

## STATE OF ARIZONA

# Oral Toxicity Values Table

August 2026 Edition

## Purpose

This document publishes the oral toxicity values that are available from the U.S. EPA Integrated Risk Information System (IRIS), the U.S. EPA Provisional Peer-Reviewed Toxicity Values (PPRTV), and the Oak Ridge National Laboratory Risk Assessment Information System (RAIS). These are the quantitative inputs from which a proposed health advisory is derived for a constituent that has no maximum contaminant level, federal health advisory, or state health advisory.

Where the U.S. EPA has established a maximum contaminant level or a health advisory, the federal value governs. Where no federal value exists but a state has published a drinking water health-based value, the State Health Advisory governs. Only where neither exists is a health advisory derived from the toxicity values published here.

Every constituent carrying an oral reference dose or an oral cancer slope factor in IRIS, PPRTV or RAIS is listed, whether or not a federal or state drinking water value already exists for it. The toxicity values are published for those constituents as well, because a reference dose or a slope factor remains useful for source characterisation, treatment evaluation and monitoring design even where the benchmark itself is set elsewhere.

## Method

### 1. Sources

U.S. EPA Integrated Risk Information System (IRIS). Values that have completed EPA's formal, externally peer-reviewed assessment process. IRIS publishes a date of last significant revision for each assessment.

U.S. EPA Provisional Peer-Reviewed Toxicity Values (PPRTV), developed by the Office of Research and Development for the Superfund program where no IRIS value exists. Peer-reviewed but provisional. PPRTV publishes a year of last revision for each assessment.

Oak Ridge National Laboratory Risk Assessment Information System (RAIS), a compilation that aggregates IRIS and PPRTV together with values from the EPA Office of Pesticide Programs (OPP), the California Environmental Protection Agency (CALEPA), the Agency for Toxic Substances and Disease Registry, HEAST, the EPA Office of Water, and others. RAIS is maintained continuously and does not publish a revision date for the values it carries. Where a value is attributed to RAIS in this table, the Notes column identifies the underlying originating source.

### 2. Oral values only

Only chronic oral reference doses are listed. Acute, short-term and subchronic oral reference doses are excluded.

### 3. Value precedence

The most recent revision governs, whichever source published it. Where no candidate value carries a revision date, and only then, source order decides — IRIS, then PPRTV, then RAIS — as a tie-break rather than as the governing rule.

Where the selected source publishes several oral values for one constituent, the most protective is taken: the highest slope factor, the lowest chronic reference dose. A candidate that EPA itself rated Low confidence is not adopted merely for being lower. Eight values were set this way. A constituent sharing a registry number with another listed entry is excluded from this step, a single published value not being attributable to either.

#### 4. What this table does not establish

A published toxicity value does not by itself make a constituent monitorable. A constituent with a reference dose or cancer slope factor but no detection method cannot be measured and thus cannot be regulated. The Department has defined what test methods are acceptable in the “available testing methods” definition in R18-9-A801. Analytical availability is addressed separately and is not a criterion for listing in this table.

#### Reading the Table

Constituent — The substance name as it appears in the source. Where the sources name the same registry number differently, both names are given, separated by a solidus. Where two entries share a registry number but the sources assign them different values — diet and non-diet forms, and mixtures carrying more than one risk basis — they are listed separately and are not synonyms of one another.

CAS No. — Chemical Abstracts Service Registry Number. A dash indicates a defined mixture, a fraction, or a group of salts for which no single registry number exists.

Source — the source supplying the value: IRIS, PPRTV or RAIS, recorded for traceability. Where the reference dose and the slope factor come from different sources, both are named and the Notes column identifies which supplied which.

Cancer Slope Factor (CSF) — the oral cancer slope factor, in inverse milligrams per kilogram body weight per day. A dash indicates that no oral slope factor is published, which may mean the constituent is not a carcinogen, or that it is one for which no quantitative oral value has been derived.

Reference Dose (RfD) — the chronic oral reference dose, in milligrams per kilogram body weight per day. A dash indicates that no chronic oral reference dose is published.

Notes — the originating source of each value and its published revision date, or a statement that the source publishes no revision date; any surrogate derivation; and the common uses and likely sources of the constituent. The use information supports source-control and monitoring planning and is informational only.

**Table: Oral Toxicity Values**

† A drinking water value has already been published for this constituent by the U.S. EPA in the 2018 Edition of the Drinking Water Standards and Health Advisories Tables as a maximum contaminant level, a secondary standard, a treatment technique, an action level, a maximum residual disinfectant level, or a health advisory. These constituents have the RfDs and CSFs provided here for reference only.

‡ A health advisory level has already been established for this constituent in the Other States' Health Advisories List. These constituents have the RfDs and CSFs provided here for reference only.

| No. | Constituent                                                                                   | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                   |
|-----|-----------------------------------------------------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Abamectin                                                                                     | 71751-41-2  | RAIS   | —                                             | $2.5 \times 10^{-3}$            | RfD from OPP (revision date not published by source). Avermectin insecticide/miticide for citrus, vegetables, and ornamentals; also veterinary antiparasitic.                                                                           |
| 2   | Acenaphthene †                                                                                | 83-32-9     | IRIS   | —                                             | $6 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1990. Coal tar; creosote; petroleum products.                                         |
| 3   | Acephate                                                                                      | 30560-19-1  | IRIS   | $8.7 \times 10^{-3}$                          | $4 \times 10^{-3}$              | RfD from IRIS Current, revised 1989; CSF from IRIS Archive, revised 1989. Acephate — organophosphate insecticide for turf, ornamentals, and structural ant control.                                                                     |
| 4   | Acequinocyl                                                                                   | 57960-19-7  | RAIS   | —                                             | $2.7 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Miticide for tree fruit, grapes, ornamentals.                                                                                                                                     |
| 5   | Acetamide                                                                                     | 60-35-5     | RAIS   | $7 \times 10^{-2}$                            | —                               | CSF from CALEPA (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                                      |
| 6   | Acetamiprid                                                                                   | 135410-20-7 | RAIS   | —                                             | $7.1 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                                         |
| 7   | Acetic acid, 2-(4-Chloro-2-methylphenoxy) (MCPA) / Methyl-4-chlorophenoxyacetic acid (MCPA) † | 94-74-6     | IRIS   | —                                             | $5 \times 10^{-4}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping. |
| 8   | Acetochlor ‡                                                                                  | 34256-82-1  | IRIS   | —                                             | $2 \times 10^{-2}$              | ‡ Health advisory published by MN — level 20 µg/L (Other States' Health Advisories List). RfD from IRIS                                                                                                                                 |

| No. | Constituent                                  | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                                                                                     |
|-----|----------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                              |             |        |                                               |                                 | Current, revised 1993. Modern agricultural pesticide or biocide.                                                                                                                                                                                                                                                                          |
| 9   | Acetone ‡                                    | 67-64-1     | IRIS   | —                                             | $9 \times 10^{-1}$              | ‡ Health advisory published by MN — level 3,000 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 2003. Nail polish remover; industrial/laboratory solvent; plastics mfg.                                                                                                                                       |
| 10  | Acetone Cyanohydrin                          | 75-86-5     | PPRTV  | —                                             | $3 \times 10^{-3}$              | RfD from PPRTV Archive, revised 2012. Methyl methacrylate manufacture intermediate; releases cyanide on hydrolysis.                                                                                                                                                                                                                       |
| 11  | Acetophenone                                 | 98-86-2     | IRIS   | —                                             | $1 \times 10^{-1}$              | RfD from IRIS Current, revised 1991. Acetophenone — fragrance in soaps/detergents; resin solvent; flavoring agent.                                                                                                                                                                                                                        |
| 12  | Acetylaminofluorene, 2-                      | 53-96-3     | RAIS   | 3.8                                           | —                               | CSF from CALEPA (revision date not published by source). Laboratory carcinogen model compound; not in commercial use.                                                                                                                                                                                                                     |
| 13  | Acibenzolar-methyl                           | 135158-54-2 | RAIS   | —                                             | $8.2 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Plant-activator fungicide for turf, citrus, and vegetables; golf course and nursery runoff.                                                                                                                                                                                         |
| 14  | Acrolein                                     | 107-02-8    | IRIS   | —                                             | $5 \times 10^{-4}$              | RfD from IRIS Current, revised 2003. Ozonation/oxidation byproduct; also industrial resin and preservative use.                                                                                                                                                                                                                           |
| 15  | Acrylamide †                                 | 79-06-1     | IRIS   | $8.3 \times 10^{-1}$                          | $2 \times 10^{-3}$              | † Federal value published — MCL (Treatment Technique) in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2010; CSF from IRIS Current (most protective of the published oral slope factors), revised 2010. Acrylamide — polyacrylamide coagulant residual in water treatment; grouting. |
| 16  | Acrylamide, 2-(2-furyl)-3-(5-nitro-2-furyl)- | 3688-53-7   | RAIS   | $2.4 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                                                                                                                                        |

| No. | Constituent        | CAS No.     | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                  |
|-----|--------------------|-------------|-------------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 17  | Acrylic Acid       | 79-10-7     | IRIS        | —                                             | $5 \times 10^{-1}$              | RfD from IRIS Current, revised 1994. Acrylic acid — superabsorbent polymers (diapers), paints, adhesives, water-treatment polymers.                                                                                                                                    |
| 18  | Acrylonitrile †    | 107-13-1    | RAIS / IRIS | $5.4 \times 10^{-1}$                          | $9 \times 10^{-5}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from ATSDR Final (revision date not published by source); CSF from IRIS Current, revised 1991. Acrylonitrile — acrylic fiber & ABS plastic mfg. |
| 19  | Actinomycin D      | 50-76-0     | RAIS        | $8.7 \times 10^3$                             | —                               | CSF from CALEPA (revision date not published by source). Antineoplastic antibiotic (dactinomycin) used in chemotherapy; laboratory transcription inhibitor.                                                                                                            |
| 20  | ADBAC              | 68424-85-1  | RAIS        | —                                             | $4.4 \times 10^{-1}$            | RfD from OPP (revision date not published by source). ADBAC/benzalkonium — disinfectant in cleaners, sanitizers, eye drops; surged in COVID-era use.                                                                                                                   |
| 21  | Afidopyropen       | 915972-17-7 | RAIS        | —                                             | $8 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Insecticide for vegetables, fruit, and cotton.                                                                                                                                                                   |
| 22  | Alachlor †         | 15972-60-8  | IRIS / RAIS | $5.6 \times 10^{-2}$                          | $1 \times 10^{-2}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1993; CSF from CALEPA (revision date not published by source). Alachlor — corn/soybean herbicide.                                |
| 23  | Aldicarb †         | 116-06-3    | IRIS        | —                                             | $1 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1993. Aldicarb — nematicide/insecticide; highly toxic.                                                                           |
| 24  | Aldicarb Sulfone † | 1646-88-4   | IRIS        | —                                             | $1 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1993.                                                                                                                            |

| No. | Constituent                   | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                             |
|-----|-------------------------------|------------|--------|-----------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                               |            |        |                                               |                                 | Carbamate insecticide/fungicide — agriculture and horticulture.                                                                                                                                                                                   |
| 25  | Aldrin †                      | 309-00-2   | IRIS   | $1.7 \times 10^1$                             | $3 \times 10^{-5}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 1987. Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue. |
| 26  | Allethrin, d- (Pynamin Forte) | 584-79-2   | RAIS   | —                                             | $8 \times 10^{-3}$              | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                                                   |
| 27  | Allyl Alcohol                 | 107-18-6   | IRIS   | —                                             | $5 \times 10^{-3}$              | RfD from IRIS Current, revised 1987. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                                                                                           |
| 28  | Allyl Chloride ‡              | 107-05-1   | RAIS   | $2.1 \times 10^{-2}$                          | —                               | ‡ Health advisory published by MN — level 30 µg/L (Other States' Health Advisories List). CSF from CALEPA (revision date not published by source). Allyl chloride — epichlorohydrin/glycerin manufacture; epoxy resin feedstock.                  |
| 29  | Aluminum †                    | 7429-90-5  | PPRTV  | —                                             | 1                               | † Federal value published — SDWR in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from PPRTV Current, revised 2006. Water treatment coagulant (alum); naturally occurring; cookware.                                    |
| 30  | Aluminum Phosphate Salts      | Multiple   | PPRTV  | —                                             | $3 \times 10^{-1}$              | RfD from PPRTV, revised 2023. Water treatment coagulant; food additive and leavening agent; ceramics, cement, and dental cements.                                                                                                                 |
| 31  | Aluminum Phosphide            | 20859-73-8 | IRIS   | —                                             | $4 \times 10^{-4}$              | RfD from IRIS Current, revised 1987. Stored-grain and burrow fumigant; generates phosphine gas; also a rodenticide.                                                                                                                               |
| 32  | Ametryn †                     | 834-12-8   | IRIS   | —                                             | $9 \times 10^{-3}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised                                                                                                 |

| No. | Constituent                                    | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                             |
|-----|------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                |             |        |                                               |                                 | 1987. Triazine herbicide — row crops, turf, rights-of-way; frequent groundwater detection.                                                        |
| 33  | Amicarbazone                                   | 129909-90-6 | RAIS   | —                                             | $2.3 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Corn and sugarcane herbicide.                                                               |
| 34  | Amino-5-(5-nitro-2-furyl)-1,3,4-thiadiazol, 2- | 712-68-5    | RAIS   | $1.6 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). Nitrofurantoin antibacterial research compound.                                          |
| 35  | Amino-9-ethylcarbazolehydrochloride, 3-        | 6109-97-3   | RAIS   | $7.8 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). Dye and pigment intermediate.                                                            |
| 36  | Aminoanthraquinone, 2-                         | 117-79-3    | RAIS   | $3.3 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                            |
| 37  | Aminoazotoluene, ortho-                        | 97-56-3     | RAIS   | 3.8                                           | —                               | CSF from CALEPA (revision date not published by source). o-Aminoazotoluene — textile dye intermediate.                                            |
| 38  | Aminobiphenyl, 4-                              | 92-67-1     | RAIS   | $2.1 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                            |
| 39  | Aminophenol, m-                                | 591-27-5    | PPRTV  | —                                             | $8 \times 10^{-2}$              | RfD from PPRTV Current, revised 2006. Industrial intermediate for resins, dyes, and disinfectants.                                                |
| 40  | Aminophenol, o-                                | 95-55-6     | PPRTV  | —                                             | $4 \times 10^{-3}$              | RfD from SCREEN Current, revised 2016. Industrial intermediate for resins, dyes, and disinfectants.                                               |
| 41  | Aminophenol, p-                                | 123-30-8    | PPRTV  | —                                             | $2 \times 10^{-2}$              | RfD from PPRTV Current, revised 2005. Industrial intermediate for resins, dyes, and disinfectants.                                                |
| 42  | Aminopyralid                                   | 150114-71-9 | RAIS   | —                                             | $5 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Aminopyralid — pasture, rangeland, and rights-of-way herbicide; persists in compost/manure. |
| 43  | Aminopyridine, 4-                              | 504-24-5    | RAIS   | —                                             | $2 \times 10^{-5}$              | RfD from HEAST Archive (revision date not published by source). 4-Aminopyridine — avian repellent; also multiple sclerosis pharmaceutical.        |

| No. | Constituent                                | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                                   |
|-----|--------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 44  | Amisulbrom                                 | 348635-87-0 | RAIS   | —                                             | $5.4 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Fungicide for grapes and turf.                                                                                                                                                                                                    |
| 45  | Amitraz                                    | 33089-61-1  | IRIS   | —                                             | $2.5 \times 10^{-3}$            | RfD from IRIS Current, revised 1988. Amitraz — miticide/acaricide; also veterinary tick collars and beehive strips.                                                                                                                                                                     |
| 46  | Amitrole                                   | 61-82-5     | RAIS   | $9.4 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Amitrole — non-selective herbicide for rights-of-way; also industrial antioxidant.                                                                                                                                             |
| 47  | Ammonia †                                  | 7664-41-7   | RAIS   | —                                             | $3.4 \times 10^1$               | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from HEAST Archive (revision date not published by source). Ammonia — chloramine disinfection, fertilizer, refrigerant, household cleaners; major WWTP nutrient. |
| 48  | Ammonium fluorotelomer sulfonate, 6:2      | 59587-39-2  | RAIS   | —                                             | $2.1 \times 10^{-4}$            | RfD from HHTV Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                                                                             |
| 49  | Ammonium perfluoro-2-methyl-3-oxahexanoate | 62037-80-3  | RAIS   | —                                             | $3 \times 10^{-6}$              | RfD from DWSHA (revision date not published by source). HFPO-DA ammonium salt (GenX) — fluoropolymer processing aid; PFOA replacement.                                                                                                                                                  |
| 50  | Ammonium perfluorobutanoate                | 10495-86-0  | IRIS   | —                                             | $1 \times 10^{-3}$              | RfD from IRIS Current (revision date not published by source). Short-chain PFOA/PFOS replacement chemistry; textile and paper coatings.                                                                                                                                                 |
| 51  | Ammonium perfluorodecanoate                | 3108-42-7   | IRIS   | —                                             | $2.07 \times 10^{-9}$           | RfD from IRIS Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                                                                             |
| 52  | Ammonium perfluorohexanesulfonate          | 68259-08-5  | IRIS   | —                                             | $4.2 \times 10^{-10}$           | RfD from IRIS Current (revision date not published by source). PFHxS salt — AFFF firefighting foam and surface treatment.                                                                                                                                                               |

| No. | Constituent                     | CAS No.    | Source       | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                             |
|-----|---------------------------------|------------|--------------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 53  | Ammonium perfluorohexanoate     | 21615-47-4 | IRIS         | —                                             | $5 \times 10^{-4}$              | RfD from IRIS Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                       |
| 54  | Ammonium perfluorooctanoate     | 3825-26-1  | RAIS         | $2.93 \times 10^4$                            | $3 \times 10^{-8}$              | RfD and CSF from DWSHA (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                      |
| 55  | Ammonium Picrate                | 131-74-8   | PPRTV        | —                                             | $2 \times 10^{-3}$              | RfD from PPRTV Current, revised 2020. Military explosive or propellant; defense/ordnance site contaminant.                                                                                                                        |
| 56  | Ammonium polyphosphate          | 68333-79-9 | PPRTV        | —                                             | $4.9 \times 10^1$               | RfD from PPRTV, revised 2011. Fertilizer; flame retardant in coatings, textiles, and intumescent paints; fire-fighting retardant.                                                                                                 |
| 57  | Ammonium Sulfamate †            | 7773-06-0  | IRIS         | —                                             | $2 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1989. Ammonium sulfamate — brush/rights-of-way herbicide; also flame retardant. |
| 58  | Aniline                         | 62-53-3    | PPRTV / IRIS | $5.7 \times 10^{-3}$                          | $7 \times 10^{-3}$              | RfD from PPRTV Current, revised 2007; CSF from IRIS Current, revised 1990. Aniline — dye/pigment mfg; rubber accelerators; polyurethane.                                                                                          |
| 59  | Aniline hydrochloride           | 142-04-1   | RAIS         | $5.7 \times 10^{-3}$                          | —                               | CSF from CALEPA (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                            |
| 60  | Anisidine hydrochloride, ortho- | 134-29-2   | RAIS         | $1.1 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                            |
| 61  | Anisidine, ortho-               | 90-04-0    | RAIS         | $1.4 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                            |

| No. | Constituent                                                                            | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                            |
|-----|----------------------------------------------------------------------------------------|------------|-------------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 62  | Anthracene †                                                                           | 120-12-7   | IRIS        | —                                             | $3 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1991. Coal tar; dye intermediate; wood preservative component. |
| 63  | Anthraquinone, 9,10-                                                                   | 84-65-1    | PPRTV       | $4 \times 10^{-2}$                            | $2 \times 10^{-3}$              | RfD from SCREEN Current, revised 2011; CSF from PPRTV Current, revised 2011. 9,10-Anthraquinone — dye/pigment manufacture, paper pulping catalyst, bird repellent.                                               |
| 64  | Antimony (metallic) †                                                                  | 7440-36-0  | IRIS        | —                                             | $4 \times 10^{-4}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Flame retardants; solder; PET plastic catalyst; brake pads.          |
| 65  | Antimony Pentoxide                                                                     | 1314-60-9  | RAIS        | —                                             | $5 \times 10^{-4}$              | RfD from HEAST Current (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                |
| 66  | Antimony Potassium Tartrate / Soluble Antimony Compounds (Antimony Potassium Tartrate) | 11071-15-1 | RAIS        | —                                             | $9 \times 10^{-4}$              | RfD from HEAST Archive (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                |
| 67  | Antimony Tetroxide                                                                     | 1332-81-6  | RAIS        | —                                             | $4 \times 10^{-4}$              | RfD from HEAST Current (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                |
| 68  | Antimony Trioxide                                                                      | 1309-64-4  | RAIS        | —                                             | $4 \times 10^{-4}$              | RfD from HEAST Archive (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                |
| 69  | Aquashade                                                                              | 2650-18-2  | RAIS        | —                                             | 5                               | RfD from OPP (revision date not published by source). Aquashade — pond and lake dye for aquatic weed suppression; blue colorant.                                                                                 |
| 70  | Aroclor 1016                                                                           | 12674-11-2 | IRIS / RAIS | $7 \times 10^{-2}$                            | $7 \times 10^{-5}$              | RfD from IRIS Current, revised 1993. Surrogate value — See Polychlorinated Biphenyls. Legacy PCB                                                                                                                 |

| No. | Constituent       | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                         |
|-----|-------------------|------------|-------------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                   |            |             |                                               |                                 | dielectric fluid for transformers and capacitors; banned 1979.                                                                                                                |
| 71  | Aroclor 1221      | 11104-28-2 | RAIS        | 2                                             | —                               | Surrogate value — See Polychlorinated Biphenyls. Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                      |
| 72  | Aroclor 1232      | 11141-16-5 | RAIS        | 2                                             | —                               | Surrogate value — See Polychlorinated Biphenyls. Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                      |
| 73  | Aroclor 1242      | 53469-21-9 | RAIS        | 2                                             | —                               | Surrogate value — See Polychlorinated Biphenyls. Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                      |
| 74  | Aroclor 1248      | 12672-29-6 | RAIS        | 2                                             | —                               | Surrogate value — See Polychlorinated Biphenyls. Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                      |
| 75  | Aroclor 1254      | 11097-69-1 | IRIS / RAIS | 2                                             | $2 \times 10^{-5}$              | RfD from IRIS Current, revised 1994. Surrogate value — See Polychlorinated Biphenyls. Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids. |
| 76  | Aroclor 1260      | 11096-82-5 | RAIS        | 2                                             | —                               | Surrogate value — See Polychlorinated Biphenyls. Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                      |
| 77  | Aroclor 5460      | 11126-42-4 | PPRTV       | —                                             | $6 \times 10^{-4}$              | RfD from SCREEN Current, revised 2014. Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                |
| 78  | Arsenic Acid      | 7778-39-4  | RAIS        | 1.5                                           | $3.5 \times 10^{-6}$            | RfD and CSF from CALEPA (revision date not published by source). Metal oxyanion — naturally occurring, industrial plating, or mining discharge.                               |
| 79  | Arsenic pentoxide | 1303-28-2  | RAIS        | 1.5                                           | $3.5 \times 10^{-6}$            | RfD and CSF from CALEPA (revision date not published by source). Metal oxyanion — naturally occurring, industrial plating, or mining discharge.                               |

| No. | Constituent                  | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                                  |
|-----|------------------------------|------------|-------------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 80  | Arsenic, Inorganic †         | 7440-38-2  | IRIS        | $3.2 \times 10^1$                             | $6 \times 10^{-5}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 1995. Naturally occurring in AZ groundwater; wood preservative (CCA); historic pesticides; mining.                                       |
| 81  | Arsine                       | 7784-42-1  | RAIS        | —                                             | $3.5 \times 10^{-6}$            | RfD from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                                                                             |
| 82  | Asbestos (units in fibers) † | 1332-21-4  | RAIS        | $1.4 \times 10^{-13}$                         | —                               | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. CSF from CALEPA (revision date not published by source). Asbestos — legacy pipe, insulation, and cement; released during demolition and AC-pipe degradation.                    |
| 83  | Asulam                       | 3337-71-1  | IRIS        | —                                             | $5 \times 10^{-2}$              | RfD from IRIS Current, revised 1988. Asulam — sugarcane and turf herbicide.                                                                                                                                                                                                            |
| 84  | Atrazine †                   | 1912-24-9  | IRIS / RAIS | $2.3 \times 10^{-1}$                          | $3.5 \times 10^{-2}$            | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1993; CSF from CALEPA (revision date not published by source). Atrazine — corn/sorghum herbicide; among most-detected US groundwater pesticides. |
| 85  | Auramine                     | 492-80-8   | RAIS        | $8.8 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                                                 |
| 86  | Avermectin B1                | 65195-55-3 | IRIS        | —                                             | $4 \times 10^{-4}$              | RfD from IRIS Current, revised 1989. Avermectin insecticide/miticide for citrus, vegetables, and ornamentals; also veterinary antiparasitic.                                                                                                                                           |
| 87  | Azaserine                    | 115-02-6   | RAIS        | $1.1 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). Azaserine — antibiotic and antineoplastic research compound.                                                                                                                                                                  |

| No. | Constituent                     | CAS No.         | Source         | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                       |
|-----|---------------------------------|-----------------|----------------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 88  | Azathioprine                    | 446-86-6        | RAIS           | 1.8                                           | —                               | CSF from CALEPA (revision date not published by source). Azathioprine — immunosuppressant.                                                                                                                  |
| 89  | Azinphos-methyl                 | 86-50-0         | RAIS           | —                                             | $1.5 \times 10^{-3}$            | RfD from OPP (revision date not published by source). Organophosphate insecticide — agricultural and (historically) residential pest control.                                                               |
| 90  | Azobenzene                      | 103-33-3        | IRIS           | $1.1 \times 10^{-1}$                          | —                               | CSF from IRIS Current, revised 1988. Azobenzene — dye intermediate; rubber and polymer chemical.                                                                                                            |
| 91  | Azodicarbonamide                | 123-77-3        | PPRTV          | —                                             | 1                               | RfD from PPRTV Current, revised 2014. Modern agricultural pesticide or biocide.                                                                                                                             |
| 92  | Azoxystrobin                    | 131860-3<br>3-8 | RAIS           | —                                             | $1.8 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                             |
| 93  | Barium / Barium and Compounds † | 7440-39-<br>3   | IRIS           | —                                             | $2 \times 10^{-1}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2005. Drilling fluids; naturally occurring; medical imaging contrast. |
| 94  | Barium Chromate                 | 10294-40<br>-3  | RAIS           | $5 \times 10^{-1}$                            | $2 \times 10^{-2}$              | RfD and CSF from CALEPA (revision date not published by source). Metal oxyanion — naturally occurring, industrial plating, or mining discharge.                                                             |
| 95  | Benalaxyl-M                     | 98243-83<br>-5  | RAIS           | $5.9 \times 10^{-3}$                          | $2 \times 10^{-2}$              | RfD and CSF from OPP (revision date not published by source). Fungicide for grapes, potatoes, lettuce; agricultural and vineyard runoff.                                                                    |
| 96  | Benfluralin / Benefin           | 1861-40-<br>1   | IRIS           | —                                             | $3 \times 10^{-1}$              | RfD from IRIS Current, revised 1987. Modern agricultural pesticide or biocide.                                                                                                                              |
| 97  | Benomyl                         | 17804-35<br>-2  | IRIS /<br>RAIS | $2.39 \times 10^{-3}$                         | $5 \times 10^{-2}$              | RfD from IRIS Current, revised 1987; CSF from OPP (revision date not published by source). Benzimidazole fungicide, US registration cancelled; degrades to carbendazim.                                     |
| 98  | Bensulfuron-methyl / Londax     | 83055-99<br>-6  | IRIS           | —                                             | $2 \times 10^{-1}$              | RfD from IRIS Current, revised 1988. Modern agricultural pesticide or biocide.                                                                                                                              |

| No. | Constituent                      | CAS No.     | Source       | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                          |
|-----|----------------------------------|-------------|--------------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 99  | Bensulide                        | 741-58-2    | RAIS         | —                                             | $5 \times 10^{-3}$              | RfD from OPP (revision date not published by source). Bensulide — turf and vegetable pre-emergent herbicide; golf course use.                                                                                                                  |
| 100 | Bentazon / Bentazon (Basagran) † | 25057-89-0  | IRIS         | —                                             | $3 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1998. Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping.        |
| 101 | Bentazon Sodium Salt             | 50723-80-3  | RAIS         | —                                             | $1.5 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping.                                                                                                          |
| 102 | Benthiavalicarb-isopropyl        | 177406-68-7 | RAIS         | $6.28 \times 10^{-2}$                         | $9.9 \times 10^{-2}$            | RfD and CSF from OPP (revision date not published by source). Fungicide for grapes and vegetables; vineyard and greenhouse runoff.                                                                                                             |
| 103 | Benz[a]anthracene †              | 56-55-3     | RAIS         | $1 \times 10^{-1}$                            | —                               | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. CSF from EPA/RPF (revision date not published by source). Combustion byproduct; coal tar; asphalt; urban stormwater runoff. |
| 104 | Benzaldehyde                     | 100-52-7    | IRIS / PPRTV | $4 \times 10^{-3}$                            | $1 \times 10^{-1}$              | RfD from IRIS Current, revised 1988; CSF from PPRTV Current, revised 2015. Ozonation/oxidation byproduct; also industrial resin and preservative use.                                                                                          |
| 105 | Benzene †                        | 71-43-2     | IRIS         | $5.5 \times 10^{-2}$                          | $4 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 2003. Gasoline component; solvent; chemical feedstock; tobacco smoke.                            |
| 106 | Benzene Sulfonic Acid            | 68584-22-5  | RAIS         | —                                             | $5 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Detergent and dye manufacture intermediate; catalyst and industrial acid.                                                                                                                |

| No. | Constituent                             | CAS No.   | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                                                                                     |
|-----|-----------------------------------------|-----------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 107 | Benzenediamine-2-methyl sulfate, 1,4-   | 6369-59-1 | PPRTV  | $1 \times 10^{-1}$                            | $3 \times 10^{-4}$              | RfD and CSF from SCREEN Current, revised 2013. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                                                                                                              |
| 108 | Benzenethiol                            | 108-98-5  | PPRTV  | —                                             | $1 \times 10^{-3}$              | RfD from PPRTV Current, revised 2011. Benzenethiol (thiophenol) — pharmaceutical/pesticide intermediate; strong odorant.                                                                                                                                                                                                                  |
| 109 | Benzidine                               | 92-87-5   | IRIS   | $2.3 \times 10^2$                             | $3 \times 10^{-3}$              | RfD and CSF from IRIS Current, revised 1991. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                                                                                                                |
| 110 | Benzo[a]pyrene / Benzo[a]pyrene (BaP) † | 50-32-8   | IRIS   | 2                                             | $3 \times 10^{-4}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2017; CSF from IRIS Current (most protective of the published oral slope factors), revised 2017. Combustion byproduct — vehicle exhaust, wood smoke, grilled food; coal tar sealant; tobacco smoke. |
| 111 | Benzo[b]fluoranthene †                  | 205-99-2  | RAIS   | $1 \times 10^{-1}$                            | —                               | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. CSF from EPA/RPF (revision date not published by source). Combustion byproduct; urban runoff; coal tar sealants.                                                                                                       |
| 112 | Benzo[e]pyrene / Benzo[e]pyrene (BeP)   | 192-97-2  | PPRTV  | —                                             | $9 \times 10^{-5}$              | RfD from PPRTV Current, revised 2021. Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.                                                                                                                                                                                                            |
| 113 | Benzo[j]fluoranthene                    | 205-82-3  | RAIS   | 1.2                                           | —                               | CSF from CALEPA (revision date not published by source). Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.                                                                                                                                                                                         |
| 114 | Benzo[k]fluoranthene †                  | 207-08-9  | RAIS   | $1 \times 10^{-2}$                            | —                               | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. CSF from EPA/RPF (revision date                                                                                                                                                                                        |

| No. | Constituent                  | CAS No.     | Source       | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                             |
|-----|------------------------------|-------------|--------------|-----------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                              |             |              |                                               |                                 | not published by source). Combustion byproduct; urban runoff.                                                                                                                                                                                     |
| 115 | Benzobicyclon                | 156963-66-5 | RAIS         | —                                             | $6.36 \times 10^{-1}$           | RfD from OPP (revision date not published by source). Rice and turf herbicide/fungicide; irrigation return flow.                                                                                                                                  |
| 116 | Benzobicyclon (Metabolite B) | 126656-88-0 | RAIS         | —                                             | $4 \times 10^{-5}$              | RfD from OPP (revision date not published by source). Benzobicyclon degradate; rice paddy and irrigation drainage.                                                                                                                                |
| 117 | Benzofluorene, 2,3-          | 243-17-4    | PPRTV        | —                                             | $5 \times 10^{-3}$              | RfD from PPRTV Current, revised 2024. Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.                                                                                                                    |
| 118 | Benzoic Acid ‡               | 65-85-0     | IRIS         | —                                             | 4                               | ‡ Health advisory published by MN, WI — level 30,000 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1989. Benzoic acid — food preservative, personal-care preservative, plasticizer feedstock; common in wastewater. |
| 119 | Benzotrichloride             | 98-07-7     | IRIS         | $1.3 \times 10^1$                             | —                               | CSF from IRIS Current, revised 1990. Benzotrichloride — dye and pesticide intermediate.                                                                                                                                                           |
| 120 | Benzovindiflupyr             | —           | RAIS         | —                                             | $8.2 \times 10^{-2}$            | RfD from OPP (revision date not published by source). SDHI fungicide for cereals, soybeans, and turf.                                                                                                                                             |
| 121 | Benzyl Alcohol               | 100-51-6    | PPRTV        | —                                             | $1 \times 10^{-1}$              | RfD from PPRTV Current, revised 2009. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                                                                                          |
| 122 | Benzyl Chloride              | 100-44-7    | PPRTV / IRIS | $1.7 \times 10^{-1}$                          | $2 \times 10^{-3}$              | RfD from PPRTV Current, revised 2008; CSF from IRIS Current, revised 1992. Benzyl chloride — plasticizer, dye, and quaternary ammonium manufacture.                                                                                               |
| 123 | Benzyl violet 4B             | 1694-09-3   | RAIS         | $2 \times 10^{-2}$                            | —                               | CSF from CALEPA (revision date not published by source). Benzyl violet 4B — textile and former food dye.                                                                                                                                          |

| No. | Constituent                      | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                               |
|-----|----------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 124 | Beryllium and Compounds †        | 7440-41-7   | IRIS   | —                                             | $2 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1998. Aerospace alloys; electronics; coal combustion; ceramics.               |
| 125 | Beryllium oxide                  | 1304-56-9   | RAIS   | —                                             | $2 \times 10^{-3}$              | RfD from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                          |
| 126 | Beryllium sulfate                | 13510-49-1  | RAIS   | —                                             | $2 \times 10^{-3}$              | RfD from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                          |
| 127 | Beryllium sulfate (tetrahydrate) | 7787-56-6   | RAIS   | —                                             | $2 \times 10^{-3}$              | RfD from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                          |
| 128 | Bicyclopyrone                    | 352010-68-5 | RAIS   | —                                             | $2.8 \times 10^{-4}$            | RfD from OPP (revision date not published by source). Corn and sugarcane herbicide.                                                                                                                                 |
| 129 | Bifenazate                       | 149877-41-8 | RAIS   | —                                             | $1 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Bifenazate — miticide for ornamentals, greenhouses, and fruit.                                                                                                |
| 130 | Bifenox                          | 42576-02-3  | PPRTV  | —                                             | $9 \times 10^{-3}$              | RfD from PPRTV Current (revision date not published by source). Diphenyl ether herbicide for cereals and soybeans.                                                                                                  |
| 131 | Bifenthrin                       | 82657-04-3  | IRIS   | —                                             | $1.5 \times 10^{-2}$            | RfD from IRIS Current, revised 1988. Bifenthrin — pyrethroid insecticide for turf, structural pest control, and termites; a dominant pyrethroid in urban wastewater and sediment.                                   |
| 132 | Biphenyl, 1,1'- ‡                | 92-52-4     | IRIS   | $8 \times 10^{-3}$                            | $5 \times 10^{-1}$              | ‡ Health advisory published by MN — level 10 µg/L (Other States' Health Advisories List). RfD and CSF from IRIS Current, revised 2013. Biphenyl — heat-transfer fluid, citrus fruit preservative, dye intermediate. |

| No. | Constituent                                                      | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                                      |
|-----|------------------------------------------------------------------|------------|-------------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 133 | Bis(2-chloro-1-methylethyl) ether †                              | 108-60-1   | IRIS / RAIS | $7 \times 10^{-2}$                            | $4 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1989; CSF from HEAST Archive (revision date not published by source). Polar industrial solvent, glycol, or alcohol; wide commercial use. |
| 134 | Bis(2-chloroethoxy)methane                                       | 111-91-1   | PPRTV       | —                                             | $3 \times 10^{-3}$              | RfD from PPRTV Current, revised 2006. Bis(2-chloroethoxy)methane — solvent and polysulfide rubber intermediate.                                                                                                                                                                            |
| 135 | Bis(2-chloroethyl)ether / Bis(chloroethyl)ether (BCEE) ‡         | 111-44-4   | IRIS        | 1.1                                           | —                               | ‡ Health advisory published by MN — level 0.5 µg/L (Other States' Health Advisories List). CSF from IRIS Current, revised 1991. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                                         |
| 136 | Bis(2-ethylhexyl)phthalate / Di (2-ethylhexyl)phthalate (DEHP) † | 117-81-7   | IRIS        | $1.4 \times 10^{-2}$                          | $2 \times 10^{-2}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 1988. DEHP — flexible PVC plasticizer; medical tubing/IV bags; vinyl flooring.                                                               |
| 137 | Bis(chloromethyl)ether / Bis(chloromethyl)ether (BCME) ‡         | 542-88-1   | IRIS        | $2.2 \times 10^2$                             | —                               | ‡ Health advisory published by MN — level 0.5 µg/L (Other States' Health Advisories List). CSF from IRIS Current, revised 1991. Chloromethylation byproduct in ion-exchange resin and polymer manufacture; potent industrial carcinogen.                                                   |
| 138 | Bis(perfluoromethylsulfonyl)imide anion                          | 98837-98-0 | RAIS        | —                                             | $3 \times 10^{-4}$              | RfD from HHTV Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                                                                                |
| 139 | Bis(trifluoromethylsulfonyl)amine (TFSI)                         | 82113-65-3 | RAIS        | —                                             | $3 \times 10^{-4}$              | RfD from HHTV Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                                                                                |

| No. | Constituent                                    | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                     |
|-----|------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 140 | Bisphenol A ‡                                  | 80-05-7     | IRIS   | —                                             | $5 \times 10^{-2}$              | ‡ Health advisory published by MN — level 20 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1988. Polycarbonate plastics; epoxy resin liners; thermal receipt paper; food can coatings.                      |
| 141 | Bispyrabac Sodium                              | 125401-92-5 | RAIS   | —                                             | $1 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Bispyribac-sodium — rice and turf herbicide.                                                                                                                                        |
| 142 | Bitertanol                                     | 55179-31-2  | RAIS   | —                                             | $2.1 \times 10^{-3}$            | RfD from OPP (revision date not published by source). Triazole fungicide for cereals, bananas, turf; landscape and nursery runoff.                                                                                                        |
| 143 | Bixafen                                        | 581809-46-3 | RAIS   | —                                             | $3 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Cereal fungicide (SDHI class); agricultural runoff.                                                                                                                                 |
| 144 | Boron And Borates Only / Boron and Compounds † | 7440-42-8   | IRIS   | —                                             | $2 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2004. Detergents/borax; fertilizer; glass & ceramics; wood preservative; cooling water. |
| 145 | Boron Trichloride                              | 10294-34-5  | PPRTV  | —                                             | 2                               | RfD from PPRTV Current, revised 2012. Detergent/borax, fertilizer, and industrial use; also naturally occurring.                                                                                                                          |
| 146 | Boron Trifluoride                              | 7637-07-2   | RAIS   | —                                             | $4 \times 10^{-2}$              | RfD from CALEPA (revision date not published by source). Boron trifluoride — polymerization catalyst; semiconductor and refinery use.                                                                                                     |
| 147 | Boscalid                                       | 188425-85-6 | RAIS   | —                                             | $2.2 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Broad-spectrum fungicide for grapes, vegetables, turf; nursery and golf runoff.                                                                                                     |
| 148 | Bromate †                                      | 15541-45-4  | IRIS   | $7 \times 10^{-1}$                            | $4 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 2001. Ozonation byproduct from bromide; hypochlorite impurity.                              |

