# Arizona Dust Mitigation Plan Review and Evaluation

# Final Report

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Prepared for:

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# 1.0 INTRODUCTION

The U.S. Environmental Protection Agency's (EPA) exceptional event rule provides for the exclusion of monitored air quality data when determining compliance with the National Ambient Air Quality Standards (NAAQS) if a state can show that an exceedance of the NAAQS was caused by an exceptional event. Exceptional events can be the result of human activity unlikely to recur or natural events such as wildfires, volcanic eruptions, or high wind episodes. EPA revised the rule in 2016 by including requirements for states to develop mitigation plans for areas with documented recurring events (e.g., high wind dust events). The rule revisions also included a periodic review and evaluation component to the mitigation plans.

The Arizona Department of Environmental Quality (ADEQ) developed and submitted the state's dust mitigation plan to EPA in 2018 (also known as *Exceptional Event Mitigation Plan*). This mitigation plan covered four of the $PM_{10}$ nonattainment areas (NAAs) in Arizona identified by EPA as subject to the mitigation plan requirements in 40 CFR 51.930(b).[1] In the mitigation plan, ADEQ proposed to conduct the periodic review and evaluation after three years.

The purpose of this project was to conduct the first periodic review and evaluation of Arizona's dust mitigation plan. The review process was intended to provide ADEQ and other stakeholders opportunity to review and update information on the mitigation plan components. The evaluation process was intended to conduct a qualitative assessment of the effectiveness of plan components. It should be noted that Gila River Indian Community $PM_{10}$ NAA and Salt River Pima-Maricopa Indian Community $PM_{10}$ NAA are not included in the scope of this project.

[1] The four $PM_{10}$ NAAs in AZ are - Phoenix $PM_{10}$ NAA, Rillito $PM_{10}$ NAA, West Pinal $PM_{10}$ NAA, and Yuma $PM_{10}$ NAA. The Gila River Indian Community and Salt River Pima-Maricopa Indian Community were also identified by EPA as subject to mitigation plan requirements, however, plans for these areas are developed independently and were not included in 2018 document developed by ADEQ.

## 2.0 ARIZONA DUST MITIGATION PLAN SUMMARY

The main components of ADEQ's dust mitigation plan are as follows:

- Air Quality (AQ) forecasts and public notification
- Education programs
- Dust control measures and regulations
- Periodic review and evaluation

The dust mitigation plan contains information on forecast, public notification, and educational and outreach programs managed by ADEQ and other stakeholders with the intent of disseminating air quality and health impact information in advance of an expected exceedance of Federal standards (i.e., whenever air quality concentrations exceed or are expected to exceed an applicable ambient air quality standard or NAAQS). The mitigation plan includes information on relevant control measures and regulations that are in place to restrict additional pollution causing activities during an exceptional event. The dust mitigation plan also includes a requirement to conduct a review and evaluation of plan components once every three years.

The following are the stakeholders participating in the development and update of the dust mitigation plan:

- ADEQ
- Arizona Department of Transportation (ADOT)
- Maricopa County (Maricopa County Air Quality Department, MCAQD)
- Maricopa Association of Governments (MAG)
- Pima County (Pima County Department of Environmental Quality, PDEQ)
- Pima Association of Governments (PAG)
- Pinal County (Pinal County Air Quality Control District, PCAQCD)
- Yuma County
- Yuma Metropolitan Planning Organization (YMPO)

## 3.0 DUST MITIGATION PLAN REVIEW

ERG initiated the review process by reviewing dust mitigation plans developed by air agencies in California (Coso Junction, South Coast, and Imperial Valley) and Nevada (Clark County and Pahrump Valley). These neighboring states have $PM_{10}$ NAAs with high wind and dust issues similar to Arizona. ERG was not able to find any periodic review and evaluation conducted for any of the California and Nevada dust mitigation plans. As a next step in establishing the content and format of the review and evaluation process, ERG held meetings with ADEQ and EPA Region 9 staff. Region 9 staff confirmed that none of the states in the region had submitted a periodic review and evaluation document for their mitigation plans (either dust or ozone). Based on these discussions, ERG formulated the following review and evaluation process in consultation with ADEQ:

1. Review Process –
    a. Request all stakeholders to provide updates to the dust mitigation plan content.
    b. Conduct web search to identify improvements to forecast and notification programs managed by ADEQ since 2018.
    c. Perform a web search to ensure that all control measures and regulations listed in the dust mitigation plan are currently being enforced (this was conducted as part of the control measures evaluation process). During the web search, ERG identified applicable control measures and regulations that were previously not included in the dust mitigation plan.
    d. Develop a revised dust mitigation plan that includes all the information compiled in above steps.
2. Evaluation Process –
    a. Implementation review – Under this review, ERG performed a web search to ensure that all control measures and regulations listed in the 2018 Arizona dust mitigation plan are currently being enforced. Additionally, ERG also performed a web search to confirm that ADEQ's AQ forecasting program [both Air Quality Index (AQI) and Air Quality Risk (AQR) forecasts] and public notification programs are being implemented. See Section 4.0 for more details.
    b. Effectiveness evaluation – ERG performed a qualitative assessment of whether ADEQ and other stakeholders' programs (i.e., forecast/notification and education programs) meet the requirement that notification and education programs shall apply whenever air quality concentrations exceed or are expected to exceed a NAAQS. See Section 4.0 for more details.

The remainder of this section will focus on the review process to develop a revised dust mitigation plan for Arizona.

ERG obtained a list of stakeholder contacts from ADEQ and developed individual review packages for stakeholders to review. The individual packages only contained information from

the dust mitigation plan relevant to the stakeholder. These packages contained information on notification programs, and educational and outreach programs managed by the stakeholder. The packages also contained a listing of control measures and regulations that were enforced by the stakeholder and included in the dust mitigation plan. Notes and comments were also included to assist the reviewers. Table 3-1, below, presents a summary of stakeholder review requests.

**Table 3-1. Summary of Stakeholder Review**

| Stakeholder | Response Received? | Nature of Response |
|---|---|---|
| ADEQ | Yes | Updates on public notification and education programs. Excluded a control measure that no longer applies as a result of West Pinal NAA's change in classification from Moderate to Serious. Added additional control measures. |
| ADOT | Yes | Revised control measures to indicate 2021 updates to standard specifications for road and bridge construction. |
| MCAQD | Yes | Changes include updates to notification programs, education programs, and title change for a control measure. |
| MAG | Yes | No updates/additions to existing information. |
| PDEQ | Yes | Minor update to public notification program. |
| PAG | Yes | Added new control measure that includes monitoring and recordkeeping requirements of dust control measures implemented by stationary sources. |
| PCAQCD | Yes | Minor update to public notification program. |
| Yuma County | Yes | Minor updates to control measures. |
| YMPO | No | No response. |

Apart from stakeholder updates, ERG identified the following information for inclusion in the revised dust mitigation plan:

- Update ADEQ's public notification programs section to indicate the recent change from Health Watch (HW) notifications to High Pollution Watch (HPW).
- Maricopa County Rule 312 (Abrasive Blasting) – Rule prohibits unconfined dry abrasive blasting during wind events (i.e., wind speeds greater than 25 mph).
- Pinal County Area A No Burn Ordinance – Ordinance triggers "no burn" restrictions and prohibitions for calendar day(s) covered by ADEQ's High Pollution Advisory for $PM_{10}$.
- Pima County Ordinance 17.32.010-040 (Emergency Episodes) – Article I of Chapter 17.32 establishes possible curtailment of emission activities during an emergency episode. These include suspension of burn permits and curtailment of certain manufacturing operations during an emergency episode.

