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| **Instructions for using this template:**  Permittees are required to submit a Toxicity Reduction Evaluation (TRE) Plan for ADEQ review and approval when required follow-up sampling detects toxicity above an action level or discharge limitation. At a minimum, the TRE Plan shall include the following:   * Further actions to investigate and identify the causes of toxicity. * Actions the permittee will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and * A schedule for implementing these actions.   This guidance document summarizes the various steps of a TRE Plan following EPA Manuals[[1]](#endnote-1). Each section describes the various stages of the TRE. The permittee should review each section and describe the steps that have been or will be taken to identify and reduce the source of toxicity utilizing this template. Any steps that are planned to be taken should be described in Step 4. This plan should be updated as necessary as more information becomes available. | |
| **Step 1. – Define the Objectives and develop the implementation schedule.** | The plan should identify the objectives of the Toxicity Reduction Evaluation Plan listed below. Permittees should describe the specific facility objectives to identify and reduce the toxicity.   * Evaluation of operation and performance of the POTW (Step 3) * Identification of compounds causing toxicity (Step 4) * Tracing effluent toxicants and/or toxicity to their source (Step 5) * Evaluation, selection, and implementation toxicity reduction methods or technologies to control toxicity. Implementation should include follow up sampling to ensure control technologies are effective. (Step 6) * Create a schedule with milestones and deadlines for completion. (Step 7) |
| **Step 2. – Describe the data that will be evaluated** | Permittees should conduct a review and summarize any available historical data that will be reviewed as part of the TRE, including but not limited to the items listed below. The data results should be summarized in tabular form in the TRE Plan.   * AZPDES Permit requirements; * POTW design criteria; * Influent and pollutant data; * Process control data; * Operations information; * Process side-stream characteristic data; and/or * Wastewater by-pass or sanitary sewer overflows |
| **Step 3. – Evaluate the facility’s performance** | Permittees should include the following information:   * An evaluation of the performance of the WWTP to indicate conventional pollutant treatment deficiencies. The results of the evaluation should be reported in the plan. * Compile and review pretreatment data for comparison to the effluent toxicity characteristics. Determine if toxicity is related to a particular type of discharge by answering the following questions: * Are changes to influent characteristics observed during toxic periods? * Does toxicity occur during changes in hydraulic and pollutant loadings to the plant? * Can these characteristics be related to certain types of discharges? * Does toxicity occur during upsets? * Are upsets related to a particular type of discharge? * Does toxicity exhibit a weekly, monthly or seasonal pattern? * Does the plant accept hauled wastes? |

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| **Step 4. – Toxicity Identification** | The plan should describe the steps that have been taken or will be taken to identify the source of the toxicity. This should include a review of;   * Process operations and applicable data; * The results of the facility performance evaluation; and * If necessary, a Toxicity Investigation Evaluation may be performed by an Arizona Certified Laboratory to assist with identifying the source of the toxicity.[[2]](#endnote-2) |
| **Step 5. – Develop a sampling plan** | The plan should outline any sampling approaches that will be used to identify the source of the toxicity. This could include sampling throughout the facility treatment processes and, if applicable, site specific sampling of any commercial or industrial users that contribute flows to the wastewater treatment plant. Any sampling must be consistent with the facility’s quality assurance plan as required under Part II. of the Permit. |
| **Step 6.– Evaluate and select toxicity control mechanisms** | The plan should describe the criteria for selection of the preferred toxicity control options. The plan should also define the process that will be used to rank, select and implement the toxicity control mechanisms. Options for criteria may include:   * Compliance with effluent toxicity limits * Compliance with other permits * Capital, operational, and maintenance costs * Ease of implementation * Reliability * Environmental impacts |
| **Step 7. – Implement the selected control mechanism** | Once selected, the plan should be updated to include a schedule of the implementation of the control mechanism. This shall include sampling to ensure the effectiveness in sufficiently reducing toxicity. |

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| Facility Name: | | AZPDES Permit ID:  LTF#: | |
| Facility Physical Address:  City, State, Zip:  County: | | Preparer(s):  Phone:  Email:  Electronic Signature: | |
| Permittee/Responsible Party:  Contact:  Mailing Address:  City, State, Zip:  Phone  Email: | | Date prepared:  Initial Submission  Update | |
| **Summary of Toxicity Information** | | | |
| Select the species with the Whole Effluent Toxicity failures. Describe specific criteria in the comments, e.g. chronic, acute, reproduction, survival. | Water Flea  Minnow  Green Algae | |  |
| Date toxicity first observed? |  | |  |
| Is the source of toxicity known? Describe in comments. | Yes  No  N/A | |  |
| Was the toxicity failure the result of a facility upset or plant malfunction? | Yes  No  N/A | |  |
| Was follow up testing completed? If yes, provide the date of the analysis and provide a copy of the results with this form. | Yes  No  N/A | |  |
| Did follow up testing receive passing results? | Yes  No  N/A | |  |

**Step 1.**

**Objectives:**

*Describe the background and objectives of the project*

# **Implementation Schedule:**

Describe the schedule for implementation the activities described in the Toxicity Evaluation Reduction Plan.

# **Step 2. Data Evaluation:**

Describe what data will be evaluated, e.g. discharge monitoring reports, operational control data, laboratory reports and bench sheets. If available provide copies of laboratory reports and summarize data in tabular form.

# **Step 3. Facility Performance Evaluation**

Are there any known operational issues at the facility. If unknown, describe the process under which the facility’s performance will be evaluated.

# **Step 4. Toxicity Identification**

Describe how the facility plans to identify the toxicity. Describe any commercial or industrial inputs into the system. Will a Toxicity Investigation Evaluation be performed? If not, please explain why?

# **Step 5. Sampling and Analysis Plan**

Describe any sampling activities that have been taken or will be taken to identify the source of toxicity, including the necessary quality assurance plan.

# **Step 6. Evaluation and Selection of Toxicity Control Mechanisms**

Describe how the facility will evaluate and select the control mechanism. This information can be updated as the evaluation progresses.

# **Step 7. Implementation of Selected Toxicity Control**

Describe the plan and schedule to implement the selected toxicity control mechanism. Include a description of the required follow up sampling once the control mechanism is installed. Describe any contingency plans should toxicity still be detected above action levels or discharge limitations.

1. *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants*, 1999 *(*EPA/833/B-99/002) [↑](#endnote-ref-1)
2. *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I, 1992 (EPA/600/6-91/005F); Methods for Aquatic Toxicity Identification Evaluations: Phase I, Toxicity Characterization Procedures, 2nd Edition, 1991 (EPA/600/6-91/003); Methods for Aquatic Toxicity Identification Evaluations: Phase II, Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity, 1993 (EPA/600/R-92/080); and Methods for Aquatic Toxicity Identification Evaluations: Phase III, Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity, 1993 (EPA/600/R-92/081).* [↑](#endnote-ref-2)