| No. | Constituent                                      | CAS No.   | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                            |
|-----|--------------------------------------------------|-----------|--------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 149 | Bromo-2-chloroethane, 1-                         | 107-04-0  | PPRTV  | 2                                             | $1 \times 10^{-4}$              | RfD from PPRTV Current, revised 2021; CSF from SCREEN Archive, revised 2021. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                                                                            |
| 150 | Bromo-3-fluorobenzene, 1-                        | 1073-06-9 | PPRTV  | —                                             | $3 \times 10^{-4}$              | RfD from SCREEN Current, revised 2017. Laboratory reagent and pharmaceutical intermediate.                                                                                                                                                       |
| 151 | Bromo-4-fluorobenzene, 1- / p-Bromofluorobenzene | 460-00-4  | PPRTV  | —                                             | $3 \times 10^{-4}$              | RfD from SCREEN Current, revised 2017. Laboratory reagent and pharmaceutical/agrochemical intermediate.                                                                                                                                          |
| 152 | Bromoacetic acid ‡                               | 79-08-3   | RAIS   | —                                             | $1.7 \times 10^{-3}$            | ‡ Health advisory published by WI — level 60 µg/L (Other States' Health Advisories List). RfD from CALEPA (revision date not published by source). Haloacetic acid — chlorination disinfection byproduct.                                        |
| 153 | Bromobenzene †                                   | 108-86-1  | IRIS   | —                                             | $8 \times 10^{-3}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2009. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume. |
| 154 | Bromodichloromethane †                           | 75-27-4   | IRIS   | $6.2 \times 10^{-2}$                          | $2 \times 10^{-2}$              | † Federal value published — MCL (TTHM group) in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 1993. Chlorination byproduct (THM).                                                   |
| 155 | Bromoform †                                      | 75-25-2   | IRIS   | $7.9 \times 10^{-3}$                          | $2 \times 10^{-2}$              | † Federal value published — MCL (TTHM group) in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 1993. Chlorination byproduct (THM), elevated with bromide.                            |
| 156 | Bromomethane †                                   | 74-83-9   | IRIS   | —                                             | $1.4 \times 10^{-3}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health                                                                                                                                                  |

| No. | Constituent           | CAS No.     | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                  |
|-----|-----------------------|-------------|-------------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                       |             |             |                                               |                                 | Advisories Tables. RfD from IRIS Current, revised 1992. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.       |
| 157 | Bromophos             | 2104-96-3   | RAIS        | —                                             | $5 \times 10^{-3}$              | RfD from HEAST Current (revision date not published by source). Organophosphate insecticide for stored products and public health vector control.      |
| 158 | Bromoxynil            | 1689-84-5   | IRIS / RAIS | $1.03 \times 10^{-1}$                         | $2 \times 10^{-2}$              | RfD from IRIS Current, revised 1988; CSF from OPP (revision date not published by source). Bromoxynil — cereal and corn broadleaf herbicide.           |
| 159 | Bromoxynil Butyrate   | 3861-41-4   | RAIS        | —                                             | $1.5 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Bromoxynil butyrate ester — herbicide formulation.                                               |
| 160 | Bromoxynil heptanoate | 56634-95-8  | RAIS        | $1.03 \times 10^{-1}$                         | $1.5 \times 10^{-2}$            | RfD and CSF from OPP (revision date not published by source). Bromoxynil heptanoate ester — herbicide formulation.                                     |
| 161 | Bromoxynil Octanoate  | 1689-99-2   | IRIS / RAIS | $1.03 \times 10^{-1}$                         | $2 \times 10^{-2}$              | RfD from IRIS Current, revised 1988; CSF from OPP (revision date not published by source). Bromoxynil octanoate ester — cereal herbicide formulation.  |
| 162 | Bromuconazole         | 116255-48-2 | RAIS        | —                                             | $9 \times 10^{-3}$              | RfD from OPP (revision date not published by source). Triazole fungicide for cereals and stone fruit.                                                  |
| 163 | Buprofezin            | 69327-76-0  | RAIS        | —                                             | $3.3 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Buprofezin — insect growth regulator for citrus, cotton, greenhouse crops.                       |
| 164 | Butadiene, 1,3-       | 106-99-0    | RAIS        | $6 \times 10^{-1}$                            | —                               | CSF from CALEPA (revision date not published by source). 1,3-Butadiene — synthetic rubber and plastics manufacture; vehicle exhaust and tobacco smoke. |
| 165 | Butafenacil           | 134605-64-4 | RAIS        | —                                             | $1.2 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Herbicide for citrus, grapes, tree nuts.                                                         |

| No. | Constituent                                                                     | CAS No.    | Source       | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                       |
|-----|---------------------------------------------------------------------------------|------------|--------------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 166 | Butanoic acid, 4-(2,4-dichlorophenoxy)- / Dichlorophenoxy)butyric acid (2,4-DB) | 94-82-6    | IRIS         | —                                             | $8 \times 10^{-3}$              | RfD from IRIS Current, revised 1987. Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping.                                                                                                                                        |
| 167 | Butanol, n- ‡                                                                   | 71-36-3    | IRIS         | —                                             | $1 \times 10^{-1}$              | ‡ Health advisory published by MN — level 700 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1991. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                          |
| 168 | Butoxypolypropylene Glycol                                                      | 9003-13-8  | RAIS         | —                                             | 1.2                             | RfD from OPP (revision date not published by source). Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                                                                                    |
| 169 | Butralin                                                                        | 33629-47-9 | RAIS         | —                                             | $1 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Butralin — cotton and tobacco herbicide; also tobacco sucker control.                                                                                                                                 |
| 170 | Butyl alcohol, sec-                                                             | 78-92-2    | PPRTV        | —                                             | 2                               | RfD from PPRTV Current, revised 2009. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                                                                                                    |
| 171 | Butyl Alcohol, t- / tert-Butyl Alcohol (tBA) ‡                                  | 75-65-0    | IRIS         | $5 \times 10^{-4}$                            | $4 \times 10^{-1}$              | ‡ Health advisory published by CA, MA — level 12 µg/L (Other States' Health Advisories List). RfD and CSF from IRIS Current, revised 2021. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                               |
| 172 | Butyl Benzyl Phthalate / Butyl benzyl phthalate (BBP) †                         | 85-68-7    | IRIS / PPRTV | $1.9 \times 10^{-3}$                          | $2 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1989; CSF from PPRTV Current, revised 2002. Butyl benzyl phthalate — vinyl flooring, adhesives, sealants. |
| 173 | Butyl chromate (VI), t-                                                         | 1189-85-1  | RAIS         | $5 \times 10^{-1}$                            | $2 \times 10^{-2}$              | RfD and CSF from CALEPA (revision date not published by source). Metal oxyanion — naturally occurring, industrial plating, or mining discharge.                                                                                                             |

| No. | Constituent                                                          | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                   |
|-----|----------------------------------------------------------------------|------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 174 | Butylate †                                                           | 2008-41-5  | IRIS   | —                                             | $5 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1994. Carbamate insecticide/fungicide — agriculture and horticulture. |
| 175 | Butylated hydroxyanisole                                             | 25013-16-5 | RAIS   | $2 \times 10^{-4}$                            | —                               | CSF from CALEPA (revision date not published by source). BHA — antioxidant preservative in food, cosmetics, and packaging.                                                                                              |
| 176 | Butylated hydroxytoluene                                             | 128-37-0   | PPRTV  | $3.6 \times 10^{-3}$                          | $3 \times 10^{-1}$              | RfD and CSF from PPRTV Current, revised 2013. BHT — antioxidant in food, cosmetics, plastics, and fuels; common wastewater detection.                                                                                   |
| 177 | Butylbenzene, n- ‡                                                   | 104-51-8   | PPRTV  | —                                             | $5 \times 10^{-2}$              | ‡ Health advisory published by CA — level 260 µg/L (Other States' Health Advisories List). RfD from PPRTV Current, revised 2010. Petroleum/fuel component and industrial solvent.                                       |
| 178 | Butylbenzene, sec- ‡                                                 | 135-98-8   | PPRTV  | —                                             | $1 \times 10^{-1}$              | ‡ Health advisory published by CA — level 260 µg/L (Other States' Health Advisories List). RfD from SCREEN Current, revised 2012. Petroleum/fuel component and industrial solvent.                                      |
| 179 | Butylbenzene, tert- ‡                                                | 98-06-6    | PPRTV  | —                                             | $1 \times 10^{-1}$              | ‡ Health advisory published by CA — level 260 µg/L (Other States' Health Advisories List). RfD from SCREEN Current, revised 2012. Petroleum/fuel component and industrial solvent.                                      |
| 180 | Butylphthalyl Butylglycolate / Butylphthalyl butylglycolate (BPPG) ‡ | 85-70-1    | IRIS   | —                                             | 1                               | ‡ Health advisory published by MN — level 7,000 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1987. Plasticizer in flexible PVC, cosmetics, and consumer products.                        |
| 181 | Butyltin Compounds, di-                                              | VARIOUS    | PPRTV  | —                                             | $3 \times 10^{-4}$              | RfD from PPRTV, revised 2006. PVC pipe heat stabilizer; polyurethane and silicone catalyst; glass coatings.                                                                                                             |

| No. | Constituent                        | CAS No.    | Source       | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                 |
|-----|------------------------------------|------------|--------------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 182 | Butyltin Compounds, tri-           | VARIOUS    | PPRTV        | —                                             | $3 \times 10^{-4}$              | RfD from PPRTV, revised 2006. Legacy antifouling boat paint biocide; wood preservative; industrial slimicide.                                                                                                         |
| 183 | Butyrolactone, beta-               | 3068-88-0  | RAIS         | 1                                             | —                               | CSF from CALEPA (revision date not published by source). beta-Butyrolactone — polymer and solvent intermediate.                                                                                                       |
| 184 | C.I. Basic Red 9 monohydrochloride | 569-61-9   | RAIS         | $2.4 \times 10^2$                             | —                               | CSF from CALEPA (revision date not published by source). Basic Red 9 — textile, ink, and leather dye.                                                                                                                 |
| 185 | Cacodylic Acid                     | 75-60-5    | RAIS / PPRTV | $2.5 \times 10^{-1}$                          | $1.4 \times 10^{-2}$            | RfD from OPP (revision date not published by source); CSF from PPRTV Archive (revision date not published by source). Cacodylic acid — organoarsenical desiccant and herbicide; arsenic-bearing.                      |
| 186 | Cadmium (Diet) †                   | 7440-43-9  | IRIS         | —                                             | $5 \times 10^{-4}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1989. Ni-Cd batteries; electroplating; pigments; phosphate fertilizer impurity. |
| 187 | Cadmium (Water) †                  | 7440-43-9  | IRIS         | —                                             | $5 \times 10^{-4}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1989. Ni-Cd batteries; electroplating; pigments; phosphate fertilizer impurity. |
| 188 | Cadmium chloride                   | 10108-00-4 | RAIS         | —                                             | $5 \times 10^{-4}$              | RfD from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                            |
| 189 | Cadmium succinate                  | 141-00-4   | RAIS         | —                                             | $5 \times 10^{-4}$              | RfD from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                            |

| No. | Constituent      | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                       |
|-----|------------------|------------|-------------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 190 | Cadusafos        | 95465-99-9 | RAIS        | —                                             | $1 \times 10^{-6}$              | RfD from OPP (revision date not published by source). Cadusafos — nematocide/insecticide (organophosphate).                                                                                                 |
| 191 | Calcium arsenate | 7778-44-1  | RAIS        | 1.5                                           | $3.5 \times 10^{-6}$            | RfD and CSF from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                          |
| 192 | Calcium Chromate | 13765-19-0 | IRIS / RAIS | $5 \times 10^{-1}$                            | $2.7 \times 10^{-3}$            | RfD from IRIS Current (revision date not published by source); CSF from CALEPA (revision date not published by source). Metal oxyanion — naturally occurring, industrial plating, or mining discharge.      |
| 193 | Calcium Cyanide  | 592-01-8   | IRIS        | —                                             | $1 \times 10^{-3}$              | RfD from IRIS Current, revised 2010. Electroplating, mining/ore processing, and combustion source.                                                                                                          |
| 194 | Caprolactam      | 105-60-2   | IRIS        | —                                             | $5 \times 10^{-1}$              | RfD from IRIS Current, revised 1994. Caprolactam — nylon-6 manufacture; carpet and textile fiber production.                                                                                                |
| 195 | Captafol         | 2425-06-1  | IRIS / RAIS | $1.5 \times 10^{-1}$                          | $2 \times 10^{-3}$              | RfD from IRIS Current, revised 1987; CSF from CALEPA (revision date not published by source). Captafol — fungicide, US registration cancelled.                                                              |
| 196 | Captan           | 133-06-2   | IRIS / RAIS | $2.3 \times 10^{-3}$                          | $1.3 \times 10^{-1}$            | RfD from IRIS Current, revised 1989; CSF from CALEPA (revision date not published by source). Captan — fruit, ornamental, and seed-treatment fungicide; also in some cosmetics.                             |
| 197 | Carbaryl †       | 63-25-2    | IRIS        | —                                             | $1 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1991. Carbaryl — garden/agricultural insecticide (Sevin). |
| 198 | Carbazole        | 86-74-8    | RAIS        | $2 \times 10^{-2}$                            | —                               | CSF from HEAST Archive (revision date not published by source). Coal tar constituent and dye/pigment intermediate; combustion byproduct.                                                                    |

| No. | Constituent            | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                               |
|-----|------------------------|-------------|--------|-----------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 199 | Carbendazim            | 10605-21-7  | RAIS   | $2.39 \times 10^{-3}$                         | $1.4 \times 10^{-1}$            | RfD and CSF from OPP (revision date not published by source). Benzimidazole fungicide and benomyl degradate; also a wood and paint preservative.                                                                    |
| 200 | Carbofuran †           | 1563-66-2   | IRIS   | —                                             | $5 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Carbofuran — insecticide/nematicide, US uses cancelled.                 |
| 201 | Carbon Disulfide ‡     | 75-15-0     | IRIS   | —                                             | $1 \times 10^{-1}$              | ‡ Health advisory published by MN, CA — level 160 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1995. Carbon disulfide — viscose rayon and cellophane manufacture; rubber chemicals.  |
| 202 | Carbon Tetrachloride † | 56-23-5     | IRIS   | $7 \times 10^{-2}$                            | $4 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 2010. Former refrigerant/solvent; grain fumigant; largely phased out. |
| 203 | Carbosulfan            | 55285-14-8  | IRIS   | —                                             | $1 \times 10^{-2}$              | RfD from IRIS Current, revised 1987. Carbamate insecticide/nematicide; degrades to carbofuran.                                                                                                                      |
| 204 | Carboxin †             | 5234-68-4   | IRIS   | —                                             | $1 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Carboxin — seed-treatment fungicide for cereals and cotton. |
| 205 | Carfentrazone-ethyl    | 128639-02-1 | RAIS   | —                                             | $3 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Carfentrazone-ethyl — turf and cereal broadleaf herbicide; lawn-care runoff.                                                                                  |
| 206 | Chloral Hydrate        | 302-17-0    | IRIS   | —                                             | $1 \times 10^{-1}$              | RfD from IRIS Current, revised 2000. Chloral hydrate — sedative/hypnotic drug; chlorination byproduct; pesticide intermediate.                                                                                      |

| No. | Constituent                   | CAS No.         | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                        |
|-----|-------------------------------|-----------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 207 | Chloramben †                  | 133-90-4        | IRIS   | —                                             | $1.5 \times 10^{-2}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping.      |
| 208 | Chlorambucil                  | 305-03-3        | RAIS   | $2.3 \times 10^{-3}$                          | —                               | CSF from CALEPA (revision date not published by source). Chlorambucil — antineoplastic agent.                                                                                                                                                |
| 209 | Chloranil                     | 118-75-2        | RAIS   | $4.03 \times 10^{-1}$                         | —                               | CSF from HEAST Current (revision date not published by source). Chloranil — dye intermediate and fungicide; leather/textile processing.                                                                                                      |
| 210 | Chlorantraniliprole ‡         | 500008-4<br>5-7 | RAIS   | —                                             | <b>1.58</b>                     | ‡ Health advisory published by WI — level 16,000 µg/L (Other States' Health Advisories List). RfD from OPP (revision date not published by source). Chlorantraniliprole — turf, ornamental, and crop insecticide; heavy urban landscape use. |
| 211 | Chlordane †                   | 57-74-9         | RAIS   | <b>1.3</b>                                    | —                               | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. CSF from CALEPA (revision date not published by source). Chlordane — banned termiticide; persistent in soil around foundations.       |
| 212 | Chlordane (alpha)             | 5103-71-<br>9   | RAIS   | —                                             | $5 \times 10^{-4}$              | Surrogate value — See Chlordane, Technical. Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue.                                                                                                                |
| 213 | Chlordane (gamma)             | 5103-74-<br>2   | RAIS   | —                                             | $5 \times 10^{-4}$              | Surrogate value — See Chlordane, Technical. Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue.                                                                                                                |
| 214 | Chlordane (technical mixture) | 12789-03<br>-6  | IRIS   | $3.5 \times 10^{-1}$                          | $5 \times 10^{-4}$              | RfD and CSF from IRIS Current, revised 1998. Banned termiticide and agricultural insecticide; persistent soil residue near foundations.                                                                                                      |

| No. | Constituent                | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                           |
|-----|----------------------------|-------------|--------|-----------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 215 | Chlordecone (Kepone)       | 143-50-0    | IRIS   | $1 \times 10^1$                               | $3 \times 10^{-4}$              | RfD and CSF from IRIS Current, revised 2009. Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue.                                                                                                  |
| 216 | Chlorendic acid            | 115-28-6    | RAIS   | $9.1 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). Chlorendic acid — flame-retardant polyester resin and epoxy hardener.                                                                                                  |
| 217 | Chlorethoxyfos             | 54593-83-8  | RAIS   | —                                             | $5 \times 10^{-5}$              | RfD from OPP (revision date not published by source). Chlorethoxyfos — corn soil insecticide (organophosphate).                                                                                                                 |
| 218 | Chlorfenapyr               | 122453-73-0 | RAIS   | —                                             | $5 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Chlorfenapyr — insecticide/miticide for greenhouses and structural pest control.                                                                                          |
| 219 | Chlorfenvinphos            | 470-90-6    | RAIS   | —                                             | $7 \times 10^{-4}$              | RfD from ATSDR Final (revision date not published by source). Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                           |
| 220 | Chlorflurenol Methyl Ester | 2536-31-4   | RAIS   | —                                             | $1 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Chlorflurenol — growth regulator and aquatic weed control.                                                                                                                |
| 221 | Chloridazon                | 1698-60-8   | RAIS   | —                                             | $1.8 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Chloridazon — sugar beet herbicide; frequent groundwater detection in Europe.                                                                                             |
| 222 | Chlorimuron, Ethyl-        | 90982-32-4  | IRIS   | —                                             | $2 \times 10^{-2}$              | RfD from IRIS Current, revised 1989. Sulfonylurea herbicide for soybeans and corn.                                                                                                                                              |
| 223 | Chlorinated paraffins      | 108171-26-2 | RAIS   | $8.9 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). Chlorinated paraffins — metalworking fluid additive, PVC plasticizer, flame retardant.                                                                                 |
| 224 | Chlorine †                 | 7782-50-5   | IRIS   | —                                             | $1 \times 10^{-1}$              | † Federal value published — MRDL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1994. Chlorine — drinking water and wastewater disinfection; bleach; industrial oxidant. |

| No. | Constituent                            | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                        |
|-----|----------------------------------------|------------|--------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 225 | Chlorine Dioxide †                     | 10049-04-4 | IRIS   | —                                             | $3 \times 10^{-2}$              | † Federal value published — MRDL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2000. Drinking water and wastewater disinfectant; pulp bleaching; industrial oxidant. |
| 226 | Chlorite (Sodium Salt) †               | 7758-19-2  | IRIS   | —                                             | $3 \times 10^{-2}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2000. Chlorine dioxide disinfection byproduct.                                         |
| 227 | Chlormequat chloride                   | 999-81-5   | RAIS   | —                                             | $5 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Chlormequat chloride — cereal and ornamental growth regulator; detected in food and urine.                                                                             |
| 228 | Chloro-1,3-butadiene, 2- (Chloroprene) | 126-99-8   | RAIS   | —                                             | $2 \times 10^{-2}$              | RfD from HEAST Current (revision date not published by source). Chloroprene — neoprene rubber manufacture (wetsuits, gaskets, hoses).                                                                                        |
| 229 | Chloro-2-methylaniline HCl, 4-         | 3165-93-3  | RAIS   | $4.6 \times 10^{-1}$                          | —                               | CSF from HEAST Current (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                |
| 230 | Chloro-2-methylaniline, 4-             | 95-69-2    | PPRTV  | $1 \times 10^{-1}$                            | $3 \times 10^{-3}$              | RfD from SCREEN Current, revised 2010; CSF from PPRTV Current, revised 2010. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                   |
| 231 | Chloro-2-methylpropene, 3-             | 563-47-3   | RAIS   | $1.4 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Methallyl chloride — polymer and pharmaceutical intermediate.                                                                                                       |
| 232 | Chloro-ortho-phenylenediamine, 4-      | 95-83-0    | RAIS   | $1.6 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                       |
| 233 | Chloroacetaldehyde, 2-                 | 107-20-0   | PPRTV  | $2.7 \times 10^{-1}$                          | —                               | CSF from SCREEN Current, revised 2009. Ozonation/oxidation byproduct; also industrial resin and preservative use.                                                                                                            |

| No. | Constituent                     | CAS No.  | Source       | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                |
|-----|---------------------------------|----------|--------------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 234 | Chloroacetic Acid †             | 79-11-8  | RAIS         | —                                             | $3.5 \times 10^{-3}$            | † Federal value published — MCL (HAA5 group) in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from CALEPA (revision date not published by source). Chlorination byproduct (HAA5); chemical intermediate.   |
| 235 | Chloroaniline, p-               | 106-47-8 | IRIS / PPRTV | $2 \times 10^{-1}$                            | $4 \times 10^{-3}$              | RfD from IRIS Current, revised 1988; CSF from PPRTV Current, revised 2008. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                             |
| 236 | Chlorobenzene †                 | 108-90-7 | IRIS         | —                                             | $2 \times 10^{-2}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1990. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume. |
| 237 | Chlorobenzene sulfonic acid, p- | 98-66-8  | PPRTV        | —                                             | $1 \times 10^{-1}$              | RfD from SCREEN Current, revised 2017. Dye, pigment, and pharmaceutical manufacture intermediate.                                                                                                                                    |
| 238 | Chlorobenzilate                 | 510-15-6 | IRIS / RAIS  | $1.1 \times 10^{-1}$                          | $2 \times 10^{-2}$              | RfD from IRIS Current, revised 1989; CSF from CALEPA (revision date not published by source). Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue.                                                      |
| 239 | Chlorobenzoic Acid, p-          | 74-11-3  | PPRTV        | —                                             | $3 \times 10^{-2}$              | RfD from SCREEN Current, revised 2007. p-Chlorobenzoic acid — dye and pharmaceutical intermediate; preservative.                                                                                                                     |
| 240 | Chlorobenzotrifluoride, 4-      | 98-56-6  | PPRTV        | —                                             | $3 \times 10^{-3}$              | RfD from PPRTV Current, revised 2007. 4-Chlorobenzotrifluoride — solvent in coatings, adhesives, and cleaners.                                                                                                                       |
| 241 | Chlorobutane, 1-                | 109-69-3 | PPRTV        | —                                             | $4 \times 10^{-2}$              | RfD from PPRTV Current, revised 2005. 1-Chlorobutane — laboratory and industrial solvent; alkylating intermediate.                                                                                                                   |

| No. | Constituent                                                  | CAS No.   | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                       |
|-----|--------------------------------------------------------------|-----------|-------------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 242 | Chloroethanol, 2-                                            | 107-07-3  | PPRTV       | —                                             | $2 \times 10^{-2}$              | RfD from PPRTV Current, revised 2012. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                                                                                                                    |
| 243 | Chloroform †                                                 | 67-66-3   | IRIS / RAIS | $3.1 \times 10^{-2}$                          | $1 \times 10^{-2}$              | † Federal value published — MCL (TTHM group) in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2001; CSF from CALEPA (revision date not published by source). Chlorination byproduct (THM); former anesthetic; solvent. |
| 244 | Chloromethane / Methyl chloride †                            | 74-87-3   | RAIS        | $1.3 \times 10^{-2}$                          | —                               | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. CSF from HEAST Archive (revision date not published by source). Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume. |
| 245 | Chloromethyl Methyl Ether / Chloromethyl methyl ether (CMME) | 107-30-2  | RAIS        | 2.4                                           | —                               | CSF from CALEPA (revision date not published by source). Chloromethylating agent in polymer and resin manufacture; industrial carcinogen.                                                                                                                                   |
| 246 | Chloronaphthalene, Beta- / 2-Chloronaphthalene               | 91-58-7   | IRIS        | —                                             | $8 \times 10^{-2}$              | RfD from IRIS Current, revised 1990. beta-Chloronaphthalene — dielectric fluid and dye intermediate.                                                                                                                                                                        |
| 247 | Chloroneb                                                    | 2675-77-6 | RAIS        | —                                             | $1.3 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Turf and ornamental fungicide; golf course and sod farm runoff.                                                                                                                                                       |
| 248 | Chloronitrobenzene, o-                                       | 88-73-3   | PPRTV       | $3 \times 10^{-1}$                            | $3 \times 10^{-3}$              | RfD and CSF from PPRTV Current, revised 2009. Military explosive or propellant; defense/ordnance site contaminant.                                                                                                                                                          |
| 249 | Chloronitrobenzene, p-                                       | 100-00-5  | PPRTV       | $6 \times 10^{-2}$                            | $7 \times 10^{-4}$              | RfD and CSF from PPRTV Current, revised 2015. Military explosive or propellant; defense/ordnance site contaminant.                                                                                                                                                          |

| No. | Constituent                  | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                                                                    |
|-----|------------------------------|------------|-------------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 250 | Chlorophenol, 2- †           | 95-57-8    | IRIS        | —                                             | $5 \times 10^{-3}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1988. Industrial intermediate for resins, dyes, and disinfectants.                                                                                                     |
| 251 | Chlorophenoxyacetic acid, 4- | 122-88-3   | RAIS        | —                                             | <b>1.32</b>                     | RfD from OPP (revision date not published by source). Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping.                                                                                                                                                                                    |
| 252 | Chlorothalonil †             | 1897-45-6  | IRIS / RAIS | $1.7 \times 10^{-2}$                          | $1.5 \times 10^{-2}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1988; CSF from CALEPA (revision date not published by source). Chlorothalonil — turf, golf course, vegetable, and ornamental fungicide; major landscape runoff source. |
| 253 | Chlorotoluene, o- †          | 95-49-8    | IRIS        | —                                             | $2 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1990. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                                                                         |
| 254 | Chlorotoluene, p- †          | 106-43-4   | PPRTV       | —                                             | $2 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from SCREEN Current, revised 2010. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                                                                       |
| 255 | Chlorozotocin                | 54749-90-5 | RAIS        | $2.4 \times 10^2$                             | —                               | CSF from CALEPA (revision date not published by source). Pharmaceutical — enters wastewater through human excretion and disposal.                                                                                                                                                                                        |

| No. | Constituent                         | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                             |
|-----|-------------------------------------|------------|-------------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 256 | Chlorpropham                        | 101-21-3   | IRIS        | —                                             | $2 \times 10^{-1}$              | RfD from IRIS Current, revised 1998. Carbamate herbicide and potato sprout inhibitor; major post-harvest storage use.                                                                                                                                             |
| 257 | Chlorpyrifos †                      | 2921-88-2  | RAIS        | —                                             | $1 \times 10^{-3}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from ATSDR Final (revision date not published by source). Chlorpyrifos — insecticide; residential uses cancelled, agricultural continuing. |
| 258 | Chlorpyrifos Methyl                 | 5598-13-0  | RAIS        | —                                             | $3.3 \times 10^{-4}$            | RfD from OPP (revision date not published by source). Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                                                                     |
| 259 | Chlorsulfuron                       | 64902-72-3 | IRIS        | —                                             | $5 \times 10^{-2}$              | RfD from IRIS Current, revised 1987. Modern agricultural pesticide or biocide.                                                                                                                                                                                    |
| 260 | Chlorthal-dimethyl / Dacthal †      | 1861-32-1  | IRIS        | —                                             | $1 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1994. Chlorthal-dimethyl (DCPA) — turf and vegetable pre-emergent herbicide.                                    |
| 261 | Chlorthiophos                       | 60238-56-4 | RAIS        | —                                             | $8 \times 10^{-4}$              | RfD from HEAST Current (revision date not published by source). Organophosphate insecticide and acaricide; not US-registered.                                                                                                                                     |
| 262 | Chromic (VI) acid                   | 7738-94-5  | IRIS        | —                                             | $2.04 \times 10^{-3}$           | RfD from IRIS Current (revision date not published by source). Metal oxyanion — naturally occurring, industrial plating, or mining discharge.                                                                                                                     |
| 263 | Chromium trioxide                   | 1333-82-0  | IRIS / RAIS | $5 \times 10^{-1}$                            | $1.73 \times 10^{-3}$           | RfD from IRIS Current (revision date not published by source); CSF from CALEPA (revision date not published by source). Metal oxyanion — naturally occurring, industrial plating, or mining discharge.                                                            |
| 264 | Chromium(III), (Insoluble Salts) †† | 16065-83-1 | IRIS        | —                                             | 1.5                             | † Federal value published — MCL (covered by the total chromium MCL, CAS 7440-47-3) in the 2018                                                                                                                                                                    |

| No. | Constituent           | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----|-----------------------|-------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                       |             |        |                                               |                                 | EPA Drinking Water Standards and Health Advisories Tables. ‡ Health advisory published by MN — level 20,000 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1998. Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                                                                                                                                                                                                                         |
| 265 | Chromium(VI) †‡       | 18540-29-9  | IRIS   | $2.7 \times 10^{-1}$                          | $7 \times 10^{-4}$              | † Federal value published — MCL (covered by the total chromium MCL, CAS 7440-47-3) in the 2018 EPA Drinking Water Standards and Health Advisories Tables. ‡ Health advisory published by MN, WI — level 0.07 µg/L (Other States' Health Advisories List). RfD from IRIS Current (lowest chronic oral RfD, Low-confidence candidates excluded), revised 2024; CSF from IRIS Current (most protective of the published oral slope factors), revised 2024. Chrome plating; stainless steel welding; leather tanning; wood preservative; cooling tower corrosion inhibitor. |
| 266 | Chrysene †            | 218-01-9    | RAIS   | $1 \times 10^{-3}$                            | —                               | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. CSF from EPA/RPF (revision date not published by source). Combustion byproduct; coal tar; urban runoff.                                                                                                                                                                                                                                                                                                                                              |
| 267 | Cinnamyl anthranilate | 87-29-6     | RAIS   | $4.6 \times 10^{-3}$                          | —                               | CSF from CALEPA (revision date not published by source). Cinnamyl anthranilate — fragrance and flavor ingredient.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 268 | Clethodim             | 99129-21-2  | RAIS   | —                                             | $3 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Clethodim — grass herbicide for soybeans, cotton, vegetables.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 269 | Clodinafop-propargyl  | 105512-06-9 | RAIS   | —                                             | $3.2 \times 10^{-3}$            | RfD from OPP (revision date not published by source). Grass herbicide for cereals.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

| No. | Constituent           | CAS No.     | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                               |
|-----|-----------------------|-------------|-------------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 270 | Clofentezine / Apollo | 74115-24-5  | IRIS / RAIS | $3.76 \times 10^{-2}$                         | $1.3 \times 10^{-2}$            | RfD from IRIS Current, revised 1991; CSF from OPP (revision date not published by source). Clofentezine — miticide for fruit and ornamentals.                                                                                                       |
| 271 | Clomazone ‡           | 81777-89-1  | RAIS        | —                                             | $8.4 \times 10^{-1}$            | ‡ Health advisory published by WI — level 430 µg/L (Other States' Health Advisories List). RfD from OPP (revision date not published by source). Clomazone — soybean, rice, and vegetable herbicide.                                                |
| 272 | Clopyralid            | 1702-17-6   | RAIS        | —                                             | $1.5 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping.                                                                                                               |
| 273 | Clopyralid-olamine    | 57754-85-5  | RAIS        | —                                             | $1.5 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping.                                                                                                               |
| 274 | Cloquintocet-mexyl    | 99607-70-2  | RAIS        | —                                             | $4 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Herbicide safener used with cereal herbicides.                                                                                                                                                |
| 275 | Cloransulam-Methyl    | 147150-35-4 | RAIS        | —                                             | $1 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Soybean broadleaf herbicide.                                                                                                                                                                  |
| 276 | Clothianidin ‡        | 210880-92-5 | RAIS        | —                                             | $9.8 \times 10^{-2}$            | ‡ Health advisory published by MN, WI — level 200 µg/L (Other States' Health Advisories List). RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                      |
| 277 | Cobalt                | 7440-48-4   | PPRTV       | —                                             | $3 \times 10^{-4}$              | RfD from PPRTV Current, revised 2008. Li-ion batteries; superalloys; pigments; naturally occurring.                                                                                                                                                 |
| 278 | Copper †              | 7440-50-8   | RAIS        | —                                             | $2 \times 10^{-2}$              | † Federal value published — MCL (Action Level) in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from ATSDR Final (revision date not published by source). Copper plumbing corrosion; algacide; electrical wiring; mining. |
| 279 | Copper Cyanide        | 544-92-3    | IRIS        | —                                             | $5 \times 10^{-3}$              | RfD from IRIS Current, revised 1988. Electroplating, mining/ore processing, and combustion source.                                                                                                                                                  |

| No. | Constituent                                  | CAS No.    | Source       | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                        |
|-----|----------------------------------------------|------------|--------------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 280 | Coumaphos                                    | 56-72-4    | RAIS         | —                                             | $3 \times 10^{-4}$              | RfD from OPP (revision date not published by source). Organophosphate insecticide — agricultural and (historically) residential pest control.                                                |
| 281 | Cresidine, para-                             | 120-71-8   | RAIS         | $1.5 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). p-Cresidine — azo dye intermediate for textiles.                                                                                    |
| 282 | Cresol, m- / Methylphenol / 3-Methylphenol ‡ | 108-39-4   | IRIS         | —                                             | $5 \times 10^{-2}$              | ‡ Health advisory published by MN — level 30 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1992. Industrial intermediate for resins, dyes, and disinfectants.  |
| 283 | Cresol, o- / Methylphenol / 2-Methylphenol ‡ | 95-48-7    | IRIS         | —                                             | $5 \times 10^{-2}$              | ‡ Health advisory published by MN — level 30 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1992. Industrial intermediate for resins, dyes, and disinfectants.  |
| 284 | Cresol, p- / Methylphenol / 4-Methylphenol ‡ | 106-44-5   | PPRTV        | —                                             | $2 \times 10^{-2}$              | ‡ Health advisory published by MN, WI — level 3 µg/L (Other States' Health Advisories List). RfD from PPRTV Memo, revised 2010. Industrial intermediate for resins, dyes, and disinfectants. |
| 285 | Cresol, p-chloro-m-                          | 59-50-7    | RAIS         | —                                             | $1 \times 10^{-1}$              | RfD from ATSDR Final (revision date not published by source). Industrial intermediate for resins, dyes, and disinfectants.                                                                   |
| 286 | Cresols / Tricresol                          | 1319-77-3  | RAIS         | —                                             | $1 \times 10^{-1}$              | RfD from ATSDR Final (revision date not published by source). Industrial intermediate for resins, dyes, and disinfectants.                                                                   |
| 287 | Crotonaldehyde, trans-                       | 123-73-9   | PPRTV / RAIS | <b>1.9</b>                                    | $1 \times 10^{-3}$              | RfD from PPRTV Current, revised 2021; CSF from HEAST Current (revision date not published by source). Ozonation/oxidation byproduct; also industrial resin and preservative use.             |
| 288 | Cryolite (sodium aluminum fluoride)          | 15096-52-3 | RAIS         | —                                             | $4 \times 10^{-2}$              | RfD from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                   |

| No. | Constituent                            | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                           |
|-----|----------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 289 | Cumene †                               | 98-82-8     | IRIS   | —                                             | $1 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1997. Petroleum/fuel component and industrial solvent.                                                                        |
| 290 | Cupferron                              | 135-20-6    | RAIS   | $2.2 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Cupferron — analytical laboratory reagent for metal separation.                                                                                                                                                        |
| 291 | Cyanazine †                            | 21725-46-2  | RAIS   | $8.4 \times 10^{-1}$                          | $2 \times 10^{-3}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from HEAST Current (revision date not published by source). Triazine herbicide — row crops, turf, rights-of-way; frequent groundwater detection. |
| 292 | Cyanide, free ‡                        | 57-12-5     | IRIS   | —                                             | $6.3 \times 10^{-4}$            | ‡ Health advisory published by MN, WI — level 100 µg/L (Other States' Health Advisories List). RfD from IRIS, revised 2010. Electroplating and metal finishing; mining/ore processing; also formed by chlorination of amines.                                                   |
| 293 | Cyanogen                               | 460-19-5    | IRIS   | —                                             | $1 \times 10^{-3}$              | RfD from IRIS Current, revised 2010. Electroplating, mining/ore processing, and combustion source.                                                                                                                                                                              |
| 294 | Cyanogen Bromide                       | 506-68-3    | IRIS   | —                                             | $9 \times 10^{-2}$              | RfD from IRIS Current, revised 1988. Electroplating, mining/ore processing, and combustion source.                                                                                                                                                                              |
| 295 | Cyanogen Chloride / Chlorine cyanide † | 506-77-4    | IRIS   | —                                             | $5 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Electroplating, mining/ore processing, and combustion source.                                                           |
| 296 | Cyantraniliprole ‡                     | 736994-63-1 | RAIS   | —                                             | $1 \times 10^{-2}$              | ‡ Health advisory published by WI — level 10 µg/L (Other States' Health Advisories List). RfD from OPP (revision date not published by source).                                                                                                                                 |

| No. | Constituent                                                                            | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                 |
|-----|----------------------------------------------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------|
|     |                                                                                        |             |        |                                               |                                 | Cyantraniliprole — insecticide for vegetables, fruit, turf.                                                           |
| 297 | Cyazofamid                                                                             | 120116-88-3 | RAIS   | —                                             | $9.48 \times 10^{-1}$           | RfD from OPP (revision date not published by source). Fungicide for grapes, potatoes, turf; nursery runoff.           |
| 298 | Cyclanilide                                                                            | 113136-77-9 | RAIS   | —                                             | $2 \times 10^{-3}$              | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                       |
| 299 | Cycloate                                                                               | 1134-23-2   | RAIS   | —                                             | $5 \times 10^{-3}$              | RfD from OPP (revision date not published by source). Carbamate insecticide/fungicide — agriculture and horticulture. |
| 300 | Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro- / 1,2,3,4,5-Pentabromo-6-chlorocyclohexane | 87-84-3     | PPRTV  | $2 \times 10^{-2}$                            | $2 \times 10^{-2}$              | RfD and CSF from SCREEN Current, revised 2016. Brominated cyclohexane — flame retardant intermediate.                 |
| 301 | Cyclohexanone                                                                          | 108-94-1    | IRIS   | —                                             | 5                               | RfD from IRIS Current, revised 1987. Cyclohexanone — nylon manufacture; paint and adhesive solvent; PVC pipe cement.  |
| 302 | Cyclohexene                                                                            | 110-83-8    | PPRTV  | —                                             | $5 \times 10^{-3}$              | RfD from PPRTV Current, revised 2012. Cyclohexene — chemical intermediate and laboratory solvent.                     |
| 303 | Cyclohexylamine                                                                        | 108-91-8    | IRIS   | —                                             | $2 \times 10^{-1}$              | RfD from IRIS Current, revised 1988. Dye, rubber, and polymer intermediate; nitrosamine precursor.                    |
| 304 | Cyclophosphamide (anhydrous)                                                           | 50-18-0     | RAIS   | $6.1 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Cyclophosphamide — antineoplastic chemotherapy agent.        |
| 305 | Cyclophosphamide (hydrated)                                                            | 6055-19-2   | RAIS   | $5.7 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Cyclophosphamide (hydrate) — chemotherapy agent.             |
| 306 | Cyflufenamid                                                                           | 180409-60-3 | RAIS   | —                                             | $4.4 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Powdery mildew fungicide for grapes, cucurbits, turf.           |

| No. | Constituent                      | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                      |
|-----|----------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 307 | Cyflumetofen                     | 400882-07-7 | RAIS   | —                                             | $1.7 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Miticide for ornamentals and fruit.                                                                  |
| 308 | Cyfluthrin / Baythroid           | 68359-37-5  | IRIS   | —                                             | $2.5 \times 10^{-2}$            | RfD from IRIS Current, revised 1988. Modern agricultural pesticide or biocide.                                                                             |
| 309 | Cyhalofop-butyl                  | 122008-85-9 | RAIS   | —                                             | $1 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Rice grass herbicide.                                                                                |
| 310 | Cyhalothrin / Cyhalothrin/Karate | 68085-85-8  | IRIS   | —                                             | $5 \times 10^{-3}$              | RfD from IRIS Current, revised 1988. Modern agricultural pesticide or biocide.                                                                             |
| 311 | Cyhexatin                        | 13121-70-5  | RAIS   | —                                             | $2.5 \times 10^{-3}$            | RfD from OPP (revision date not published by source). Organotin miticide for tree fruit, nuts, and ornamentals; US registration cancelled.                 |
| 312 | Cymoxanil                        | 57966-95-7  | RAIS   | —                                             | $3 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Cymoxanil — fungicide for grapes, potatoes, vegetables.                                              |
| 313 | Cypermethrin                     | 52315-07-8  | IRIS   | —                                             | $1 \times 10^{-2}$              | RfD from IRIS Current, revised 1989. Pyrethroid insecticide for structural pest control, turf, and agriculture; frequent in urban wastewater and sediment. |
| 314 | Cyproconazole                    | 94361-06-5  | RAIS   | —                                             | $1 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Triazole fungicide for cereals, coffee, and turf.                                                    |
| 315 | Cyprodinil                       | 121552-61-2 | RAIS   | —                                             | $2.7 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Cyprodinil — fungicide for grapes, almonds, strawberries; frequently detected in urban streams.      |
| 316 | Cyprosulfamide                   | 221667-31-8 | RAIS   | —                                             | $3.9 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                            |
| 317 | Cyromazine                       | 66215-27-8  | IRIS   | —                                             | $7.5 \times 10^{-3}$            | RfD from IRIS Current, revised 1987. Cyromazine — insect growth regulator; poultry-house fly control and vegetable use.                                    |