ERG compiled information solicited from stakeholders and obtained via web searches to develop a revised dust mitigation plan for Arizona. Based on ERG's review of dust mitigation plan developed by other air agencies in California and Nevada, we recommend that ADEQ change their period review and evaluation process from a 3-year cycle to a 5-year cycle. The revised dust mitigation plan is included as an attachment to this report.

# 4.0 DUST MITIGATION PLAN EVALUATION

The dust mitigation plan evaluation process consists of implementation review and effectiveness assessment of plan components. As described in Section 3.0, the evaluation process is qualitative in nature.

## 4.1 Implementation Review

Under the implementation review, ERG performed web searches to ensure all forecast/notification, education programs, and control measures listed in the 2018 dust mitigation plan are active and currently enforced. ERG obtained and reviewed historic $PM_{10}$ public notifications (issued in 2021) from ADEQ, and current and historic AQ forecast and monitoring data from ADEQ's website. ERG's findings indicate that all plan components included in the 2018 mitigation plan are currently active, except for a single control measure that is no longer applicable. This control measure was excluded from the revised dust mitigation plan.

## 4.2 Effectiveness Evaluation

The goals of the dust mitigation plan are: to provide public notification and education programs for potentially affected communities whenever air quality concentrations are expected to exceed a national ambient air quality standard **and** to implement control measures (regulatory and voluntary) to minimize air pollution and human exposure to high concentrations of air pollutants. ERG performed a qualitative assessment of how well ADEQ and other stakeholders meet these goals. The plan components that were evaluated under the effectiveness assessment are AQ forecasts/notification programs and education programs. Considering project resources and timeline, and in consultation with ADEQ staff, ERG decided to exclude control measures from this evaluation.

### 4.2.1 AQ Forecasting and Public Notification Programs

***Program Summary***

AQ Forecasting – ADEQ meteorologists provide Air Quality Index (AQI) and Air Quality Risk-based (AQR) forecasts (i.e., risk of exceeding NAAQS) for $PM_{10}$. Weather models, past/current meteorology and $PM_{10}$ monitoring data, and staff expertise and personal knowledge are used in developing the forecasts. Hourly forecasts are developed for a 5-day period and posted to ADEQ's website and emailed to a subscription list no later than 10:00 a.m. (AQI forecasts) or 12:00 pm. (AQR forecasts). Historic forecast data (discussion, concentrations, etc.) and notifications are saved in an internal ADEQ database (not available publicly).

***Public Notification Program -***

- 5-day AQI and AQR forecasts are posted on ADEQ's website and emailed to subscribers daily.
- AQI forecasts are available for the four PM10 NAAs subject to mitigation plan requirements.

- AQR forecasts are available for Phoenix and West Pinal $PM_{10}$ NAAs.
- High Pollution Watches/Advisories (HPW/HPA) are issued up to five days in advance for $PM_{10}$ NAAs via ADEQ's website (except for the West Pinal $PM_{10}$ NAA, which is available on the Pinal County website), and posted on social media. HPW's are issued when there is potential for a pollutant to exceed the federal health standard. As the date nears and the confidence in the forecast increases, the HPW is upgraded to an HPA. An HPA is issued when it is imminent or there is a high probability for a pollutant to exceed the federal health standard.
- Air quality alerts are also issued through the National Weather Service (NWS) website and sent out to local media to be disseminated out to the public.
- AQ Flag Program - The Program uses nautical-style flags to match the levels of the EPA's AQI that represents the daily air quality in a given area. The flags are posted at participating schools and/or community centers in an area visible to the public.

### *Extent of Program Activities*

All AQI and AQR forecasts and public notification programs are currently active. The programs cover all $PM_{10}$ NAAs in Arizona. Forecasts and notifications are posted online (i.e., websites of ADEQ, Maricopa County, Pima County, Pinal County, and Yuma County), sent via email/text messaging to subscribers, and disseminated through local media and social media. Daily and hourly forecasts and notifications are provided by ADEQ. Similar public notification programs (albeit on a smaller scale) are separately run by Maricopa County (MCAQD), Pima County (PDEQ), Pinal County (PCAQCD), and Arizona Department of Transportation (ADOT). Historic forecasts and notification information is internally saved by ADEQ (not available online). Location-specific current and past monitoring data (state-wide $PM_{10}$ monitoring network) are also available online.

ERG reviewed examples of historic $PM_{10}$ HPAs issued by ADEQ in 2021. The HPAs contained the following information:

- Nature of alert ($PM_{10}$, ozone, etc.)
- Geographic coverage for alert
- Time frame the alert is in effect
- Recommended level of outdoor activity
- Health impacts for general population and sensitive groups (e.g., children and people with respiratory issues)
- Activities to avoid
- Contact information for state and local authorities
- Links for further information (e.g., particulate matter fact sheets, air quality forecasts, subscription links for text/email alerts, links to mobile app)

The HPAs effectively communicate the nature of the pollution event and associated health

impacts and provide resources and local contacts for additional information.

### *Extent of Program Coverage*

Forecasts and notifications are disseminated to public state-wide through various media (e.g., posting to Websites, email subscriptions, and text alerts), including the $PM_{10}$ NAAs in Arizona. The number of AQI and AQR forecast recipients are as follows:

- Phoenix AQI forecast – 18,499 recipients
- Rillito AQI forecast – 430 recipients
- West Pinal AQI forecast – 1,363 recipients
- Yuma AQI forecast – 1,503 recipients
- Phoenix Dust Risk forecast – 14,170 recipients
- Pinal County Dust Risk forecast – 1,498 recipients

ADEQ's AQ flag program is actively implemented at 227 locations (e.g., schools and community centres) state-wide. The number of AQ flag locations in $PM_{10}$ NAAs are as follows:

- Phoenix $PM_{10}$ NAA – 107 locations
- Rillito $PM_{10}$ NAA – 6 locations
- West Pinal $PM_{10}$ NAA – 41 locations
- Yuma $PM_{10}$ NAA – 26 locations

### *Frequency of Forecasts/Notifications*

ADEQ issues air quality forecasts (both AQI and AQR) daily Monday through Friday. Forecasts are issued for a 5-day period. Typically, public notifications are issued at least 24 hours in advance of expected exceedance of federal health standards but can also be issued on the same day.