| No. | Constituent                                                  | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                       |
|-----|--------------------------------------------------------------|------------|-------------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 318 | Dacarbazine                                                  | 4342-03-4  | RAIS        | $4.9 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). Dacarbazine — antineoplastic chemotherapy drug.                                                                                                                    |
| 319 | Dalapon / Dalapon, sodium salt †                             | 75-99-0    | IRIS        | —                                             | $3 \times 10^{-2}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1988. Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping. |
| 320 | Daminozide / Alar                                            | 1596-84-5  | IRIS / RAIS | $8.7 \times 10^{-3}$                          | $1.5 \times 10^{-1}$            | RfD from IRIS Current, revised 1988; CSF from OPP (revision date not published by source). Daminozide (Alar) — plant growth regulator; ornamental and former food-crop use.                                                 |
| 321 | Dantochlor (BCDMH)                                           | 118-52-5   | RAIS        | —                                             | 1                               | RfD from OPP (revision date not published by source). BCDMH — pool/spa and cooling-tower disinfectant; bromine-releasing biocide.                                                                                           |
| 322 | Dantron                                                      | 117-10-2   | RAIS        | $7.6 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). Dantron — laxative pharmaceutical and dye intermediate.                                                                                                            |
| 323 | DCNA (Dicloran)                                              | 99-30-9    | RAIS        | —                                             | $2.5 \times 10^{-3}$            | RfD from OPP (revision date not published by source). Dicloran (DCNA) — post-harvest fungicide for stone fruit and sweet potatoes.                                                                                          |
| 324 | Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209) | 1163-19-5  | IRIS        | $7 \times 10^{-4}$                            | $7 \times 10^{-3}$              | RfD and CSF from IRIS Current, revised 2008. Deca-BDE flame retardant — electronics housings, textiles, furniture foam.                                                                                                     |
| 325 | Demeton                                                      | 8065-48-3  | IRIS        | —                                             | $4 \times 10^{-5}$              | RfD from IRIS Current, revised 1987. Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                                                |
| 326 | Desmedipham                                                  | 13684-56-5 | RAIS        | —                                             | $4 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Desmedipham — sugar beet herbicide.                                                                                                                                   |
| 327 | Di(2-ethylhexyl)adipate †                                    | 103-23-1   | IRIS        | $1.2 \times 10^{-3}$                          | $6 \times 10^{-1}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories                                                                                                                              |

| No. | Constituent                    | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                    |
|-----|--------------------------------|------------|--------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                |            |        |                                               |                                 | Tables. RfD and CSF from IRIS Current, revised 1992. DEHA — food wrap plasticizer; cosmetics.                                                                                                                                                                            |
| 328 | Diallate                       | 2303-16-4  | RAIS   | $6.1 \times 10^{-2}$                          | —                               | CSF from HEAST Current (revision date not published by source). Carbamate insecticide/fungicide — agriculture and horticulture.                                                                                                                                          |
| 329 | Diaminoanisoole sulfate, 2,4-  | 39156-41-7 | RAIS   | $1.3 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                                   |
| 330 | Diaminoanisoole, 2,4-          | 615-05-4   | RAIS   | $2.3 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                                   |
| 331 | Diaminochlorotriazine (DACT) ‡ | 3397-62-4  | RAIS   | —                                             | $1.8 \times 10^{-3}$            | ‡ Health advisory published by MN — level 1 µg/L (Other States' Health Advisories List). RfD from OPP (revision date not published by source). Triazine herbicide — row crops, turf, rights-of-way; frequent groundwater detection.                                      |
| 332 | Diaminodiphenyl ether, 4,4-    | 101-80-4   | RAIS   | $1.4 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Polyimide and aramid polymer monomer; dye and epoxy hardener intermediate.                                                                                                                                      |
| 333 | Diazinon †                     | 333-41-5   | RAIS   | —                                             | $7 \times 10^{-4}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from ATSDR Final (revision date not published by source). Organophosphate insecticide — agricultural and (historically) residential pest control. |
| 334 | Dibenz[a,h]acridine            | 226-36-8   | RAIS   | 1.2                                           | —                               | CSF from CALEPA (revision date not published by source). Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.                                                                                                                        |
| 335 | Dibenz[a,h]anthracene          | 53-70-3    | RAIS   | 1                                             | —                               | CSF from EPA/RPF (revision date not published by source). Combustion byproduct; coal tar.                                                                                                                                                                                |

| No. | Constituent                                                      | CAS No.  | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                         |
|-----|------------------------------------------------------------------|----------|--------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 336 | Dibenz[a,i]acridine                                              | 224-42-0 | RAIS   | 1.2                                           | —                               | CSF from CALEPA (revision date not published by source). Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.                                                                                             |
| 337 | Dibenzo[a,e]pyrene                                               | 192-65-4 | RAIS   | $1.2 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.                                                                                             |
| 338 | Dibenzo[a,h]pyrene                                               | 189-64-0 | RAIS   | $1.2 \times 10^2$                             | —                               | CSF from CALEPA (revision date not published by source). Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.                                                                                             |
| 339 | Dibenzo[a,i]pyrene                                               | 189-55-9 | RAIS   | $1.2 \times 10^2$                             | —                               | CSF from CALEPA (revision date not published by source). Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.                                                                                             |
| 340 | Dibenzo[a,l]pyrene                                               | 191-30-0 | RAIS   | $1.2 \times 10^2$                             | —                               | CSF from CALEPA (revision date not published by source). Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.                                                                                             |
| 341 | Dibenzo[c,g]carbazole, 7H-                                       | 194-59-2 | RAIS   | $1.2 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). Coal tar and combustion byproduct; laboratory carcinogen model.                                                                                                                      |
| 342 | Dibenzofuran                                                     | 132-64-9 | PPRTV  | —                                             | $1 \times 10^{-3}$              | RfD from SCREEN Current, revised 2007. Dibenzofuran — coal tar and combustion byproduct; also insecticide intermediate.                                                                                                                       |
| 343 | Dibenzothiophene                                                 | 132-65-0 | PPRTV  | —                                             | $1 \times 10^{-2}$              | RfD from SCREEN Archive, revised 2022. Dibenzothiophene — petroleum sulfur compound; refinery and diesel marker.                                                                                                                              |
| 344 | Dibromo-3-chloropropane, 1,2- / Dibromo-3-chloropropane (DBCP) † | 96-12-8  | PPRTV  | $8 \times 10^{-1}$                            | $2 \times 10^{-4}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from PPRTV Current, revised 2006. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume. |

| No. | Constituent                                   | CAS No.  | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                        |
|-----|-----------------------------------------------|----------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 345 | Dibromoacetic acid ‡                          | 631-64-1 | RAIS   | $2.5 \times 10^{-1}$                          | $3 \times 10^{-4}$              | ‡ Health advisory published by WI — level 60 µg/L (Other States' Health Advisories List). RfD and CSF from CALEPA (revision date not published by source). Haloacetic acid — chlorination disinfection byproduct.                            |
| 346 | Dibromobenzene, 1,3-                          | 108-36-1 | PPRTV  | —                                             | $4 \times 10^{-4}$              | RfD from SCREEN Current, revised 2014. 1,3-Dibromobenzene — chemical and flame-retardant intermediate.                                                                                                                                       |
| 347 | Dibromobenzene, 1,4-                          | 106-37-6 | IRIS   | —                                             | $1 \times 10^{-2}$              | RfD from IRIS Current, revised 1987. 1,4-Dibromobenzene — flame retardant and polymer intermediate.                                                                                                                                          |
| 348 | Dibromochloromethane †                        | 124-48-1 | IRIS   | $8.4 \times 10^{-2}$                          | $2 \times 10^{-2}$              | † Federal value published — MCL (TTHM group) in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 1992. Chlorination byproduct (THM).                                               |
| 349 | Dibromoethane, 1,2- †                         | 106-93-4 | IRIS   | 2                                             | $9 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 2004. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume. |
| 350 | Dibromomethane (Methylene Bromide)            | 74-95-3  | RAIS   | —                                             | $1 \times 10^{-2}$              | RfD from HEAST Archive (revision date not published by source). Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                                                                                     |
| 351 | Dibutyl Phthalate / Dibutyl phthalate (DBP) † | 84-74-2  | IRIS   | —                                             | $1 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1990. Dibutyl phthalate — nail polish, adhesives, plasticizer.                             |

| No. | Constituent                   | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                                                                  |
|-----|-------------------------------|------------|--------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 352 | Dibutyltin Compounds          | —          | PPRTV  | —                                             | $3 \times 10^{-4}$              | RfD from PPRTV Current (revision date not published by source). PVC pipe heat stabilizer; catalyst for polyurethane and silicone.                                                                                                                                                                                      |
| 353 | Dicamba †                     | 1918-00-9  | IRIS   | —                                             | $3 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1988. Dicamba — broadleaf herbicide; drift-prone.                                                                                                                    |
| 354 | Dichlobenil                   | 1194-65-6  | RAIS   | —                                             | $1 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Dichlobenil — industrial and aquatic weed control; also used around utility rights-of-way.                                                                                                                                                                       |
| 355 | Dichlormid                    | 37764-25-3 | RAIS   | —                                             | $2.2 \times 10^{-3}$            | RfD from OPP (revision date not published by source). Herbicide safener used with corn herbicides.                                                                                                                                                                                                                     |
| 356 | Dichloroacetic Acid †         | 79-43-6    | IRIS   | $5 \times 10^{-2}$                            | $4 \times 10^{-3}$              | † Federal value published — MCL (HAA5 group) in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 2003. Chlorination byproduct (HAA5).                                                                                                                        |
| 357 | Dichlorobenzamide, 2,6- (BAM) | 2008-58-4  | RAIS   | —                                             | $4.5 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Principal soil and groundwater metabolite of the herbicide dichlobenil; persistent and mobile.                                                                                                                                                                   |
| 358 | Dichlorobenzene, 1,2- †       | 95-50-1    | IRIS   | —                                             | $9 \times 10^{-2}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1990. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                                                                                   |
| 359 | Dichlorobenzene, 1,4- †       | 106-46-7   | RAIS   | $5.4 \times 10^{-3}$                          | $7 \times 10^{-2}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from ATSDR Final (revision date not published by source); CSF from CALEPA (revision date not published by source). Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume. |

| No. | Constituent                                                                                    | CAS No. | Source       | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                                             |
|-----|------------------------------------------------------------------------------------------------|---------|--------------|-----------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 360 | Dichlorobenzidine, 3,3'- $\ddagger$                                                            | 91-94-1 | IRIS         | $4.5 \times 10^{-1}$                          | —                               | $\ddagger$ Health advisory published by MN — level 0.8 $\mu\text{g/L}$ (Other States' Health Advisories List). CSF from IRIS Current, revised 1991. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                 |
| 361 | Dichlorobenzophenone, 4,4'-                                                                    | 90-98-2 | PPRTV        | —                                             | $9 \times 10^{-3}$              | RfD from SCREEN Current, revised 2009. Degradate of the miticide dicofol and of DDT; also a chemical intermediate.                                                                                                                                                                                |
| 362 | Dichlorodifluoromethane $\dagger$                                                              | 75-71-8 | IRIS         | —                                             | $2 \times 10^{-1}$              | $\dagger$ Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. CFC-12 — former refrigerant/propellant; phased out.                                                                               |
| 363 | Dichlorodiphenyldichloroethane, p,p'- (DDD) / Dichlorodiphenyl dichloroethane (DDD) $\ddagger$ | 72-54-8 | RAIS / IRIS  | $2.4 \times 10^{-1}$                          | $5 \times 10^{-4}$              | $\ddagger$ Health advisory published by MN — level 1 $\mu\text{g/L}$ (Other States' Health Advisories List). RfD from ATSDR Final (revision date not published by source); CSF from IRIS Current, revised 1988. Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue. |
| 364 | Dichlorodiphenyldichloroethylene, p,p'- (DDE) $\ddagger$                                       | 72-55-9 | RAIS / IRIS  | $3.4 \times 10^{-1}$                          | $5 \times 10^{-4}$              | $\ddagger$ Health advisory published by MN — level 1 $\mu\text{g/L}$ (Other States' Health Advisories List). RfD from ATSDR Final (revision date not published by source); CSF from IRIS Current, revised 1988. Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue. |
| 365 | Dichlorodiphenyltrichloroethane, p,p'- (DDT) $\ddagger$                                        | 50-29-3 | IRIS         | $3.4 \times 10^{-1}$                          | $5 \times 10^{-4}$              | $\ddagger$ Health advisory published by MN — level 1 $\mu\text{g/L}$ (Other States' Health Advisories List). RfD and CSF from IRIS Current, revised 1988. DDT — banned 1972; persistent legacy soil/sediment residue.                                                                             |
| 366 | Dichloroethane, 1,1- $\ddagger$                                                                | 75-34-3 | PPRTV / RAIS | $5.7 \times 10^{-3}$                          | $2 \times 10^{-1}$              | $\ddagger$ Health advisory published by MN — level 80 $\mu\text{g/L}$ (Other States' Health Advisories List). RfD from PPRTV Current, revised 2006; CSF from CALEPA (revision date not published by source). Chlorinated                                                                          |

| No. | Constituent                                           | CAS No.  | Source       | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                       |
|-----|-------------------------------------------------------|----------|--------------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                       |          |              |                                               |                                 | solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                                                                                                                                                                                |
| 367 | Dichloroethane, 1,2- †                                | 107-06-2 | PPRTV / IRIS | $9.1 \times 10^{-2}$                          | $6 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from SCREEN Current, revised 2010; CSF from IRIS Current, revised 1987. Vinyl chloride feedstock; gasoline lead scavenger (historic); degreaser. |
| 368 | Dichloroethylene, 1,1- / Dichloroethylene (1,1-DCE) † | 75-35-4  | IRIS         | —                                             | $5 \times 10^{-2}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2002. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                        |
| 369 | Dichloroethylene, 1,2- (Mixed Isomers)                | 540-59-0 | RAIS         | —                                             | $9 \times 10^{-3}$              | RfD from HEAST Archive (revision date not published by source). Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                                                                                                    |
| 370 | Dichloroethylene, cis-1,2- †                          | 156-59-2 | IRIS         | —                                             | $2 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2010. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                        |
| 371 | Dichloroethylene, trans-1,2- †                        | 156-60-5 | IRIS         | —                                             | $2 \times 10^{-2}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2010. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                        |
| 372 | Dichlorophenol, 2,4- †                                | 120-83-2 | IRIS         | —                                             | $3 \times 10^{-3}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Industrial intermediate for resins, dyes, and disinfectants.                                        |

| No. | Constituent                                                              | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                    |
|-----|--------------------------------------------------------------------------|------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 373 | Dichlorophenoxy Acetic Acid, 2,4- / Dichlorophenoxyacetic acid (2,4-D) † | 94-75-7    | IRIS   | —                                             | $1 \times 10^{-2}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. 2,4-D — broadleaf herbicide; lawn care, agriculture, rights-of-way.                                          |
| 374 | (2,4-Dichlorophenoxy)butyric Acid, Dimethylamine Salt (2,4-DB)           | 2758-42-1  | RAIS   | —                                             | $1.5 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping.                                                                                                                    |
| 375 | Dichloropropane, 1,2- †                                                  | 78-87-5    | PPRTV  | $3.7 \times 10^{-2}$                          | $4 \times 10^{-2}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from PPRTV Current, revised 2016. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.            |
| 376 | Dichloropropane, 1,3-                                                    | 142-28-9   | PPRTV  | —                                             | $2 \times 10^{-2}$              | RfD from PPRTV Current, revised 2006. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                                                                                                                           |
| 377 | Dichloropropanol, 2,3-                                                   | 616-23-9   | IRIS   | —                                             | $3 \times 10^{-3}$              | RfD from IRIS Current, revised 1990. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                                                                                                  |
| 378 | Dichloropropene, 1,3- †                                                  | 542-75-6   | IRIS   | $1 \times 10^{-1}$                            | $3 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 2000. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume. |
| 379 | Dichlorvos                                                               | 62-73-7    | IRIS   | $2.9 \times 10^{-1}$                          | $5 \times 10^{-4}$              | RfD and CSF from IRIS Current, revised 1994. Dichlorvos — insecticide; pet collars; stored product fumigant.                                                                                                                                             |
| 380 | Diclofop-methyl                                                          | 51338-27-3 | RAIS   | $7.36 \times 10^{-2}$                         | $2.3 \times 10^{-3}$            | RfD and CSF from OPP (revision date not published by source). Diclofop-methyl — grass herbicide for wheat and barley.                                                                                                                                    |

| No. | Constituent                                   | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                            |
|-----|-----------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 381 | Diclosulam                                    | 145701-21-9 | RAIS   | —                                             | $5 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Soybean and peanut herbicide.                                                                                                                                              |
| 382 | Dicofol ‡                                     | 115-32-2    | RAIS   | —                                             | $4 \times 10^{-4}$              | ‡ Health advisory published by WI — level 1 µg/L (Other States' Health Advisories List). RfD from OPP (revision date not published by source). Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue. |
| 383 | Dicrotophos / Bidrin                          | 141-66-2    | IRIS   | —                                             | $1 \times 10^{-4}$              | RfD from IRIS Current, revised 1987. Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                                                     |
| 384 | Dicyclopentadiene                             | 77-73-6     | PPRTV  | —                                             | $8 \times 10^{-2}$              | RfD from PPRTV Current, revised 2014. Dicyclopentadiene — resins, adhesives, inks, and flame-retardant intermediate.                                                                                                             |
| 385 | Didecyl dimethyl ammonium chloride            | 7173-51-5   | RAIS   | —                                             | $1 \times 10^{-1}$              | RfD from OPP (revision date not published by source). DDAC — quaternary disinfectant; wood preservative; sanitizers.                                                                                                             |
| 386 | Dieldrin †                                    | 60-57-1     | IRIS   | $1.6 \times 10^1$                             | $5 \times 10^{-5}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 1988. Dieldrin — banned insecticide; persistent legacy contaminant.    |
| 387 | Diethanolamine                                | 111-42-2    | PPRTV  | —                                             | $2 \times 10^{-3}$              | RfD from PPRTV Current, revised 2012. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                              |
| 388 | Diethanolamine Mefluidide                     | 53780-36-2  | RAIS   | —                                             | $1.5 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                              |
| 389 | Diethofencarb                                 | 87130-20-9  | RAIS   | —                                             | $5 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Diethofencarb — fungicide for grapes, vegetables, and ornamentals.                                                                                                         |
| 390 | Diethyl Phthalate / Diethyl phthalate (DEP) † | 84-66-2     | IRIS   | —                                             | $8 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health                                                                                                                                  |

| No. | Constituent                        | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                        |
|-----|------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                    |             |        |                                               |                                 | Advisories Tables. RfD from IRIS Current, revised 1988. Diethyl phthalate — cosmetics/fragrance fixative; plastics.                          |
| 391 | Diethylene Glycol Monobutyl Ether  | 112-34-5    | PPRTV  | —                                             | $3 \times 10^{-2}$              | RfD from PPRTV Current, revised 2009. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                     |
| 392 | Diethylene Glycol Monoethyl Ether  | 111-90-0    | PPRTV  | —                                             | $6 \times 10^{-2}$              | RfD from PPRTV Current, revised 2009. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                     |
| 393 | Diethylformamide                   | 617-84-5    | PPRTV  | —                                             | $1 \times 10^{-3}$              | RfD from PPRTV Current, revised 2008. Modern agricultural pesticide or biocide.                                                              |
| 394 | Diethylstilbestrol                 | 56-53-1     | RAIS   | $3.5 \times 10^2$                             | —                               | CSF from CALEPA (revision date not published by source). Diethylstilbestrol — withdrawn synthetic estrogen.                                  |
| 395 | Difenoconazole                     | 119446-68-3 | RAIS   | —                                             | $1 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Triazole fungicide for fruit, vegetables, and turf; agricultural and landscape runoff. |
| 396 | Difenzoquat                        | 43222-48-6  | IRIS   | —                                             | $8 \times 10^{-2}$              | RfD from IRIS Current, revised 1988. Difenzoquat — wild oat herbicide for cereals.                                                           |
| 397 | Diflubenzuron                      | 35367-38-5  | IRIS   | —                                             | $2 \times 10^{-2}$              | RfD from IRIS Current, revised 1987. Modern agricultural pesticide or biocide.                                                               |
| 398 | Diflufenzopyr                      | 109293-97-2 | RAIS   | —                                             | $2.6 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Corn and cereal herbicide.                                                             |
| 399 | Diflufenzopyr-sodium               | 109293-98-3 | RAIS   | —                                             | $2.6 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Diflufenzopyr sodium salt — corn herbicide.                                            |
| 400 | Diglycidyl resorcinol ether (DGRE) | 101-90-6    | RAIS   | 1.7                                           | —                               | CSF from CALEPA (revision date not published by source). Industrial intermediate for resins, dyes, and disinfectants.                        |

| No. | Constituent                                                            | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                               |
|-----|------------------------------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 401 | Dihydrosafrole                                                         | 94-58-6     | RAIS   | $4.4 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). Dihydrosafrole — fragrance and flavor intermediate; pesticide synergist precursor.                                                                                         |
| 402 | Diisopropyl Methylphosphonate / Diisopropyl methylphosphonate (DIMP) † | 1445-75-6   | IRIS   | —                                             | $8 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1989. Byproduct of nerve agent (GB) manufacture; defense-site groundwater marker. |
| 403 | Dimagnesium phosphate                                                  | 7782-75-4   | PPRTV  | —                                             | $4.9 \times 10^1$               | RfD from PPRTV, revised 2011. Food additive and nutrient supplement; fertilizer; pharmaceutical excipient; dentifrice abrasive.                                                                                                     |
| 404 | Dimethenamid ‡                                                         | 87674-68-8  | RAIS   | —                                             | $5 \times 10^{-2}$              | ‡ Health advisory published by MN — level 300 µg/L (Other States' Health Advisories List). RfD from OPP (revision date not published by source). Dimethenamid — corn and soybean herbicide.                                         |
| 405 | Dimethenamid-P                                                         | 163515-14-8 | RAIS   | —                                             | $5 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Dimethenamid-P — corn, soybean, and vegetable herbicide.                                                                                                                      |
| 406 | Dimethipin                                                             | 55290-64-7  | IRIS   | —                                             | $2 \times 10^{-2}$              | RfD from IRIS Current, revised 1990. Dimethipin — cotton and potato defoliant/desiccant.                                                                                                                                            |
| 407 | Dimethoate                                                             | 60-51-5     | IRIS   | —                                             | $2 \times 10^{-4}$              | RfD from IRIS Current, revised 1988. Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                                                        |
| 408 | Dimethomorph                                                           | 110488-70-5 | RAIS   | —                                             | $1.1 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Dimethomorph — fungicide for grapes, potatoes, and cucurbits.                                                                                                                 |
| 409 | Dimethoxybenzidine, 3,3'-                                              | 119-90-4    | PPRTV  | 1.6                                           | —                               | CSF from PPRTV Current, revised 2013. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                 |
| 410 | Dimethyl methylphosphonate †                                           | 756-79-6    | PPRTV  | $1.7 \times 10^{-3}$                          | $6 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from PPRTV                                                                                           |

| No. | Constituent                      | CAS No.    | Source       | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                |
|-----|----------------------------------|------------|--------------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                  |            |              |                                               |                                 | Current, revised 2006. Flame retardant in polyurethane foam and resins; chemical warfare agent simulant; plasticizer.                                |
| 411 | Dimethyl Sulfide                 | 75-18-3    | PPRTV        | —                                             | $2 \times 10^{-2}$              | RfD from PPRTV Current, revised 2024. Dimethyl sulfide — natural odorant; pulp/paper mill emissions; petroleum odorant.                              |
| 412 | Dimethylamino azobenzene [p-]    | 60-11-7    | RAIS         | 4.6                                           | —                               | CSF from CALEPA (revision date not published by source). p-Dimethylaminoazobenzene — former food and textile dye (Butter Yellow).                    |
| 413 | Dimethylaniline HCl, 2,4-        | 21436-96-4 | RAIS         | $5.8 \times 10^{-1}$                          | —                               | CSF from HEAST Current (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                        |
| 414 | Dimethylaniline, 2,4-            | 95-68-1    | PPRTV        | $2 \times 10^{-1}$                            | $2 \times 10^{-3}$              | RfD from SCREEN Current, revised 2011; CSF from PPRTV Current, revised 2011. Dye, rubber, and polymer intermediate; nitrosamine precursor.           |
| 415 | Dimethylaniline, N,N-            | 121-69-7   | IRIS / PPRTV | $2.7 \times 10^{-2}$                          | $2 \times 10^{-3}$              | RfD from IRIS Current, revised 1987; CSF from PPRTV Current, revised 2016. Dye, rubber, and polymer intermediate; nitrosamine precursor.             |
| 416 | Dimethylbenz[a]anthracene, 7,12- | 57-97-6    | RAIS         | $2.5 \times 10^2$                             | —                               | CSF from CALEPA (revision date not published by source). Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.    |
| 417 | Dimethylbenzidine, 3,3'-         | 119-93-7   | PPRTV        | $1.1 \times 10^1$                             | —                               | CSF from PPRTV Current, revised 2008. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                  |
| 418 | Dimethylcarbaryl chloride        | 79-44-7    | RAIS         | $1.3 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). Carbamate pesticide and pharmaceutical manufacture intermediate; not itself an insecticide. |
| 419 | Dimethylformamide                | 68-12-2    | PPRTV        | —                                             | $1 \times 10^{-1}$              | RfD from PPRTV Current, revised 2007. DMF — synthetic fiber & pharmaceutical solvent.                                                                |

| No. | Constituent                                          | CAS No.  | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                        |
|-----|------------------------------------------------------|----------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 420 | Dimethylhydrazine, 1,1-                              | 57-14-7  | PPRTV  | 3                                             | $1 \times 10^{-4}$              | RfD from SCREEN Current, revised 2009; CSF from PPRTV Archive, revised 2009. 1,1-Dimethylhydrazine — rocket propellant; defense site contaminant.                                            |
| 421 | Dimethylhydrazine, 1,2-                              | 540-73-8 | RAIS   | $5.5 \times 10^2$                             | —                               | CSF from CALEPA (revision date not published by source). 1,2-Dimethylhydrazine — research chemical; laboratory carcinogen model.                                                             |
| 422 | Dimethylphenol, 2,4- ‡                               | 105-67-9 | IRIS   | —                                             | $2 \times 10^{-2}$              | ‡ Health advisory published by MN — level 100 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1990. Industrial intermediate for resins, dyes, and disinfectants. |
| 423 | Dimethylphenol, 2,6-                                 | 576-26-1 | IRIS   | —                                             | $6 \times 10^{-4}$              | RfD from IRIS Current, revised 1988. Industrial intermediate for resins, dyes, and disinfectants.                                                                                            |
| 424 | Dimethylphenol, 3,4-                                 | 95-65-8  | IRIS   | —                                             | $1 \times 10^{-3}$              | RfD from IRIS Current, revised 1988. Industrial intermediate for resins, dyes, and disinfectants.                                                                                            |
| 425 | Dimethylterephthalate / Dimethyl terephthalate (DMT) | 120-61-6 | IRIS   | —                                             | $1 \times 10^{-1}$              | RfD from IRIS Current, revised 1987. Plasticizer in flexible PVC, cosmetics, and consumer products.                                                                                          |
| 426 | Dimethylvinylchloride                                | 513-37-1 | RAIS   | $4.5 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). Dimethylvinyl chloride — polymer and chemical intermediate.                                                                         |
| 427 | Dinitro-o-cresol, 4,6-                               | 534-52-1 | PPRTV  | —                                             | $8 \times 10^{-5}$              | RfD from SCREEN Current, revised 2010. Industrial intermediate for resins, dyes, and disinfectants.                                                                                          |
| 428 | Dinitro-o-cyclohexyl Phenol, 4,6-                    | 131-89-5 | IRIS   | —                                             | $2 \times 10^{-3}$              | RfD from IRIS Current, revised 1988. Military explosive or propellant; defense/ordnance site contaminant.                                                                                    |
| 429 | Dinitroaniline, 3,5-                                 | 618-87-1 | PPRTV  | —                                             | $4 \times 10^{-4}$              | RfD from PPRTV Current, revised 2021. Military explosive or propellant; defense/ordnance site contaminant.                                                                                   |
| 430 | Dinitrobenzene, 1,2-                                 | 528-29-0 | PPRTV  | —                                             | $1 \times 10^{-4}$              | RfD from PPRTV Current, revised 2006. Military explosive or propellant; defense/ordnance site contaminant.                                                                                   |

| No. | Constituent                       | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                              |
|-----|-----------------------------------|------------|-------------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 431 | Dinitrobenzene, 1,3- †            | 99-65-0    | IRIS        | —                                             | $1 \times 10^{-4}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1991. Military explosive or propellant; defense/ordnance site contaminant.                                                       |
| 432 | Dinitrobenzene, 1,4-              | 100-25-4   | PPRTV       | —                                             | $1 \times 10^{-4}$              | RfD from PPRTV Current, revised 2006. Military explosive or propellant; defense/ordnance site contaminant.                                                                                                                                                                         |
| 433 | Dinitrophenol, 2,4- ‡             | 51-28-5    | IRIS        | —                                             | $2 \times 10^{-3}$              | ‡ Health advisory published by MN — level 10 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1991. Industrial intermediate for resins, dyes, and disinfectants.                                                                                        |
| 434 | Dinitropyrene, 1,6-               | 42397-64-8 | RAIS        | $1.2 \times 10^2$                             | —                               | CSF from CALEPA (revision date not published by source). Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.                                                                                                                                  |
| 435 | Dinitropyrene, 1,8-               | 42397-65-9 | RAIS        | $1.2 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.                                                                                                                                  |
| 436 | Dinitrotoluene Mixture, 2,4/2,6-  | —          | IRIS        | $6.8 \times 10^{-1}$                          | —                               | CSF from IRIS Current (revision date not published by source). Explosives and polyurethane manufacture; munitions site contaminant.                                                                                                                                                |
| 437 | Dinitrotoluene, 2,4- †            | 121-14-2   | IRIS / RAIS | $3.1 \times 10^{-1}$                          | $2 \times 10^{-3}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1992; CSF from CALEPA (revision date not published by source). 2,4-DNT — explosives & propellant mfg; polyurethane intermediate. |
| 438 | Dinitrotoluene, 2,4- (sulfurized) | 1326-41-6  | RAIS        | $3.1 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Military explosive or propellant; defense/ordnance site contaminant.                                                                                                                                                      |

| No. | Constituent                     | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                |
|-----|---------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 439 | Dinitrotoluene, 2,6- †          | 606-20-2    | PPRTV  | 1.5                                           | $3 \times 10^{-4}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from SCREEN Current, revised 2013; CSF from PPRTV Current, revised 2013. Military explosive or propellant; defense/ordnance site contaminant. |
| 440 | Dinitrotoluene, 2-Amino-4,6- ‡  | 35572-78-2  | PPRTV  | —                                             | $1 \times 10^{-4}$              | ‡ Health advisory published by WI — level 1 µg/L (Other States' Health Advisories List). RfD from PPRTV Current, revised 2020. Military explosive or propellant; defense/ordnance site contaminant.                                                                  |
| 441 | Dinitrotoluene, 4-Amino-2,6-    | 19406-51-0  | PPRTV  | —                                             | $1 \times 10^{-4}$              | RfD from PPRTV Current, revised 2020. Military explosive or propellant; defense/ordnance site contaminant.                                                                                                                                                           |
| 442 | Dinitrotoluene, Technical grade | 25321-14-6  | PPRTV  | $4.5 \times 10^{-1}$                          | $9 \times 10^{-4}$              | RfD and CSF from SCREEN Current, revised 2013. Military explosive or propellant; defense/ordnance site contaminant.                                                                                                                                                  |
| 443 | Dinocap                         | 39300-45-3  | RAIS   | —                                             | $3.8 \times 10^{-4}$            | RfD from OPP (revision date not published by source). Dinocap — powdery mildew fungicide/miticide for grapes.                                                                                                                                                        |
| 444 | Dinoseb †                       | 88-85-7     | IRIS   | —                                             | $1 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1989. Industrial intermediate for resins, dyes, and disinfectants.                                                             |
| 445 | Dinotefuran                     | 165252-70-0 | RAIS   | —                                             | 1                               | RfD from OPP (revision date not published by source). Dinotefuran — neonicotinoid for turf, ornamentals, and structural pest control; urban runoff.                                                                                                                  |
| 446 | Dioxane, 1,4- †                 | 123-91-1    | IRIS   | $1 \times 10^{-1}$                            | $3 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 2013. Solvent stabilizer for 1,1,1-TCA;                                                                    |

| No. | Constituent             | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                      |
|-----|-------------------------|------------|--------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                         |            |        |                                               |                                 | degreasing; cosmetics/detergent byproduct; adhesives, inks.                                                                                                                                                                                |
| 447 | Diphenamid †            | 957-51-7   | IRIS   | —                                             | $3 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Diphenamid — herbicide for tomatoes, peppers, ornamentals.                         |
| 448 | Diphenyl Sulfone        | 127-63-9   | PPRTV  | —                                             | $8 \times 10^{-4}$              | RfD from SCREEN Current, revised 2009. Diphenyl sulfone — high-temperature polymer manufacture (PES/PSU resins).                                                                                                                           |
| 449 | Diphenylamine           | 122-39-4   | IRIS   | —                                             | $2.5 \times 10^{-2}$            | RfD from IRIS Current, revised 1987. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                         |
| 450 | Diphenylhydrazine, 1,2- | 122-66-7   | IRIS   | $8 \times 10^{-1}$                            | —                               | CSF from IRIS Current, revised 1991. 1,2-Diphenylhydrazine — dye and pharmaceutical intermediate.                                                                                                                                          |
| 451 | Diquat †                | 2764-72-9  | IRIS   | —                                             | $2.2 \times 10^{-3}$            | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Diquat — aquatic weed control; desiccant.                                                      |
| 452 | Diquat dibromide †      | 85-00-7    | RAIS   | —                                             | $5 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from OPP (revision date not published by source). Diquat dibromide — aquatic weed control, desiccant; canal and pond treatment. |
| 453 | Direct Black 38         | 1937-37-7  | RAIS   | 7.4                                           | —                               | CSF from CALEPA (revision date not published by source). Direct Black 38 — textile and leather dye; benzidine-based.                                                                                                                       |
| 454 | Direct Blue 218         | 28407-37-6 | RAIS   | $5 \times 10^2$                               | —                               | CSF from CALEPA (revision date not published by source). Direct Blue 218 — textile dye.                                                                                                                                                    |

| No. | Constituent                       | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                           |
|-----|-----------------------------------|------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 455 | Direct Blue 6                     | 2602-46-2  | RAIS   | 7.4                                           | —                               | CSF from CALEPA (revision date not published by source). Direct Blue 6 — textile and paper dye; benzidine-based.                                                                                                                                |
| 456 | Direct Brown 95                   | 16071-86-6 | RAIS   | 6.7                                           | —                               | CSF from CALEPA (revision date not published by source). Direct Brown 95 — textile and leather dye; benzidine-based.                                                                                                                            |
| 457 | Disperse Blue 1 (technical grade) | 2475-45-8  | RAIS   | $4.5 \times 10^{-3}$                          | —                               | CSF from CALEPA (revision date not published by source). Disperse Blue 1 — textile dye; also semi-permanent hair dye.                                                                                                                           |
| 458 | Disulfoton †                      | 298-04-4   | IRIS   | —                                             | $4 \times 10^{-5}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Organophosphate insecticide — agricultural and (historically) residential pest control. |
| 459 | Dithiane, 1,4- †                  | 505-29-3   | IRIS   | —                                             | $1 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1993. 1,4-Dithiane — chemical intermediate; degradation product of mustard agent.             |
| 460 | Dithianon                         | 3347-22-6  | RAIS   | —                                             | $6 \times 10^{-3}$              | RfD from OPP (revision date not published by source). Fungicide for pome fruit and ornamentals.                                                                                                                                                 |
| 461 | Dithiopyr                         | 97886-45-8 | RAIS   | —                                             | $3.6 \times 10^{-3}$            | RfD from OPP (revision date not published by source). Dithiopyr — turf pre-emergent herbicide; heavy golf course and lawn-care use.                                                                                                             |
| 462 | Diuron †                          | 330-54-1   | IRIS   | —                                             | $2 \times 10^{-3}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1988. Diuron — herbicide; also antifouling paint biocide.                                     |
| 463 | Dodecyl benzenesulfonic acid      | 27176-87-0 | RAIS   | —                                             | $5 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Anionic surfactant — the acid form of LAS                                                                                                                                                 |

| No. | Constituent        | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                         |
|-----|--------------------|-------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                    |             |        |                                               |                                 | detergent; household and industrial cleaners; major sewershed surfactant load.                                                                                                                                                |
| 464 | Dodine             | 2439-10-3   | IRIS   | —                                             | $4 \times 10^{-3}$              | RfD from IRIS Current, revised 1987. Dodine — fungicide for apples, pears, pecans.                                                                                                                                            |
| 465 | DSMA               | 144-21-8    | RAIS   | —                                             | $3 \times 10^{-2}$              | RfD from OPP (revision date not published by source). DSMA — organoarsenical herbicide for turf and cotton.                                                                                                                   |
| 466 | Ecolyst            | 274671-61-3 | RAIS   | —                                             | $1.4 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Water-treatment scale and corrosion inhibitor formulation.                                                                                                              |
| 467 | Emamectin Benzoate | 137512-74-4 | RAIS   | —                                             | $2.5 \times 10^{-3}$            | RfD from OPP (revision date not published by source). Avermectin insecticide for vegetables and tree crops; also veterinary sea-lice treatment in aquaculture.                                                                |
| 468 | Endosulfan         | 115-29-7    | IRIS   | —                                             | $6 \times 10^{-3}$              | RfD from IRIS Current, revised 1994. Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue.                                                                                                        |
| 469 | Endosulfan Sulfate | 1031-07-8   | PPRTV  | —                                             | $6 \times 10^{-3}$              | RfD from PPRTV Current, revised 2013. Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue.                                                                                                       |
| 470 | Endothall †        | 145-73-3    | IRIS   | —                                             | $2 \times 10^{-2}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping.   |
| 471 | Endrin †           | 72-20-8     | IRIS   | —                                             | $3 \times 10^{-4}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1989. Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue. |

| No. | Constituent                                                        | CAS No.     | Source       | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                        |
|-----|--------------------------------------------------------------------|-------------|--------------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 472 | Epichlorohydrin †                                                  | 106-89-8    | PPRTV / IRIS | $9.9 \times 10^{-3}$                          | $6 \times 10^{-3}$              | † Federal value published — MCL (Treatment Technique) in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from PPRTV Current, revised 2006; CSF from IRIS Current, revised 1992. Epichlorohydrin — epoxy resin mfg; water treatment polymer additive. |
| 473 | Epoxiconazole                                                      | 133855-98-8 | RAIS         | $3.04 \times 10^{-2}$                         | $2 \times 10^{-2}$              | RfD and CSF from OPP (revision date not published by source). Triazole fungicide for cereals; agricultural runoff.                                                                                                                                                           |
| 474 | Estradiol 17B                                                      | 50-28-2     | RAIS         | $3.9 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). 17β-Estradiol — natural human/livestock estrogen; excreted in urine.                                                                                                                                                |
| 475 | Ethaboxam                                                          | 162650-77-3 | RAIS         | —                                             | $5.5 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Fungicide for grapes, potatoes, cucurbits.                                                                                                                                                                             |
| 476 | Ethalfuralin                                                       | 55283-68-6  | RAIS         | $8.9 \times 10^{-2}$                          | $4 \times 10^{-2}$              | RfD and CSF from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                                                                      |
| 477 | Ethametsulfuron Methyl                                             | 97780-06-8  | RAIS         | —                                             | 4.5                             | RfD from OPP (revision date not published by source). Sulfonylurea herbicide for canola.                                                                                                                                                                                     |
| 478 | Ethanol, 2-(2-methoxyethoxy)- / Diethylene Glycol Monomethyl Ether | 111-77-3    | PPRTV        | —                                             | $4 \times 10^{-2}$              | RfD from PPRTV Current, revised 2015. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                                                                                                                     |
| 479 | Ethephon                                                           | 16672-87-0  | IRIS         | —                                             | $5 \times 10^{-3}$              | RfD from IRIS Current, revised 1988. Ethephon — plant growth regulator/ripening agent for cotton, tomatoes, fruit.                                                                                                                                                           |
| 480 | Ethion                                                             | 563-12-2    | IRIS         | —                                             | $5 \times 10^{-4}$              | RfD from IRIS Current, revised 1989. Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                                                                                                 |
| 481 | Ethiprole                                                          | 181587-01-9 | RAIS         | —                                             | $3 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Ethiprole — insecticide (phenylpyrazole, fipronil analog).                                                                                                                                                             |

| No. | Constituent                             | CAS No.    | Source       | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                              |
|-----|-----------------------------------------|------------|--------------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 482 | Ethofumesate                            | 26225-79-6 | RAIS         | —                                             | $3 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Ethofumesate — sugar beet and turf herbicide.                                                                                                |
| 483 | Ethoprop                                | 13194-48-4 | RAIS         | $2.81 \times 10^{-2}$                         | $6.5 \times 10^{-5}$            | RfD and CSF from OPP (revision date not published by source). Organophosphate insecticide — agricultural and (historically) residential pest control.                                              |
| 484 | Ethoxyethanol Acetate, 2-               | 111-15-9   | PPRTV        | —                                             | $1 \times 10^{-1}$              | RfD from PPRTV Current, revised 2010. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                                           |
| 485 | Ethoxyethanol, 2-                       | 110-80-5   | PPRTV        | —                                             | $9 \times 10^{-2}$              | RfD from PPRTV Current, revised 2013. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                                           |
| 486 | Ethoxyquin                              | 91-53-2    | RAIS         | —                                             | $4 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Ethoxyquin — antioxidant preservative in animal feed, pet food, and stored fruit.                                                            |
| 487 | Ethyl Acetate                           | 141-78-6   | IRIS         | —                                             | $9 \times 10^{-1}$              | RfD from IRIS Current, revised 1987. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                                            |
| 488 | Ethyl Acrylate                          | 140-88-5   | PPRTV / RAIS | $4.8 \times 10^{-2}$                          | $5 \times 10^{-3}$              | RfD from PPRTV Current, revised 2014; CSF from HEAST Archive (revision date not published by source). Ethyl acrylate — paints, adhesives, textile and paper coatings; latex binders.               |
| 489 | Ethyl dipropylthiocarbamate, S-(EPTC) ‡ | 759-94-4   | IRIS         | —                                             | $2.5 \times 10^{-2}$            | ‡ Health advisory published by MN — level 40 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1987. Carbamate insecticide/fungicide — agriculture and horticulture.     |
| 490 | Ethyl Ether ‡                           | 60-29-7    | IRIS         | —                                             | $2 \times 10^{-1}$              | ‡ Health advisory published by MN — level 200 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1990. Polar industrial solvent, glycol, or alcohol; wide commercial use. |

| No. | Constituent                                                                                | CAS No.   | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                   |
|-----|--------------------------------------------------------------------------------------------|-----------|-------------|-----------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 491 | Ethyl Methacrylate                                                                         | 97-63-2   | RAIS        | —                                             | $9 \times 10^{-2}$              | RfD from HEAST Archive (revision date not published by source). Ethyl methacrylate — acrylic resins; artificial nail products.                                                                                                                          |
| 492 | Ethyl Tertiary Butyl Ether (ETBE)                                                          | 637-92-3  | IRIS        | —                                             | 1                               | RfD from IRIS Current, revised 2021. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                                                                                                 |
| 493 | Ethyl-p-nitrophenyl Phosphonate / Ethyl p-nitrophenyl phenylphosphorothioate (EPN)         | 2104-64-5 | IRIS        | —                                             | $1 \times 10^{-5}$              | RfD from IRIS Current, revised 1987. EPN — organophosphate insecticide for cotton and rice; US uses cancelled.                                                                                                                                          |
| 494 | Ethylbenzene †                                                                             | 100-41-4  | IRIS / RAIS | $1.1 \times 10^{-2}$                          | $1 \times 10^{-1}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1991; CSF from CALEPA (revision date not published by source). Gasoline; styrene mfg; solvent in paints and inks. |
| 495 | Ethylene Cyanohydrin                                                                       | 109-78-4  | PPRTV       | —                                             | $7 \times 10^{-2}$              | RfD from PPRTV Current, revised 2012. Ethylene cyanohydrin — solvent and polymer intermediate.                                                                                                                                                          |
| 496 | Ethylene Diamine                                                                           | 107-15-3  | PPRTV       | —                                             | $9 \times 10^{-2}$              | RfD from PPRTV Current, revised 2006. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                                     |
| 497 | Ethylene Glycol †                                                                          | 107-21-1  | IRIS        | —                                             | 2                               | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Antifreeze/coolant; aircraft deicing fluid; polyester mfg.                                      |
| 498 | Ethylene Glycol Monobutyl Ether / Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol) | 111-76-2  | IRIS        | —                                             | $1 \times 10^{-1}$              | RfD from IRIS Current, revised 2010. 2-Butoxyethanol — surface cleaners; paints; hydraulic fracturing fluid.                                                                                                                                            |
| 499 | Ethylene Oxide                                                                             | 75-21-8   | RAIS        | $3.1 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Sterilant for medical devices; ethylene glycol/surfactant feedstock.                                                                                                                           |
| 500 | Ethylene Thiourea / Ethylene thiourea (ETU) †                                              | 96-45-7   | IRIS / RAIS | $4.5 \times 10^{-2}$                          | $8 \times 10^{-5}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health                                                                                                                                                         |

| No. | Constituent                                                         | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                           |
|-----|---------------------------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                                     |             |        |                                               |                                 | Advisories Tables. RfD from IRIS Current, revised 1991; CSF from CALEPA (revision date not published by source). Ethylene thiourea — rubber vulcanization accelerator; EBDC fungicide degradate.                                                |
| 501 | Ethyleneimine                                                       | 151-56-4    | RAIS   | $6.5 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). Ethyleneimine — polymer and adhesive intermediate; papermaking chemical.                                                                                                               |
| 502 | Ethylphthalyl Ethyl Glycolate / Ethylphthalyl ethylglycolate (EPEG) | 84-72-0     | IRIS   | —                                             | 3                               | RfD from IRIS Current, revised 1987. Plasticizer in flexible PVC, cosmetics, and consumer products.                                                                                                                                             |
| 503 | Etofenprox                                                          | 80844-07-1  | RAIS   | —                                             | $2.55 \times 10^{-2}$           | RfD from OPP (revision date not published by source). Pyrethroid-like insecticide for mosquito control, rice, and pet products.                                                                                                                 |
| 504 | Etoxazole                                                           | 153233-91-1 | RAIS   | —                                             | $4.6 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Miticide for fruit, nuts, and ornamentals.                                                                                                                                                |
| 505 | Etridiazole                                                         | 2593-15-9   | RAIS   | $3.58 \times 10^{-2}$                         | $6 \times 10^{-2}$              | RfD and CSF from OPP (revision date not published by source). Soil fungicide for turf, ornamentals, and seed treatment; golf course use.                                                                                                        |
| 506 | Famoxadone                                                          | 131807-57-3 | RAIS   | —                                             | $1.4 \times 10^{-3}$            | RfD from OPP (revision date not published by source). Fungicide for grapes, tomatoes, turf.                                                                                                                                                     |
| 507 | Fenamidone                                                          | 161326-34-7 | RAIS   | —                                             | $2.83 \times 10^{-2}$           | RfD from OPP (revision date not published by source). Fungicide for grapes, potatoes, tomatoes.                                                                                                                                                 |
| 508 | Fenamiphos †                                                        | 22224-92-6  | IRIS   | —                                             | $2.5 \times 10^{-4}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Organophosphate insecticide — agricultural and (historically) residential pest control. |
| 509 | Fenarimol                                                           | 60168-88-9  | RAIS   | —                                             | $6 \times 10^{-3}$              | RfD from OPP (revision date not published by source). Fenarimol — fungicide for turf, grapes, ornamentals; golf course runoff.                                                                                                                  |

| No. | Constituent             | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                         |
|-----|-------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 510 | Fenazaquin              | 120928-09-8 | RAIS   | —                                             | $5 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Fenazaquin — miticide for fruit, nuts, ornamentals.                                     |
| 511 | Fenbuconazole           | 114369-43-6 | RAIS   | $3.59 \times 10^{-3}$                         | $3 \times 10^{-2}$              | RfD and CSF from OPP (revision date not published by source). Triazole fungicide for stone fruit, cereals, and turf.                          |
| 512 | Fenbutatin Oxide        | 13356-08-6  | RAIS   | —                                             | $5 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Organotin miticide for citrus, grapes, and ornamentals.                                 |
| 513 | Fenhexamid              | 126833-17-8 | RAIS   | —                                             | $1.7 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Fungicide for grapes, strawberries, stone fruit.                                        |
| 514 | Fenitrothion            | 122-14-5    | RAIS   | —                                             | $1.25 \times 10^{-4}$           | RfD from OPP (revision date not published by source). Organophosphate insecticide — agricultural and (historically) residential pest control. |
| 515 | Fenoxaprop-Et           | 66441-23-4  | RAIS   | —                                             | $2.5 \times 10^{-3}$            | RfD from OPP (revision date not published by source). Fenoxaprop-ethyl — grass herbicide for turf, rice, and cereals; lawn-care use.          |
| 516 | Fenpicoxamid (XDE-777)  | 517875-34-2 | RAIS   | —                                             | $4 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Fenpicoxamid — cereal fungicide.                                                        |
| 517 | Fenpropathrin / Danitol | 39515-41-8  | IRIS   | —                                             | $2.5 \times 10^{-2}$            | RfD from IRIS Current, revised 1994. Modern agricultural pesticide or biocide.                                                                |
| 518 | Fenpropidin             | 67306-00-7  | RAIS   | —                                             | $2.3 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Cereal fungicide (morpholine class).                                                    |
| 519 | Fenpropimorph           | 67564-91-4  | RAIS   | —                                             | $3.2 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Cereal fungicide; also used in wood coatings.                                           |
| 520 | Fenpyrazamine           | 473798-59-3 | RAIS   | —                                             | $3 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                           |

| No. | Constituent          | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                         |
|-----|----------------------|-------------|--------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 521 | Fenpyroximate        | 134098-61-6 | RAIS   | —                                             | $1 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Fenpyroximate — miticide for fruit, nuts, ornamentals.                                  |
| 522 | Fenthion             | 55-38-9     | RAIS   | —                                             | $7 \times 10^{-5}$              | RfD from OPP (revision date not published by source). Organophosphate insecticide — agricultural and (historically) residential pest control. |
| 523 | Fenvalerate / Pydrin | 51630-58-1  | IRIS   | —                                             | $2.5 \times 10^{-2}$            | RfD from IRIS Current, revised 1987. Fenvalerate — pyrethroid insecticide; also livestock ear tags.                                           |
| 524 | Ferbam               | 14484-64-1  | RAIS   | —                                             | $1.5 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Dithiocarbamate fungicide for fruit and tobacco.                                        |
| 525 | Fipronil             | 120068-37-3 | RAIS   | —                                             | $2 \times 10^{-4}$              | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                               |
| 526 | Flazasulfuron        | 104040-78-0 | RAIS   | —                                             | $1.3 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                               |
| 527 | Flonicamid           | 158062-67-0 | RAIS   | —                                             | $4 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Flonicamid — aphid insecticide for cotton, vegetables, ornamentals.                     |
| 528 | Florasulam           | 145701-23-1 | RAIS   | —                                             | $5 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Cereal broadleaf herbicide.                                                             |
| 529 | Fluazifop-butyl      | 69806-50-4  | RAIS   | —                                             | $7.4 \times 10^{-3}$            | RfD from OPP (revision date not published by source). Fluazifop-butyl — grass herbicide for broadleaf crops.                                  |
| 530 | Fluazifop-p-butyl    | 79241-46-6  | RAIS   | —                                             | $5.1 \times 10^{-3}$            | RfD from OPP (revision date not published by source). Fluazifop-P-butyl — grass herbicide for soybeans, cotton, ornamentals.                  |
| 531 | Fluazinam            | 79622-59-6  | RAIS   | —                                             | $1.1 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Fungicide for grapes, potatoes; also aquaculture antifoulant.                           |

| No. | Constituent              | CAS No.         | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                 |
|-----|--------------------------|-----------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 532 | Flubendiamide            | 272451-6<br>5-7 | RAIS   | —                                             | $2.4 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                       |
| 533 | Flucarbazone-sodium      | 181274-1<br>7-9 | RAIS   | —                                             | $7.4 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Cereal herbicide (sulfonaminocarbonyltriazolinone).                                                                                             |
| 534 | Fludioxonil              | 131341-8<br>6-1 | RAIS   | —                                             | $3.3 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Fludioxonil — seed treatment and post-harvest fruit fungicide; enters via packing-house wash water.                                             |
| 535 | Fluensulfone             | 318290-9<br>8-1 | RAIS   | —                                             | $1 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Nematicide for vegetables and fruiting crops.                                                                                                   |
| 536 | Flufenacet (Thiaflumide) | 142459-5<br>8-3 | RAIS   | —                                             | $1.7 \times 10^{-3}$            | RfD from OPP (revision date not published by source). Herbicide/fungicide for corn and soybeans.                                                                                                      |
| 537 | Flufenoxuron             | 101463-6<br>9-8 | RAIS   | —                                             | $3.75 \times 10^{-2}$           | RfD from OPP (revision date not published by source). Insect growth regulator for citrus and cotton.                                                                                                  |
| 538 | Flufenpyr-ethyl          | 188489-0<br>7-8 | RAIS   | —                                             | $4 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Rice and cereal herbicide.                                                                                                                      |
| 539 | Flumetsulam ‡            | 98967-40<br>-9  | RAIS   | —                                             | <b>1</b>                        | ‡ Health advisory published by WI — level 10,000 µg/L (Other States' Health Advisories List). RfD from OPP (revision date not published by source). Corn and soybean herbicide.                       |
| 540 | Flumiclorac pentyl       | 87546-18<br>-7  | RAIS   | —                                             | <b>1</b>                        | RfD from OPP (revision date not published by source). Soybean broadleaf herbicide.                                                                                                                    |
| 541 | Flumioxazin              | 103361-0<br>9-7 | RAIS   | —                                             | $2 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Herbicide for soybeans, peanuts, turf.                                                                                                          |
| 542 | Fluometuron †            | 2164-17-<br>2   | IRIS   | —                                             | $1.3 \times 10^{-2}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Fluometuron — cotton and sugarcane herbicide. |

| No. | Constituent                                | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                  |
|-----|--------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 543 | Fluopicolide                               | 239110-15-7 | RAIS   | —                                             | $2 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Fungicide for grapes, potatoes, cucurbits.                                                                                       |
| 544 | Fluopyram                                  | 658066-35-4 | RAIS   | —                                             | $1.2 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Fluopyram — fungicide/nematicide for fruit, nuts, turf.                                                                          |
| 545 | Fluoranthene ‡                             | 206-44-0    | IRIS   | —                                             | $4 \times 10^{-2}$              | ‡ Health advisory published by MN — level 70 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1990. Coal tar; creosote; urban runoff.                       |
| 546 | Fluorene †                                 | 86-73-7     | IRIS   | —                                             | $4 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1990. Coal tar; creosote; petroleum. |
| 547 | Fluoride                                   | 16984-48-8  | RAIS   | —                                             | $4 \times 10^{-2}$              | RfD from CALEPA (revision date not published by source). Water fluoridation; naturally occurring; aluminum/phosphate industry.                                                         |
| 548 | Fluorine (Soluble Fluoride)                | 7782-41-4   | IRIS   | —                                             | $6 \times 10^{-2}$              | RfD from IRIS Current, revised 1987. Inorganic anion — fertilizer, industrial, or naturally occurring source.                                                                          |
| 549 | Fluorotelomer sulfonate, 6:2               | 425670-75-3 | RAIS   | —                                             | $2 \times 10^{-4}$              | RfD from HHTV Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                            |
| 550 | Fluorotelomer sulfonic acid, 6:2 (FtS 6:2) | 27619-97-2  | RAIS   | —                                             | $2 \times 10^{-4}$              | RfD from HHTV Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                            |
| 551 | Fluoxastrobin                              | 361377-29-9 | RAIS   | —                                             | $1.5 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                        |
| 552 | Flupyradifurone                            | 951659-40-8 | RAIS   | —                                             | $7.8 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                        |

| No. | Constituent          | CAS No.     | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                      |
|-----|----------------------|-------------|-------------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 553 | Fluridone            | 59756-60-4  | IRIS        | —                                             | $8 \times 10^{-2}$              | RfD from IRIS Current, revised 1988. Fluridone — aquatic herbicide for lakes, canals, and irrigation systems.                                                                                                                              |
| 554 | Fluroxypyr           | 69377-81-7  | RAIS        | —                                             | 1                               | RfD from OPP (revision date not published by source). Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping.                                                                                                      |
| 555 | Flurprimidol         | 56425-91-3  | IRIS        | —                                             | $2 \times 10^{-2}$              | RfD from IRIS Current, revised 1989. Turf growth regulator; golf course and sod farm use.                                                                                                                                                  |
| 556 | Flusilazole / NuStar | 85509-19-9  | IRIS        | —                                             | $7 \times 10^{-4}$              | RfD from IRIS Current, revised 1988. Triazole fungicide for cereals, fruit, and vines.                                                                                                                                                     |
| 557 | Fluthiacet methyl    | 117337-19-6 | RAIS        | $2.07 \times 10^{-1}$                         | $1 \times 10^{-3}$              | RfD and CSF from OPP (revision date not published by source). Corn and soybean herbicide.                                                                                                                                                  |
| 558 | Flutolanil           | 66332-96-5  | IRIS        | —                                             | $6 \times 10^{-2}$              | RfD from IRIS Current, revised 1989. Rice and turf fungicide.                                                                                                                                                                              |
| 559 | Flutriafol           | 76674-21-0  | RAIS        | —                                             | $5 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Triazole fungicide for cereals, coffee, turf.                                                                                                                                        |
| 560 | Fluvalinate          | 69409-94-5  | IRIS        | —                                             | $1 \times 10^{-2}$              | RfD from IRIS Current, revised 1988. Fluvalinate — pyrethroid; notably used as a beehive varroa mite treatment.                                                                                                                            |
| 561 | Fluxapyroxad         | 907204-31-3 | RAIS        | —                                             | $2.1 \times 10^{-2}$            | RfD from OPP (revision date not published by source). SDHI fungicide for cereals, soybeans, turf.                                                                                                                                          |
| 562 | Folpet               | 133-07-3    | IRIS        | $3.5 \times 10^{-3}$                          | $1 \times 10^{-1}$              | RfD from IRIS Current, revised 1988; CSF from IRIS Archive, revised 1988. Folpet — fungicide for grapes and ornamentals; also paint/plastic preservative.                                                                                  |
| 563 | Fomesafen ‡          | 72178-02-0  | RAIS / IRIS | $1.9 \times 10^{-1}$                          | $1 \times 10^{-2}$              | ‡ Health advisory published by MN, WI — level 20 µg/L (Other States' Health Advisories List). RfD from OPP (revision date not published by source); CSF from IRIS Archive, revised 1988. Fomesafen — soybean and bean broadleaf herbicide. |

| No. | Constituent      | CAS No.     | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                                         |
|-----|------------------|-------------|-------------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 564 | Fomesafen Sodium | 108731-70-0 | RAIS        | —                                             | $1 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Fomesafen sodium salt — soybean herbicide.                                                                                                                                                                                              |
| 565 | Fonofos †        | 944-22-9    | IRIS        | —                                             | $2 \times 10^{-3}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Organophosphate insecticide — agricultural and (historically) residential pest control.                                               |
| 566 | Forchlorfenuron  | 68157-60-8  | RAIS        | —                                             | $7 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Forchlorfenuron — plant growth regulator for grapes and kiwifruit.                                                                                                                                                                      |
| 567 | Formaldehyde †   | 50-00-0     | IRIS / RAIS | $2.1 \times 10^{-2}$                          | $2 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2024; CSF from CALEPA (revision date not published by source). Formaldehyde — resins/plywood; embalming; disinfectant; ozonation byproduct. |
| 568 | Formic Acid      | 64-18-6     | PPRTV       | —                                             | $9 \times 10^{-1}$              | RfD from PPRTV Current, revised 2010. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                                                                                                                                      |
| 569 | Fosetyl-AL       | 39148-24-8  | IRIS        | —                                             | 3                               | RfD from IRIS Current, revised 1988. Fosetyl-Al — systemic fungicide for turf, citrus, ornamentals.                                                                                                                                                                                           |
| 570 | Fosthiazate      | 98886-44-3  | RAIS        | —                                             | $9.6 \times 10^{-4}$            | RfD from OPP (revision date not published by source). Fosthiazate — nematicide (organophosphate).                                                                                                                                                                                             |
| 571 | Furan            | 110-00-9    | IRIS        | —                                             | $1 \times 10^{-3}$              | RfD from IRIS Current, revised 1987. Furan — food processing/heat-treatment byproduct; chemical intermediate.                                                                                                                                                                                 |
| 572 | Furazolidone     | 67-45-8     | RAIS        | 3.8                                           | —                               | CSF from HEAST Current (revision date not published by source). Furazolidone — veterinary and former human antibacterial.                                                                                                                                                                     |

| No. | Constituent                                                     | CAS No.         | Source      | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                 |
|-----|-----------------------------------------------------------------|-----------------|-------------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 573 | Furfural                                                        | 98-01-1         | IRIS / RAIS | $3.49 \times 10^{-2}$                         | $3 \times 10^{-3}$              | RfD from IRIS Current, revised 1988; CSF from OPP (revision date not published by source). Ozonation/oxidation byproduct; also industrial resin and preservative use. |
| 574 | Furfuryl Alcohol                                                | 98-00-0         | RAIS        | $1.31 \times 10^{-1}$                         | —                               | CSF from OPP (revision date not published by source). Polar industrial solvent, glycol, or alcohol; wide commercial use.                                              |
| 575 | Furilazole                                                      | 121776-3<br>3-8 | RAIS        | $2.74 \times 10^{-2}$                         | $9 \times 10^{-4}$              | RfD and CSF from OPP (revision date not published by source). Herbicide safener applied with corn herbicides.                                                         |
| 576 | Furium                                                          | 531-82-8        | RAIS        | 1.5                                           | —                               | CSF from CALEPA (revision date not published by source). Furium — antibacterial research compound.                                                                    |
| 577 | Furmecyclox                                                     | 60568-05<br>-0  | IRIS        | $3 \times 10^{-2}$                            | —                               | CSF from IRIS Current, revised 1988. Furmecyclox — seed-treatment fungicide.                                                                                          |
| 578 | Gallium arsenide                                                | 1303-00-<br>0   | RAIS        | 1.5                                           | $3.5 \times 10^{-6}$            | RfD and CSF from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                    |
| 579 | Glu-P-1<br>[(2-Amino-6-methyldipyrdo[1,2a:<br>:3,2d]imidazole)] | 67730-11<br>-4  | RAIS        | 4.8                                           | —                               | CSF from CALEPA (revision date not published by source). Heterocyclic amine formed in cooked meat and fish.                                                           |
| 580 | Glu-P-2<br>[(2-Aminodipyrdo[1,2-a:3',2'-d]in<br>dole)]          | 67730-10<br>-3  | RAIS        | 1.4                                           | —                               | CSF from CALEPA (revision date not published by source). Heterocyclic amine formed in cooked meat and fish.                                                           |
| 581 | Glufosinate, Ammonium                                           | 77182-82<br>-2  | IRIS        | —                                             | $4 \times 10^{-4}$              | RfD from IRIS Current, revised 1987. Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping.                                                  |
| 582 | Glutaraldehyde                                                  | 111-30-8        | RAIS        | —                                             | $1 \times 10^{-1}$              | RfD from ATSDR Final (revision date not published by source). Ozonation/oxidation byproduct; also industrial resin and preservative use.                              |

| No. | Constituent         | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                     |
|-----|---------------------|-------------|--------|-----------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 583 | Glycidaldehyde      | 765-34-4    | IRIS   | —                                             | $4 \times 10^{-4}$              | RfD from IRIS Current, revised 1991. Ozonation/oxidation byproduct; also industrial resin and preservative use.                                                                                                           |
| 584 | Glyphosate †        | 1071-83-6   | IRIS   | —                                             | $1 \times 10^{-1}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1989. Glyphosate — broad-spectrum herbicide (Roundup); agriculture and landscaping. |
| 585 | Guanidine           | 113-00-8    | PPRTV  | —                                             | $1 \times 10^{-2}$              | RfD from SCREEN Current, revised 2014. Guanidine — plastics, resins, and pharmaceutical intermediate.                                                                                                                     |
| 586 | Guanidine Chloride  | 50-01-1     | PPRTV  | —                                             | $2 \times 10^{-2}$              | RfD from PPRTV Current, revised 2014. Guanidine hydrochloride — laboratory protein denaturant; pharmaceutical intermediate.                                                                                               |
| 587 | Guanidine Nitrate   | 506-93-4    | PPRTV  | —                                             | $3 \times 10^{-2}$              | RfD from SCREEN Current (revision date not published by source). Guanidine nitrate — airbag propellant and explosives intermediate.                                                                                       |
| 588 | Gyromitrin          | 16568-02-8  | RAIS   | $1 \times 10^1$                               | —                               | CSF from CALEPA (revision date not published by source). Naturally occurring toxin in false morel mushrooms.                                                                                                              |
| 589 | Halauxifen-methyl   | 943831-98-9 | RAIS   | —                                             | $3 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Cereal broadleaf herbicide.                                                                                                                                         |
| 590 | Halosulfuron methyl | 100784-20-1 | RAIS   | —                                             | $1 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                           |
| 591 | Haloxypop, Methyl   | 69806-40-2  | IRIS   | —                                             | $5 \times 10^{-5}$              | RfD from IRIS Current, revised 1990. Haloxypop-methyl — grass herbicide for broadleaf crops.                                                                                                                              |
| 592 | HC Blue 1           | 2784-94-3   | RAIS   | $5.1 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). HC Blue 1 — semi-permanent hair dye.                                                                                                                             |
| 593 | Heptachlor †        | 76-44-8     | IRIS   | 4.5                                           | $5 \times 10^{-4}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories                                                                                                                            |

| No. | Constituent                                       | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                 |
|-----|---------------------------------------------------|------------|--------|-----------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                   |            |        |                                               |                                 | Tables. RfD and CSF from IRIS Current, revised 1987. Heptachlor — banned insecticide; former termiticide.                                                                                                                             |
| 594 | Heptachlor Epoxide †                              | 1024-57-3  | IRIS   | 9.1                                           | $1.3 \times 10^{-5}$            | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 1987. Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue. |
| 595 | Heptachlorobiphenyl, 2,2',3,3',4,4',5'- (PCB 170) | 35065-30-6 | RAIS   | $1.3 \times 10^1$                             | $7 \times 10^{-6}$              | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                                             |
| 596 | Heptachlorobiphenyl, 2,2',3,4,4',5,5'- (PCB 180)  | 35065-29-3 | RAIS   | 1.3                                           | $7 \times 10^{-5}$              | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                                             |
| 597 | Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)  | 39635-31-9 | RAIS   | 3.9                                           | $2.33 \times 10^{-5}$           | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                                             |
| 598 | Heptachlorodibenzofuran, 1,2,3,4,6,7,8-           | 67562-39-4 | RAIS   | $1.3 \times 10^3$                             | $7 \times 10^{-8}$              | RfD and CSF from WHO/TEF (revision date not published by source). Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue.                                                                                   |
| 599 | Heptane, N-                                       | 142-82-5   | PPRTV  | —                                             | $3 \times 10^{-4}$              | RfD from SCREEN Current, revised 2016. n-Heptane — fuel component; laboratory solvent; rubber cement.                                                                                                                                 |
| 600 | Hexabromobenzene                                  | 87-82-1    | IRIS   | —                                             | $2 \times 10^{-3}$              | RfD from IRIS Current, revised 1987. Hexabromobenzene — flame retardant for plastics and textiles.                                                                                                                                    |

| No. | Constituent                                        | CAS No.    | Source       | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                                  |
|-----|----------------------------------------------------|------------|--------------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 601 | Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153) | 68631-49-2 | IRIS         | —                                             | $2 \times 10^{-4}$              | RfD from IRIS Current, revised 2008. Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                                                                                                                           |
| 602 | Hexachlorobenzene †                                | 118-74-1   | IRIS         | 1.6                                           | $8 \times 10^{-4}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 1991. Hexachlorobenzene — fungicide (banned); industrial byproduct.                                                                      |
| 603 | Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)      | 52663-72-6 | RAIS         | 3.9                                           | $2.33 \times 10^{-5}$           | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                                                                                              |
| 604 | Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)      | 69782-90-7 | RAIS         | 3.9                                           | $2.33 \times 10^{-5}$           | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                                                                                              |
| 605 | Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 156)      | 38380-08-4 | RAIS         | 3.9                                           | $2.33 \times 10^{-5}$           | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                                                                                              |
| 606 | Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)      | 32774-16-6 | RAIS         | $3.9 \times 10^3$                             | $2.33 \times 10^{-8}$           | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                                                                                              |
| 607 | Hexachlorobutadiene †                              | 87-68-3    | PPRTV / IRIS | $7.8 \times 10^{-2}$                          | $1 \times 10^{-3}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from PPRTV Current, revised 2007; CSF from IRIS Current, revised 1993. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume. |

| No. | Constituent                                                                   | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                            |
|-----|-------------------------------------------------------------------------------|------------|-------------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 608 | Hexachlorocyclohexane, Alpha- / Hexachlorocyclohexane (alpha-HCH)             | 319-84-6   | RAIS / IRIS | 6.3                                           | $9 \times 10^{-4}$              | RfD from ATSDR Final (revision date not published by source); CSF from IRIS Current, revised 1987. Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue.                                                                             |
| 609 | Hexachlorocyclohexane, Beta- / Hexachlorocyclohexane (beta-HCH)               | 319-85-7   | IRIS        | 1.8                                           | —                               | CSF from IRIS Current, revised 1987. Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue.                                                                                                                                           |
| 610 | Hexachlorocyclohexane, Delta- / Hexachlorocyclohexane (delta-HCH)             | 319-86-8   | PPRTV       | —                                             | $6 \times 10^{-8}$              | RfD from PPRTV Current, revised 2024. Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue.                                                                                                                                          |
| 611 | Hexachlorocyclohexane, Gamma- (Lindane) / Hexachlorocyclohexane (gamma-HCH) † | 58-89-9    | IRIS / RAIS | 1.1                                           | $3 \times 10^{-4}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987; CSF from CALEPA (revision date not published by source). Lindane — insecticide; lice/scabies pharmaceutical shampoo. |
| 612 | Hexachlorocyclohexane, Technical / Hexachlorocyclohexane (t-HCH)              | 608-73-1   | IRIS        | 1.8                                           | —                               | CSF from IRIS Current, revised 1987. Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue.                                                                                                                                           |
| 613 | Hexachlorocyclopentadiene / Hexachlorocyclopentadiene (HCCPD) †               | 77-47-4    | IRIS        | —                                             | $6 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2001. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                             |
| 614 | Hexachlorodibenzo-p-dioxin, 1,2,3,4,7,8-                                      | 39227-28-6 | RAIS        | $1.3 \times 10^4$                             | $7 \times 10^{-9}$              | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                                                                        |
| 615 | Hexachlorodibenzo-p-dioxin, Mixture                                           | 34465-46-8 | IRIS        | $6.2 \times 10^3$                             | —                               | CSF from IRIS Current (revision date not published by source). Legacy industrial contaminant;                                                                                                                                                                    |

| No. | Constituent                                      | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                    |
|-----|--------------------------------------------------|------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                  |            |        |                                               |                                 | banned/restricted; persistent in sediment and biosolids.                                                                                                                                                                                                 |
| 616 | Hexachlorodibenzofuran, 1,2,3,4,7,8-             | 70648-26-9 | RAIS   | $1.3 \times 10^4$                             | $7 \times 10^{-9}$              | RfD and CSF from WHO/TEF (revision date not published by source). Combustion and incineration byproduct; legacy chlorophenol/PCB manufacturing impurity.                                                                                                 |
| 617 | Hexachloroethane †                               | 67-72-1    | IRIS   | $4 \times 10^{-2}$                            | $7 \times 10^{-4}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 2011. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume. |
| 618 | Hexachlorophene                                  | 70-30-4    | IRIS   | —                                             | $3 \times 10^{-4}$              | RfD from IRIS Current, revised 1988. Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue.                                                                                                                                   |
| 619 | Hexaconazole                                     | 79983-71-4 | RAIS   | $1.6 \times 10^{-2}$                          | $2 \times 10^{-2}$              | RfD and CSF from OPP (revision date not published by source). Triazole fungicide for fruit, vines, and turf.                                                                                                                                             |
| 620 | Hexafluoropropylene oxide dimer acid (HFPO-DA) ‡ | 13252-13-6 | RAIS   | —                                             | $3 \times 10^{-6}$              | ‡ Health advisory published by WI, MI — level 0.01 µg/L (Other States' Health Advisories List). RfD from DWSHA (revision date not published by source). GenX — PFOA replacement in fluoropolymer mfg; nonstick coating processing aid.                   |
| 621 | Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) †  | 121-82-4   | IRIS   | $8 \times 10^{-2}$                            | $4 \times 10^{-3}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 2018. RDX — military explosive; groundwater plumes at defense sites.                           |
| 622 | Hexamethylphosphoramide                          | 680-31-9   | PPRTV  | —                                             | $4 \times 10^{-4}$              | RfD from PPRTV Current, revised 2012. Industrial and laboratory aprotic solvent; polymerization and synthesis reagent.                                                                                                                                   |

| No. | Constituent                                               | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                        |
|-----|-----------------------------------------------------------|------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 623 | Hexane, Commercial                                        | —          | PPRTV  | —                                             | $1.1 \times 10^1$               | RfD from PPRTV Archive, revised 2006. Commercial hexane — adhesives, vegetable oil extraction, cleaning solvent.                                                                                                                             |
| 624 | Hexane, n- †                                              | 110-54-3   | RAIS   | —                                             | $6 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from HEAST Archive (revision date not published by source). n-Hexane — adhesives; vegetable oil extraction; gasoline. |
| 625 | Hexanedioic Acid                                          | 124-04-9   | PPRTV  | —                                             | 2                               | RfD from PPRTV Current, revised 2006. Adipic acid — nylon manufacture; food acidulant; polyurethane intermediate.                                                                                                                            |
| 626 | Hexanol, 1-,2-ethyl- (2-Ethyl-1-hexanol) / 2-Ethylhexanol | 104-76-7   | PPRTV  | $9.5 \times 10^{-3}$                          | $7 \times 10^{-2}$              | RfD and CSF from PPRTV Current, revised 2019. 2-Ethyl-1-hexanol — plasticizer (DEHP) feedstock; solvent; fragrance.                                                                                                                          |
| 627 | Hexanone, 2- ‡                                            | 591-78-6   | IRIS   | —                                             | $5 \times 10^{-3}$              | ‡ Health advisory published by WI — level 100 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 2009. 2-Hexanone (MBK) — solvent in paints, lacquers, and adhesives.                                               |
| 628 | Hexazinone †                                              | 51235-04-2 | IRIS   | —                                             | $3.3 \times 10^{-2}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Herbicide for forestry, rights-of-way, and rangeland.                                |
| 629 | Hexythiazox / Savey                                       | 78587-05-0 | IRIS   | —                                             | $2.5 \times 10^{-2}$            | RfD from IRIS Current, revised 1988. Hexythiazox — miticide for fruit, nuts, ornamentals.                                                                                                                                                    |
| 630 | HpCDD, 1,2,3,4,6,7,8,-                                    | 35822-46-9 | RAIS   | $1.3 \times 10^3$                             | $7 \times 10^{-8}$              | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                                                    |
| 631 | HpCDD, 2,3,7,8-                                           | 37871-00-4 | RAIS   | $1.3 \times 10^3$                             | $7 \times 10^{-8}$              | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant;                                                                                                                                             |

| No. | Constituent                                                                                                  | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                     |
|-----|--------------------------------------------------------------------------------------------------------------|------------|--------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                                                                              |            |        |                                               |                                 | banned/restricted; persistent in sediment and biosolids.                                                                                                  |
| 632 | HpCDF, 1,2,3,4,7,8,9-                                                                                        | 55673-89-7 | RAIS   | $1.3 \times 10^3$                             | $7 \times 10^{-8}$              | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids. |
| 633 | HpCDF, 2,3,7,8-                                                                                              | 38998-75-3 | RAIS   | $1.3 \times 10^3$                             | $7 \times 10^{-8}$              | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids. |
| 634 | HxCDD, 1,2,3,6,7,8- / Hexachlorodibenzo-p-dioxin (HxCDD), mixture of 1,2,3,6,7,8-HxCDD and 1,2,3,7,8,9-HxCDD | 57653-85-7 | RAIS   | $1.3 \times 10^4$                             | $7 \times 10^{-9}$              | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids. |
| 635 | HxCDD, 1,2,3,7,8,9-                                                                                          | 19408-74-3 | RAIS   | $1.3 \times 10^4$                             | $7 \times 10^{-9}$              | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids. |
| 636 | HxCDF, 1,2,3,6,7,8-                                                                                          | 57117-44-9 | RAIS   | $1.3 \times 10^4$                             | $7 \times 10^{-9}$              | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids. |
| 637 | HxCDF, 1,2,3,7,8,9-                                                                                          | 72918-21-9 | RAIS   | $1.3 \times 10^4$                             | $7 \times 10^{-9}$              | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids. |
| 638 | HxCDF, 2,3,4,6,7,8-                                                                                          | 60851-34-5 | RAIS   | $1.3 \times 10^4$                             | $7 \times 10^{-9}$              | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids. |

| No. | Constituent                        | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                            |
|-----|------------------------------------|------------|--------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 639 | HxCDF, 2,3,7,8-                    | 55684-94-1 | RAIS   | $1.3 \times 10^4$                             | $7 \times 10^{-9}$              | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                                                        |
| 640 | Hydramethylnon / Amdro             | 67485-29-4 | IRIS   | —                                             | $3 \times 10^{-4}$              | RfD from IRIS Current, revised 1987. Hydramethylnon — ant and cockroach bait insecticide; residential and structural use.                                                                                                                        |
| 641 | Hydrazine Sulfate                  | 10034-93-2 | IRIS   | 3                                             | —                               | CSF from IRIS Current (revision date not published by source). Hydrazine sulfate — boiler water oxygen scavenger; pharmaceutical intermediate.                                                                                                   |
| 642 | Hydrazine/Hydrazine sulfate        | 302-01-2   | IRIS   | 3                                             | —                               | CSF from IRIS Current (most protective of the published oral slope factors), revised 1988. Use not characterized.                                                                                                                                |
| 643 | Hydrogen Cyanamide                 | 420-04-2   | RAIS   | $6.64 \times 10^{-2}$                         | $2 \times 10^{-3}$              | RfD and CSF from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                                          |
| 644 | Hydrogen Cyanide †                 | 74-90-8    | IRIS   | —                                             | $6 \times 10^{-4}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current (revision date not published by source). Electroplating; mining/ore processing; chlorination of amines; combustion. |
| 645 | Hydrogen Cyanide and Cyanide Salts | Various    | IRIS   | —                                             | $6 \times 10^{-4}$              | RfD from IRIS, revised 2010. Electroplating, metal finishing, mining/ore processing; fumigant; combustion byproduct.                                                                                                                             |
| 646 | Hydrogen Fluoride                  | 7664-39-3  | RAIS   | —                                             | $4 \times 10^{-2}$              | RfD from CALEPA (revision date not published by source). Hydrogen fluoride — semiconductor etching, aluminum smelting, refinery alkylation.                                                                                                      |
| 647 | Hydroquinone                       | 123-31-9   | PPRTV  | $6 \times 10^{-2}$                            | $4 \times 10^{-2}$              | RfD and CSF from PPRTV Current, revised 2009. Industrial intermediate for resins, dyes, and disinfectants.                                                                                                                                       |

| No. | Constituent                | CAS No.     | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                 |
|-----|----------------------------|-------------|-------------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 648 | Hydroxyatrazine            | 2163-68-0   | RAIS        | —                                             | $6.76 \times 10^{-2}$           | RfD from OPP (revision date not published by source). Triazine herbicide — row crops, turf, rights-of-way; frequent groundwater detection.                                                            |
| 649 | Hymexazol                  | 10004-44-1  | RAIS        | —                                             | $3 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Rice and vegetable seedling fungicide.                                                                                                          |
| 650 | Imazalil                   | 35554-44-0  | IRIS / RAIS | $6.11 \times 10^{-2}$                         | $1.3 \times 10^{-2}$            | RfD from IRIS Current, revised 1987; CSF from OPP (revision date not published by source). Imazalil — post-harvest citrus fungicide; also veterinary antifungal; enters via packing-house wash water. |
| 651 | Imazamethabenz-Me p-isomer | 81405-85-8  | RAIS        | —                                             | $2.5 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Cereal broadleaf herbicide.                                                                                                                     |
| 652 | Imazapic                   | 104098-48-8 | RAIS        | —                                             | $1.37 \times 10^{-1}$           | RfD from OPP (revision date not published by source). Imazapic — rangeland, peanut, and rights-of-way herbicide.                                                                                      |
| 653 | Imazapyr Acid              | 81334-34-1  | RAIS        | —                                             | 2.5                             | RfD from OPP (revision date not published by source). Imazapyr — non-crop, forestry, and rights-of-way herbicide; utility corridor use.                                                               |
| 654 | Imazaquin                  | 81335-37-7  | IRIS        | —                                             | $2.5 \times 10^{-1}$            | RfD from IRIS Current, revised 1987. Imazaquin — soybean herbicide; also turf.                                                                                                                        |
| 655 | Imazaquin Sodium           | 81335-46-8  | RAIS        | —                                             | $2.5 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Imazaquin sodium salt — soybean and turf herbicide.                                                                                             |
| 656 | Imazaquin-ammonium         | 81335-47-9  | RAIS        | —                                             | $2.5 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Imazaquin ammonium salt — soybean herbicide.                                                                                                    |
| 657 | Imazethapyr / Pursuit      | 81335-77-5  | IRIS        | —                                             | $2.5 \times 10^{-1}$            | RfD from IRIS Current, revised 1990. Imazethapyr — soybean, bean, and alfalfa herbicide.                                                                                                              |
| 658 | Imazosulfuron              | 122548-33-8 | RAIS        | —                                             | $7.5 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                       |