### *Ease of Use*

Air quality forecasts and public notifications (i.e., HPWs and HPAs) are available on the homepage banner of ADEQ's website and through ADEQ's social media channels. Email/text subscriptions are available with an easy sign-up process. Forecasts and notifications are also disseminated via press releases, local media, and the National Weather Service.

ADEQ also provides the public with the Air Arizona mobile app (available in English and Spanish). The mobile app is highlighted on ADEQ's homepage banner and available for Android and iPhone users. The mobile app provides hourly forecasts, public notifications, health tips, and information on efforts to reduce pollution. Similar mobile app is provided by Maricopa County (Clean Air Make More mobile app).

### *Customer Satisfaction*

ADEQ did not receive any customer complaints related to AQ forecasts and/or public notifications in 2021.

### *Other Effectiveness Measures*

- Quality Assurance Measures – ADEQ replaced the Health Watch with High Pollution Watch (HPW). HW was triggered when the forecast AQI was between 90 to 100 and resulted in over messaging to subscribers. ADEQ switched to HPW (i.e., AQI of 101 and above), where more advanced notice is provided of potential air quality issues. HW alerts were issued 24 hours in advance and an HPW can be issued up to 5 days in advance. An HPW is upgraded to an HPA when there is a high probability of exceeding the federal health standard.
- Data Retention and Availability – ADEQ's website provides public access to current and historic $PM_{10}$ monitoring data, including exceedances. Annual daily maximum AQI and concentration data, and annual $PM_{10}$ exceedance data are publicly available for the entire monitoring network from year 2015 onwards. ADEQ's website provides public access to current AQI and AQR forecasts developed for a 5-day period. Historic forecasts are maintained in an internal ADEQ database that is not publicly available. Public notifications for current events are available on ADEQ's website. Historic public notifications are maintained in an internal ADEQ database that is not publicly available.
- Technical Issues – ADEQ's AQ forecast and public notification programs did not experience any technical issues in 2021 that prevented issuance of public alerts. ADEQ has not received any customer complaints related to AQ forecasts or public notifications in 2021.

## 4.2.2 Education Programs

### *Program Summary*

ADEQ provides daily AQ forecasts and health and pollution alerts (HPW and HPA) in advance of expected high dust events. Such public notifications are provided for all $PM_{10}$ NAAs in the state. These notifications also include information on health impacts associated with particulate matter, recommended outdoor activities, precautions for sensitive groups (e.g., children and older age groups, and people with respiratory health issues), pollution causing activities to avoid (e.g., avoid using leaf blowers and offroad recreational vehicles), and links to other health resources.

ADEQ's Office of Children's Environmental Health (OCEH) manages state-wide educational programs to help identify and mitigate health issues arising from exposure to air pollutants. OCEH runs programs such as Air Quality Flag Program, Idle Reduction, and Green Schools Programs. OCEH website provides access to tools and resources such as fact sheets, posters, activity guides, and program handbooks for information dissemination to general public.

Additionally, ADEQ's website contains information on air pollution and particulate pollution basics, definitions, FAQs, and additional information resources.

Other Stakeholder Programs:

- Maricopa County Air Quality Department (MCAQD) – Clean Air Make More is an educational outreach initiative created to generate public awareness towards air pollution challenges and provide them with the resources needed to understand and mitigate related health challenges. This website contains information on air pollutants, activities causing air pollution, health impacts of air pollutants, restrictions based on local air quality, and information on mitigating health and environmental impacts. The website also provides public access to tools such as toolkits and flyers. A smartphone mobile application is also available and provides real-time air quality information, health tips, and access to other informational resources.
- Pima County Department of Environmental Quality (PDEQ) and Pinal County Air Quality Control District (PCAQCD) – PDEQ and PCAQCD maintain public outreach and information programs through their respective websites to promote public awareness and encourage actions to reduce pollution. Both the agencies provide information to a variety of audiences (i.e., schools and youth groups, community groups, businesses, associations, agencies, and industries) and through various media (i.e., email subscription, sponsorship and participation in community events). These websites provide information on health and wellness related to air quality including particulate matter pollution sources, at risk populations, possible health effects of pollution, recommendations to manage exposure and related health impacts, and various ways residents can take action to mitigate pollution.

### *Extent of Program Activities*

All educational and outreach programs listed in the 2018 dust mitigation plan are currently active. The programs cover all $PM_{10}$ NAAs in Arizona. Information is posted online (i.e., websites of ADEQ, Maricopa County, Pima County, Pinal County, and Yuma County), sent via email/text messaging to subscribers, and disseminated through local media and social media. Daily and hourly forecasts and notifications are provided by ADEQ that contain public awareness and educational information.

In addition, location-specific current and past monitoring data (state-wide $PM_{10}$ monitoring network) are also available online. ADEQ also provides online public access to $PM_{10}$ monitoring and exceedance data (both current and historic).

ERG reviewed examples of historic $PM_{10}$ HPAs issued by ADEQ (issued in 2021). The HPAs contained the following education information:

- Nature of alert ($PM_{10}$, ozone, etc.)
- Geographic coverage and time frame the alert is in effect
- Recommended level of outdoor activity
- Health impacts for general population and sensitive groups (e.g., children and people with respiratory issues)
- Activities to avoid
- Contact information for state and local authorities

- Links for further information (e.g., particulate matter fact sheets, air quality forecasts, subscription links for text/email alerts, links to mobile app)

The education and outreach programs effectively communicate the nature of the pollution event and associated health impacts and provide resources for additional information.

### *Extent of Program Coverage*

Educational and outreach information is disseminated to public state-wide, including all the $PM_{10}$ NAAs in Arizona. ADEQ's AQ flag program is actively implemented at 227 locations (e.g., schools and community centres) state-wide. The number of AQ flag locations in $PM_{10}$ NAAs are as follows:

- Phoenix $PM_{10}$ NAA – 107 locations
- Rillito $PM_{10}$ NAA – 6 locations
- West Pinal $PM_{10}$ NAA – 41 locations
- Yuma $PM_{10}$ NAA – 26 locations

The educational programs developed and maintained by ADEQ, and stakeholders cover all the basics of particulate pollution, including definitions, descriptions, and FAQs. ADEQ and other stakeholders provide public access to information on identifying sensitive population groups, particulate health impacts, steps to manage and mitigate health impacts, pollution mitigation actions, and accessibility to current and historic air quality monitoring data.