| No. | Constituent                                          | CAS No.         | Source         | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                            |
|-----|------------------------------------------------------|-----------------|----------------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 659 | Imidacloprid ‡                                       | 138261-4<br>1-3 | RAIS           | —                                             | $8 \times 10^{-2}$              | ‡ Health advisory published by MN, WI — level 0.5 µg/L (Other States' Health Advisories List). RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                   |
| 660 | Imidazolidinone, 1-[(5-Nitrofurfurylidene)-amino]-2- | 555-84-0        | RAIS           | 1.8                                           | —                               | CSF from CALEPA (revision date not published by source). Nitrofurantoin antibacterial research compound.                                                                                                                         |
| 661 | Indaziflam                                           | 950782-8<br>6-2 | RAIS           | —                                             | $2 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Indaziflam — turf and landscape pre-emergent; heavy urban/HOA landscape use.                                                                                               |
| 662 | Indeno[1,2,3-cd]pyrene †                             | 193-39-5        | RAIS           | $1 \times 10^{-1}$                            | —                               | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. CSF from EPA/RPF (revision date not published by source). Combustion byproduct; diesel exhaust; urban runoff. |
| 663 | Indoxacarb                                           | 173584-4<br>4-6 | RAIS           | —                                             | $2 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Indoxacarb — turf, ornamental, and cockroach/ant bait insecticide; urban use.                                                                                              |
| 664 | Inpyrfluxam                                          | —               | RAIS           | —                                             | $2.6 \times 10^{-1}$            | RfD from OPP (revision date not published by source). SDHI fungicide for turf, soybeans, and seed treatment.                                                                                                                     |
| 665 | Iodine                                               | 7553-56-<br>2   | RAIS           | —                                             | $1 \times 10^{-2}$              | RfD from ATSDR Final (revision date not published by source). Iodine — disinfectant, sanitizer, water treatment, pharmaceutical, and feed supplement.                                                                            |
| 666 | Iodosulfuron Methyl-Sodium                           | 144550-3<br>6-7 | RAIS           | —                                             | $7.3 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                                  |
| 667 | Ipoconazole                                          | 125225-2<br>8-7 | RAIS           | —                                             | $1.5 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Triazole seed-treatment fungicide for cereals and rice.                                                                                                                    |
| 668 | Iprodione                                            | 36734-19<br>-7  | IRIS /<br>RAIS | $4.39 \times 10^{-2}$                         | $4 \times 10^{-2}$              | RfD from IRIS Current, revised 1988; CSF from OPP (revision date not published by source). Iprodione —                                                                                                                           |

| No. | Constituent                                        | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                       |
|-----|----------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                    |             |        |                                               |                                 | fungicide for turf, stone fruit, vegetables; golf course runoff.                                                                                                                                                            |
| 669 | Iprovalicarb                                       | 140923-17-7 | RAIS   | $4.47 \times 10^{-4}$                         | $2.62 \times 10^{-2}$           | RfD and CSF from OPP (revision date not published by source). Fungicide for grapes and vegetables.                                                                                                                          |
| 670 | IQ (2-Amino-3-methylimidazo-[4,5-f]quinoline)      | 76180-96-6  | RAIS   | <b>1.4</b>                                    | —                               | CSF from CALEPA (revision date not published by source). IQ — heterocyclic amine formed in cooked meat.                                                                                                                     |
| 671 | Iron / Iron and Compounds †                        | 7439-89-6   | PPRTV  | —                                             | $7 \times 10^{-1}$              | † Federal value published — SDWR in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from PPRTV Current, revised 2006. Naturally occurring; pipe corrosion; mining discharge.                        |
| 672 | Isobutyl Alcohol / Isobutanol (Isobutyl Alcohol) ‡ | 78-83-1     | IRIS   | —                                             | $3 \times 10^{-1}$              | ‡ Health advisory published by MN — level 300 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1987. Polar industrial solvent, glycol, or alcohol; wide commercial use.                          |
| 673 | Isofenphos                                         | 25311-71-1  | RAIS   | —                                             | $8 \times 10^{-5}$              | RfD from OPP (revision date not published by source). Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                               |
| 674 | Isofetamid                                         | 875915-78-9 | RAIS   | —                                             | $7.7 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Fungicide for peanuts, potatoes, vegetables.                                                                                                                          |
| 675 | Isophorone †                                       | 78-59-1     | IRIS   | $9.5 \times 10^{-4}$                          | $2 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 1992. Isophorone — solvent for inks, coatings; pesticide carrier. |
| 676 | Isopropalin                                        | 33820-53-0  | IRIS   | —                                             | $1.5 \times 10^{-2}$            | RfD from IRIS Current, revised 1987. Isopropalin — herbicide for tobacco and peppers.                                                                                                                                       |
| 677 | Isopropanol ‡                                      | 67-63-0     | PPRTV  | —                                             | <b>2</b>                        | ‡ Health advisory published by WI — level 3,000 µg/L (Other States' Health Advisories List). RfD from PPRTV Current, revised 2014. Polar industrial solvent, glycol, or alcohol; wide commercial use.                       |

| No. | Constituent                                                                  | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                     |
|-----|------------------------------------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 678 | Isopropyl Methyl Phosphonic Acid / Isopropyl methyl phosphonic acid (IMPA) † | 1832-54-8   | IRIS   | —                                             | $1 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1992. Environmental degradation product of the nerve agent sarin (GB); defense-site groundwater marker. |
| 679 | Isopropyltoluene, p-                                                         | 99-87-6     | PPRTV  | —                                             | $4 \times 10^{-3}$              | RfD from PPRTV Current, revised 2024. Petroleum/fuel component and industrial solvent.                                                                                                                                                                    |
| 680 | Isopyrazam                                                                   | 881685-58-1 | RAIS   | $6.29 \times 10^{-3}$                         | $5.5 \times 10^{-2}$            | RfD and CSF from OPP (revision date not published by source). SDHI cereal and turf fungicide.                                                                                                                                                             |
| 681 | Isotianil                                                                    | 224049-04-1 | RAIS   | —                                             | $2.7 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Rice plant-activator fungicide.                                                                                                                                                                     |
| 682 | Isoxaben                                                                     | 82558-50-7  | IRIS   | —                                             | $5 \times 10^{-2}$              | RfD from IRIS Current, revised 1991. Isoxaben — turf and ornamental pre-emergent herbicide; landscape runoff.                                                                                                                                             |
| 683 | Isoxadifen-ethyl                                                             | 163520-33-0 | RAIS   | —                                             | $3.3 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Herbicide safener used with corn herbicides.                                                                                                                                                        |
| 684 | Isoxaflutole ‡                                                               | 141112-29-0 | RAIS   | $1.14 \times 10^{-2}$                         | $2 \times 10^{-2}$              | ‡ Health advisory published by MN, WI — level 3 µg/L (Other States' Health Advisories List). RfD and CSF from OPP (revision date not published by source). Isoxaflutole — corn herbicide.                                                                 |
| 685 | Kasugamycin                                                                  | 6980-18-3   | RAIS   | —                                             | $1.1 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Agricultural antibiotic used as a bactericide and fungicide on rice, fruit, and vegetables.                                                                                                         |
| 686 | Kathon 930                                                                   | 64359-81-5  | RAIS   | —                                             | $2 \times 10^{-3}$              | RfD from OPP (revision date not published by source). Kathon 930 — isothiazolinone biocide in paints, cooling water, metalworking fluids.                                                                                                                 |
| 687 | Kresoxim-methyl                                                              | 143390-89-0 | RAIS   | $2.9 \times 10^{-3}$                          | $3.6 \times 10^{-1}$            | RfD and CSF from OPP (revision date not published by source). Strobilurin fungicide for cereals, grapes, turf.                                                                                                                                            |

| No. | Constituent                                                                                                                   | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                       |
|-----|-------------------------------------------------------------------------------------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 688 | Lactofen                                                                                                                      | 77501-63-4  | IRIS   | —                                             | $2 \times 10^{-3}$              | RfD from IRIS Current, revised 1988. Lactofen — soybean broadleaf herbicide.                                                                                                                                                                                |
| 689 | Lactonitrile                                                                                                                  | 78-97-7     | PPRTV  | —                                             | $2 \times 10^{-4}$              | RfD from SCREEN Current, revised 2017. Lactonitrile — chemical intermediate for lactic acid and pharmaceuticals.                                                                                                                                            |
| 690 | Lake Red C (D and C Red No. 9)                                                                                                | 5160-02-1   | RAIS   | $5.3 \times 10^{-3}$                          | —                               | CSF from CALEPA (revision date not published by source). Lake Red C — pigment for inks, paints, and cosmetics.                                                                                                                                              |
| 691 | Lanthanum                                                                                                                     | 7439-91-0   | PPRTV  | —                                             | $5 \times 10^{-5}$              | RfD from PPRTV, revised 2018. Rare-earth phosphate-binding pharmaceutical (renal patients); water-treatment P-removal media; catalysts, optical glass, batteries.                                                                                           |
| 692 | Lanthanum Acetate Hydrate                                                                                                     | 100587-90-4 | PPRTV  | —                                             | $2.08 \times 10^{-5}$           | RfD from PPRTV Current (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                                           |
| 693 | Lasiocarpine                                                                                                                  | 303-34-4    | RAIS   | 7.8                                           | —                               | CSF from CALEPA (revision date not published by source). Lasiocarpine — pyrrolizidine alkaloid plant toxin; herbal contaminant.                                                                                                                             |
| 694 | Lead acetate                                                                                                                  | 301-04-2    | RAIS   | $2.1 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                                                  |
| 695 | Lead and Compounds / Lead and compounds (inorganic) / Lead and Compounds (with other sources of lead present, see Guidance) † | 7439-92-1   | RAIS   | $8.5 \times 10^{-3}$                          | —                               | † Federal value published — MCL (Action Level) in the 2018 EPA Drinking Water Standards and Health Advisories Tables. CSF from CALEPA (revision date not published by source). Lead service lines & solder; legacy paint & gasoline; ammunition; batteries. |
| 696 | Lead Chromate                                                                                                                 | 7758-97-6   | RAIS   | $5 \times 10^{-1}$                            | $2 \times 10^{-2}$              | RfD and CSF from CALEPA (revision date not published by source). Metal oxyanion — naturally occurring, industrial plating, or mining discharge.                                                                                                             |

| No. | Constituent                                    | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                             |
|-----|------------------------------------------------|------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 697 | Lead Phosphate                                 | 7446-27-7  | RAIS   | $8.5 \times 10^{-3}$                          | —                               | CSF from CALEPA (revision date not published by source). Pigment and PVC heat stabiliser; legacy paint and plastics additive.                                                                                     |
| 698 | Lead subacetate                                | 1335-32-6  | RAIS   | $3.8 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                        |
| 699 | Lewisite                                       | 541-25-3   | PPRTV  | —                                             | $5 \times 10^{-6}$              | RfD from PPRTV Current, revised 2015. Lewisite — chemical warfare agent; legacy defense site contaminant.                                                                                                         |
| 700 | Linuron ‡                                      | 330-55-2   | IRIS   | —                                             | $2 \times 10^{-3}$              | ‡ Health advisory published by MN — level 1 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1989. Modern agricultural pesticide or biocide.                                           |
| 701 | Lithium                                        | 7439-93-2  | PPRTV  | —                                             | $2 \times 10^{-3}$              | RfD from PPRTV Current, revised 2008. Li-ion batteries; naturally occurring in AZ groundwater; pharmaceuticals; UCMR5.                                                                                            |
| 702 | Lithium bis[(trifluoromethyl)sulfonyl]azani de | 90076-65-6 | RAIS   | —                                             | $3 \times 10^{-4}$              | RfD from HHTV Current (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                  |
| 703 | Lithium Perchlorate                            | 7791-03-9  | IRIS   | —                                             | $7 \times 10^{-4}$              | RfD from IRIS Current (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                  |
| 704 | Malathion †                                    | 121-75-5   | IRIS   | —                                             | $2 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Malathion — insecticide; mosquito abatement; agriculture. |
| 705 | Maleic Anhydride                               | 108-31-6   | IRIS   | —                                             | $1 \times 10^{-1}$              | RfD from IRIS Current, revised 1988. Maleic anhydride — polyester resins, agricultural chemicals, lubricant additives.                                                                                            |

| No. | Constituent            | CAS No.     | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                               |
|-----|------------------------|-------------|-------------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 706 | Maleic Hydrazide †     | 123-33-1    | IRIS        | —                                             | $5 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Maleic hydrazide — sprout inhibitor for potatoes, onions, tobacco.          |
| 707 | Malononitrile          | 109-77-3    | PPRTV       | —                                             | $1 \times 10^{-4}$              | RfD from PPRTV Current, revised 2007. Malononitrile — pharmaceutical and dye intermediate.                                                                                                                                          |
| 708 | Mancozeb               | 8018-01-7   | RAIS        | $6.01 \times 10^{-2}$                         | $1.6 \times 10^{-2}$            | RfD and CSF from OPP (revision date not published by source). Dithiocarbamate fungicide for fruit, vegetables, and turf; degrades to ethylenethiourea.                                                                              |
| 709 | Mandestrobin           | 173662-97-0 | RAIS        | —                                             | $9.2 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                                     |
| 710 | Mandipropamid          | 374726-62-2 | RAIS        | —                                             | $5 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Fungicide for grapes, potatoes, vegetables.                                                                                                                                   |
| 711 | Maneb                  | 12427-38-2  | IRIS / RAIS | $6.01 \times 10^{-2}$                         | $5 \times 10^{-3}$              | RfD from IRIS Current, revised 1988; CSF from OPP (revision date not published by source). Dithiocarbamate fungicide for potatoes, tomatoes, and cereals.                                                                           |
| 712 | Manganese (Diet) †     | 7439-96-5   | IRIS        | —                                             | $1.4 \times 10^{-1}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1995. Naturally occurring; steel alloy; MMT fuel additive; well casing corrosion. |
| 713 | Manganese (Non-diet) † | 7439-96-5   | IRIS        | —                                             | $1.4 \times 10^{-1}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1995. Naturally occurring; steel alloy; MMT fuel additive; well casing corrosion. |
| 714 | MCPB Sodium Salt       | 6062-26-6   | RAIS        | —                                             | $4.4 \times 10^{-2}$            | RfD from OPP (revision date not published by source). MCPB sodium salt — legume and pea herbicide.                                                                                                                                  |

| No. | Constituent                                            | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                        |
|-----|--------------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 715 | MCPPP-p                                                | 16484-77-8  | RAIS   | —                                             | $4 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping.        |
| 716 | Me-A-alpha-C (2-Amino-3-methyl-9H-pyrido[2,3-b]indole) | 68006-83-7  | RAIS   | <b>1.2</b>                                    | —                               | CSF from CALEPA (revision date not published by source). MeA-alpha-C — heterocyclic amine from cooked meat and tobacco smoke.                |
| 717 | Mefenpyr-diethyl (HOE 107892)                          | 135590-91-9 | RAIS   | —                                             | $5.1 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Herbicide safener used with cereal herbicides.                                         |
| 718 | Mefentrifluconazole                                    | —           | RAIS   | —                                             | $3.5 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Triazole fungicide for cereals, soybeans, and corn.                                    |
| 719 | Mefluidide                                             | 53780-34-0  | RAIS   | —                                             | $1.5 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Mefluidide — turf and rangeland growth regulator.                                      |
| 720 | Melphalan                                              | 148-82-3    | RAIS   | $1.3 \times 10^2$                             | —                               | CSF from CALEPA (revision date not published by source). Melphalan — antineoplastic chemotherapy agent.                                      |
| 721 | Mephosfolan                                            | 950-10-7    | RAIS   | —                                             | $9 \times 10^{-5}$              | RfD from HEAST Current (revision date not published by source). Organophosphate systemic insecticide for cotton and rice; not US-registered. |
| 722 | Mepiquat Chloride                                      | 24307-26-4  | IRIS   | —                                             | $3 \times 10^{-2}$              | RfD from IRIS Current, revised 1988. Mepiquat chloride — cotton growth regulator.                                                            |
| 723 | Meptyldinocap                                          | 131-72-6    | RAIS   | —                                             | $5 \times 10^{-3}$              | RfD from OPP (revision date not published by source). Meptyldinocap — powdery mildew fungicide for grapes and cucurbits.                     |
| 724 | Mercaptobenzothiazole, 2-                              | 149-30-4    | PPRTV  | $1.1 \times 10^{-2}$                          | $4 \times 10^{-3}$              | RfD and CSF from PPRTV Current, revised 2016. Rubber vulcanisation accelerator; corrosion inhibitor in antifreeze and cooling systems.       |

| No. | Constituent                              | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                   |
|-----|------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 725 | Mercuric chloride (HgCl <sub>2</sub> ) † | 7487-94-7   | IRIS   | —                                             | $3 \times 10^{-4}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS, revised 1995. Laboratory preservative and fixative; historic antiseptic and wood preservative; chemical catalyst. |
| 726 | Mercuric Sulfide                         | 1344-48-5   | RAIS   | —                                             | $3 \times 10^{-4}$              | Surrogate value — See Mercuric Chloride. Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                                              |
| 727 | Mercury (elemental)                      | 7439-97-6   | RAIS   | —                                             | $1.6 \times 10^{-4}$            | RfD from CALEPA (revision date not published by source). Dental amalgam; fluorescent lamps; coal combustion; mining legacy.                                                                                                             |
| 728 | Mercury, Inorganic Salts                 | —           | RAIS   | —                                             | $3 \times 10^{-4}$              | Surrogate value — See Mercuric Chloride. Dental amalgam, fluorescent lamps, industrial catalyst; coal combustion.                                                                                                                       |
| 729 | Merphos                                  | 150-50-5    | IRIS   | —                                             | $3 \times 10^{-5}$              | RfD from IRIS Current, revised 1992. Cotton defoliant (tributyl phosphorotrithioite); organophosphorus, not an insecticide.                                                                                                             |
| 730 | Mesosulfuron methyl                      | 208465-21-8 | RAIS   | —                                             | 1.55                            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                                         |
| 731 | Mesotrione                               | 104206-82-8 | RAIS   | —                                             | $7.1 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Mesotrione — corn and turf herbicide; frequently detected in surface water.                                                                                                       |
| 732 | Metaflumizone                            | 139968-49-3 | RAIS   | —                                             | $4 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Metaflumizone — ant/roach bait and veterinary flea product.                                                                                                                       |
| 733 | Metalaxyl ‡                              | 57837-19-1  | IRIS   | —                                             | $6 \times 10^{-2}$              | ‡ Health advisory published by WI — level 800 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1987. Metalaxyl — fungicide for turf, vegetables, ornamentals; widely detected in urban runoff.               |

| No. | Constituent                | CAS No.         | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                   |
|-----|----------------------------|-----------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 734 | Metaldehyde                | 108-62-3        | RAIS   | —                                             | $1 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Ozonation/oxidation byproduct; also industrial resin and preservative use.                                                                                        |
| 735 | Metconazole                | 125116-2<br>3-6 | RAIS   | —                                             | $4 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Triazole fungicide for cereals, canola, and turf.                                                                                                                 |
| 736 | Methacrylonitrile ‡        | 126-98-7        | IRIS   | —                                             | $1 \times 10^{-4}$              | ‡ Health advisory published by WI — level 1 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1988. Methacrylonitrile — plastics and elastomer manufacture.                                   |
| 737 | Methamidophos              | 10265-92<br>-6  | IRIS   | —                                             | $5 \times 10^{-5}$              | RfD from IRIS Current, revised 1987. Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                                            |
| 738 | Methanol ‡                 | 67-56-1         | IRIS   | —                                             | 2                               | ‡ Health advisory published by MN — level 3,000 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 2013. Windshield washer fluid; antifreeze; fuel; industrial feedstock.                      |
| 739 | Methidathion               | 950-37-8        | IRIS   | —                                             | $1 \times 10^{-3}$              | RfD from IRIS Current, revised 1989. Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                                            |
| 740 | Methiozolin                | 403640-2<br>7-7 | RAIS   | —                                             | $4.3 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Turf fungicide; golf course and sod runoff.                                                                                                                       |
| 741 | Methomyl †                 | 16752-77-<br>5  | IRIS   | —                                             | $2.5 \times 10^{-2}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Carbamate insecticide/fungicide — agriculture and horticulture. |
| 742 | Methoxy-5-nitroaniline, 2- | 99-59-2         | RAIS   | $4.9 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                  |

| No. | Constituent                                                                     | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                          |
|-----|---------------------------------------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 743 | Methoxychlor †                                                                  | 72-43-5     | IRIS   | —                                             | $5 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1993. Methoxychlor — insecticide, cancelled in US 2003.                  |
| 744 | Methoxyethanol Acetate, 2-                                                      | 110-49-6    | PPRTV  | —                                             | $8 \times 10^{-3}$              | RfD from PPRTV Current, revised 2011. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                                                       |
| 745 | Methoxyethanol, 2-                                                              | 109-86-4    | PPRTV  | —                                             | $5 \times 10^{-3}$              | RfD from PPRTV Current, revised 2011. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                                                       |
| 746 | Methoxyfenozide                                                                 | 161050-58-4 | RAIS   | —                                             | $1 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                |
| 747 | Methyl Acetate                                                                  | 79-20-9     | PPRTV  | —                                             | 1                               | RfD from SCREEN Current, revised 2010. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                                                      |
| 748 | Methyl Acrylate                                                                 | 96-33-3     | RAIS   | —                                             | $3 \times 10^{-2}$              | RfD from HEAST Archive (revision date not published by source). Methyl acrylate — acrylic fibers, paints, adhesives, textile coatings.                                                                         |
| 749 | Methyl Ethyl Ketone (2-Butanone) / Methyl ethyl ketone (MEK) †                  | 78-93-3     | IRIS   | —                                             | $6 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2003. MEK — lacquers, adhesives, printing inks; degreaser.   |
| 750 | Methyl Hydrazine                                                                | 60-34-4     | PPRTV  | 3                                             | $1 \times 10^{-3}$              | RfD from PPRTV Current, revised 2010; CSF from PPRTV Archive, revised 2010. Methylhydrazine — rocket propellant; chemical intermediate.                                                                        |
| 751 | Methyl Isobutyl Ketone (4-methyl-2-pentanone) / Methyl isobutyl ketone (MIBK) ‡ | 108-10-1    | RAIS   | —                                             | $8 \times 10^{-2}$              | ‡ Health advisory published by MN, CA — level 120 µg/L (Other States' Health Advisories List). RfD from HEAST Archive (revision date not published by source). MIBK — paints/coatings solvent; ore extraction. |

| No. | Constituent                                                                         | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                                                                                       |
|-----|-------------------------------------------------------------------------------------|------------|--------|-----------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 752 | Methyl Methacrylate                                                                 | 80-62-6    | IRIS   | —                                             | 1.4                             | RfD from IRIS Current, revised 1998. Methyl methacrylate — acrylic sheet/Plexiglas, dental products, bone cement, nail products.                                                                                                                                                                                                            |
| 753 | Methyl methanesulfonate                                                             | 66-27-3    | RAIS   | $9.9 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). Laboratory alkylating agent and mutagen; chemical synthesis reagent.                                                                                                                                                                                                               |
| 754 | Methyl Parathion †                                                                  | 298-00-0   | IRIS   | —                                             | $2.5 \times 10^{-4}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                                             |
| 755 | Methyl Phosphonic Acid                                                              | 993-13-5   | PPRTV  | —                                             | $6 \times 10^{-2}$              | RfD from SCREEN Current, revised 2009. Terminal degradation product of organophosphorus nerve agents; defense-site groundwater marker.                                                                                                                                                                                                      |
| 756 | Methyl Styrene (Mixed Isomers)                                                      | 25013-15-4 | RAIS   | —                                             | $6 \times 10^{-3}$              | RfD from HEAST Current (revision date not published by source). Vinyltoluene — polyester resins, coatings, and polymer manufacture.                                                                                                                                                                                                         |
| 757 | Methyl tert-Butyl Ether (MTBE) †‡                                                   | 1634-04-4  | RAIS   | $1.8 \times 10^{-3}$                          | —                               | † Federal value published — Drinking Water Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. ‡ Health advisory published by MN — level 60 µg/L (Other States' Health Advisories List). CSF from CALEPA (revision date not published by source). Gasoline oxygenate (MTBE); leaking underground storage tanks. |
| 758 | Methyl-1,4-benzenediamine dihydrochloride, 2- / Toluene-2,5-diamine dihydrochloride | 615-45-2   | PPRTV  | —                                             | $3 \times 10^{-4}$              | RfD from SCREEN Current, revised 2013. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                                                                                                                        |
| 759 | Methyl-1-nitroanthraquinone, 2-                                                     | 129-15-7   | RAIS   | 4.3                                           | —                               | CSF from CALEPA (revision date not published by source). 2-Methyl-1-nitroanthraquinone — dye intermediate.                                                                                                                                                                                                                                  |

| No. | Constituent                                     | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                               |
|-----|-------------------------------------------------|------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 760 | Methyl-5-Nitroaniline, 2- ‡                     | 99-55-8    | PPRTV  | $9 \times 10^{-3}$                            | $2 \times 10^{-2}$              | ‡ Health advisory published by WI — level 4 µg/L (Other States' Health Advisories List). RfD from SCREEN Current, revised 2011; CSF from PPRTV Current, revised 2011. Dye, rubber, and polymer intermediate; nitrosamine precursor. |
| 761 | Methyl-N-nitro-N-nitrosoguanidine, N-           | 70-25-7    | RAIS   | 8.3                                           | —                               | CSF from CALEPA (revision date not published by source). Disinfection byproduct of chloramination; also industrial/rubber/tobacco sources.                                                                                          |
| 762 | Methylaniline Hydrochloride, 2-                 | 636-21-5   | RAIS   | $1.3 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                              |
| 763 | Methylantraquinone, 1-Amino-2-                  | 82-28-0    | RAIS   | $1.5 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). 1-Amino-2-methylantraquinone — textile dye intermediate.                                                                                                                   |
| 764 | Methylarsonic acid                              | 124-58-3   | RAIS   | —                                             | $1 \times 10^{-2}$              | RfD from ATSDR Final (revision date not published by source). Methylarsonic acid — organoarsenical herbicide degradate; arsenic-bearing.                                                                                            |
| 765 | Methylbenzene,1-4-diamine monohydrochloride, 2- | 74612-12-7 | PPRTV  | —                                             | $2 \times 10^{-4}$              | RfD from SCREEN Current (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                      |
| 766 | Methylbenzene-1,4-diamine sulfate, 2-           | 615-50-9   | PPRTV  | $1 \times 10^{-1}$                            | $3 \times 10^{-4}$              | RfD and CSF from SCREEN Current, revised 2013. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                        |
| 767 | Methylcholanthrene, 3-                          | 56-49-5    | RAIS   | $2.2 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.                                                                                   |
| 768 | Methylchrysene, 5-                              | 3697-24-3  | RAIS   | $1.2 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.                                                                                   |

| No. | Constituent                                                                 | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                                                            |
|-----|-----------------------------------------------------------------------------|------------|--------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 769 | Methylene bis(2-methylaniline), 4,4'-                                       | 838-88-0   | RAIS   | $9.2 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                                                                           |
| 770 | Methylene Chloride / Dichloromethane †                                      | 75-09-2    | IRIS   | $3.3 \times 10^{-3}$                          | $6 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2011; CSF from IRIS Current (most protective of the published oral slope factors), revised 2011. Paint stripper; degreaser; pharmaceutical extraction; aerosol propellant. |
| 771 | Methylene-bis(2-chloroaniline), 4,4'- / 4,4'-Methylenebis (2-chloroaniline) | 101-14-4   | PPRTV  | $1 \times 10^{-1}$                            | $2 \times 10^{-3}$              | RfD and CSF from PPRTV Current, revised 2006. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                                                                                      |
| 772 | Methylene-bis(N,N-dimethyl) Aniline, 4,4'-                                  | 101-61-1   | IRIS   | $4.6 \times 10^{-2}$                          | —                               | CSF from IRIS Current, revised 1989. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                                                                                               |
| 773 | Methylenabisbenzenamine, 4,4'-                                              | 101-77-9   | RAIS   | 1.6                                           | —                               | CSF from CALEPA (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                                                                           |
| 774 | Methylenedianiline dihydrochloride, 4,4'-                                   | 13552-44-8 | RAIS   | 1.6                                           | —                               | CSF from CALEPA (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                                                                           |
| 775 | Methylmercury (MeHg)                                                        | 22967-92-6 | IRIS   | —                                             | $1 \times 10^{-4}$              | RfD from IRIS, revised 2001. Environmental methylation product of inorganic mercury in anaerobic sediment and biosolids; bioaccumulates in fish.                                                                                                                                                                 |
| 776 | Methylnaphthalene, 1-                                                       | 90-12-0    | PPRTV  | $5.1 \times 10^{-2}$                          | $1 \times 10^{-2}$              | RfD from PPRTV Current, revised 2024; CSF from SCREEN Current, revised 2024. 1-Methylnaphthalene — petroleum/diesel component; coal tar.                                                                                                                                                                         |
| 777 | Methylnaphthalene, 2- ‡                                                     | 91-57-6    | IRIS   | —                                             | $4 \times 10^{-3}$              | ‡ Health advisory published by MN — level 8 µg/L (Other States' Health Advisories List). RfD from IRIS                                                                                                                                                                                                           |

| No. | Constituent               | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                        |
|-----|---------------------------|-------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                           |             |        |                                               |                                 | Current, revised 2003. 2-Methylnaphthalene — petroleum and coal tar component; dye intermediate.                                                                                                                                             |
| 778 | Methylstyrene, Alpha-     | 98-83-9     | RAIS   | —                                             | $7 \times 10^{-2}$              | RfD from HEAST Current (revision date not published by source). alpha-Methylstyrene — resins, coatings, and adhesives.                                                                                                                       |
| 779 | Methylthiouracil          | 56-04-2     | RAIS   | $4 \times 10^{-1}$                            | —                               | CSF from CALEPA (revision date not published by source). Methylthiouracil — antithyroid drug.                                                                                                                                                |
| 780 | Metiram                   | 9006-42-2   | RAIS   | $6.01 \times 10^{-2}$                         | $4 \times 10^{-4}$              | RfD and CSF from OPP (revision date not published by source). Dithiocarbamate fungicide for fruit and vegetables.                                                                                                                            |
| 781 | Metolachlor †             | 51218-45-2  | IRIS   | —                                             | $1.5 \times 10^{-1}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1990. Metolachlor — corn/soybean pre-emergent herbicide.                                   |
| 782 | Metrafenone               | 220899-03-6 | RAIS   | —                                             | $2.49 \times 10^{-1}$           | RfD from OPP (revision date not published by source). Powdery mildew fungicide for grapes, cereals.                                                                                                                                          |
| 783 | Metribuzin †              | 21087-64-9  | IRIS   | —                                             | $2.5 \times 10^{-2}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1993. Triazine herbicide — row crops, turf, rights-of-way; frequent groundwater detection. |
| 784 | Metsulfuron-methyl / Ally | 74223-64-6  | IRIS   | —                                             | $2.5 \times 10^{-1}$            | RfD from IRIS Current, revised 1988. Modern agricultural pesticide or biocide.                                                                                                                                                               |
| 785 | Mevinphos                 | 7786-34-7   | RAIS   | —                                             | $2.5 \times 10^{-5}$            | RfD from OPP (revision date not published by source). Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                                                |
| 786 | MGK 264                   | 113-48-4    | RAIS   | —                                             | $6.1 \times 10^{-2}$            | RfD from OPP (revision date not published by source). MGK 264 — pyrethroid synergist in household and pet insecticide sprays.                                                                                                                |

| No. | Constituent                            | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                      |
|-----|----------------------------------------|------------|-------------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 787 | Michler's ketone                       | 90-94-8    | RAIS        | $8.6 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Dye and pigment intermediate for triarylmethane colorants; carbonless copy paper.                                                                                 |
| 788 | Midrange Aliphatic Hydrocarbon Streams | —          | PPRTV       | —                                             | $1 \times 10^{-2}$              | RfD from SCREEN Current, revised 2006. Petroleum distillate solvent — degreasers, paints, and cleaning products.                                                                                                           |
| 789 | Mineral oils / White Mineral Oil       | 8012-95-1  | PPRTV       | —                                             | 3                               | RfD from PPRTV Current, revised 2009. Mineral oil — lubricants, hydraulic fluid, cosmetics, food-grade processing oil.                                                                                                     |
| 790 | Mirex                                  | 2385-85-5  | IRIS / RAIS | $1.8 \times 10^1$                             | $2 \times 10^{-4}$              | RfD from IRIS Current, revised 1992; CSF from CALEPA (revision date not published by source). Legacy organochlorine pesticide; most US uses cancelled; persistent soil residue.                                            |
| 791 | Mitomycin C                            | 50-07-7    | RAIS        | $8.2 \times 10^3$                             | —                               | CSF from CALEPA (revision date not published by source). Mitomycin C — antineoplastic antibiotic.                                                                                                                          |
| 792 | Molinate                               | 2212-67-1  | IRIS        | —                                             | $2 \times 10^{-3}$              | RfD from IRIS Current, revised 1988. Carbamate insecticide/fungicide — agriculture and horticulture.                                                                                                                       |
| 793 | Molybdenum †                           | 7439-98-7  | IRIS        | —                                             | $5 \times 10^{-3}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1992. Steel alloy; lubricants; naturally occurring; irrigation drainage. |
| 794 | Monochloramine †                       | 10599-90-3 | IRIS        | —                                             | $1 \times 10^{-1}$              | † Federal value published — MRDL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1994. Dye, rubber, and polymer intermediate; nitrosamine precursor.                 |
| 795 | Monocrotaline                          | 315-22-0   | RAIS        | $1 \times 10^1$                               | —                               | CSF from CALEPA (revision date not published by source). Monocrotaline — pyrrolizidine alkaloid plant toxin; herbal supplement contaminant.                                                                                |

| No. | Constituent                             | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                             |
|-----|-----------------------------------------|------------|-------------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 796 | Monomagnesium phosphate                 | 7757-86-0  | PPRTV       | —                                             | $4.9 \times 10^1$               | RfD from PPRTV, revised 2011. Food additive and leavening agent; fertilizer; pharmaceutical excipient.                                                                                                                                                                            |
| 797 | Monomethylaniline / n-Methylaniline     | 100-61-8   | PPRTV       | —                                             | $2 \times 10^{-3}$              | RfD from PPRTV Current, revised 2005. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                                                               |
| 798 | MSMA                                    | 2163-80-6  | RAIS        | —                                             | $3 \times 10^{-2}$              | RfD from OPP (revision date not published by source). MSMA — organoarsenical herbicide for cotton, turf, rights-of-way; arsenic source.                                                                                                                                           |
| 799 | MSMA-calcium salt                       | 5902-95-4  | RAIS        | —                                             | $3 \times 10^{-2}$              | RfD from OPP (revision date not published by source). MSMA calcium salt — organoarsenical herbicide.                                                                                                                                                                              |
| 800 | Myclobutanil / Systhane                 | 88671-89-0 | IRIS        | —                                             | $2.5 \times 10^{-2}$            | RfD from IRIS Current, revised 1988. Myclobutanil — turf, grape, and ornamental fungicide; common in urban landscape runoff.                                                                                                                                                      |
| 801 | N,N'-Diphenyl-1,4-benzenediamine        | 74-31-7    | PPRTV       | —                                             | $3 \times 10^{-4}$              | RfD from SCREEN Current, revised 2009. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                                                              |
| 802 | Naled                                   | 300-76-5   | IRIS        | —                                             | $2 \times 10^{-3}$              | RfD from IRIS Current, revised 1987. Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                                                                                                      |
| 803 | Naphtha, High Flash Aromatic (HFAN)     | 64742-95-6 | PPRTV       | —                                             | $3 \times 10^{-2}$              | RfD from SCREEN Current, revised 2009. High-flash aromatic naphtha — paint/coating solvent, degreaser, pesticide carrier.                                                                                                                                                         |
| 804 | Naphthalene †                           | 91-20-3    | IRIS / RAIS | $1.2 \times 10^{-1}$                          | $2 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1998; CSF from CALEPA (revision date not published by source). Naphthalene — mothballs; fuel component; dye/resin intermediate. |
| 805 | Naphthalene, 1- acetic acid sodium salt | 61-31-4    | RAIS        | —                                             | $2.5 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Plant growth regulator (auxin) — fruit                                                                                                                                                                                      |

| No. | Constituent                     | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                |
|-----|---------------------------------|------------|--------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                 |            |        |                                               |                                 | thinning and rooting compound; nursery and orchard use.                                                                                              |
| 806 | Naphthaleneacetamide, 1-        | 86-86-2    | RAIS   | —                                             | $2.5 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                      |
| 807 | Naphthaleneacetate, Ammonium 1- | 25545-89-5 | RAIS   | —                                             | $2.5 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Plant growth regulator (auxin) — fruit thinning and rooting compound.                          |
| 808 | Naphthaleneacetate, Ethyl 1-    | 2122-70-5  | RAIS   | —                                             | $2.5 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Plant growth regulator (auxin) — fruit thinning and rooting compound.                          |
| 809 | Naphthylacetic Acid, 1-         | 86-87-3    | RAIS   | —                                             | $2.5 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Plant growth regulator (auxin) — fruit thinning and rooting compound; nursery and orchard use. |
| 810 | Naphthylamine, 2-               | 91-59-8    | RAIS   | <b>1.8</b>                                    | —                               | CSF from CALEPA (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                               |
| 811 | Napropamide                     | 15299-99-7 | IRIS   | —                                             | $1 \times 10^{-1}$              | RfD from IRIS Current, revised 1989. Modern agricultural pesticide or biocide.                                                                       |
| 812 | Nickel Acetate                  | 373-02-4   | RAIS   | —                                             | $1.1 \times 10^{-2}$            | RfD from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.           |
| 813 | Nickel Carbonate                | 3333-67-3  | RAIS   | —                                             | $1.1 \times 10^{-2}$            | RfD from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.           |
| 814 | Nickel Carbonyl                 | 13463-39-3 | RAIS   | —                                             | $1.1 \times 10^{-2}$            | RfD from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.           |

| No. | Constituent                          | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                    |
|-----|--------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 815 | Nickel chloride                      | 7718-54-9   | RAIS   | —                                             | $1.1 \times 10^{-2}$            | RfD from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                               |
| 816 | Nickel Hydroxide                     | 12054-48-7  | RAIS   | —                                             | $1.1 \times 10^{-2}$            | RfD from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                               |
| 817 | Nickel nitrate (Nickel (II) nitrate) | 13138-45-9  | RAIS   | —                                             | $1.1 \times 10^{-2}$            | RfD from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                               |
| 818 | Nickel Oxide                         | 1313-99-1   | RAIS   | —                                             | $1.1 \times 10^{-2}$            | RfD from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                               |
| 819 | Nickel Refinery Dust                 | —           | RAIS   | —                                             | $1.1 \times 10^{-2}$            | RfD from CALEPA (revision date not published by source). Nickel refining and smelting particulate emissions.                                                                                                                             |
| 820 | Nickel Soluble Salts †               | 7440-02-0   | IRIS   | —                                             | $2 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current (revision date not published by source). Stainless steel; electroplating; batteries; catalysts. |
| 821 | Nickel Subsulfide                    | 12035-72-2  | RAIS   | 1.7                                           | $1.1 \times 10^{-2}$            | RfD and CSF from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                       |
| 822 | Nickel sulfate                       | 7786-81-4   | RAIS   | —                                             | $1.1 \times 10^{-2}$            | RfD from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                               |
| 823 | Nickelocene                          | 1271-28-9   | RAIS   | $9.1 \times 10^{-1}$                          | $1.1 \times 10^{-2}$            | RfD and CSF from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                       |
| 824 | Nicosulfuron                         | 111991-09-4 | RAIS   | —                                             | 1.25                            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                                          |

| No. | Constituent                                       | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                  |
|-----|---------------------------------------------------|------------|--------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 825 | Nitrapyrin                                        | 1929-82-4  | RAIS   | —                                             | $3 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Nitrapyrin — soil nitrification inhibitor applied with fertilizer.                                                                                               |
| 826 | Nitrate (measured as nitrogen) †                  | 14797-55-8 | IRIS   | —                                             | <b>1.6</b>                      | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1991. Fertilizer runoff; septic/wastewater discharge; animal feeding operations. |
| 827 | Nitrilotriacetic acid                             | 139-13-9   | RAIS   | $5.3 \times 10^{-3}$                          | —                               | CSF from CALEPA (revision date not published by source). Chelating agent — detergent builder, boiler and cooling water treatment, metal finishing.                                                                     |
| 828 | Nitrilotriacetic acid, trisodium salt monohydrate | 18662-53-8 | RAIS   | $1 \times 10^{-2}$                            | —                               | CSF from CALEPA (revision date not published by source). Chelating agent — detergent builder, boiler and cooling water treatment, metal finishing.                                                                     |
| 829 | Nitrite (measured as nitrogen) †                  | 14797-65-0 | IRIS   | —                                             | $1 \times 10^{-1}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Wastewater nitrification intermediate; corrosion inhibitor; cured meats.   |
| 830 | Nitroacenaphthene, 5-                             | 602-87-9   | RAIS   | $1.3 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.                                                                      |
| 831 | Nitroaniline, 2- ‡                                | 88-74-4    | PPRTV  | —                                             | $1 \times 10^{-2}$              | ‡ Health advisory published by WI — level 100 µg/L (Other States' Health Advisories List). RfD from SCREEN Current, revised 2009. Dye, rubber, and polymer intermediate; nitrosamine precursor.                        |
| 832 | Nitroaniline, 3- ‡                                | 99-09-2    | PPRTV  | $2.1 \times 10^{-2}$                          | $3 \times 10^{-4}$              | ‡ Health advisory published by WI — level 2 µg/L (Other States' Health Advisories List). RfD and CSF from PPRTV Archive, revised 2009. Dye, rubber, and polymer intermediate; nitrosamine precursor.                   |