### *Ease of Use*

All educational and outreach program information and resources are readily and publicly available on ADEQ and stakeholder websites and through social media channels. Information is available in English and Spanish. Email/text subscriptions are available with an easy sign-up process.

ADEQ also provides the general public with the Air Arizona mobile app (available in English and Spanish). The mobile app is highlighted on ADEQ's homepage banner and available for Android and iPhone users. The mobile app provides hourly forecasts, public notifications, health tips, and information on efforts to reduce pollution. Similarly, MCAQD's Clean Air Make More mobile app is available for Android and iPhone users.

## 5.0 CONCLUSIONS

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# Attachment A

# Revised 2018 AZ Dust Mitigation Plan

# Revised Exceptional Event Mitigation Plan: Phoenix, Rillito, West Pinal, and Yuma $PM_{10}$ Nonattainment Areas

*Air Quality Division*
*June 2022 PROPOSED*

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| 40 CFR 51.930 – MITIGATION OF EXCEPTIONAL EVENTS<br>Regulatory Citations | | |
|---|---|---|
| **Citation** | **Short Title** | **Description** |
| **51.930(a) – Minimum Requirements to Exclude Data Due to Exceptional Events** | | |
| A State requesting to exclude air quality data due to exceptional events must take appropriate and reasonable actions to protect public health from exceedances or violations of the NAAQS. At a minimum, the State must: | | |
| 51.930(a)(1) | Public Notification | Provide prompt public notification whenever air quality concentrations exceed or are expected to exceed an applicable ambient air quality standard. |
| 51.930(a)(2) | Public Education | Provide public education concerning actions that individuals may take to reduce exposures to unhealthy levels of air quality during and following an exceptional event. |
| 51.930(a)(3) | Implementation of Appropriate Measures | Provide for the implementation of appropriate measures to protect public health from exceedances or violations of ambient air quality standards caused by exceptional events. |
| **51.930(b) – Areas Requiring Mitigation Plans** | | |
| Development of mitigation plans for areas with historically documented or known seasonal events. | | |
| 51.930(b)(1) | General Requirements | All States having areas with historically documented or known seasonal events shall be required to develop a mitigation plan with the components in 51.930(b)(2) and submit such plan to the Administrator according to the requirements in 51.930(b)(3). |
| 51.930(b)(1)(i) | Historically Documented or Seasonal Events | For purposes of the requirements set forth in 51.930, historically documented or known seasonal events shall include those events of the same type and pollutant that recur in a 3-year period and meet any of the following: |
| 51.930(b)(1)(i)(A) | Events During a Three-Year Time Period | Three events or event seasons that a State submits a demonstration under the provisions of 40 CFR 50.14 in a 3- year period; or |
| 51.930(b)(1)(i)(B) | Initial Notification of Exceptional Event | Three events or event seasons that are the subject of an initial notification of a potential exceptional event as defined in 40 CFR 50.14(c)(2) in a 3-year period regardless of whether the State submits a demonstration under the provisions of 40 CFR 50.14. |
| 51.930(b)(1)(ii) | EPA Notification to States | The Administrator will provide written notification to States that they are subject to the requirements in 51.930(b) when the Administrator becomes aware of applicability. |
| **51.930(b)(2) – Plan Components** | | |
| At a minimum, each mitigation plan developed under this paragraph shall contain provisions for the following: | | |
| 51.930(b)(2)(i) | Public Notification & Education Programs | Public notification to and education programs for affected or potentially affected communities. Such notification and education programs shall apply whenever air quality concentrations exceed or are expected to exceed a NAAQS with an averaging time that is less than or equal to 24-hours. |

| 40 CFR 51.930 – MITIGATION OF EXCEPTIONAL EVENTS<br>Regulatory Citations | | |
|---|---|---|
| **Citation** | **Short Title** | **Description** |
| 51.930(b)(2)(ii) | Identification & Implementation of Mitigation Measures | Steps to identify, study and implement mitigating measures, including approaches to address each of the following: |
| 51.930(b)(2)(ii)(A) | Abate/Minimize Contributing Controllable Sources | Measures to abate or minimize contributing controllable sources of identified pollutants. |
| 51.930(b)(2)(ii)(B) | Minimize Public Exposure to High Concentrations | Methods to minimize public exposure to high concentrations of identified pollutants. |
| 51.930(b)(2)(ii)(C) | Collection and Maintenance of Data | Processes to collect and maintain data pertinent to the event. |
| 51.930(b)(2)(ii)(D) | Consultation | Mechanisms to consult with other air quality managers in the affected area regarding the appropriate responses to abate and minimize impacts. |
| 51.930(b)(2)(iii) | Periodic Review and Evaluation of Mitigation Plan | Provisions for periodic review and evaluation of the mitigation plan and its implementation and effectiveness by the State & interested stakeholders. |
| 51.930(b)(2)(iii)(A) | Public Process Requirements for Plan | With the submission of the initial mitigation plan according to the requirements in 51.930(b)(3) that contains the elements in 51.930(b)(2), the State must: |
| 51.930(b)(2)(iii)(A)(1) | Public Comment | Document that a draft version of the mitigation plan was available for public comment for a minimum of 30 days; |
| 51.930(b)(2)(iii)(A)(2) | Submit Public Comment with Plan | Submit the public comments received along with its mitigation plan to the Administrator |
| 51.930(b)(2)(iii)(A)(3) | Explanation of Revisions due to Public Comments | In its submission to the Administrator, for each public comment received, explain the changes made to the mitigation plan or explain why the State did not make any changes to the mitigation plan. |
| 51.930(b)(2)(iii)(B) | Periodic Review and Evaluation | The State shall specify in its mitigation plan the periodic review and evaluation process that it intends to follow for reviews following the initial review identified in 51.930(b)(2)(iii)(A). |

| 40 CFR 51.930 – MITIGATION OF EXCEPTIONAL EVENTS<br>Regulatory Citations | | |
|---|---|---|
| **Citation** | **Short Title** | **Description** |
| **51.930(b)(3) – Submission of Mitigation Plans** | | |
| All States subject to 51.930(b) shall, after notice and opportunity for public comment identified in 51.930(b)(2)(iii)(A), submit a mitigation plan to the Administrator for review and verification of the plan components identified in 51.930(b)(2). | | |
| 51.930(b)(3)(i) | Deadline for Submittal of Mitigation Plan | States shall submit their mitigation plans within 2 years of being notified they are subject to 51.930(b). |
| 51.930(b)(3)(ii) | EPA Review of Plan | The Administrator shall review each mitigation plan developed according to the requirements in paragraph (b)(2) of this section and shall notify the submitting State upon completion of such review. |
| **50.14 – TREATMENT OF AIR QUALITY MONITORING DATA INFLUENCED BY EXCEPTIONAL EVENTS** | | |
| **50.14(b)(9) – Mitigation Plans** | | |
| 50.14(b)(9)(i) | | Except as provided for in 50.14(b)(9)(ii), where a State is subject to the requirements of 40 CFR 51.930(b), the Administrator shall not place a concurrence flag in the appropriate field for the data record in the AQS database, as specified in 50.14(c)(2)(ii), if the data are of the type and pollutant that are the focus of the mitigation plan until the State fulfills its obligations under the requirements of 40 CFR 51.930(b). The Administrator may not concur or defer action on such a demonstration. |
| 50.14(b)(9)(ii) | | The prohibition on placing a concurrence flag in the appropriate field for the data record in the AQS database by the Administrator stated in 50.14(b)(9(i) does not apply to data that are included in an exceptional events demonstration that is: |
| 50.14(b)(9)(ii)(A) | | Submitted in accordance with 50.14(c)(3) that is also of the type and pollutant that is the focus of the mitigation plan. |
| 50.14(b)(9)(ii)(B) | | Submitted within 2-year period allowed for mitigation plan development specified in 51.930(b)(3). |