| No. | Constituent                | CAS No.   | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                         |
|-----|----------------------------|-----------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 833 | Nitroaniline, 4-           | 100-01-6  | PPRTV  | $2 \times 10^{-2}$                            | $4 \times 10^{-3}$              | RfD and CSF from PPRTV Current, revised 2009. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                   |
| 834 | Nitrobenzene ‡             | 98-95-3   | IRIS   | —                                             | $2 \times 10^{-3}$              | ‡ Health advisory published by WI — level 0.35 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 2009. Nitrobenzene — aniline mfg; explosives; shoe polish.                                         |
| 835 | Nitrocellulose †           | 9004-70-0 | PPRTV  | —                                             | $3 \times 10^3$                 | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from PPRTV Current, revised 2009. Military explosive or propellant; defense/ordnance site contaminant. |
| 836 | Nitrochrysene, 6-          | 7496-02-8 | RAIS   | $1.2 \times 10^2$                             | —                               | CSF from CALEPA (revision date not published by source). Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.                                                                             |
| 837 | Nitrofen (technical grade) | 1836-75-5 | PPRTV  | $3.8 \times 10^{-2}$                          | $3 \times 10^{-3}$              | RfD and CSF from PPRTV Current, revised 2012. Nitrofen — herbicide, US registration cancelled.                                                                                                                                |
| 838 | Nitrofluorene, 2-          | 607-57-8  | RAIS   | $1.2 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.                                                                             |
| 839 | Nitrofurantoin             | 67-20-9   | RAIS   | —                                             | $7 \times 10^{-2}$              | RfD from HEAST Current (revision date not published by source). Nitrofurantoin — urinary antibiotic.                                                                                                                          |
| 840 | Nitrofurazone              | 59-87-0   | RAIS   | 1.3                                           | —                               | CSF from CALEPA (revision date not published by source). Nitrofurazone — topical antibacterial.                                                                                                                               |
| 841 | Nitroglycerin †            | 55-63-0   | PPRTV  | $1.7 \times 10^{-2}$                          | $1 \times 10^{-4}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from PPRTV Current, revised 2006. Nitroglycerin — explosives; cardiac medication.              |
| 842 | Nitroguanidine †           | 556-88-7  | IRIS   | —                                             | $1 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health                                                                                                                               |

| No. | Constituent                                       | CAS No.    | Source       | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                              |
|-----|---------------------------------------------------|------------|--------------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                   |            |              |                                               |                                 | Advisories Tables. RfD from IRIS Current, revised 1990. Military explosive or propellant; defense/ordnance site contaminant.                                                                                                                       |
| 843 | Nitropyrene, 1-                                   | 5522-43-0  | RAIS         | 1.2                                           | —                               | CSF from CALEPA (revision date not published by source). Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.                                                                                                  |
| 844 | Nitropyrene, 4-                                   | 57835-92-4 | RAIS         | 1.2                                           | —                               | CSF from CALEPA (revision date not published by source). Combustion byproduct — vehicle exhaust, wood smoke; coal tar sealants; urban stormwater.                                                                                                  |
| 845 | Nitroso-N-ethylurea, N-                           | 759-73-9   | RAIS         | $2.7 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). Disinfection byproduct of chloramination; also industrial/rubber/tobacco sources.                                                                                                         |
| 846 | Nitroso-N-methylurea, N-                          | 684-93-5   | RAIS         | $1.2 \times 10^2$                             | —                               | CSF from CALEPA (revision date not published by source). Disinfection byproduct of chloramination; also industrial/rubber/tobacco sources.                                                                                                         |
| 847 | Nitroso-N-methylurethane, N-                      | 615-53-2   | RAIS         | $1.1 \times 10^2$                             | —                               | CSF from CALEPA (revision date not published by source). Disinfection byproduct of chloramination; also industrial/rubber/tobacco sources.                                                                                                         |
| 848 | Nitrosodibutylamine, N- / Nitroso-di-n-butylamine | 924-16-3   | IRIS         | 5.4                                           | —                               | CSF from IRIS Current, revised 1987. Rubber accelerator byproduct; disinfection byproduct.                                                                                                                                                         |
| 849 | Nitrosodiethanolamine, N-                         | 1116-54-7  | IRIS         | 2.8                                           | —                               | CSF from IRIS Current, revised 1987. Metalworking fluids; cosmetics/personal care; cutting oils.                                                                                                                                                   |
| 850 | Nitrosodiethylamine, N- ‡                         | 55-18-5    | IRIS         | $1.5 \times 10^2$                             | —                               | ‡ Health advisory published by CA — level 0.5 µg/L (Other States' Health Advisories List). CSF from IRIS Current, revised 1987. Research chemical; tobacco smoke; disinfection byproduct; rubber industry.                                         |
| 851 | Nitrosodimethylamine, N- †                        | 62-75-9    | PPRTV / IRIS | $5.1 \times 10^1$                             | $8 \times 10^{-6}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from PPRTV Current, revised 2007; CSF from IRIS Current, revised 1987. Disinfection byproduct (chloramination); rocket fuel |

| No. | Constituent                                              | CAS No.    | Source       | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                  |
|-----|----------------------------------------------------------|------------|--------------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                          |            |              |                                               |                                 | mfg; rubber/tire industry; not manufactured commercially.                                                                                                                                                                                              |
| 852 | Nitrosodiphenylamine, N- ‡                               | 86-30-6    | PPRTV / IRIS | $4.9 \times 10^{-3}$                          | $2 \times 10^{-2}$              | ‡ Health advisory published by MN — level 70 µg/L (Other States' Health Advisories List). RfD from PPRTV Archive, revised 2007; CSF from IRIS Current, revised 1987. Disinfection byproduct of chloramination; also industrial/rubber/tobacco sources. |
| 853 | Nitrosodiphenylamine, p-                                 | 156-10-5   | RAIS         | $2.2 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). Disinfection byproduct of chloramination; also industrial/rubber/tobacco sources.                                                                                                             |
| 854 | Nitrosodipropylamine, N- / Nitrosodi-N-propylamine ‡     | 621-64-7   | IRIS         | 7                                             | —                               | ‡ Health advisory published by CA — level 0.5 µg/L (Other States' Health Advisories List). CSF from IRIS Current, revised 1987. Disinfection byproduct; pesticide impurity (trifluralin).                                                              |
| 855 | Nitrosomethylethylamine, N- / Nitroso-N-methylethylamine | 10595-95-6 | IRIS         | $2.2 \times 10^1$                             | —                               | CSF from IRIS Current, revised 1988. Disinfection byproduct; tobacco smoke; research use.                                                                                                                                                              |
| 856 | Nitrosomorpholine [N-]                                   | 59-89-2    | RAIS         | 6.7                                           | —                               | CSF from CALEPA (revision date not published by source). Disinfection byproduct; metalworking fluids; cosmetics.                                                                                                                                       |
| 857 | Nitrosonornicotine, N-                                   | 16543-55-8 | RAIS         | 1.4                                           | —                               | CSF from CALEPA (revision date not published by source). Disinfection byproduct of chloramination; also industrial/rubber/tobacco sources.                                                                                                             |
| 858 | Nitrosopiperidine [N-]                                   | 100-75-4   | RAIS         | 9.4                                           | —                               | CSF from CALEPA (revision date not published by source). Disinfection byproduct; tobacco smoke.                                                                                                                                                        |
| 859 | Nitrosopyrrolidine, N-                                   | 930-55-2   | IRIS         | 2.1                                           | —                               | CSF from IRIS Current, revised 1987. Disinfection byproduct; cured meats; tobacco smoke.                                                                                                                                                               |
| 860 | Nitrotoluene, m- ‡                                       | 99-08-1    | PPRTV        | —                                             | $1 \times 10^{-4}$              | ‡ Health advisory published by WI — level 200 µg/L (Other States' Health Advisories List). RfD from SCREEN Current, revised 2009. Military explosive or propellant; defense/ordnance site contaminant.                                                 |

| No. | Constituent                                              | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                          |
|-----|----------------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 861 | Nitrotoluene, o- ‡                                       | 88-72-2     | PPRTV  | $2.2 \times 10^{-1}$                          | $9 \times 10^{-4}$              | ‡ Health advisory published by WI — level 0.15 µg/L (Other States' Health Advisories List). RfD and CSF from PPRTV Current, revised 2008. Military explosive or propellant; defense/ordnance site contaminant. |
| 862 | Nitrotoluene, p- ‡                                       | 99-99-0     | PPRTV  | $1.6 \times 10^{-2}$                          | $4 \times 10^{-3}$              | ‡ Health advisory published by WI — level 2 µg/L (Other States' Health Advisories List). RfD and CSF from PPRTV Current, revised 2007. Military explosive or propellant; defense/ordnance site contaminant.    |
| 863 | Nonane, n-                                               | 111-84-2    | PPRTV  | —                                             | $3 \times 10^{-4}$              | RfD from SCREEN Current, revised 2009. n-Nonane — fuel and solvent component.                                                                                                                                  |
| 864 | Norflurazon ‡                                            | 27314-13-2  | IRIS   | —                                             | $4 \times 10^{-2}$              | ‡ Health advisory published by WI — level 15 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1987. Norflurazon — aquatic and citrus herbicide; irrigation canal treatment.         |
| 865 | Novaluron                                                | 116714-46-6 | RAIS   | —                                             | $1.1 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Novaluron — insect growth regulator for cotton, potatoes, ornamentals.                                                                                   |
| 866 | OCDD                                                     | 3268-87-9   | RAIS   | $3.9 \times 10^1$                             | $2.33 \times 10^{-6}$           | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                      |
| 867 | OCDF                                                     | 39001-02-0  | RAIS   | $3.9 \times 10^1$                             | $2.33 \times 10^{-6}$           | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                      |
| 868 | Octabromodiphenyl Ether                                  | 32536-52-0  | IRIS   | —                                             | $3 \times 10^{-3}$              | RfD from IRIS Current, revised 1990. Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                                                   |
| 869 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) † | 2691-41-0   | IRIS   | —                                             | $5 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health                                                                                                                |

| No. | Constituent                                                                           | CAS No.     | Source      | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                       |
|-----|---------------------------------------------------------------------------------------|-------------|-------------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                                                       |             |             |                                               |                                 | Advisories Tables. RfD from IRIS Current, revised 1989. HMX — military high explosive; propellant.                                                                                                          |
| 870 | Octamethylpyrophosphoramide                                                           | 152-16-9    | RAIS        | —                                             | $2 \times 10^{-3}$              | RfD from HEAST Current (revision date not published by source). Schradan — organophosphate systemic insecticide; obsolete.                                                                                  |
| 871 | Octyl Phthalate, di-N-                                                                | 117-84-0    | PPRTV       | —                                             | $1 \times 10^{-2}$              | RfD from PPRTV Current, revised 2012. Di-n-octyl phthalate — PVC plasticizer.                                                                                                                               |
| 872 | Orthosulfamuron                                                                       | 213464-77-8 | RAIS        | —                                             | $5 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Rice sulfonylurea herbicide.                                                                                                                          |
| 873 | Oryzalin                                                                              | 19044-88-3  | IRIS / RAIS | $7.79 \times 10^{-3}$                         | $5 \times 10^{-2}$              | RfD from IRIS Current, revised 1989; CSF from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                        |
| 874 | Oxadiazole, trans-2[(Dimethylamino)-methylimino]-5-[2-(5-nitro-2-furyl)-vinyl]-1,3,4- | 55738-54-0  | RAIS        | $4.4 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Nitrofurantol antibiotic research compound.                                                                                                        |
| 875 | Oxadiazon                                                                             | 19666-30-9  | IRIS / RAIS | $7.11 \times 10^{-2}$                         | $5 \times 10^{-3}$              | RfD from IRIS Current, revised 1987; CSF from OPP (revision date not published by source). Oxadiazon — turf and ornamental pre-emergent; significant urban landscape runoff.                                |
| 876 | Oxamyl †                                                                              | 23135-22-0  | IRIS        | —                                             | $2.5 \times 10^{-2}$            | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Carbamate insecticide/fungicide — agriculture and horticulture. |
| 877 | Oxydemeton-Me                                                                         | 301-12-2    | RAIS        | —                                             | $1 \times 10^{-4}$              | RfD from OPP (revision date not published by source). Organophosphate insecticide — agricultural and (historically) residential pest control.                                                               |
| 878 | Oxyfluorfen                                                                           | 42874-03-3  | IRIS / RAIS | $7.32 \times 10^{-2}$                         | $3 \times 10^{-3}$              | RfD from IRIS Current, revised 1987; CSF from OPP (revision date not published by source). Diphenyl                                                                                                         |

| No. | Constituent                   | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                              |
|-----|-------------------------------|------------|--------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                               |            |        |                                               |                                 | ether herbicide for orchards, vineyards, and ornamentals.                                                                                                                                                          |
| 879 | Oxytetracycline               | 79-57-2    | RAIS   | —                                             | $1 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Oxytetracycline — veterinary/human antibiotic; aquaculture.                                                                                                  |
| 880 | Oxytetracycline calcium       | 7179-50-2  | RAIS   | —                                             | $1 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Pharmaceutical — enters wastewater through human excretion and disposal.                                                                                     |
| 881 | Oxytetracycline hydrochloride | 2058-46-0  | RAIS   | —                                             | $1 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Pharmaceutical — enters wastewater through human excretion and disposal.                                                                                     |
| 882 | Paclobutrazol                 | 76738-62-0 | IRIS   | —                                             | $1.3 \times 10^{-2}$            | RfD from IRIS Current, revised 1987. Paclobutrazol — turf and ornamental growth regulator; golf course and nursery use.                                                                                            |
| 883 | Paraquat Dichloride †         | 1910-42-5  | IRIS   | —                                             | $4.5 \times 10^{-3}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1988. Paraquat — restricted-use herbicide; highly acutely toxic. |
| 884 | Parathion                     | 56-38-2    | RAIS   | —                                             | $3 \times 10^{-5}$              | RfD from OPP (revision date not published by source). Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                      |
| 885 | Pebulate                      | 1114-71-2  | RAIS   | —                                             | $7 \times 10^{-4}$              | RfD from OPP (revision date not published by source). Carbamate insecticide/fungicide — agriculture and horticulture.                                                                                              |
| 886 | PeCDD, 2,3,7,8-               | 36088-22-9 | RAIS   | $1.3 \times 10^5$                             | $7 \times 10^{-10}$             | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                          |
| 887 | PeCDF, 1,2,3,7,8-             | 57117-41-6 | RAIS   | $3.9 \times 10^3$                             | $2.33 \times 10^{-8}$           | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant;                                                                                                                   |

| No. | Constituent                                     | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                           |
|-----|-------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                 |             |        |                                               |                                 | banned/restricted; persistent in sediment and biosolids.                                                                                                                                                        |
| 888 | PeCDF, 2,3,4,7,8-                               | 57117-31-4  | RAIS   | $3.9 \times 10^4$                             | $4 \times 10^{-9}$              | RfD from ATSDR Final (revision date not published by source); CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids. |
| 889 | Pendimethalin                                   | 40487-42-1  | IRIS   | —                                             | $4 \times 10^{-2}$              | RfD from IRIS Current, revised 1988. Modern agricultural pesticide or biocide.                                                                                                                                  |
| 890 | Penflufen                                       | 494793-67-8 | RAIS   | —                                             | $3.8 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Seed-treatment and turf fungicide.                                                                                                                        |
| 891 | Penoxsulam                                      | 219714-96-2 | RAIS   | —                                             | $1.47 \times 10^{-1}$           | RfD from OPP (revision date not published by source). Rice and turf sulfonamide herbicide.                                                                                                                      |
| 892 | Pentabromodiphenyl Ether                        | 32534-81-9  | IRIS   | —                                             | $2 \times 10^{-3}$              | RfD from IRIS Current, revised 1990. Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                                                    |
| 893 | Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99) | 60348-60-9  | IRIS   | —                                             | $1 \times 10^{-4}$              | RfD from IRIS Current, revised 2008. Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                                                    |
| 894 | Pentachlorobenzene                              | 608-93-5    | IRIS   | —                                             | $8 \times 10^{-4}$              | RfD from IRIS Current, revised 1992. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                                                                                   |
| 895 | Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)     | 65510-44-3  | RAIS   | 3.9                                           | $2.33 \times 10^{-5}$           | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                       |
| 896 | Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)     | 31508-00-6  | RAIS   | 3.9                                           | $2.33 \times 10^{-5}$           | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                       |

| No. | Constituent                                              | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                        |
|-----|----------------------------------------------------------|------------|-------------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 897 | Pentachlorobiphenyl, 2,3,3',4,4'-(PCB 105)               | 32598-14-4 | RAIS        | 3.9                                           | $2.33 \times 10^{-5}$           | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                    |
| 898 | Pentachlorobiphenyl, 2,3,4,4',5-(PCB 114)                | 74472-37-0 | RAIS        | 3.9                                           | $2.33 \times 10^{-5}$           | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                    |
| 899 | Pentachlorobiphenyl, 3,3',4,4',5-(PCB 126)               | 57465-28-8 | RAIS        | $1.3 \times 10^4$                             | $7 \times 10^{-9}$              | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                    |
| 900 | Pentachlorodibenzo-p-dioxin, 1,2,3,7,8-                  | 40321-76-4 | RAIS        | $1.3 \times 10^5$                             | $7 \times 10^{-10}$             | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                    |
| 901 | Pentachloroethane                                        | 76-01-7    | PPRTV       | $9 \times 10^{-2}$                            | —                               | CSF from PPRTV Current, revised 2007. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                                                                               |
| 902 | Pentachloronitrobenzene / Pentachloronitrobenzene (PCNB) | 82-68-8    | IRIS / RAIS | $2.6 \times 10^{-1}$                          | $3 \times 10^{-3}$              | RfD from IRIS Current, revised 1987; CSF from HEAST Current (revision date not published by source). Military explosive or propellant; defense/ordnance site contaminant.                                    |
| 903 | Pentachlorophenol †                                      | 87-86-5    | IRIS        | $4 \times 10^{-1}$                            | $5 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 2010. Pentachlorophenol — wood preservative for utility poles. |
| 904 | Pentaerythritol tetranitrate (PETN)                      | 78-11-5    | PPRTV       | $4.3 \times 10^{-3}$                          | $9 \times 10^{-3}$              | RfD from PPRTV Current, revised 2021; CSF from SCREEN Current, revised 2021. Military explosive or propellant; defense/ordnance site contaminant.                                                            |

| No. | Constituent                                                                  | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                       |
|-----|------------------------------------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 905 | Pentamethylphosphoramidate (PMPA)                                            | 10159-46-3  | PPRTV  | —                                             | $1 \times 10^{-4}$              | RfD from PPRTV Current, revised 2020. Chemical synthesis intermediate; organophosphorus degradation product.                                                                                                                                                                |
| 906 | Penthiopyrad                                                                 | 183675-82-3 | RAIS   | —                                             | $2.7 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                                                                             |
| 907 | Perchlorate (ClO <sub>4</sub> ) and Perchlorate Salts †                      | 7790-98-9   | IRIS   | —                                             | $7 \times 10^{-4}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS, revised 2005. Rocket propellant and munitions; road flares and fireworks; naturally occurring in arid Arizona soils; fertilizer impurity. |
| 908 | Perfluoro(2-propoxypropanoate)                                               | 122499-17-6 | RAIS   | —                                             | $3 \times 10^{-6}$              | RfD from DWSHA (revision date not published by source). ADONA — fluoropolymer processing aid; PFOA replacement chemistry.                                                                                                                                                   |
| 909 | Perfluorobutanesulfonate                                                     | 45187-15-3  | PPRTV  | —                                             | $3 \times 10^{-4}$              | RfD from PPRTV Current, revised 2014. Short-chain PFOA/PFOS replacement chemistry; textile and paper coatings.                                                                                                                                                              |
| 910 | Perfluorobutanesulfonic acid (PFBS) / Perfluorobutane sulfonic acid (PFBS) ‡ | 375-73-5    | PPRTV  | —                                             | $3 \times 10^{-4}$              | ‡ Health advisory published by MN, WI, CA, MI — level 0.1 µg/L (Other States' Health Advisories List). RfD from PPRTV Current, revised 2014. PFOS replacement; carpet/textile treatment; metal plating.                                                                     |
| 911 | Perfluorobutanoate                                                           | 45048-62-2  | IRIS   | —                                             | $1 \times 10^{-3}$              | RfD from IRIS Current (revision date not published by source). Short-chain PFOA/PFOS replacement chemistry; textile and paper coatings.                                                                                                                                     |
| 912 | Perfluorobutanoic acid (PFBA) ‡                                              | 375-22-4    | IRIS   | —                                             | $1 \times 10^{-3}$              | ‡ Health advisory published by MN, WI — level 7 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 2022. PFAS degradation product; paper coating; photolithography.                                                                                |
| 913 | Perfluorodecanoate                                                           | 73829-36-4  | IRIS   | —                                             | $2 \times 10^{-9}$              | RfD from IRIS Current (revision date not published by source). AFFF firefighting foam; stain/water                                                                                                                                                                          |

| No. | Constituent                            | CAS No.         | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                |
|-----|----------------------------------------|-----------------|--------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                        |                 |        |                                               |                                 | repellents; fluoropolymer manufacturing; food packaging.                                                                                                                                                                                             |
| 914 | Perfluorodecanoic acid (PFDA) ‡        | 335-76-2        | IRIS   | —                                             | $2 \times 10^{-9}$              | ‡ Health advisory published by WI — level 0.3 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 2024. AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                         |
| 915 | Perfluorododecanoate                   | 171978-9<br>5-3 | RAIS   | —                                             | $5 \times 10^{-5}$              | RfD from WI Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                                            |
| 916 | Perfluorododecanoic acid (PFDoDA) ‡    | 307-55-1        | RAIS   | —                                             | $5 \times 10^{-5}$              | ‡ Health advisory published by WI — level 0.5 µg/L (Other States' Health Advisories List). RfD from WI Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging. |
| 917 | Perfluorohexanesulfonate               | 108427-5<br>3-8 | IRIS   | —                                             | $4 \times 10^{-10}$             | RfD from IRIS Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                                          |
| 918 | Perfluorohexanesulfonic acid (PFHxS) ‡ | 355-46-4        | IRIS   | —                                             | $4 \times 10^{-10}$             | ‡ Health advisory published by MN, WI, CA, MI — level 0.003 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 2022. AFFF firefighting foam; PFOS replacement; textile/leather treatment.                                   |
| 919 | Perfluorohexanoate                     | 92612-52<br>-7  | IRIS   | —                                             | $5 \times 10^{-4}$              | RfD from IRIS Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                                          |
| 920 | Perfluorohexanoic acid (PFHxA) ‡       | 307-24-4        | IRIS   | —                                             | $4 \times 10^{-4}$              | ‡ Health advisory published by MN, WI, CA, MI — level 0.2 µg/L (Other States' Health Advisories List).                                                                                                                                               |

| No. | Constituent                           | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                                     |
|-----|---------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                       |             |        |                                               |                                 | RfD from IRIS Current (lowest chronic oral RfD, Low-confidence candidates excluded), revised 2023. Short-chain PFOA replacement; textile treatment.                                                                                                                                       |
| 921 | Perfluorononanoate                    | 72007-68-2  | RAIS   | —                                             | $3 \times 10^{-6}$              | RfD from ATSDR_PFAS (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                                                                                 |
| 922 | Perfluorononanoic acid (PFNA) ‡       | 375-95-1    | RAIS   | —                                             | $3 \times 10^{-6}$              | ‡ Health advisory published by WI, NJ, MI — level 0.006 µg/L (Other States' Health Advisories List). RfD from ATSDR_PFAS (revision date not published by source). Fluoropolymer processing aid; AFFF; consumer product coatings.                                                          |
| 923 | Perfluorooctadecanoate                | 798556-82-8 | RAIS   | —                                             | $4 \times 10^{-2}$              | RfD from WI Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                                                                                 |
| 924 | Perfluorooctadecanoic acid (PFODA)    | 16517-11-6  | RAIS   | —                                             | $4 \times 10^{-2}$              | RfD from WI Current (revision date not published by source). Long-chain PFAS; fluoropolymer processing and specialty coatings.                                                                                                                                                            |
| 925 | Perfluorooctanesulfonate              | 45298-90-6  | RAIS   | $3.95 \times 10^1$                            | $1 \times 10^{-7}$              | RfD and CSF from DWSHA (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                                                                              |
| 926 | Perfluorooctanesulfonic acid (PFOS) † | 1763-23-1   | RAIS   | $3.95 \times 10^1$                            | $1 \times 10^{-7}$              | † Federal value published — Health Advisory (2016 LHA) in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from DWSHA (revision date not published by source). AFFF firefighting foam; metal plating mist suppressant; stain repellents; carpet treatment. |
| 927 | Perfluorooctanoate                    | 45285-51-6  | RAIS   | $2.93 \times 10^4$                            | $3 \times 10^{-8}$              | RfD and CSF from DWSHA (revision date not published by source). AFFF firefighting foam;                                                                                                                                                                                                   |

| No. | Constituent                             | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                            |
|-----|-----------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                         |             |        |                                               |                                 | stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                                                                                                                                                             |
| 928 | Perfluorooctanoic acid (PFOA) †         | 335-67-1    | RAIS   | $2.93 \times 10^4$                            | $3 \times 10^{-8}$              | † Federal value published — Health Advisory (2016 LHA) in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from DWSHA (revision date not published by source). AFFF firefighting foam; fluoropolymer mfg; stain/water repellents; food packaging. |
| 929 | Perfluoropropanoate                     | 44864-55-3  | RAIS   | —                                             | $5 \times 10^{-4}$              | RfD from HHTV Current (revision date not published by source). Short-chain PFOA/PFOS replacement chemistry; textile and paper coatings.                                                                                                                                          |
| 930 | Perfluoropropanoic acid (PFPrA)         | 422-64-0    | RAIS   | —                                             | $5 \times 10^{-4}$              | RfD from HHTV Current (revision date not published by source). Short-chain PFOA/PFOS replacement chemistry; textile and paper coatings.                                                                                                                                          |
| 931 | Perfluorotetradecanoate                 | 365971-87-5 | RAIS   | —                                             | $1 \times 10^{-3}$              | RfD from WI Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                                                                        |
| 932 | Perfluorotetradecanoic acid (PFTetDA) ‡ | 376-06-7    | RAIS   | —                                             | $1 \times 10^{-3}$              | ‡ Health advisory published by WI — level 10 µg/L (Other States' Health Advisories List). RfD from WI Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                              |
| 933 | Perfluoroundecanoate                    | 196859-54-8 | RAIS   | —                                             | $3 \times 10^{-4}$              | RfD from WI Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                                                                        |
| 934 | Perfluoroundecanoic acid (PFUDA) ‡      | 2058-94-8   | RAIS   | —                                             | $3 \times 10^{-4}$              | ‡ Health advisory published by WI — level 3 µg/L (Other States' Health Advisories List). RfD from WI Current (revision date not published by source).                                                                                                                            |

| No. | Constituent                   | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                         |
|-----|-------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                               |             |        |                                               |                                 | AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                                                                                  |
| 935 | Permethrin                    | 52645-53-1  | IRIS   | —                                             | $5 \times 10^{-2}$              | RfD from IRIS Current, revised 1987. Modern agricultural pesticide or biocide.                                                                                                                                                |
| 936 | Perylene                      | 198-55-0    | PPRTV  | —                                             | $9 \times 10^{-5}$              | RfD from PPRTV Current, revised 2023. Polycyclic aromatic hydrocarbon of natural diagenetic origin in sediment; also a dye and pigment intermediate.                                                                          |
| 937 | Pethoxamid                    | 106700-29-2 | RAIS   | —                                             | $1.7 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Corn and soybean herbicide.                                                                                                                                             |
| 938 | Phenacetin                    | 62-44-2     | RAIS   | $2.2 \times 10^{-3}$                          | —                               | CSF from CALEPA (revision date not published by source). Phenacetin — withdrawn analgesic.                                                                                                                                    |
| 939 | Phenazopyridine               | 94-78-0     | RAIS   | $1.7 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Phenazopyridine — urinary analgesic.                                                                                                                                 |
| 940 | Phenazopyridine hydrochloride | 136-40-3    | RAIS   | $1.5 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Pharmaceutical — enters wastewater through human excretion and disposal.                                                                                             |
| 941 | Phenesterin                   | 3546-10-9   | RAIS   | $1.5 \times 10^2$                             | —                               | CSF from CALEPA (revision date not published by source). Phenesterin — experimental antineoplastic agent.                                                                                                                     |
| 942 | Phenmedipham                  | 13684-63-4  | IRIS   | —                                             | $2.5 \times 10^{-1}$            | RfD from IRIS Current, revised 1990. Phenmedipham — sugar beet and spinach herbicide.                                                                                                                                         |
| 943 | Phenobarbital                 | 50-06-6     | RAIS   | $4.6 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Phenobarbital — barbiturate anticonvulsant/sedative.                                                                                                                 |
| 944 | Phenol †                      | 108-95-2    | IRIS   | —                                             | $3 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2002. Phenol — resins, plastics; disinfectant; pharmaceutical intermediate. |

| No. | Constituent                                             | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                         |
|-----|---------------------------------------------------------|------------|-------------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 945 | Phenol, 2-(1-methylethoxy)-, methylcarbamate / Baygon † | 114-26-1   | IRIS / RAIS | $3.52 \times 10^{-3}$                         | $4 \times 10^{-3}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987; CSF from OPP (revision date not published by source). Carbamate insecticide/fungicide — agriculture and horticulture. |
| 946 | Phenothiazine                                           | 92-84-2    | PPRTV       | —                                             | $5 \times 10^{-4}$              | RfD from SCREEN Current, revised 2011. Phenothiazine — veterinary anthelmintic; dye and pharmaceutical precursor.                                                                                                                                                             |
| 947 | Phenothrin, d- (Sumithrin)                              | 26002-80-2 | RAIS        | —                                             | $7 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                                                                               |
| 948 | Phenoxybenzamine                                        | 59-96-1    | RAIS        | 3.1                                           | —                               | CSF from CALEPA (revision date not published by source). Pharmaceutical — enters wastewater through human excretion and disposal.                                                                                                                                             |
| 949 | Phenoxybenzamine hydrochloride                          | 63-92-3    | RAIS        | 2.7                                           | —                               | CSF from CALEPA (revision date not published by source). Pharmaceutical — enters wastewater through human excretion and disposal.                                                                                                                                             |
| 950 | Phenyl Isothiocyanate                                   | 103-72-0   | PPRTV       | —                                             | $2 \times 10^{-4}$              | RfD from SCREEN Current, revised 2009. Phenyl isothiocyanate — laboratory protein sequencing reagent.                                                                                                                                                                         |
| 951 | Phenylenediamine, m-                                    | 108-45-2   | IRIS        | —                                             | $6 \times 10^{-3}$              | RfD from IRIS Current, revised 1987. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                                                            |
| 952 | Phenylenediamine, o-                                    | 95-54-5    | PPRTV       | $1.2 \times 10^{-1}$                          | $4 \times 10^{-3}$              | RfD and CSF from PPRTV Current, revised 2016. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                                                   |
| 953 | Phenylenediamine, p-                                    | 106-50-3   | PPRTV       | —                                             | $1 \times 10^{-3}$              | RfD from SCREEN Current, revised 2016. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                                                          |
| 954 | Phenylmercuric Acetate                                  | 62-38-4    | IRIS        | —                                             | $8 \times 10^{-5}$              | RfD from IRIS Current, revised 1987. Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                                                                                        |

| No. | Constituent               | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----|---------------------------|------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 955 | Phenylphenate, sodium, O- | 132-27-4   | RAIS   | $3 \times 10^{-3}$                            | —                               | CSF from CALEPA (revision date not published by source). Sodium o-phenylphenate — disinfectant, sanitizer, and post-harvest fruit preservative.                                                                                                                                                                                                                                                                |
| 956 | Phenylphenol, 2-          | 90-43-7    | RAIS   | $1.94 \times 10^{-3}$                         | —                               | CSF from HEAST Current (revision date not published by source). Industrial intermediate for resins, dyes, and disinfectants.                                                                                                                                                                                                                                                                                   |
| 957 | PHMB                      | 32289-58-0 | RAIS   | —                                             | $2 \times 10^{-1}$              | RfD from OPP (revision date not published by source). PHMB — pool/spa sanitizer; contact lens solution; wound care.                                                                                                                                                                                                                                                                                            |
| 958 | Phorate                   | 298-02-2   | RAIS   | —                                             | $1.7 \times 10^{-4}$            | RfD from OPP (revision date not published by source). Phorate — organophosphate soil insecticide for corn and potatoes.                                                                                                                                                                                                                                                                                        |
| 959 | Phosalone                 | 2310-17-0  | RAIS   | —                                             | $2 \times 10^{-3}$              | RfD from OPP (revision date not published by source). Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                                                                                                                                                                                                                  |
| 960 | Phosmet                   | 732-11-6   | IRIS   | —                                             | $2 \times 10^{-2}$              | RfD from IRIS Current, revised 1987. Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                                                                                                                                                                                                                                   |
| 961 | Phosphine                 | 7803-51-2  | IRIS   | —                                             | $3 \times 10^{-4}$              | RfD from IRIS Current, revised 1995. Stored-grain and burrow fumigant, generated from aluminium or magnesium phosphide; semiconductor dopant gas.                                                                                                                                                                                                                                                              |
| 962 | Phosphoric Acid           | 7664-38-2  | PPRTV  | —                                             | $4.86 \times 10^1$              | RfD from PPRTV Current, revised 2011. The sources disagree: RAIS attributes 1 mg/kg-day to the current PPRTV while the PPRTV assessment listing carries $4.86 \times 10^1$ mg/kg-day at the same revision. The lower value is published here. Food and beverage acidulant (cola drinks); fertilizer manufacture; rust remover and metal cleaner; drinking water corrosion inhibitor; dental and detergent use. |

| No. | Constituent                               | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                       |
|-----|-------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 963 | Phostebupirim (Tebupirimphos)             | 96182-53-5  | RAIS   | —                                             | $4.1 \times 10^{-5}$            | RfD from OPP (revision date not published by source). Organophosphate soil insecticide for corn rootworm control.                                                                                                           |
| 964 | Phthalic Acid, p-                         | 100-21-0    | PPRTV  | —                                             | $5 \times 10^{-1}$              | RfD from PPRTV Current, revised 2020. Plasticizer in flexible PVC, cosmetics, and consumer products.                                                                                                                        |
| 965 | Phthalic Anhydride                        | 85-44-9     | IRIS   | —                                             | 2                               | RfD from IRIS Current, revised 1988. Plasticizer in flexible PVC, cosmetics, and consumer products.                                                                                                                         |
| 966 | Picloram †                                | 1918-02-1   | IRIS   | —                                             | $7 \times 10^{-2}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping. |
| 967 | Picoxystrobin                             | 117428-22-5 | RAIS   | —                                             | $4.6 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                             |
| 968 | Picramic Acid (2-Amino-4,6-dinitrophenol) | 96-91-3     | PPRTV  | —                                             | $1 \times 10^{-4}$              | RfD from SCREEN Current, revised 2009. Military explosive or propellant; defense/ordnance site contaminant.                                                                                                                 |
| 969 | Picric Acid (2,4,6-Trinitrophenol)        | 88-89-1     | PPRTV  | —                                             | $2 \times 10^{-3}$              | RfD from PPRTV Current, revised 2020. Military explosive or propellant; defense/ordnance site contaminant.                                                                                                                  |
| 970 | Pinoxaden                                 | 243973-20-8 | RAIS   | —                                             | $3 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Cereal grass herbicide.                                                                                                                                               |
| 971 | Piperonyl butoxide                        | 51-03-6     | RAIS   | —                                             | $1.6 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Pesticide synergist added to pyrethrin and pyrethroid formulations; household and structural insecticide products.                                                    |
| 972 | Pirimiphos, Methyl                        | 29232-93-7  | IRIS   | —                                             | $1 \times 10^{-2}$              | RfD from IRIS Current, revised 1987. Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                                                |

| No. | Constituent                                                                  | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                    |
|-----|------------------------------------------------------------------------------|------------|--------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 973 | Polybrominated Biphenyls                                                     | 36355-01-8 | RAIS   | $3 \times 10^1$                               | $7 \times 10^{-6}$              | RfD from HEAST Current (revision date not published by source); CSF from CALEPA (revision date not published by source). Legacy flame retardant; banned after Michigan livestock contamination incident.                                 |
| 974 | Polychlorinated Biphenyls (high risk) / Polychlorinated Biphenyls (PCBs) †   | 1336-36-3  | IRIS   | 2                                             | —                               | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. CSF from IRIS Current, revised 1996. Legacy transformer/capacitor dielectric fluid; banned 1979; persistent sediment contaminant. |
| 975 | Polychlorinated Biphenyls (low risk) / Polychlorinated Biphenyls (PCBs) †    | 1336-36-3  | IRIS   | $4 \times 10^{-1}$                            | —                               | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. CSF from IRIS Current, revised 1996. Legacy transformer/capacitor dielectric fluid; banned 1979; persistent sediment contaminant. |
| 976 | Polychlorinated Biphenyls (lowest risk) / Polychlorinated Biphenyls (PCBs) † | 1336-36-3  | IRIS   | $7 \times 10^{-2}$                            | —                               | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. CSF from IRIS Current, revised 1996. Legacy transformer/capacitor dielectric fluid; banned 1979; persistent sediment contaminant. |
| 977 | Polyphosphoric acid                                                          | 8017-16-1  | PPRTV  | —                                             | $4.9 \times 10^1$               | RfD from PPRTV, revised 2011. Corrosion inhibitor and sequestrant in drinking water systems; asphalt modifier; catalyst; fertilizer.                                                                                                     |
| 978 | Ponceau 3R                                                                   | 3564-09-8  | RAIS   | $1.6 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). Ponceau 3R — former textile and food dye.                                                                                                                                       |
| 979 | Ponceau MX (D and C Red No.5)                                                | 3761-53-3  | RAIS   | $4.5 \times 10^{-3}$                          | —                               | CSF from CALEPA (revision date not published by source). Ponceau MX — textile and cosmetic dye.                                                                                                                                          |
| 980 | Potassium 1-naphthaleneacetate                                               | 15165-79-4 | RAIS   | —                                             | $2.5 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Plant growth regulator (auxin) — fruit thinning and rooting compound.                                                                                                              |

| No. | Constituent                                                              | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                      |
|-----|--------------------------------------------------------------------------|------------|--------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 981 | Potassium Cyanide                                                        | 151-50-8   | IRIS   | —                                             | $2 \times 10^{-3}$              | RfD from IRIS Current, revised 2010. Electroplating, mining/ore processing, and combustion source.                                                                                                                                                         |
| 982 | Potassium fluorotelomer sulfonate, 6:2                                   | 59587-38-1 | RAIS   | —                                             | $2.2 \times 10^{-4}$            | RfD from HHTV Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                                                |
| 983 | Potassium Mefluidide                                                     | 83601-83-6 | RAIS   | —                                             | $1.5 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Potassium mefluidide — turf growth regulator.                                                                                                                                                        |
| 984 | Potassium Perchlorate †                                                  | 7778-74-7  | IRIS   | —                                             | $7 \times 10^{-4}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current (revision date not published by source). Inorganic anion — fertilizer, industrial, or naturally occurring source. |
| 985 | Potassium perfluorobutanesulfonate / Potassium Perfluorobutane Sulfonate | 29420-49-3 | PPRTV  | —                                             | $3 \times 10^{-4}$              | RfD from PPRTV Current, revised 2014. Short-chain PFOA/PFOS replacement chemistry; textile and paper coatings.                                                                                                                                             |
| 986 | Potassium perfluorobutanoate                                             | 2966-54-3  | IRIS   | —                                             | $2 \times 10^{-3}$              | RfD from IRIS Current (revision date not published by source). Short-chain PFOA/PFOS replacement chemistry; textile and paper coatings.                                                                                                                    |
| 987 | Potassium perfluorodecanoate                                             | 51604-85-4 | IRIS   | —                                             | $2.15 \times 10^{-9}$           | RfD from IRIS Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                                                |
| 988 | Potassium perfluorohexanesulfonate                                       | 3871-99-6  | IRIS   | —                                             | $4.4 \times 10^{-10}$           | RfD from IRIS Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                                                |
| 989 | Potassium perfluorooctanesulfonate                                       | 2795-39-3  | RAIS   | $3.95 \times 10^1$                            | $1 \times 10^{-7}$              | RfD and CSF from DWSHA (revision date not published by source). AFFF firefighting foam;                                                                                                                                                                    |

| No.  | Constituent                | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                             |
|------|----------------------------|-------------|--------|-----------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
|      |                            |             |        |                                               |                                 | stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                              |
| 990  | Potassium Silver Cyanide   | 506-61-6    | IRIS   | —                                             | $5 \times 10^{-3}$              | RfD from IRIS Current, revised 2010. Electroplating, mining/ore processing, and combustion source.                                                |
| 991  | Primisulfuron-methyl       | 86209-51-0  | RAIS   | —                                             | $2.5 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                   |
| 992  | Procarbazine               | 671-16-9    | RAIS   | $1.4 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). Procarbazine — antineoplastic agent.                                                     |
| 993  | Procarbazine hydrochloride | 366-70-1    | RAIS   | $1.2 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Pharmaceutical — enters wastewater through human excretion and disposal.                 |
| 994  | Prochloraz                 | 67747-09-5  | IRIS   | $1.5 \times 10^{-1}$                          | $9 \times 10^{-3}$              | RfD and CSF from IRIS Current, revised 1989. Imidazole fungicide for cereals, mushrooms, and ornamentals.                                         |
| 995  | Procymidone                | 32809-16-8  | RAIS   | $1.34 \times 10^{-2}$                         | —                               | CSF from OPP (revision date not published by source). Procymidone — fungicide for grapes and stone fruit; anti-androgenic.                        |
| 996  | Prodiamine                 | 29091-21-2  | RAIS   | —                                             | $1.4 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                               |
| 997  | Profenofos                 | 41198-08-7  | RAIS   | —                                             | $1.2 \times 10^{-4}$            | RfD from OPP (revision date not published by source). Organophosphate insecticide for cotton and vegetables.                                      |
| 998  | Profluralin                | 26399-36-0  | RAIS   | —                                             | $6 \times 10^{-3}$              | RfD from HEAST Current (revision date not published by source). Modern agricultural pesticide or biocide.                                         |
| 999  | Prohexadione calcium       | 127277-53-6 | RAIS   | —                                             | $2 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Growth regulator for apples and turf.                                                       |
| 1000 | Prometon †                 | 1610-18-0   | IRIS   | —                                             | $1.5 \times 10^{-2}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised |

| No.      | Constituent                                    | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                             |
|----------|------------------------------------------------|------------|-------------|-----------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                                                |            |             |                                               |                                 | 1987. Triazine herbicide — row crops, turf, rights-of-way; frequent groundwater detection.                                                                                                        |
| 100<br>1 | Prometryn                                      | 7287-19-6  | IRIS        | —                                             | $4 \times 10^{-3}$              | RfD from IRIS Current, revised 1987. Triazine herbicide — row crops, turf, rights-of-way; frequent groundwater detection.                                                                         |
| 100<br>2 | Pronamide †                                    | 23950-58-5 | IRIS        | —                                             | $7.5 \times 10^{-2}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Modern agricultural pesticide or biocide. |
| 100<br>3 | Propachlor †                                   | 1918-16-7  | IRIS        | —                                             | $1.3 \times 10^{-2}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Modern agricultural pesticide or biocide. |
| 100<br>4 | Propamocarb HCL                                | 25606-41-1 | RAIS        | —                                             | $1.2 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Propamocarb hydrochloride — fungicide for greenhouse vegetables and ornamentals.                                                            |
| 100<br>5 | Propane sultone, 1,3-                          | 1120-71-4  | RAIS        | <b>2.4</b>                                    | —                               | CSF from CALEPA (revision date not published by source). 1,3-Propane sultone — surfactant and battery electrolyte intermediate.                                                                   |
| 100<br>6 | Propanil                                       | 709-98-8   | IRIS        | —                                             | $5 \times 10^{-3}$              | RfD from IRIS Current, revised 1988. Modern agricultural pesticide or biocide.                                                                                                                    |
| 100<br>7 | Propanoic acid, 2-(2,4-dichlorophenoxy)-, (R)- | 15165-67-0 | RAIS        | —                                             | $6 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping.                                                             |
| 100<br>8 | Propargite                                     | 2312-35-8  | IRIS / RAIS | $1.92 \times 10^{-1}$                         | $2 \times 10^{-2}$              | RfD from IRIS Current, revised 1990; CSF from OPP (revision date not published by source). Propargite — miticide for fruit, nuts, cotton.                                                         |
| 100<br>9 | Propargyl Alcohol                              | 107-19-7   | IRIS        | —                                             | $2 \times 10^{-3}$              | RfD from IRIS Current, revised 1990. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                                           |

| No.              | Constituent                                        | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                        |
|------------------|----------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 101 <sub>0</sub> | Propazine †                                        | 139-40-2    | IRIS   | —                                             | $2 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Triazine herbicide — row crops, turf, rights-of-way; frequent groundwater detection. |
| 101 <sub>1</sub> | Propetamphos                                       | 31218-83-4  | RAIS   | —                                             | $5 \times 10^{-4}$              | RfD from OPP (revision date not published by source). Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                                                |
| 101 <sub>2</sub> | Propham †                                          | 122-42-9    | IRIS   | —                                             | $2 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Carbamate insecticide/fungicide — agriculture and horticulture.                      |
| 101 <sub>3</sub> | Propiconazole                                      | 60207-90-1  | IRIS   | —                                             | $1.3 \times 10^{-2}$            | RfD from IRIS Current, revised 1988. Triazole fungicide for turf, cereals, and ornamentals; also a wood preservative. Frequent in urban landscape runoff.                                                                                    |
| 101 <sub>4</sub> | Propiolactone, beta-                               | 57-57-8     | RAIS   | $1.4 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). beta-Propiolactone — sterilant for vaccines and biological products.                                                                                                                |
| 101 <sub>5</sub> | Propionic acid, 2-(2-methyl-4-chlorophenoxy) (MCP) | 93-65-2     | IRIS   | —                                             | $1 \times 10^{-3}$              | RfD from IRIS Current, revised 1989. Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping.                                                                                                                         |
| 101 <sub>6</sub> | Propoxycarbazone sodium                            | 181274-15-7 | RAIS   | —                                             | $7.48 \times 10^{-1}$           | RfD from OPP (revision date not published by source). Cereal herbicide.                                                                                                                                                                      |
| 101 <sub>7</sub> | Propyl benzene / n-Propylbenzene ‡                 | 103-65-1    | PPRTV  | —                                             | $1 \times 10^{-1}$              | ‡ Health advisory published by CA — level 260 µg/L (Other States' Health Advisories List). RfD from SCREEN Current, revised 2009. Petroleum/fuel component and industrial solvent.                                                           |
| 101 <sub>8</sub> | Propylene Glycol ‡                                 | 57-55-6     | PPRTV  | —                                             | $2 \times 10^1$                 | ‡ Health advisory published by WI — level 25,000 µg/L (Other States' Health Advisories List). RfD from                                                                                                                                       |

| No.  | Constituent                                                                  | CAS No.     | Source      | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                         |
|------|------------------------------------------------------------------------------|-------------|-------------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |                                                                              |             |             |                                               |                                 | PPRTV Current, revised 2008. Propylene glycol — deicing fluid; food additive; cosmetics; e-liquids.                                                                           |
| 1019 | Propylene Glycol Monoethyl Ether / beta-Propylene Glycol Monoethyl Ether     | 1569-02-4   | RAIS        | —                                             | $7 \times 10^{-1}$              | RfD from HEAST Archive (revision date not published by source). Polar industrial solvent, glycol, or alcohol; wide commercial use.                                            |
| 1020 | Propylene Glycol Monomethyl Ether / Propylene glycol monomethyl ether (PGME) | 107-98-2    | RAIS        | —                                             | $7 \times 10^{-1}$              | RfD from HEAST Current (revision date not published by source). Polar industrial solvent, glycol, or alcohol; wide commercial use.                                            |
| 1021 | Propylene Oxide                                                              | 75-56-9     | RAIS / IRIS | $2.4 \times 10^{-1}$                          | $1 \times 10^{-3}$              | RfD from OPP (revision date not published by source); CSF from IRIS Current, revised 1990. Propylene oxide — polyurethane foam, propylene glycol, and antifreeze manufacture. |
| 1022 | Propylthiouracil                                                             | 51-52-5     | RAIS        | 1                                             | —                               | CSF from CALEPA (revision date not published by source). Propylthiouracil — antithyroid drug.                                                                                 |
| 1023 | Proquinazid                                                                  | 189278-12-4 | RAIS        | —                                             | $4 \times 10^{-3}$              | RfD from OPP (revision date not published by source). Proquinazid — powdery mildew fungicide for grapes and cereals.                                                          |
| 1024 | Prosulfuron                                                                  | 94125-34-5  | RAIS        | —                                             | $5.3 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                               |
| 1025 | Prothioconazole                                                              | 178928-70-6 | RAIS        | —                                             | $1 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Triazole fungicide for cereals, soybeans, and canola.                                                                   |
| 1026 | Pydiflumetofen                                                               | —           | RAIS        | —                                             | $9.2 \times 10^{-2}$            | RfD from OPP (revision date not published by source). SDHI fungicide for cereals, corn, and specialty crops.                                                                  |
| 1027 | Pymetrozine                                                                  | 123312-89-0 | RAIS        | $1.19 \times 10^{-2}$                         | $8 \times 10^{-3}$              | RfD and CSF from OPP (revision date not published by source). Pymetrozine — aphid/whitefly insecticide for vegetables and ornamentals.                                        |
| 1028 | Pyraclostrobin ‡                                                             | 175013-18-0 | RAIS        | —                                             | $3.4 \times 10^{-2}$            | ‡ Health advisory published by MN — level 100 µg/L (Other States' Health Advisories List). RfD from OPP                                                                       |

| No.      | Constituent                         | CAS No.         | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                 |
|----------|-------------------------------------|-----------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                                     |                 |        |                                               |                                 | (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                    |
| 102<br>9 | Pyraflufen ethyl                    | 129630-1<br>9-9 | RAIS   | $3.32 \times 10^{-2}$                         | $2 \times 10^{-1}$              | RfD and CSF from OPP (revision date not published by source). Pyraflufen-ethyl — burndown and turf broadleaf herbicide.                                                                               |
| 103<br>0 | Pyrasulfotole                       | 365400-1<br>1-9 | RAIS   | —                                             | $1 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Cereal broadleaf herbicide.                                                                                                                     |
| 103<br>1 | Pyrene †                            | 129-00-0        | IRIS   | —                                             | $3 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1990. Combustion byproduct; coal tar; urban runoff. |
| 103<br>2 | Pyrethrins                          | 8003-34-<br>7   | RAIS   | —                                             | $4 \times 10^{-3}$              | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                       |
| 103<br>3 | Pyridaben                           | 96489-71<br>-3  | RAIS   | —                                             | $2.2 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Pyridaben — miticide for fruit, nuts, ornamentals.                                                                                              |
| 103<br>4 | Pyridalyl                           | 179101-8<br>1-6 | RAIS   | —                                             | $3.4 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Pyridalyl — insecticide for vegetables and cotton.                                                                                              |
| 103<br>5 | Pyridate                            | 55512-33<br>-9  | RAIS   | —                                             | $1.1 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Pyridate — corn, cereal, and mint herbicide.                                                                                                    |
| 103<br>6 | Pyridine                            | 110-86-1        | IRIS   | —                                             | $1 \times 10^{-3}$              | RfD from IRIS Current, revised 1987. Pyridine — solvent; pharmaceutical/pesticide intermediate.                                                                                                       |
| 103<br>7 | Pyrido(2,3-b)indole,<br>2-Amino-9H- | 26148-68<br>-5  | RAIS   | $4 \times 10^{-1}$                            | —                               | CSF from CALEPA (revision date not published by source). A-alpha-C — heterocyclic amine from cooked meat and tobacco smoke.                                                                           |
| 103<br>8 | Pyrifluquinazon                     | 337458-2<br>7-2 | RAIS   | —                                             | $6 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Insecticide for fruit and vegetables.                                                                                                           |

| No.      | Constituent                                                                  | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                    |
|----------|------------------------------------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 103<br>9 | Pyrimethanil                                                                 | 53112-28-0  | RAIS   | —                                             | $1.7 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Pyrimethanil — post-harvest fruit and grape fungicide.                                                                                                             |
| 104<br>0 | Pyrimidinecarboxylic acid, 4-, 6-amino-5-chloro-2-cyclopropyl-, methyl ester | 858954-83-3 | RAIS   | —                                             | <b>2.79</b>                     | RfD from OPP (revision date not published by source). Aminopyralid-related herbicide intermediate for pasture and rangeland use.                                                                                         |
| 104<br>1 | Pyriofenone                                                                  | 688046-61-9 | RAIS   | —                                             | $9.1 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Powdery mildew fungicide for grapes and cucurbits.                                                                                                                 |
| 104<br>2 | Pyriproxyfen                                                                 | 95737-68-1  | RAIS   | —                                             | $3.5 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Pyriproxyfen — insect growth regulator; pet flea products and mosquito control.                                                                                    |
| 104<br>3 | Pyrithiobac Sodium                                                           | 123343-16-8 | RAIS   | $1.05 \times 10^{-3}$                         | $5.87 \times 10^{-1}$           | RfD and CSF from OPP (revision date not published by source). Cotton and soybean herbicide.                                                                                                                              |
| 104<br>4 | Pyroxasulfone ‡                                                              | 447399-55-5 | RAIS   | —                                             | $2 \times 10^{-2}$              | ‡ Health advisory published by MN — level 40 µg/L (Other States' Health Advisories List). RfD from OPP (revision date not published by source). Corn and soybean pre-emergent herbicide.                                 |
| 104<br>5 | Pyroxsulam                                                                   | 422556-08-9 | RAIS   | —                                             | <b>1</b>                        | RfD from OPP (revision date not published by source). Cereal sulfonamide herbicide.                                                                                                                                      |
| 104<br>6 | Quinalphos                                                                   | 13593-03-8  | IRIS   | —                                             | $5 \times 10^{-4}$              | RfD from IRIS Current, revised 1987. Organophosphate insecticide for cotton and rice (not US-registered).                                                                                                                |
| 104<br>7 | Quinchlorac                                                                  | 84087-01-4  | RAIS   | —                                             | $3.8 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Herbicide for rice and turf; common lawn-care crabgrass product.                                                                                                   |
| 104<br>8 | Quinoline ‡                                                                  | 91-22-5     | IRIS   | <b>3</b>                                      | —                               | ‡ Health advisory published by MN — level 0.03 µg/L (Other States' Health Advisories List). CSF from IRIS Current, revised 2001. Quinoline — coal tar component; pharmaceutical and dye intermediate; wood preservative. |

| No.  | Constituent               | CAS No.     | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                  |
|------|---------------------------|-------------|-------------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1049 | Quinoxifen                | 124495-18-7 | RAIS        | —                                             | $2 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Quinoxifen — powdery mildew fungicide for grapes and cereals.                                                                                    |
| 1050 | Quizalofop-ethyl / Assure | 76578-14-8  | IRIS        | —                                             | $9 \times 10^{-3}$              | RfD from IRIS Current, revised 1991. Quizalofop-ethyl — grass herbicide.                                                                                                                               |
| 1051 | Quizalofop-P ethyl        | 100646-51-3 | RAIS        | —                                             | $9 \times 10^{-3}$              | RfD from OPP (revision date not published by source). Quizalofop-P-ethyl — grass herbicide for broadleaf crops.                                                                                        |
| 1052 | Reserpine                 | 50-55-5     | RAIS        | $1.1 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). Reserpine — antihypertensive.                                                                                                                 |
| 1053 | Resmethrin                | 10453-86-8  | IRIS / RAIS | $5.62 \times 10^{-2}$                         | $3 \times 10^{-2}$              | RfD from IRIS Current, revised 1988; CSF from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                   |
| 1054 | Rimsulfuron               | 122931-48-0 | RAIS        | —                                             | $1.18 \times 10^{-1}$           | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                        |
| 1055 | Ronnel                    | 299-84-3    | RAIS        | —                                             | $5 \times 10^{-2}$              | RfD from HEAST Current (revision date not published by source). Ronnel — organophosphate insecticide, largely discontinued.                                                                            |
| 1056 | Rotenone                  | 83-79-4     | IRIS        | —                                             | $4 \times 10^{-3}$              | RfD from IRIS Current, revised 1988. Rotenone — botanical insecticide and fisheries piscicide for lake renovation.                                                                                     |
| 1057 | Saflufenacil ‡            | 372137-35-4 | RAIS        | —                                             | $4.6 \times 10^{-2}$            | ‡ Health advisory published by WI — level 460 µg/L (Other States' Health Advisories List). RfD from OPP (revision date not published by source). Saflufenacil — corn, soybean, and burndown herbicide. |
| 1058 | Safrole                   | 94-59-7     | RAIS        | $2.2 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Safrole — sassafras oil component; fragrance and flavor; MDMA precursor.                                                                      |

| No.  | Constituent                         | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                          |
|------|-------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1059 | Sedaxane                            | 874967-67-6 | RAIS   | —                                             | $1.1 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Seed-treatment fungicide for cereals and corn.                                                                                                                           |
| 1060 | Selenious Acid                      | 7783-00-8   | IRIS   | —                                             | $5 \times 10^{-3}$              | RfD from IRIS Current, revised 1991. Metal oxyanion — naturally occurring, industrial plating, or mining discharge.                                                                                                            |
| 1061 | Selenium / Selenium and Compounds † | 7782-49-2   | IRIS   | —                                             | $5 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1991. Naturally occurring in AZ soils; irrigation drainage; electronics; supplements.    |
| 1062 | Selenium hexafluoride               | 7783-79-1   | RAIS   | —                                             | $4 \times 10^{-2}$              | RfD from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                     |
| 1063 | Selenium Sulfide                    | 7446-34-6   | RAIS   | —                                             | $5 \times 10^{-3}$              | RfD from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                     |
| 1064 | Selenourea                          | 630-10-4    | RAIS   | —                                             | $5 \times 10^{-3}$              | RfD from HEAST Archive (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                              |
| 1065 | Sethoxydim                          | 74051-80-2  | IRIS   | —                                             | $9 \times 10^{-2}$              | RfD from IRIS Current, revised 1989. Sethoxydim — grass herbicide for vegetables and broadleaf crops.                                                                                                                          |
| 1066 | Siduron                             | 1982-49-6   | RAIS   | —                                             | $1.5 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Siduron — turf pre-emergent herbicide; lawn and golf course use.                                                                                                         |
| 1067 | Silver †                            | 7440-22-4   | IRIS   | —                                             | $5 \times 10^{-3}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1991. Photographic processing; antimicrobial coatings; electronics; jewelry. |

| No.  | Constituent                                        | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                       |
|------|----------------------------------------------------|------------|-------------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1068 | Silver Cyanide                                     | 506-64-9   | IRIS        | —                                             | $1 \times 10^{-1}$              | RfD from IRIS Current, revised 1987. Electroplating, mining/ore processing, and combustion source.                                                                                                                                                                          |
| 1069 | Simazine †                                         | 122-34-9   | IRIS / RAIS | $1.2 \times 10^{-1}$                          | $5 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1993; CSF from HEAST Current (revision date not published by source). Simazine — herbicide for crops, turf, and aquatic weed control. |
| 1070 | Sodium Acifluorfen †                               | 62476-59-9 | IRIS        | —                                             | $1.3 \times 10^{-2}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping.                                     |
| 1071 | Sodium and Potassium Salts of Inorganic Phosphates | MULTIPLE   | PPRTV       | —                                             | 1                               | RfD from PPRTV, revised 2022. Detergent builder; food additive and preservative; corrosion inhibitor and sequestrant in water systems; fertilizer.                                                                                                                          |
| 1072 | Sodium Azide                                       | 26628-22-8 | IRIS        | —                                             | $4 \times 10^{-3}$              | RfD from IRIS Current, revised 1987. Sodium azide — automotive airbag propellant; laboratory preservative and biocide.                                                                                                                                                      |
| 1073 | Sodium cacodylate                                  | 124-65-2   | RAIS        | —                                             | $1.4 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Sodium cacodylate — organoarsenical herbicide; arsenic-bearing.                                                                                                                                                       |
| 1074 | Sodium Chlorate                                    | 7775-09-9  | RAIS        | —                                             | $3 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Sodium chlorate — defoliant/herbicide; chlorine dioxide generation; pulp bleaching.                                                                                                                                   |
| 1075 | Sodium Cyanide †                                   | 143-33-9   | IRIS        | —                                             | $1 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2010. Electroplating, mining/ore processing, and combustion source.                                                                   |

| No.      | Constituent                         | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                         |
|----------|-------------------------------------|------------|-------------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 107<br>6 | Sodium Dichromate                   | 10588-01-9 | IRIS / RAIS | $5 \times 10^{-1}$                            | $2.27 \times 10^{-3}$           | RfD from IRIS Current (revision date not published by source); CSF from CALEPA (revision date not published by source). Chrome plating, leather tanning, wood preservative, corrosion inhibitor.                                              |
| 107<br>7 | Sodium Diethyldithiocarbamate       | 148-18-5   | IRIS / RAIS | $2.7 \times 10^{-1}$                          | $3 \times 10^{-2}$              | RfD from IRIS Current, revised 1987; CSF from HEAST Current (revision date not published by source). Analytical chelating reagent and rubber accelerator; also a metabolite of disulfiram.                                                    |
| 107<br>8 | Sodium Dodecylbenzene Sulfonate     | 25155-30-0 | RAIS        | —                                             | $5 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Anionic surfactant (LAS) — laundry and dishwashing detergents; among the highest-mass surfactants in municipal wastewater.                                                              |
| 107<br>9 | Sodium Fluoride †                   | 7681-49-4  | RAIS        | —                                             | $5 \times 10^{-2}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from ATSDR Final (revision date not published by source). Inorganic anion — fertilizer, industrial, or naturally occurring source. |
| 108<br>0 | Sodium Fluoroacetate                | 62-74-8    | IRIS        | —                                             | $2 \times 10^{-5}$              | RfD from IRIS Current, revised 1991. Compound 1080 — restricted-use vertebrate poison for predator and rodent control; highly acutely toxic.                                                                                                  |
| 108<br>1 | Sodium fluorotelomer sulfonate, 6:2 | 27619-94-9 | RAIS        | —                                             | $2.1 \times 10^{-4}$            | RfD from HHTV Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging.                                                                                   |
| 108<br>2 | Sodium Metavanadate                 | 13718-26-8 | RAIS        | —                                             | $1 \times 10^{-3}$              | RfD from HEAST Current (revision date not published by source). Sodium metavanadate — catalyst and corrosion inhibitor; laboratory reagent.                                                                                                   |
| 108<br>3 | Sodium Perchlorate †                | 7601-89-0  | IRIS        | —                                             | $7 \times 10^{-4}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current (revision                                                                                            |

| No.      | Constituent                     | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                       |
|----------|---------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                                 |             |        |                                               |                                 | date not published by source). Inorganic anion — fertilizer, industrial, or naturally occurring source.                                                     |
| 108<br>4 | Sodium perfluorobutanoate       | 2218-54-4   | IRIS   | —                                             | $1 \times 10^{-3}$              | RfD from IRIS Current (revision date not published by source). Short-chain PFOA/PFOS replacement chemistry; textile and paper coatings.                     |
| 108<br>5 | Sodium perfluorodecanoate       | 3830-45-3   | IRIS   | —                                             | $2.09 \times 10^{-9}$           | RfD from IRIS Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging. |
| 108<br>6 | Sodium perfluorohexanesulfonate | 82382-12-5  | IRIS   | —                                             | $4.2 \times 10^{-10}$           | RfD from IRIS Current (revision date not published by source). PFHxS salt — AFFF firefighting foam and textile treatment.                                   |
| 108<br>7 | Sodium perfluorohexanoate       | 2923-26-4   | IRIS   | —                                             | $5 \times 10^{-4}$              | RfD from IRIS Current (revision date not published by source). AFFF firefighting foam; stain/water repellents; fluoropolymer manufacturing; food packaging. |
| 108<br>8 | Sodium Tungstate                | 13472-45-2  | PPRTV  | —                                             | $8 \times 10^{-4}$              | RfD from PPRTV, revised 2015. Alloy and catalyst manufacture; corrosion inhibitor; fire-retardant textile treatment; laboratory reagent.                    |
| 108<br>9 | Sodium Tungstate Dihydrate      | 10213-10-2  | PPRTV  | —                                             | $8 \times 10^{-4}$              | RfD from PPRTV (revision date not published by source). Alloy and catalyst manufacture; corrosion inhibitor; laboratory reagent.                            |
| 109<br>0 | Spinetoram J                    | 187166-40-1 | RAIS   | —                                             | $2.49 \times 10^{-2}$           | RfD from OPP (revision date not published by source). Spinetoram — insecticide for fruit, vegetables, and ornamentals.                                      |
| 109<br>1 | Spinetoram L                    | 187166-15-0 | RAIS   | —                                             | $2.49 \times 10^{-2}$           | RfD from OPP (revision date not published by source). Spinetoram L isomer — crop insecticide.                                                               |
| 109<br>2 | Spinosad (Spinosyn A)           | 131929-60-7 | RAIS   | —                                             | $2.49 \times 10^{-2}$           | RfD from OPP (revision date not published by source). Spinosad — insecticide for crops, turf, and pet flea/tick products.                                   |

| No.      | Constituent                   | CAS No.         | Source         | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                       |
|----------|-------------------------------|-----------------|----------------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 109<br>3 | Spirodiclofen                 | 148477-7<br>1-8 | RAIS           | $1.49 \times 10^{-2}$                         | $1.4 \times 10^{-2}$            | RfD and CSF from OPP (revision date not published by source). Spirodiclofen — miticide for citrus, grapes, nuts.                                                            |
| 109<br>4 | Spiromesifen                  | 283594-9<br>0-1 | RAIS           | —                                             | $3.8 \times 10^{-3}$            | RfD from OPP (revision date not published by source). Spiromesifen — miticide/whitefly control for vegetables and ornamentals.                                              |
| 109<br>5 | Spirotetramat                 | 203313-2<br>5-1 | RAIS           | —                                             | $5 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Spirotetramat — systemic insecticide for fruit, vegetables, ornamentals.                                              |
| 109<br>6 | Spiroxamine                   | 118134-3<br>0-8 | RAIS           | —                                             | $2.5 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                         |
| 109<br>7 | Sterigmatocystin              | 10048-13<br>-2  | RAIS           | $2.2 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Aspergillus mycotoxin; contaminant of stored grain, cheese, and animal feed; a precursor of aflatoxin.             |
| 109<br>8 | Stirofos (Tetrachlorovinphos) | 961-11-5        | IRIS /<br>RAIS | $1.83 \times 10^{-3}$                         | $3 \times 10^{-2}$              | RfD from IRIS Current, revised 1987; CSF from OPP (revision date not published by source). Organophosphate insecticide for livestock, poultry houses, and pet flea collars. |
| 109<br>9 | Streptomycin                  | 57-92-1         | RAIS           | —                                             | $5 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Streptomycin — antibiotic; agricultural bactericide.                                                                  |
| 110<br>0 | Streptomycin Sesquisulfate    | 3810-74-<br>0   | RAIS           | —                                             | $5 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Pharmaceutical — enters wastewater through human excretion and disposal.                                              |
| 110<br>1 | Streptozotocin                | 18883-66<br>-4  | RAIS           | $1.1 \times 10^2$                             | —                               | CSF from CALEPA (revision date not published by source). Pharmaceutical — enters wastewater through human excretion and disposal.                                           |

| No.      | Constituent                                      | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                         |
|----------|--------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 110<br>2 | Strontium Chromate                               | 7789-06-2   | RAIS   | $5 \times 10^{-1}$                            | $2 \times 10^{-2}$              | RfD and CSF from CALEPA (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                            |
| 110<br>3 | Strontium, Stable †                              | 7440-24-6   | IRIS   | —                                             | $6 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1992. Naturally occurring; pyrotechnics; ceramics; UCMR3 monitored.         |
| 110<br>4 | Strychnine                                       | 57-24-9     | IRIS   | —                                             | $3 \times 10^{-4}$              | RfD from IRIS Current, revised 1987. Strychnine — rodenticide; historically a pharmaceutical stimulant.                                                                                                                       |
| 110<br>5 | Styrene †                                        | 100-42-5    | IRIS   | —                                             | $2 \times 10^{-1}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1992. Polystyrene & fiberglass resin mfg; food packaging.                               |
| 110<br>6 | Styrene oxide                                    | 96-09-3     | RAIS   | $1.6 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Styrene oxide — epoxy resins, adhesives, and surfactant intermediate.                                                                                                |
| 110<br>7 | Styrene-Acrylonitrile (SAN) Trimer (THNA isomer) | 57964-39-3  | PPRTV  | —                                             | $3 \times 10^{-3}$              | RfD from PPRTV Current (revision date not published by source). SAN trimer — polymer manufacturing residue; landfill leachate marker.                                                                                         |
| 110<br>8 | Styrene-Acrylonitrile (SAN) Trimer (THNP isomer) | 57964-40-6  | PPRTV  | —                                             | $3 \times 10^{-3}$              | RfD from PPRTV Current (revision date not published by source). SAN trimer isomer — plastics manufacturing residue.                                                                                                           |
| 110<br>9 | Sulfallate                                       | 95-06-7     | RAIS   | $1.9 \times 10^{-1}$                          | —                               | CSF from CALEPA (revision date not published by source). Sulfallate — obsolete herbicide.                                                                                                                                     |
| 111<br>0 | Sulfentrazone ‡                                  | 122836-35-5 | RAIS   | —                                             | $1.4 \times 10^{-1}$            | ‡ Health advisory published by MN, WI — level 60 µg/L (Other States' Health Advisories List). RfD from OPP (revision date not published by source). Sulfentrazone — turf, soybean, and sugarcane herbicide; landscape runoff. |

| No.      | Constituent                                                                                  | CAS No.     | Source      | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                     |
|----------|----------------------------------------------------------------------------------------------|-------------|-------------|-----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 111<br>1 | Sulfolane                                                                                    | 126-33-0    | PPRTV       | —                                             | $1 \times 10^{-3}$              | RfD from PPRTV Current, revised 2012. Sulfolane — gas sweetening solvent; refinery extraction; electronics/battery solvent.                               |
| 111<br>2 | Sulfometuron Me                                                                              | 74222-97-2  | RAIS        | —                                             | $2.75 \times 10^{-1}$           | RfD from OPP (revision date not published by source). Sulfometuron methyl — non-crop, forestry, and rights-of-way herbicide.                              |
| 111<br>3 | Sulfonylbis(4-chlorobenzene), 1,1'-                                                          | 80-07-9     | PPRTV       | —                                             | $8 \times 10^{-4}$              | RfD from PPRTV Current, revised 2009. Polysulfone polymer manufacture intermediate; degradate of the miticide tetradifon.                                 |
| 111<br>4 | Sulfosate (Glyphosate-trimesium)                                                             | 81591-81-3  | RAIS        | —                                             | $8.3 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Non-selective herbicide (glyphosate salt) for agriculture and rights-of-way.                        |
| 111<br>5 | Sulfosulfuron                                                                                | 141776-32-1 | RAIS        | —                                             | $2.4 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                           |
| 111<br>6 | Sulfoxaflor                                                                                  | 946578-00-3 | RAIS        | —                                             | $5 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Sulfoxaflor — sap-feeding insect control for cotton, vegetables, turf.                              |
| 111<br>7 | Sulfurous acid, 2-chloroethyl 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester / Aramite | 140-57-8    | RAIS / IRIS | $2.5 \times 10^{-2}$                          | $5 \times 10^{-2}$              | RfD from HEAST Current (revision date not published by source); CSF from IRIS Current, revised 1991. Aramite — obsolete miticide.                         |
| 111<br>8 | Sulfuryl fluoride                                                                            | 2699-79-8   | RAIS        | —                                             | $8 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Sulfuryl fluoride — structural fumigant for termites and stored commodities.                        |
| 111<br>9 | TCDF, 2,3,7,8-                                                                               | 51207-31-9  | RAIS        | $1.3 \times 10^4$                             | $7 \times 10^{-9}$              | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids. |
| 112<br>0 | Tebuconazole                                                                                 | 107534-96-3 | RAIS        | —                                             | $2.9 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Triazole fungicide for cereals, fruit, and turf; also a wood preservative.                          |

| No.      | Constituent   | CAS No.         | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                      |
|----------|---------------|-----------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 112<br>1 | Tebufenozide  | 112410-2<br>3-8 | RAIS   | —                                             | $2 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                                                                            |
| 112<br>2 | Tebuthiuron † | 34014-18<br>-1  | IRIS   | —                                             | $7 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1988. Tebuthiuron — rangeland, rights-of-way, and industrial-site herbicide; persistent.                                 |
| 112<br>3 | Teflubenzuron | 83121-18<br>-0  | RAIS   | —                                             | $2.1 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Teflubenzuron — insect growth regulator; also aquaculture sea-lice treatment.                                                                                                                                        |
| 112<br>4 | Tembotrione   | 335104-8<br>4-2 | RAIS   | —                                             | $4 \times 10^{-4}$              | RfD from OPP (revision date not published by source). Corn herbicide.                                                                                                                                                                                                      |
| 112<br>5 | Temephos      | 3383-96-<br>8   | RAIS   | —                                             | $2 \times 10^{-2}$              | RfD from HEAST Current (revision date not published by source). Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                                                                    |
| 112<br>6 | Tepraloxydim  | 149979-4<br>1-9 | RAIS   | —                                             | $5 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Grass herbicide for broadleaf crops.                                                                                                                                                                                 |
| 112<br>7 | Terbacil †    | 5902-51-<br>2   | IRIS   | —                                             | $1.3 \times 10^{-2}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. Terbacil — herbicide for citrus, mint, alfalfa, sugarcane.                                                         |
| 112<br>8 | Terbufos †    | 13071-79<br>-9  | RAIS   | —                                             | $2.5 \times 10^{-5}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from HEAST Current (revision date not published by source). Organophosphate insecticide — agricultural and (historically) residential pest control. |
| 112<br>9 | Terbutryn     | 886-50-0        | IRIS   | —                                             | $1 \times 10^{-3}$              | RfD from IRIS Current, revised 1988. Triazine herbicide — row crops, turf, rights-of-way; frequent groundwater detection.                                                                                                                                                  |

| No.  | Constituent                                            | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                                                    |
|------|--------------------------------------------------------|------------|-------------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1130 | Tert-Butyl Acetate                                     | 540-88-5   | RAIS        | $5 \times 10^{-3}$                            | —                               | CSF from CALEPA (revision date not published by source). Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                                                                                                                              |
| 1131 | Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47)          | 5436-43-1  | IRIS        | —                                             | $1 \times 10^{-4}$              | RfD from IRIS Current, revised 2008. Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                                                                                                                                             |
| 1132 | Tetrachlorobenzene, 1,2,4,5-                           | 95-94-3    | IRIS        | —                                             | $3 \times 10^{-4}$              | RfD from IRIS Current, revised 1987. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                                                                                                                                                                            |
| 1133 | Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)               | 32598-13-3 | RAIS        | $1.3 \times 10^1$                             | $7 \times 10^{-6}$              | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                                                                                                                |
| 1134 | Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)                | 70362-50-4 | RAIS        | $3.9 \times 10^1$                             | $2.33 \times 10^{-6}$           | RfD and CSF from WHO/TEF (revision date not published by source). Legacy industrial contaminant; banned/restricted; persistent in sediment and biosolids.                                                                                                                                                |
| 1135 | Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (2,3,7,8-TCDD) † | 1746-01-6  | IRIS / RAIS | $1.3 \times 10^5$                             | $7 \times 10^{-10}$             | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2012; CSF from CALEPA (revision date not published by source). Combustion & incineration byproduct; former herbicide (Agent Orange) impurity; bleaching byproduct. |
| 1136 | Tetrachloroethane, 1,1,1,2- †                          | 630-20-6   | IRIS        | $2.6 \times 10^{-2}$                          | $3 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 1989. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                                                 |

| No.      | Constituent                                                     | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                    |
|----------|-----------------------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 113<br>7 | Tetrachloroethane, 1,1,2,2- †                                   | 79-34-5     | IRIS   | $2 \times 10^{-1}$                            | $2 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 2010. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume. |
| 113<br>8 | Tetrachloroethylene / Tetrachloroethylene (Perchloroethylene) † | 127-18-4    | IRIS   | $2.1 \times 10^{-3}$                          | $6 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 2012. Dry cleaning solvent; metal degreasing; common groundwater contaminant.                              |
| 113<br>9 | Tetrachlorophenol, 2,3,4,6-                                     | 58-90-2     | IRIS   | —                                             | $3 \times 10^{-2}$              | RfD from IRIS Current, revised 1988. Industrial intermediate for resins, dyes, and disinfectants.                                                                                                                                                        |
| 114<br>0 | Tetrachlorotoluene, p- alpha, alpha, alpha-                     | 5216-25-1   | PPRTV  | $1.6 \times 10^1$                             | $6 \times 10^{-5}$              | RfD from PPRTV Current, revised 2019; CSF from SCREEN Current, revised 2019. Dye and pesticide manufacture intermediate.                                                                                                                                 |
| 114<br>1 | Tetrachlorvinphos                                               | 22248-79-9  | RAIS   | $1.83 \times 10^{-3}$                         | $2.8 \times 10^{-3}$            | RfD and CSF from OPP (revision date not published by source). Organophosphate insecticide — agricultural and (historically) residential pest control.                                                                                                    |
| 114<br>2 | Tetraconazole                                                   | 112281-77-3 | RAIS   | —                                             | $7.3 \times 10^{-3}$            | RfD from OPP (revision date not published by source). Triazole fungicide for sugar beet, cereals, and vines.                                                                                                                                             |
| 114<br>3 | Tetraethyl Dithiopyrophosphate / Tetraethyldithiopyrophosphate  | 3689-24-5   | IRIS   | —                                             | $5 \times 10^{-4}$              | RfD from IRIS Current, revised 1988. Sulfotep — organophosphate insecticide and greenhouse fumigant.                                                                                                                                                     |
| 114<br>4 | Tetraethyl Lead                                                 | 78-00-2     | IRIS   | —                                             | $1 \times 10^{-7}$              | RfD from IRIS Current, revised 1987. Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                                                                   |
| 114<br>5 | Tetrahydrofuran ‡                                               | 109-99-9    | IRIS   | —                                             | $9 \times 10^{-1}$              | ‡ Health advisory published by MN — level 600 µg/L (Other States' Health Advisories List). RfD from IRIS                                                                                                                                                 |

| No.      | Constituent                                   | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                          |
|----------|-----------------------------------------------|------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                                               |            |        |                                               |                                 | Current, revised 2012. THF — PVC cement; polymer solvent; pharmaceutical mfg.                                                                                                                                  |
| 114<br>6 | Tetramethylphosphoramidate, -N,N,N',N" (TMPA) | 16853-36-4 | PPRTV  | —                                             | $1 \times 10^{-4}$              | RfD from PPRTV Current, revised 2020. Chemical synthesis intermediate; organophosphorus degradation product.                                                                                                   |
| 114<br>7 | Tetryl (Trinitrophenylmethylnitramine)        | 479-45-8   | PPRTV  | —                                             | $2 \times 10^{-3}$              | RfD from PPRTV Current, revised 2013. Military explosive or propellant; defense/ordnance site contaminant.                                                                                                     |
| 114<br>8 | Thallic Oxide / Thallium oxide                | 1314-32-5  | PPRTV  | —                                             | $2 \times 10^{-5}$              | Surrogate value — See PPRTV for Thallium and Compounds (MW fraction). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                        |
| 114<br>9 | Thallium (I) Nitrate                          | 10102-45-1 | PPRTV  | —                                             | $1 \times 10^{-5}$              | RfD from SCREEN Current, revised 2012. Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                       |
| 115<br>0 | Thallium (Soluble Salts) †                    | 7440-28-0  | PPRTV  | —                                             | $1 \times 10^{-5}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from SCREEN Current, revised 2012. Electronics/semiconductors; former rodenticide; coal combustion. |
| 115<br>1 | Thallium Acetate                              | 563-68-8   | PPRTV  | —                                             | $1 \times 10^{-5}$              | RfD from SCREEN Current, revised 2012. Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                       |
| 115<br>2 | Thallium Carbonate                            | 6533-73-9  | PPRTV  | —                                             | $2 \times 10^{-5}$              | RfD from SCREEN Current, revised 2012. Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                       |
| 115<br>3 | Thallium Chloride                             | 7791-12-0  | PPRTV  | —                                             | $1 \times 10^{-5}$              | RfD from SCREEN Current, revised 2012. Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                       |
| 115<br>4 | Thallium Selenite                             | 12039-52-0 | PPRTV  | —                                             | $1 \times 10^{-5}$              | Surrogate value — See PPRTV for Thallium and Compounds (MW fraction). Metal — naturally                                                                                                                        |