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# 1 INTRODUCTION

## 1.1 Statement of Introduction and Purpose

The U.S. Environmental Protection Agency's (EPA's) exceptional event rule provides for the exclusion of monitored air quality data when determining compliance with the National Ambient Air Quality Standards (NAAQS) if a state can show that an exceedance of the NAAQS was caused by an exceptional event. Exceptional events can be the result of human activity unlikely to recur or natural events such as wildfires, volcanic eruptions, or high wind episodes.

In October 2016 EPA revised the rule by adding regulatory elements for states and tribes to follow as they develop mitigation plans for areas with ''historically documented'' or ''known seasonal'' recurring events (i.e., three similar events of the same type and pollutant in a three-year period).[1] The revised rule defined those areas to which mitigation requirements apply and clarified that EPA may not concur with a request to exclude data unless an air quality agency has submitted the required plan within two years of the effective date of the rule.

The following areas in Arizona were identified as subject to mitigation plan requirements due to $PM_{10}$ NAAQS exceedances from high winds.[2]

1) Phoenix $PM_{10}$ Nonattainment Area
2) Rillito $PM_{10}$ Nonattainment Area
3) West Pinal $PM_{10}$ Nonattainment Area
4) Yuma $PM_{10}$ Nonattainment Area
5) Gila River Indian Community
6) Salt River Pima-Maricopa Indian Community

This document was developed to comply with federal mitigation plan requirements to reduce $PM_{10}$ emissions and limit public exposure during high-wind dust events in the Phoenix, Rillito, West Pinal, and Yuma areas.

The Arizona mitigation plan was originally developed and submitted to EPA in September 2018. The first periodic review and evaluation of the mitigation plan was conducted in 2022. As a result of the review findings, a revised mitigation plan (i.e., this document) was developed.

## 1.2 Regulatory Background

As noted above, all valid monitored exceedances must be included when determining compliance with the National Ambient Air Quality Standards unless the state can demonstrate that the exceedances are due to an exceptional event. Under the exceptional event rule, the state must demonstrate the following technical criteria to exclude relevant ambient data.[3]

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[1] *See Treatment of Data Influenced by Exceptional Events,* 81 FR 68216, 68218; October 3, 2016; effective September 30, 2016.

[2] $PM_{10}$ is particulate matter that consists of particles with diameters that are generally 10 micrometers and smaller.

[3] *See* the exceptional events definitions and rule at 40 CFR 50.1 and 50.14.

- A clear causal relationship between a specific event and a monitored exceedance or violation
- The event was a natural event or caused by human activity unlikely to recur
- The event was not reasonably preventable or controllable

For exceedances due to a high wind dust event EPA requires the state to show that "reasonable measures" to control the impact of the event on air quality were applied (on anthropogenic sources) at the time of the event.

Although an area may have reasonable controls in place, additional measures to protect the public during periods of elevated pollution concentrations may be necessary. Clean Air Act (CAA) Section 319(b)(3)(A), *Air Quality Monitoring Data Influenced by Exceptional Events*, identifies several principles that EPA must follow in developing implementing regulations for exceptional events, including the following.

- Protection of public health is the highest priority
- Timely information should be provided to the public in any case in which the air quality is unhealthy
- Each state must take necessary measures to safeguard public health regardless of the source of the air pollution

Accordingly, under 40 CFR 51.930, *Mitigation of Exceptional Events*, states and tribes are required to develop mitigation plans for areas with recurring events in which air quality concentrations exceed the NAAQS. Mitigation plan provisions include the following elements.

- Public notification and education
- Identification and implementation of mitigation measures
  - Mandatory or voluntary measures for controllable sources
  - Methods to minimize public exposure
  - Processes to collect data pertinent to an event
  - Mechanisms to consult with other air quality managers to abate and minimize impacts
- Periodic review of mitigation plan effectiveness and revision

Chapter 2 of this document outlines these elements and describes the steps taken by state and local agencies to meet mitigation plan requirements.

## 1.3 Identification of Areas

To protect the public health from exceedances or violations of the NAAQS, mitigation plans are required for areas with "historically documented" or "known seasonal" events. EPA defines these occurrences "to include events of the same type and pollutant (e.g., high wind dust/PM or wildfire/ozone) that recur every year, either seasonally or throughout the year."[4] Areas subject to mitigation requirements are more specifically identified as areas with three events (or three seasons with multiple events of a common type) in a three-year period for which a state has notified the EPA Administrator of its intent to request exclusion of monitored ambient exceedances due to an exceptional event.

Because of the frequent recurrence of high wind events and resultant high $PM_{10}$ concentrations (windblown dust), EPA identified 6 areas in Arizona as subject to the mitigation requirements in 40 CFR

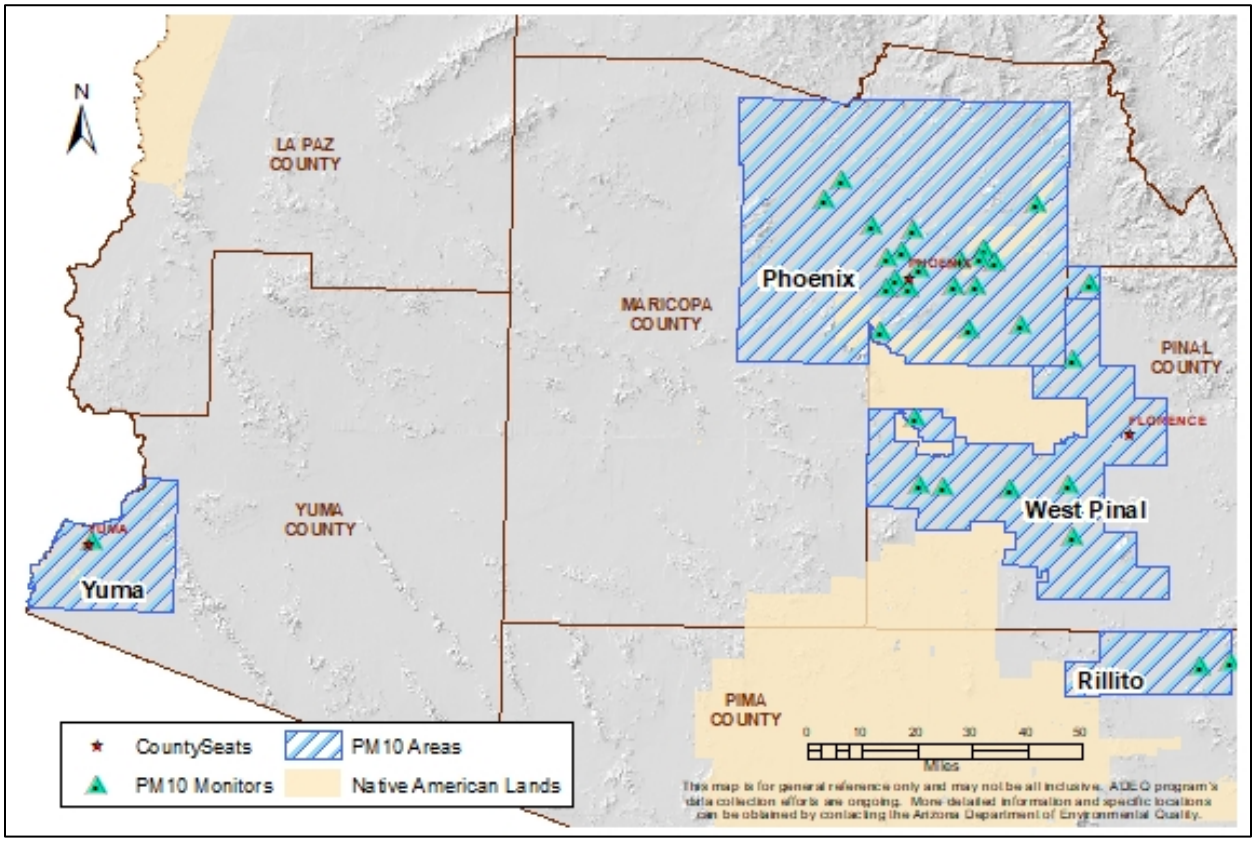
[4] *See* 81 FR 68271, October 3, 2016.

51.930(b).[5] These areas are listed in Table 1-1. Figure 1-1 shows their location within the state. Please note that mitigation plans are developed independently for areas under Gila River Indian Community and Salt River Pima-Maricopa Indian Community jurisdiction and demonstrations for these areas are not included in this document.

**Table 1-1. Areas Subject to Mitigation Plan Requirements in Arizona**

| Pollutant | Event Type | Area |
|---|---|---|
| $PM_{10}$ | High Winds | Phoenix $PM_{10}$ Nonattainment Area |
| $PM_{10}$ | High Winds | Rillito $PM_{10}$ Nonattainment Area |
| $PM_{10}$ | High Winds | West Pinal $PM_{10}$ Nonattainment Area |
| $PM_{10}$ | High Winds | Yuma $PM_{10}$ Nonattainment Area |
| $PM_{10}$ | High Winds | Gila River Indian Community |
| $PM_{10}$ | High Winds | Salt River Pima-Maricopa Indian Community |

**Figure 1-1. Arizona $PM_{10}$ Nonattainment Areas Subject to Mitigation Plan Requirements**




[5] *See* 81 FR 68272, October 3, 2016. Identification of areas was based on ambient monitoring data for the period January 1, 2013 through December 31, 2015, and only includes data with "request exclusion flags" (flagged as exceptional) in EPA's Air Quality System (AQS).

# 2 MITIGATION PLAN COMPONENTS (40 CFR 51.930(b)(2))

## 2.1 Public Notification and Education Programs – 40 CFR 51.930(b)(2)(i)

*"At a minimum, each mitigation plan developed under this paragraph shall contain provisions for the following: (i) Public notification to and education programs for affected or potentially affected communities. Such notification and education programs shall apply whenever air quality concentrations exceed or are expected to exceed a national ambient air quality standard with an averaging time that is less than or equal to 24-hours."*

### 2.1.1 Public Notification

#### 2.1.1.1 Phoenix/Rillito/West Pinal/Yuma

***Arizona Department of Environmental Quality – Air Quality Forecast/Notification Program***

The Arizona Department of Environmental Quality (ADEQ) meteorologists provide Air Quality Index (AQI) and Air Quality Risk-Based (AQR) forecasts to serve and assist the public in Arizona. Air Quality Index forecasts are based on the EPA's AQI federal health standards and are issued for the following planning areas: Phoenix ($PM_{10}$, $PM_{2.5}$, and ozone), Prescott (ozone), Tucson ($PM_{10}$, $PM_{2.5}$, and ozone), Rillito ($PM_{10}$), and Yuma ($PM_{10}$, $PM_{2.5}$, and ozone). Air quality- and risk-based forecasts are five-day forecasts that are disseminated daily Monday through Friday.

The AQI forecasts inform the public of expected hourly air quality conditions and provide advice about what they can do to protect their health, especially that of children, seniors, and people with respiratory problems. For the areas listed in the previous paragraph, ADEQ issues either a High Pollution Watch (HPW) when there is the potential for a pollutant to exceed the federal health standard or a High Pollution Advisory (HPA) when it is imminent or there is a high probability for a pollutant to exceed the federal health standard. A HPA is typically issued a day in advance of an air quality episode with an HPW issued up to 5 days in advance of the air quality episode. If weather conditions that could influence air quality change following a previously issued forecast the agency may issue an HPA on the day of the air quality episode.

Air quality episodes trigger a concerted effort by ADEQ and other local regulatory agencies to actively message the imminent event. The intent is to increase awareness of the event and suggest measures the public can take to curb or prevent pollutant contribution. Messaging is initiated once a decision is made by ADEQ meteorologists to issue a HPA or HPW, which are communicated through multiple channels including:

- ADEQ website (all locations),
- ADEQ Office of Communications and Outreach (all locations),
- Maricopa County Air Quality Department (MCAQD) Office of Communications (Phoenix area),
- Capitol Rideshare (Phoenix area),
- Valley Metro (Phoenix area),
- EPA's AirNow (all locations),

- National Weather Service (NWS) (all locations; HPA only),
- Mobile Air Quality Applications (all locations); and
- GovDelivery[6] email and text bulletin subscriptions (all locations).

The ADEQ Office of Communications and Outreach uses the following general process for disseminating High Pollution Watches and High Pollution Advisories.