| No.      | Constituent                                         | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                          |
|----------|-----------------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                                                     |             |        |                                               |                                 | occurring, industrial discharge, plumbing corrosion, or mining.                                                                                                                                |
| 115<br>5 | Thallium Sulfate / Thallium(I) sulfate              | 7446-18-6   | PPRTV  | —                                             | $2 \times 10^{-5}$              | RfD from SCREEN Current, revised 2012. Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                       |
| 115<br>6 | Thiabendazole                                       | 148-79-8    | RAIS   | —                                             | $1 \times 10^{-1}$              | RfD from OPP (revision date not published by source). Thiabendazole — anthelmintic drug; agricultural fungicide.                                                                               |
| 115<br>7 | Thiacloprid                                         | 111988-49-9 | RAIS   | $4.06 \times 10^{-2}$                         | $4 \times 10^{-3}$              | RfD and CSF from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                        |
| 115<br>8 | Thiamethoxam ‡                                      | 153719-23-4 | RAIS   | —                                             | $1.2 \times 10^{-2}$            | ‡ Health advisory published by MN, WI — level 120 µg/L (Other States' Health Advisories List). RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide. |
| 115<br>9 | Thiazole, 2-(2-Formylhydrazino)-4-(5-nitro-2-furyl) | 3570-75-0   | RAIS   | <b>2.3</b>                                    | —                               | CSF from CALEPA (revision date not published by source). Nitrofurantol antibiotic research compound.                                                                                           |
| 116<br>0 | Thidiazuron                                         | 51707-55-2  | RAIS   | —                                             | $3.93 \times 10^{-2}$           | RfD from OPP (revision date not published by source). Thidiazuron — cotton defoliant and plant growth regulator.                                                                               |
| 116<br>1 | Thiencarbazone-methyl ‡                             | 317815-83-1 | RAIS   | —                                             | <b>1.17</b>                     | ‡ Health advisory published by WI — level 10,000 µg/L (Other States' Health Advisories List). RfD from OPP (revision date not published by source). Cereal and corn herbicide.                 |
| 116<br>2 | Thifensulfuron-methyl / Harmony                     | 79277-27-3  | IRIS   | —                                             | $1.3 \times 10^{-2}$            | RfD from IRIS Current, revised 1988. Modern agricultural pesticide or biocide.                                                                                                                 |
| 116<br>3 | Thioacetamide                                       | 62-55-5     | RAIS   | <b>6.1</b>                                    | —                               | CSF from CALEPA (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                             |
| 116<br>4 | Thiobencarb                                         | 28249-77-6  | IRIS   | —                                             | $1 \times 10^{-2}$              | RfD from IRIS Current, revised 1987. Carbamate insecticide/fungicide — agriculture and horticulture.                                                                                           |

| No.      | Constituent                                                 | CAS No.    | Source      | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                           |
|----------|-------------------------------------------------------------|------------|-------------|-----------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 116<br>5 | Thiocyanates                                                | —          | PPRTV       | —                                             | $2 \times 10^{-4}$              | RfD from PPRTV Current, revised 2006. Industrial process chemical; coking and metal finishing wastewater; also a natural dietary metabolite.                                    |
| 116<br>6 | Thiocyanic Acid                                             | 463-56-9   | PPRTV       | —                                             | $2 \times 10^{-4}$              | RfD from SCREEN Current (revision date not published by source). Electroplating, mining/ore processing, and combustion source.                                                  |
| 116<br>7 | Thiocyanic acid, (2-benzothiazolylthio)methyl ester (TCMTB) | 21564-17-0 | RAIS        | —                                             | $1 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Electroplating, mining/ore processing, and combustion source.                                                             |
| 116<br>8 | Thiodianiline, 4,4-                                         | 139-65-1   | RAIS        | $1.5 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                          |
| 116<br>9 | Thiodiglycol                                                | 111-48-8   | PPRTV       | —                                             | $7 \times 10^{-2}$              | RfD from SCREEN Current, revised 2009. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                                       |
| 117<br>0 | Thiofanox                                                   | 39196-18-4 | RAIS        | —                                             | $3 \times 10^{-4}$              | RfD from HEAST Current (revision date not published by source). Thiofanox — soil insecticide (carbamate).                                                                       |
| 117<br>1 | Thiophanate, Methyl                                         | 23564-05-8 | IRIS / RAIS | $1.16 \times 10^{-2}$                         | $8 \times 10^{-2}$              | RfD from IRIS Current, revised 1987; CSF from OPP (revision date not published by source). Thiophanate-methyl — turf, ornamental, and fruit fungicide; degrades to carbendazim. |
| 117<br>2 | Thiourea                                                    | 62-56-6    | RAIS        | $7.2 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). Industrial chemical — metal plating, photographic processing, rubber accelerator, dye intermediate.                    |
| 117<br>3 | Thiram                                                      | 137-26-8   | IRIS        | —                                             | $5 \times 10^{-3}$              | RfD from IRIS Current, revised 1987. Dithiocarbamate fungicide and seed treatment; also an animal repellent.                                                                    |
| 117<br>4 | Thitrol (MCPB) / Methyl-4-chlorophenoxy butyric acid (MCPB) | 94-81-5    | IRIS        | —                                             | $1 \times 10^{-2}$              | RfD from IRIS Current, revised 1988. MCPB — broadleaf herbicide for peas and legumes.                                                                                           |

| No.      | Constituent                        | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                          |
|----------|------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 117<br>5 | Tiafenacil                         | —           | RAIS   | —                                             | $1 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Non-selective burndown herbicide.                                                                                                                                                        |
| 117<br>6 | Tin ‡                              | 7440-31-5   | RAIS   | —                                             | $6 \times 10^{-1}$              | ‡ Health advisory published by MN — level 4,000 µg/L (Other States' Health Advisories List). RfD from HEAST Current (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining. |
| 117<br>7 | Tioxazafen                         | 330459-31-9 | RAIS   | —                                             | $5 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Seed-treatment nematicide for corn and soybeans.                                                                                                                                         |
| 117<br>8 | Tolfenpyrad                        | 129558-76-5 | RAIS   | —                                             | $6 \times 10^{-3}$              | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                                                |
| 117<br>9 | Tolpyralate                        | —           | RAIS   | —                                             | $9.3 \times 10^{-3}$            | RfD from OPP (revision date not published by source). Corn herbicide.                                                                                                                                                                          |
| 118<br>0 | Toluene †                          | 108-88-3    | IRIS   | —                                             | $8 \times 10^{-2}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2005. Gasoline; paint thinner; adhesives; nail products; chemical feedstock.                             |
| 118<br>1 | Toluene diisocyanate mixture (TDI) | 26471-62-5  | RAIS   | $3.9 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). Toluene diisocyanate — polyurethane foam for furniture, bedding, and insulation.                                                                                                      |
| 118<br>2 | Toluene-2,4-diisocyanate           | 584-84-9    | RAIS   | $3.9 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). 2,4-TDI — flexible polyurethane foam manufacture.                                                                                                                                     |
| 118<br>3 | Toluene-2,6-diisocyanate           | 91-08-7     | RAIS   | $3.9 \times 10^{-2}$                          | —                               | CSF from CALEPA (revision date not published by source). 2,6-TDI — polyurethane foam and coatings manufacture.                                                                                                                                 |
| 118<br>4 | Toluenediamine, 2,3-               | 2687-25-4   | PPRTV  | —                                             | $1 \times 10^{-4}$              | RfD from PPRTV Current, revised 2021. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                            |

| No.  | Constituent                                | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                             |
|------|--------------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1185 | Toluenediamine, 2,4- / Diaminotoluene ‡    | 95-80-7     | RAIS   | 4                                             | —                               | ‡ Health advisory published by WI — level 0.2 µg/L (Other States' Health Advisories List). CSF from CALEPA (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor. |
| 1186 | Toluenediamine, 2,5- / Toluene-2,5-diamine | 95-70-5     | PPRTV  | $1.8 \times 10^{-1}$                          | $2 \times 10^{-4}$              | RfD and CSF from SCREEN Current, revised 2013. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                      |
| 1187 | Toluenediamine, 2,6- ‡                     | 823-40-5    | PPRTV  | —                                             | $3 \times 10^{-2}$              | ‡ Health advisory published by WI — level 300 µg/L (Other States' Health Advisories List). RfD from PPRTV Current, revised 2005. Dye, rubber, and polymer intermediate; nitrosamine precursor.                    |
| 1188 | Toluenediamine, 3,4-                       | 496-72-0    | PPRTV  | —                                             | $1 \times 10^{-4}$              | RfD from PPRTV Current, revised 2021. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                               |
| 1189 | Toluic Acid, p-                            | 99-94-5     | PPRTV  | —                                             | $5 \times 10^{-3}$              | RfD from PPRTV Current, revised 2017. p-Toluic acid — polyester and plasticizer intermediate.                                                                                                                     |
| 1190 | Toluidine, o- (Methylaniline, 2-) ‡        | 95-53-4     | PPRTV  | $1.6 \times 10^{-2}$                          | —                               | ‡ Health advisory published by MN — level 6 µg/L (Other States' Health Advisories List). CSF from PPRTV Current, revised 2012. Dye, rubber, and polymer intermediate; nitrosamine precursor.                      |
| 1191 | Toluidine, p-                              | 106-49-0    | PPRTV  | $3 \times 10^{-2}$                            | $4 \times 10^{-3}$              | RfD from SCREEN Current, revised 2012; CSF from PPRTV Current, revised 2012. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                        |
| 1192 | Tolyfluanid                                | 731-27-1    | RAIS   | $1.59 \times 10^{-3}$                         | $2.6 \times 10^{-2}$            | RfD and CSF from OPP (revision date not published by source). Tolyfluanid — fungicide and antifouling/material preservative; NDMA-relevant amine source.                                                          |
| 1193 | Topramezone                                | 210631-68-8 | RAIS   | —                                             | $4 \times 10^{-3}$              | RfD from OPP (revision date not published by source). Corn herbicide.                                                                                                                                             |

| No.      | Constituent                                    | CAS No.    | Source       | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                          |
|----------|------------------------------------------------|------------|--------------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 119<br>4 | Total Petroleum Hydrocarbons (Aliphatic High)  | VARIOUS    | PPRTV        | —                                             | 3                               | RfD from PPRTV, revised 2006. Petroleum fraction — motor oil, lubricants, heavy fuel; vehicle-service and industrial discharge; stormwater.                                                                                    |
| 119<br>5 | Total Petroleum Hydrocarbons (Aliphatic Low)   | VARIOUS    | PPRTV        | —                                             | $5 \times 10^{-3}$              | RfD from PPRTV, revised 2022. Petroleum fraction — gasoline-range aliphatics; fuel releases, vehicle service, stormwater runoff.                                                                                               |
| 119<br>6 | Total Petroleum Hydrocarbons (Aromatic High)   | VARIOUS    | PPRTV        | —                                             | $3 \times 10^{-4}$              | RfD from PPRTV, revised 2022. Petroleum fraction — heavy aromatics including PAH-range compounds; asphalt, heavy fuel oil, coal tar.                                                                                           |
| 119<br>7 | Total Petroleum Hydrocarbons (Aromatic Low)    | VARIOUS    | PPRTV        | —                                             | $4 \times 10^{-3}$              | RfD from PPRTV, revised 2009. Petroleum fraction — BTEX-range aromatics; gasoline releases, fuel storage, vehicle service discharge.                                                                                           |
| 119<br>8 | Total Petroleum Hydrocarbons (Aromatic Medium) | VARIOUS    | PPRTV        | —                                             | $1 \times 10^{-2}$              | RfD from PPRTV, revised 2022. Petroleum fraction — diesel-range aromatics including naphthalenes; diesel fuel, heating oil, fuel releases.                                                                                     |
| 119<br>9 | Toxaphene †                                    | 8001-35-2  | PPRTV / IRIS | 1.1                                           | $9 \times 10^{-5}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from PPRTV Current, revised 2018; CSF from IRIS Current, revised 1988. Toxaphene — cotton insecticide, banned 1990. |
| 120<br>0 | Toxaphene, Weathered                           | —          | PPRTV        | —                                             | $3 \times 10^{-5}$              | RfD from SCREEN Current (revision date not published by source). Weathered legacy cotton insecticide residue in soil and sediment.                                                                                             |
| 120<br>1 | Tralkoxydim                                    | 87820-88-0 | RAIS         | —                                             | $5 \times 10^{-3}$              | RfD from OPP (revision date not published by source). Cereal grass herbicide.                                                                                                                                                  |
| 120<br>2 | Tralomethrin                                   | 66841-25-6 | IRIS         | —                                             | $7.5 \times 10^{-3}$            | RfD from IRIS Current, revised 1989. Modern agricultural pesticide or biocide.                                                                                                                                                 |
| 120<br>3 | Tri-n-butyltin                                 | 688-73-3   | RAIS         | —                                             | $3 \times 10^{-4}$              | RfD from ATSDR Final (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                |

| No.              | Constituent                 | CAS No.     | Source      | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                    |
|------------------|-----------------------------|-------------|-------------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 120 <sub>4</sub> | Triacetin                   | 102-76-1    | PPRTV       | —                                             | $8 \times 10^1$                 | RfD from SCREEN Current, revised 2012. Food additive and flavor carrier; cigarette filter plasticizer; cosmetics and pharmaceutical excipient; fuel additive.                                            |
| 120 <sub>5</sub> | Triadimefon / Bayleton ‡    | 43121-43-3  | IRIS        | —                                             | $3 \times 10^{-2}$              | ‡ Health advisory published by WI — level 25 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1988. Triadimefon — turf, ornamental, and cereal fungicide; golf course runoff. |
| 120 <sub>6</sub> | Triadimenol                 | 55219-65-3  | RAIS        | —                                             | $3.4 \times 10^{-3}$            | RfD from OPP (revision date not published by source). Triadimenol — triadimefon degradate; turf and cereal fungicide.                                                                                    |
| 120 <sub>7</sub> | Triallate                   | 2303-17-5   | IRIS / RAIS | $7.17 \times 10^{-2}$                         | $1.3 \times 10^{-2}$            | RfD from IRIS Current, revised 1987; CSF from OPP (revision date not published by source). Carbamate insecticide/fungicide — agriculture and horticulture.                                               |
| 120 <sub>8</sub> | Triasulfuron                | 82097-50-5  | IRIS        | —                                             | $1 \times 10^{-2}$              | RfD from IRIS Current, revised 1991. Modern agricultural pesticide or biocide.                                                                                                                           |
| 120 <sub>9</sub> | Triazole Acetic Acid        | 28711-29-7  | RAIS        | —                                             | $9 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Soil and plant metabolite of triazole fungicides.                                                                                                  |
| 121 <sub>0</sub> | Triazole alanine            | 114419-45-3 | RAIS        | —                                             | $9 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Soil and plant metabolite of triazole fungicides.                                                                                                  |
| 121 <sub>1</sub> | Triazole, 1,2,4-            | 288-88-0    | RAIS        | —                                             | $5 \times 10^{-3}$              | RfD from OPP (revision date not published by source). Common degradate of triazole fungicides; also a corrosion inhibitor and photographic chemical.                                                     |
| 121 <sub>2</sub> | Tribenuron-methyl / Express | 101200-48-0 | IRIS        | —                                             | $8 \times 10^{-3}$              | RfD from IRIS Current, revised 1989. Cereal sulfonurea herbicide.                                                                                                                                        |
| 121 <sub>3</sub> | Tribromobenzene, 1,2,4-     | 615-54-3    | IRIS        | —                                             | $5 \times 10^{-3}$              | RfD from IRIS Current, revised 1987. 1,2,4-Tribromobenzene — flame retardant intermediate.                                                                                                               |

| No.      | Constituent                                                                           | CAS No.   | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                |
|----------|---------------------------------------------------------------------------------------|-----------|--------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 121<br>4 | Tribromophenol, 2,4,6-                                                                | 118-79-6  | PPRTV  | —                                             | $9 \times 10^{-3}$              | RfD from SCREEN Current, revised 2009. Industrial intermediate for resins, dyes, and disinfectants.                                                                                                                                  |
| 121<br>5 | Tribufos / Merphos oxide                                                              | 78-48-8   | IRIS   | —                                             | $3 \times 10^{-5}$              | RfD from IRIS Current, revised 1992. Tribufos — cotton defoliant; organophosphate.                                                                                                                                                   |
| 121<br>6 | Tributyl Phosphate ‡                                                                  | 126-73-8  | PPRTV  | $9 \times 10^{-3}$                            | $1 \times 10^{-2}$              | ‡ Health advisory published by MN — level 10 µg/L (Other States' Health Advisories List). RfD and CSF from PPRTV Current, revised 2010. Tributyl phosphate — hydraulic fluid; nuclear fuel reprocessing; plasticizer.                |
| 121<br>7 | Tributyltin Compounds                                                                 | —         | PPRTV  | —                                             | $3 \times 10^{-4}$              | RfD from PPRTV Current (revision date not published by source). Legacy antifouling boat paint biocide; wood preservative.                                                                                                            |
| 121<br>8 | Tributyltin Oxide / Tributyltin oxide (TBTO)                                          | 56-35-9   | IRIS   | —                                             | $3 \times 10^{-4}$              | RfD from IRIS Current, revised 1997. Organotin biocide — legacy antifouling boat paint, wood preservative, industrial slimicide.                                                                                                     |
| 121<br>9 | Trichlorfon                                                                           | 52-68-6   | RAIS   | —                                             | $7 \times 10^{-5}$              | RfD from OPP (revision date not published by source). Trichlorfon — organophosphate insecticide for turf, ornamentals; also veterinary parasiticide.                                                                                 |
| 122<br>0 | Trichloro-1,2,2-trifluoroethane, 1,1,2- / Trichloro-1,2,2-trifluoroethane (CFC-113) ‡ | 76-13-1   | IRIS   | —                                             | $3 \times 10^1$                 | ‡ Health advisory published by MN, WI — level 5,500 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1987. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.       |
| 122<br>1 | Trichloro-2'-hydroxydiphenylether ‡                                                   | 3380-34-5 | RAIS   | —                                             | $3 \times 10^{-1}$              | ‡ Health advisory published by MN — level 50 µg/L (Other States' Health Advisories List). RfD from OPP (revision date not published by source). Triclosan — antibacterial soap/toothpaste; textile & plastic antimicrobial additive. |
| 122<br>2 | Trichloroacetic Acid †                                                                | 76-03-9   | IRIS   | $7 \times 10^{-2}$                            | $2 \times 10^{-2}$              | † Federal value published — MCL (HAA5 group) in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current,                                                                                   |

| No.      | Constituent                  | CAS No.        | Source          | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                      |
|----------|------------------------------|----------------|-----------------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                              |                |                 |                                               |                                 | revised 2011. Chlorination byproduct (HAA5); former herbicide.                                                                                                                                                                                                             |
| 122<br>3 | Trichloroaniline HCl, 2,4,6- | 33663-50<br>-2 | RAIS            | $2.9 \times 10^{-2}$                          | —                               | CSF from HEAST Current (revision date not published by source). Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                              |
| 122<br>4 | Trichloroaniline, 2,4,6-     | 634-93-5       | PPRTV           | $7 \times 10^{-3}$                            | $3 \times 10^{-5}$              | RfD and CSF from SCREEN Current, revised 2010. Dye, rubber, and polymer intermediate; nitrosamine precursor.                                                                                                                                                               |
| 122<br>5 | Trichlorobenzene, 1,2,3-     | 87-61-6        | PPRTV           | —                                             | $8 \times 10^{-4}$              | RfD from SCREEN Current, revised 2009. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                                                                                                                                            |
| 122<br>6 | Trichlorobenzene, 1,2,4- †   | 120-82-1       | IRIS /<br>PPRTV | $2.9 \times 10^{-2}$                          | $1 \times 10^{-2}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1992; CSF from PPRTV Current, revised 2009. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume. |
| 122<br>7 | Trichloroethane, 1,1,1- †    | 71-55-6        | IRIS            | —                                             | 2                               | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2007. Metal cleaning; aerosol propellant; phased out under Montreal Protocol.                                                        |
| 122<br>8 | Trichloroethane, 1,1,2- †    | 79-00-5        | IRIS            | $5.7 \times 10^{-2}$                          | $4 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 1988. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                               |
| 122<br>9 | Trichloroethylene †          | 79-01-6        | IRIS            | $5.2 \times 10^{-2}$                          | $5 \times 10^{-4}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2011; CSF                                                                                                                            |

| No.      | Constituent                                                                            | CAS No.  | Source       | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                      |
|----------|----------------------------------------------------------------------------------------|----------|--------------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                                                                                        |          |              |                                               |                                 | from IRIS Current (most protective of the published oral slope factors), revised 2011. Metal degreasing; dry cleaning; adhesives; common groundwater plume contaminant.                                                                                    |
| 123<br>0 | Trichlorofluoromethane †                                                               | 75-69-4  | IRIS         | —                                             | $3 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1987. CFC-11 — former refrigerant/blowing agent; phased out.                                             |
| 123<br>1 | Trichlorophenol, 2,4,5-                                                                | 95-95-4  | IRIS         | —                                             | $1 \times 10^{-1}$              | RfD from IRIS Current, revised 1991. Industrial intermediate for resins, dyes, and disinfectants.                                                                                                                                                          |
| 123<br>2 | Trichlorophenol, 2,4,6- †                                                              | 88-06-2  | PPRTV / IRIS | $1.1 \times 10^{-2}$                          | $1 \times 10^{-3}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from PPRTV Current, revised 2007; CSF from IRIS Current, revised 1991. Industrial intermediate for resins, dyes, and disinfectants. |
| 123<br>3 | Trichlorophenoxyacetic Acid, 2,4,5- / Trichlorophenoxyacetic acid (2,4,5-T) †          | 93-76-5  | IRIS         | —                                             | $1 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1988. Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping.                    |
| 123<br>4 | Trichlorophenoxypropionic acid, -2,4,5 / Trichlorophenoxy) propionic acid (2,4,5-TP) † | 93-72-1  | IRIS         | —                                             | $8 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 1988. Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping.                                |
| 123<br>5 | Trichloropropane, 1,1,2-                                                               | 598-77-6 | IRIS         | —                                             | $5 \times 10^{-3}$              | RfD from IRIS Current, revised 1988. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                                                                                                                              |
| 123<br>6 | Trichloropropane, 1,2,3- †                                                             | 96-18-4  | IRIS         | $3 \times 10^1$                               | $4 \times 10^{-3}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health                                                                                                                                                            |

| No.      | Constituent               | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                              |
|----------|---------------------------|-------------|--------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                           |             |        |                                               |                                 | Advisories Tables. RfD and CSF from IRIS Current, revised 2009. Solvent/degreaser; paint remover; soil fumigant impurity (D-D, Telone).                            |
| 123<br>7 | Trichloropropene, 1,2,3-  | 96-19-5     | PPRTV  | —                                             | $3 \times 10^{-3}$              | RfD from SCREEN Current, revised 2009. Chlorinated solvent — degreasing, dry cleaning, manufacturing; common groundwater plume.                                    |
| 123<br>8 | Triclopyr                 | 55335-06-3  | RAIS   | —                                             | $5 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Phenoxy/acid herbicide — broadleaf weed control in agriculture and landscaping.                              |
| 123<br>9 | Tricresyl Phosphate (TCP) | 1330-78-5   | RAIS   | —                                             | $2 \times 10^{-2}$              | RfD from ATSDR Final (revision date not published by source). Hydraulic and lubricating fluid additive (notably aviation); plasticizer and flame retardant in PVC. |
| 124<br>0 | Tricyclazole              | 41814-78-2  | RAIS   | —                                             | $6.7 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Rice blast fungicide.                                                                                        |
| 124<br>1 | Tridemorph                | 24602-86-6  | RAIS   | —                                             | $1 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Cereal fungicide (morpholine class).                                                                         |
| 124<br>2 | Tridiphane                | 58138-08-2  | IRIS   | —                                             | $3 \times 10^{-3}$              | RfD from IRIS Current, revised 1987. Corn herbicide synergist.                                                                                                     |
| 124<br>3 | Triethylene Glycol        | 112-27-6    | PPRTV  | —                                             | 2                               | RfD from PPRTV Current, revised 2014. Polar industrial solvent, glycol, or alcohol; wide commercial use.                                                           |
| 124<br>4 | Trifloxystrobin           | 141517-21-7 | RAIS   | —                                             | $3.8 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                    |
| 124<br>5 | Trifloxysulfuron Sodium   | 290332-10-4 | RAIS   | —                                             | $2.37 \times 10^{-1}$           | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                    |
| 124<br>6 | Triflumezopyrim           | —           | RAIS   | —                                             | $1.7 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Rice insecticide for planthopper control.                                                                    |

| No.      | Constituent                | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                          |
|----------|----------------------------|-------------|--------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 124<br>7 | Triflumizole               | 68694-11-1  | RAIS   | —                                             | $1.17 \times 10^{-2}$           | RfD from OPP (revision date not published by source). Imidazole fungicide for fruit, vegetables, and ornamentals.                                                                                                              |
| 124<br>8 | Trifluralin †              | 1582-09-8   | IRIS   | $7.7 \times 10^{-3}$                          | $7.5 \times 10^{-3}$            | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 1989. Trifluralin — pre-emergent herbicide; NDPA precursor impurity. |
| 124<br>9 | Triflusulfuronmethyl       | 126535-15-7 | RAIS   | —                                             | $2.44 \times 10^{-2}$           | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                                                                                                                                |
| 125<br>0 | Triforine                  | 26644-46-2  | RAIS   | —                                             | $2.2 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Fungicide for ornamentals, fruit, and turf.                                                                                                                              |
| 125<br>1 | Trimagnesium phosphate     | 7757-87-1   | PPRTV  | —                                             | $4.9 \times 10^1$               | RfD from PPRTV, revised 2011. Food additive and anticaking agent; antacid pharmaceutical; fertilizer.                                                                                                                          |
| 125<br>2 | Trimethyl Phosphate        | 512-56-1    | PPRTV  | $2 \times 10^{-2}$                            | $1 \times 10^{-2}$              | RfD and CSF from PPRTV Current, revised 2010. Industrial methylating agent; flame retardant and gasoline additive; polymer intermediate.                                                                                       |
| 125<br>3 | Trimethylbenzene, 1,2,3- ‡ | 526-73-8    | IRIS   | —                                             | $1 \times 10^{-2}$              | ‡ Health advisory published by MN — level 30 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 2016. Petroleum/fuel component and industrial solvent.                                                |
| 125<br>4 | Trimethylbenzene, 1,2,4- † | 95-63-6     | IRIS   | —                                             | $1 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2016. Petroleum/fuel component and industrial solvent.                       |
| 125<br>5 | Trimethylbenzene, 1,3,5- † | 108-67-8    | IRIS   | —                                             | $1 \times 10^{-2}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2016. Petroleum/fuel component and industrial solvent.                       |

| No.      | Constituent                                       | CAS No.    | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                      |
|----------|---------------------------------------------------|------------|--------|-----------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 125<br>6 | Trimethylpentene, 2,4,4-                          | 25167-70-8 | PPRTV  | —                                             | $1 \times 10^{-2}$              | RfD from SCREEN Current, revised 2015. Diisobutylene — surfactant and lubricant additive intermediate.                                                                                                                     |
| 125<br>7 | Trinexapac-Ethyl                                  | 95266-40-3 | RAIS   | —                                             | $3.2 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Trinexapac-ethyl — turf growth regulator; heavy golf course and sports-turf use.                                                                                     |
| 125<br>8 | Trinitrobenzene, 1,3,5- ‡                         | 99-35-4    | IRIS   | —                                             | $3 \times 10^{-2}$              | ‡ Health advisory published by MN — level 0.3 µg/L (Other States' Health Advisories List). RfD from IRIS Current, revised 1997. Military explosive or propellant; defense/ordnance site contaminant.                       |
| 125<br>9 | Trinitrotoluene, 2,4,6- / Trinitrotoluene (TNT) † | 118-96-7   | IRIS   | $3 \times 10^{-2}$                            | $5 \times 10^{-4}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD and CSF from IRIS Current, revised 1989. TNT — military explosive; legacy ordnance/munitions sites. |
| 126<br>0 | Triphenylphosphine Oxide                          | 791-28-6   | PPRTV  | —                                             | $2 \times 10^{-2}$              | RfD from PPRTV Current, revised 2007. Byproduct of Wittig and related syntheses; coordination ligand and pharmaceutical manufacturing residue.                                                                             |
| 126<br>1 | Triphenyltin hydroxide (TPTH)                     | 76-87-9    | RAIS   | 1.83                                          | $1 \times 10^{-3}$              | RfD and CSF from OPP (revision date not published by source). Organotin fungicide for potatoes, sugar beet, and pecans.                                                                                                    |
| 126<br>2 | Tris(1,3-Dichloro-2-propyl) Phosphate ‡           | 13674-87-8 | RAIS   | —                                             | $2 \times 10^{-2}$              | ‡ Health advisory published by MN — level 10 µg/L (Other States' Health Advisories List). RfD from ATSDR Final (revision date not published by source). TDCPP flame retardant — furniture foam, baby products.             |
| 126<br>3 | Tris(1-chloro-2-propyl)phosphate                  | 13674-84-5 | PPRTV  | —                                             | $1 \times 10^{-2}$              | RfD from SCREEN Current, revised 2012. TCPP flame retardant — polyurethane foam in furniture and building insulation; persistent in wastewater.                                                                            |

| No.              | Constituent                         | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                               |
|------------------|-------------------------------------|-------------|--------|-----------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 126 <sub>4</sub> | Tris(2,3-dibromopropyl)phosphate    | 126-72-7    | RAIS   | 2.3                                           | —                               | CSF from CALEPA (revision date not published by source). Flame retardant for children's sleepwear and textiles; banned in the US in 1977.                                                                           |
| 126 <sub>5</sub> | Tris(2-chloroethyl)phosphate ‡      | 115-96-8    | PPRTV  | $2 \times 10^{-2}$                            | $7 \times 10^{-3}$              | ‡ Health advisory published by MN — level 10 µg/L (Other States' Health Advisories List). RfD and CSF from PPRTV Current, revised 2009. TCEP flame retardant — polyurethane foam, resins; persistent in wastewater. |
| 126 <sub>6</sub> | Tris(2-ethylhexyl)phosphate         | 78-42-2     | PPRTV  | $3.2 \times 10^{-3}$                          | $1 \times 10^{-1}$              | RfD and CSF from PPRTV Current, revised 2002. Plasticizer and flame retardant in PVC, coatings, and hydraulic fluids.                                                                                               |
| 126 <sub>7</sub> | Tris-(1-aziridiny)phosphine sulfide | 52-24-4     | RAIS   | $1.2 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). Thiotepea — alkylating antineoplastic chemotherapy agent.                                                                                                  |
| 126 <sub>8</sub> | Triticonazole                       | 131983-72-7 | RAIS   | —                                             | $1.7 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Triazole seed-treatment and turf fungicide.                                                                                                                   |
| 126 <sub>9</sub> | Trp-P-1 (Tryptophan-P-1)            | 62450-06-0  | RAIS   | $2.6 \times 10^1$                             | —                               | CSF from CALEPA (revision date not published by source). Trp-P-1 — heterocyclic amine formed in cooked protein foods.                                                                                               |
| 127 <sub>0</sub> | Trp-P-2 (Tryptophan-P-2)            | 62450-07-1  | RAIS   | 3.2                                           | —                               | CSF from CALEPA (revision date not published by source). Heterocyclic amine formed in cooked protein foods.                                                                                                         |
| 127 <sub>1</sub> | Tungsten                            | 7440-33-7   | PPRTV  | —                                             | $8 \times 10^{-4}$              | RfD from PPRTV Current, revised 2015. Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                             |
| 127 <sub>2</sub> | Uniconazole-P                       | 83657-17-4  | RAIS   | —                                             | $2 \times 10^{-2}$              | RfD from OPP (revision date not published by source). Triazole plant growth regulator for ornamentals and turf.                                                                                                     |
| 127 <sub>3</sub> | Uranium (Soluble Salts) †           | 7440-61-1   | RAIS   | —                                             | $2 \times 10^{-4}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from ATSDR Final (revision date not                                                                      |

| No.      | Constituent                | CAS No.         | Source | Cancer Slope Factor (mg/kg-day) <sub>-1</sub> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                 |
|----------|----------------------------|-----------------|--------|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                            |                 |        |                                               |                                 | published by source). Naturally occurring in AZ groundwater; mining legacy; nuclear fuel cycle.                                                                                                                                                       |
| 127<br>4 | Urethane / Ethyl carbamate | 51-79-6         | RAIS   | 1                                             | —                               | CSF from CALEPA (revision date not published by source). Urethane (ethyl carbamate) — fermentation byproduct in alcoholic beverages; former pharmaceutical.                                                                                           |
| 127<br>5 | Valifenalate               | 283159-9<br>0-0 | RAIS   | —                                             | $2.2 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Fungicide for grapes and vegetables.                                                                                                                                                            |
| 127<br>6 | Vanadium ‡                 | —               | RAIS   | —                                             | $5.04 \times 10^{-3}$           | ‡ Health advisory published by MN, CA — level 50 µg/L (Other States' Health Advisories List). Surrogate value — See Vanadium Pentoxide. MW contribution adjustment. Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining. |
| 127<br>7 | Vanadium and Compounds ‡   | 7440-62-<br>2   | PPRTV  | —                                             | $7 \times 10^{-5}$              | ‡ Health advisory published by MN, CA — level 50 µg/L (Other States' Health Advisories List). RfD from PPRTV Current, revised 2009. Steel alloy; petroleum combustion residue; naturally occurring.                                                   |
| 127<br>8 | Vanadium Pentoxide         | 1314-62-<br>1   | IRIS   | —                                             | $9 \times 10^{-3}$              | RfD from IRIS Current, revised 1988. Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                                                                |
| 127<br>9 | Vanadium Sulfate           | 36907-42<br>-3  | RAIS   | —                                             | $2 \times 10^{-2}$              | RfD from HEAST Archive (revision date not published by source). Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining.                                                                                                     |
| 128<br>0 | Vernolate / Vernam         | 1929-77-7       | IRIS   | —                                             | $1 \times 10^{-3}$              | RfD from IRIS Current, revised 1987. Carbamate insecticide/fungicide — agriculture and horticulture.                                                                                                                                                  |
| 128<br>1 | Vinclozolin                | 50471-44<br>-8  | IRIS   | —                                             | $2.5 \times 10^{-2}$            | RfD from IRIS Current, revised 1987. Vinclozolin — fungicide; known anti-androgenic endocrine disruptor.                                                                                                                                              |
| 128<br>2 | Vinyl Acetate              | 108-05-4        | RAIS   | —                                             | 1                               | RfD from HEAST Current (revision date not published by source). Vinyl acetate monomer — polyvinyl acetate adhesives, paints, coatings, and PVA films.                                                                                                 |

| No.              | Constituent                 | CAS No.   | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                                                                                                                                                                                                |
|------------------|-----------------------------|-----------|--------|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 128 <sub>3</sub> | Vinyl Chloride †            | 75-01-4   | IRIS   | 1.5                                           | $3 \times 10^{-3}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2000; CSF from IRIS Current (most protective of the published oral slope factors), revised 2000. PVC plastic mfg; breakdown product of TCE/PCE in groundwater. |
| 128 <sub>4</sub> | Warfarin                    | 81-81-2   | IRIS   | —                                             | $3 \times 10^{-4}$              | RfD from IRIS Current, revised 1987. Warfarin — anticoagulant drug; also rodenticide.                                                                                                                                                                                                                |
| 128 <sub>5</sub> | White phosphorus †          | 7723-14-0 | IRIS   | —                                             | $2 \times 10^{-5}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS, revised 1990. Military incendiary and smoke munitions; historic rodenticide and match manufacture; legacy ordnance site contaminant.                               |
| 128 <sub>6</sub> | Xylene, m-                  | 108-38-3  | RAIS   | —                                             | $2 \times 10^{-1}$              | Surrogate value — See Xylenes. Petroleum/fuel component and industrial solvent.                                                                                                                                                                                                                      |
| 128 <sub>7</sub> | Xylene, o-                  | 95-47-6   | RAIS   | —                                             | $2 \times 10^{-1}$              | Surrogate value — See Xylenes. Petroleum/fuel component and industrial solvent.                                                                                                                                                                                                                      |
| 128 <sub>8</sub> | Xylene, p-                  | 106-42-3  | RAIS   | —                                             | $2 \times 10^{-1}$              | Surrogate value — See Xylenes. Petroleum/fuel component and industrial solvent.                                                                                                                                                                                                                      |
| 128 <sub>9</sub> | Xylenes / Xylene, Mixture † | 1330-20-7 | IRIS   | —                                             | $2 \times 10^{-1}$              | † Federal value published — MCL in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2003. Gasoline; solvent in paints, lacquers, adhesives; printing.                                                                                              |
| 129 <sub>0</sub> | Zinc and Compounds †        | 7440-66-6 | IRIS   | —                                             | $3 \times 10^{-1}$              | † Federal value published — Health Advisory in the 2018 EPA Drinking Water Standards and Health Advisories Tables. RfD from IRIS Current, revised 2005. Galvanized pipe corrosion; tire wear; sunscreen; fertilizer.                                                                                 |

| No.      | Constituent    | CAS No.     | Source | Cancer Slope Factor (mg/kg-day) <sup>-1</sup> | Oral Reference Dose (mg/kg-day) | Notes                                                                                                                    |
|----------|----------------|-------------|--------|-----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| 129<br>1 | Zinc Cyanide   | 557-21-1    | IRIS   | —                                             | $5 \times 10^{-2}$              | RfD from IRIS Current, revised 1987. Electroplating, mining/ore processing, and combustion source.                       |
| 129<br>2 | Zinc Phosphide | 1314-84-7   | IRIS   | —                                             | $3 \times 10^{-4}$              | RfD from IRIS Current, revised 1987. Rodenticide bait for burrowing rodents in agriculture and landscaping.              |
| 129<br>3 | Zineb          | 12122-67-7  | IRIS   | —                                             | $5 \times 10^{-2}$              | RfD from IRIS Current, revised 1987. Dithiocarbamate fungicide for fruit and vegetables.                                 |
| 129<br>4 | Ziram          | 137-30-4    | RAIS   | —                                             | $1.6 \times 10^{-2}$            | RfD from OPP (revision date not published by source). Dithiocarbamate fungicide for fruit and nut crops.                 |
| 129<br>5 | Zirconium      | 7440-67-7   | PPRTV  | —                                             | $8 \times 10^{-5}$              | RfD from SCREEN Current, revised 2012. Metal — naturally occurring, industrial discharge, plumbing corrosion, or mining. |
| 129<br>6 | Zoxamide       | 156052-68-5 | RAIS   | —                                             | $4.8 \times 10^{-1}$            | RfD from OPP (revision date not published by source). Modern agricultural pesticide or biocide.                          |

## Notes

- Values are listed as published by the source. They are not rounded, normalised, or adjusted.
- 17 constituents carry a surrogate value derived from a related compound rather than from a study on the constituent itself. Each is identified in the Notes column.
- The common uses and likely sources given in the Notes column do not form part of any adopted standard.

## References

### Primary sources

U.S. Environmental Protection Agency. *Integrated Risk Information System (IRIS)*. Office of Research and Development, Center for Public Health and Environmental Assessment, Washington, DC. Database available at <https://iris.epa.gov>; program information at <https://www.epa.gov/iris>. Values in this table extracted 30 July 2026.

U.S. Environmental Protection Agency. *Provisional Peer-Reviewed Toxicity Values (PPRTVs)*. Superfund Health Risk Technical Support Center, Center for Public Health and Environmental Assessment, Office of Research and Development, Cincinnati, OH. Available at <https://www.epa.gov/pprtv>. Values in this table extracted 30 July 2026.

Oak Ridge National Laboratory. *The Risk Assessment Information System (RAIS), Chemical Toxicity Values database*. Toxicology and Risk Analysis Section, Oak Ridge National Laboratory, Oak Ridge, TN, operated for the U.S. Department of Energy. Available at <https://rais.ornl.gov>; toxicity value search at [https://rais.ornl.gov/cgi-bin/tools/TOX\\_search](https://rais.ornl.gov/cgi-bin/tools/TOX_search). Values in this table extracted 30 July 2026.

### Source hierarchy guidance

U.S. Environmental Protection Agency. 2003. *Human Health Toxicity Values in Superfund Risk Assessments*. Memorandum from Michael B. Cook, Director, Office of Superfund Remediation and Technology Innovation, to Superfund National Policy Managers, Regions 1–10. OSWER Directive 9285.7-53, December 5, 2003. Establishes the three-tier source order applied as the tie-break in Method section 3.

### Sources aggregated within RAIS

The originating authority for a value attributed to RAIS is one of the following.

Agency for Toxic Substances and Disease Registry. *Minimal Risk Levels (MRLs)*. U.S. Department of Health and Human Services, Public Health Service, Atlanta, GA. Cited in the Notes column as ATSDR.

California Environmental Protection Agency, Office of Environmental Health Hazard Assessment. *Toxicity Criteria Database* (chronic reference exposure levels and cancer potency values). Sacramento, CA. Cited in the Notes column as CALEPA.

U.S. Environmental Protection Agency. *Health Effects Assessment Summary Tables (HEAST)*. Office of Research and Development and Office of Emergency and Remedial Response, Washington, DC. A Tier 3 source under OSWER Directive 9285.7-53. Cited in the Notes column as HEAST.

U.S. Environmental Protection Agency, Office of Pesticide Programs. *Human Health Benchmarks and reregistration and registration review toxicity values*. Washington, DC. Cited in the Notes column as OPP.

U.S. Environmental Protection Agency, Office of Water. *Drinking water health advisories and supporting human health toxicity assessments*, including those for PFOA, PFOS and GenX chemicals. Washington, DC. Cited in the Notes column as DWSHA and as EPA Office of Water.

World Health Organization. *Toxic equivalency factors (TEFs) for dioxins, furans and dioxin-like polychlorinated biphenyls*. Cited in the Notes column as WHO/TEF. Values so derived are relative-potency estimates rather than independently derived toxicity values.

*This document was prepared with the assistance of artificial intelligence tools. All content has been reviewed, verified, and approved by ADEQ subject matter experts. Pursuant to applicable Arizona law governing the use of artificial intelligence in the preparation of government documents, this disclosure is provided for transparency.*