- Phoenix area (Maricopa County) HPAs are sent to the vehicle emissions testing stations for placement of messaging on electronic signs; and the travel reduction coordinator receives emails to distribute internally and to other agencies
- All HPAs are posted on the ADEQ website (home page banner) and linked to the published forecast
- All HPWs are posted on the ADEQ website (home page banner) and link to the published forecast (no email)
- All HPWs and HPAs are also posted to social media (Facebook – 4,333 followers, Instagram – 1,181 followers, and Twitter – 8,973 followers)

In addition to the distribution of HPWs and HPAs described above, ADEQ forecasters post the following AQI forecasts to the ADEQ website on a daily basis (Monday through Friday) and send to subscribers via email or text messaging.

- Phoenix AQI forecast – 18,499 recipients
- Rillito AQI forecast – 430 recipients
- Tucson AQI forecast – 1,363 recipients
- Yuma AQI forecast – 1,503 recipients

ADEQ also issues a Maricopa County and Pinal County Dust Risk forecast (i.e., low, moderate, high risk). These risk-based forecasts assist industrial and agricultural operations with reducing dust pollution through planning work activities that will minimize emissions on moderate and high risk days. These forecasts are also used by county inspectors for enforcement purposes. Forecasts are made available on the ADEQ website and sent by GovDelivery email and text bulletin subscriptions.

- Maricopa County (Phoenix) Dust Risk forecast – 14,170 recipients
- Pinal County Dust Risk forecast – 1,498 recipients

In addition to the distributed HPA, an Air Quality Alert is issued through the National Weather Service. The alert is posted on their website and sent out to local media to be disseminated out to the general public.

Appendices A-D contain examples of AQI and AQR forecasts, HPAs, HPWs, and press releases for the Phoenix, Rillito, West Pinal, and Yuma areas. See also discussion of the Air Quality Flag Program in Section 2.1.2.1.

[6] GovDelivery is a company that provides web-based services, including an email and messaging platform exclusively to the public sector. The platform allows the public to self-subscribe to topics that are provided by individual agencies. It also allows government agencies the ability to produce a wide variety of bulletins and email alerts using predesigned templates or ones manually by individual organizations. Using GovDelivery, agencies can send emails and/or bulletins to subscriber lists in order to provide information regarding specific topics.

***Maricopa County Air Quality Department – Air Quality Forecast/Notification Program***

The Maricopa County Air Quality Department (MCAQD) notifies the public by posting daily forecasts and HPAs to its website, posting on social media sites (English and Spanish), and through email and text bulletin subscriptions. In addition to the circulation of forecasts and advisories, MCAQD's website provides access to current AQI data from an extensive ambient monitoring network so the public can quickly identify areas that may be exceeding health standards.

In addition, MCAQD notifies schools in Maricopa County when an HPA has been issued and provides actions that school staff and district administration can take to protect students' health. These notifications are sent in collaboration with the Maricopa County Department of Public Health's high heat notifications.

MCAQD also operates the *Rapid Response Notification System* in order to provide advance notice that pollution levels are rising at specific air quality monitors that are operated by MCAQD. Air quality permit holders with dust generating activities are encouraged to sign up for notifications of Rapid Response events. MCAQD sends recipients a message informing them of where a pollution hot spot is and what steps the permittee will need to take to help prevent an exceedance of the health standard. See Section 2.2.1.1 for further information on this program.

See Appendix A for examples of Maricopa County postings of daily forecasts, HPWs, HPAs, and the *Rapid Response Notification System* webpage[7]. The public and permit holders are able to subscribe to receive rapid response notifications for specific monitors through *GovDelivery* through the webpage.[7]

***Pima County Department of Environmental Quality – Air Quality Forecast/Notification Program***

The Pima County Department of Environmental Quality (PDEQ) notifies the public by promoting ADEQ's daily forecasts that are released daily (Monday through Friday) for the Tucson Metropolitan area and the Rillito nonattainment area. PDEQ also publishes HPAs to over 17,000 people who have signed up to receive notifications when eastern Pima County is expected to experience poor air quality. PDEQ also posts HPAs on their website and social media sites. The PDEQ website also provides current AQI data from an extensive ambient monitoring network.

See Appendix B for examples of Pima County postings of daily forecasts, High Pollution Watch alerts, High Pollution Advisories, and AQI data.

***Pinal County Air Quality Control District – Air Quality Forecast/Notification Program***

The Pinal County Air Quality Control District (PCAQCD) issues AQI forecasts to inform the public about expected air quality conditions and provide advice about what they can do to protect their health. Air quality forecasts are five-day forecasts that are disseminated daily, Monday through Friday. The district also issues a HPW when forecasted (2 days in advance) air pollution levels are expected to exceed the federal health standard or a HPA when air pollution levels are expected to exceed the federal health standard (same day or 1 day in advance).

If weather conditions that could influence air quality change following a previously issued forecast the agency may also issue a "same day" HPA. This triggers a concerted effort by the county to actively message

[7] https://www.maricopa.gov/1628/Rapid-Response-Notifications

the imminent event by providing information to increase public awareness and suggest measures the public may take to mitigate or prevent pollutant contribution.

The PCAQCD notifies the public by posting daily forecasts, high pollution watches, and high pollution advisories to its website, via Twitter, GovDelivery (subscribers receive either email or text with link to the forecast), and email via *EnviroFlash* [*see* also Section 2.1.2.3, *Flag Program,* and http://www.enviroflash.info/signup.cfm]. A banner with an issued HPA and/or HPW is posted on the Pinal County main webpage and the PCAQCD webpage. The banner is a link to the forecast, which includes a discussion on how to minimize public exposure to high concentrations of a particular pollutant.

In addition to the AQI forecast and associated HPW or HPA, an Air Quality Alert is issued through the National Weather Service. The alert is posted on their website and sent out to local media to be disseminated out to the general public. The District also provides current AQI data from an extensive ambient monitoring network on its website so the public can quickly identify areas that may be exceeding health standards.

Short Term Notifications

Notifications are emailed out to subscribers when hourly and/or short-term (i.e., 5-minute averages) $PM_{10}$ levels reach certain predetermined (for $PM_{10}$ exceedances) levels. For hourly average $PM_{10}$, the email notification is sent out at around 5 to 10 minutes after the hour for the hourly average period from which the elevated concentrations occurred. For short-term $PM_{10}$ (i.e., 5-minute averages), the email notification is sent out within 5 to 10 minutes after the ending of the 5-minute period with which the elevated $PM_{10}$ levels occurred.

See Appendix C for examples of Pinal County daily forecasts, HPWs, HPAs, and AQI data. See also discussion of the Pinal County Air Quality Flag Program in Section 2.1.2.3.

***Arizona Department of Transportation – Notification Programs***

The following is a list of programs related to notifying the public of high pollution/dust events that are implemented by the Arizona Department of Transportation (ADOT).

Road Dust Detection and Warning System

The ADOT and the Federal Highway Administration (FHWA) have developed a dust-detection and warning system along a 10 mile stretch of Interstate 10.[8] The system includes technology that will recognize an approaching dust storm and warn ADOT and drivers of that threat.

[8] Arizona Department of Transportation, Southcentral Districts Project. Retrieved from https://azdot.gov/adot-blog/dust-detection-system-ready-action-monsoon-season

High Dust Notifications on Social Media

The ADOT posts notifications on Facebook[9] and Twitter[10] about unplanned, major events that affect traffic including blowing high-wind dust events.

ADOT Blog Notifications

The ADOT posts News Releases to warn the public about current and expected high-wind events and blowing dust.[11]

ADOT Alerts Application

The ADOT Alerts smartphone application provides real-time information to travelers about unplanned, major events that are impacting traffic including blowing dust events.[12]

AZ511 - Road Conditions & Traffic Advisories in Arizona

The AZ511 website and phone notification system provides road conditions traffic advisories including information on high-wind dust events.[13]

### 2.1.2 Education Programs

#### 2.1.2.1 Phoenix

***Arizona Department of Environmental Quality – Education Programs***

Educational Outreach

All high pollution forecasts issued by ADEQ include a brief health statement identifying at risk individuals and provide recommendations for protecting personal health. More extensive information is provided on the ADEQ website in the *Air Quality Guide for Particle Pollution*. The guide identifies populations that could be affected depending on the AQI level (e.g., the very young or elderly and those with respiratory disease), and provides recommendations for reducing exposure (e.g., limit outdoor exertion). It also includes advice for identifying and limiting symptoms of exposure (e.g., watch for coughing or shortness of breath; follow asthma action plans and keep quick-relief medicine handy).

The mission of the ADEQ Office of Children's Environmental Health (OCEH)[14] is to protect children from environmental health risks. As part of its mission, OCEH works to develop and implement practical ways to reduce children's exposure to environmental pollutants. They make an effort to identify and help

[9] Arizona Department of Transportation, Facebook. Retrieved from
[10] Arizona DOT on Twitter. Retrieved from https://twitter.com/ArizonaDOT)
[11] Arizona Department of Transportation, Media Center. Retrieved from https://azdot.gov/adot-news/monsoon-coming-and-drivers-need-%E2%80%98pull-aside-stay-alive%E2%80%99
[12] Arizona Department of Transportation, Transportation Safety, ADOT Alerts. Retrieved from https://www.azdot.gov/adotalerts/
[13] AZ511, Arizona Traveler Information. Retrieved from http://www.az511.gov/traffic/index.jsp
[14] Arizona Department of Environmental Quality, Children's Environmental Health Program. Retrieved from http://www.azdeq.gov/OCEH

remediate pollutants that put children most at risk and provide information on pollution-specific issues for families, teachers, day care providers and other concerned individuals. OCEH programs include the School Air Quality Flag Program, School Idle Reduction Program, and Green Schools.

ADEQ Air Quality Flag Program

ADEQ's Air Quality Flag Program is a mechanism to notify the public of air quality conditions. The Program uses nautical-style flags with colors that match the levels of the EPA's AQI, representing the daily air quality in a given area. The AQI is an informational tool to indicate how polluted (or clean) the air is and what associated health effects might be a concern for you. The AQI focuses on health effects that a person may experience within a few hours or days after breathing polluted air. ADEQ calculates the AQI for air pollutants, including ground-level ozone, $PM_{10}$, and $PM_{2.5}$.

The AQI values range from 0 to 500 where the higher the value, the greater the level of air pollution and the greater the health concern. For example, when AQI values are above 100 the air quality is considered to be unhealthy at first for certain sensitive groups of people, then for everyone as AQI values get higher. Different colored flags are used to correspond with the level of the AQI to quickly and efficiently communicate that air quality is good (green), moderate (yellow), unhealthy for sensitive groups (orange), or worse (red).

The flags are posted at participating schools and/or community centers in an area visible to the public. On a given day, the flag to be flown will be based on which pollutant is forecast to have the highest AQI. Pollutants commonly with the highest AQI vary throughout the year. From April through October, the flags will often pertain to ozone, unless significant dust ($PM_{10}$) is expected. From October to March, the flags will typically be for particulate matter pollution.

Participating schools and community centers provide information regarding the color of the flag, the corresponding AQI, and the actions individuals can take to minimize their exposure to pollution.

See Appendix E for examples of educational programs in the Phoenix area.

***Maricopa County Air Quality Department – Education Programs***

Educational Outreach

MCAQD maintains an educational outreach initiative called *Clean Air Make More*.[15] This outreach program provides information to Maricopa County residents about air pollution challenges occurring in the county as well as various ways they can take action. The primary focus of *Clean Air Make More* is to reduce the number of days the region exceeds the federal health standard for air pollution. The *Clean Air Make More* website, available in English and Spanish, provides pertinent information on the air quality forecast, current restrictions, no-burn day restrictions, air quality news, upcoming events and ways to reduce air pollution. A smartphone application is available through the website that provides individuals with immediate access to the current air quality status and information on actions to reduce exposure. The Clean Air Make More mobile application offers real-time Phoenix air quality information and air pollution statistics directly to a smartphone or tablet, providing air quality forecasts, air quality restrictions, and the ability to report air quality problems in Phoenix.

[15] Maricopa County, Clean Air Make More. Retrieved from http://cleanairmakemore.com/

The initiative's educational programs include outreach campaigns, educational kiosks in locations across the valley, and a mobile kiosk used at school STEM events and within the classroom setting and other public outreach events. The education outreach program offers to all schools in Maricopa County: award winning air quality curriculum aligned to current Arizona academic standards; lesson plans and resource kits delivered right to the classroom or virtually; expert speakers who visit classrooms and school STEM events; and professional development workshops for educators.

See Appendix E for examples of educational programs in the Phoenix area.

#### 2.1.2.2 Rillito

***Pima County Department of Environmental Quality – Education Programs***

Educational Outreach

PDEQ maintains an *Information, Education, Public Outreach* program to increase public awareness and encouraging community action to reduce air pollution. This outreach program provides air quality and environmentally-related information to a variety of audiences (i.e., schools and youth groups, community groups, businesses, associations, agencies, and industries) and through a number of mediums (i.e., email subscription, sponsorship and participation in community events, presentations, and social media). PDEQ informs the public about health and wellness related to air quality including particulate matter pollution sources, at risk populations, possible health effects of pollution, and various ways residents can take action to mitigate pollution.

See Appendix F for examples of educational programs in the Rillito area.

#### 2.1.2.3 West Pinal

***Pinal County Air Quality Control District – Education Programs***

Educational Outreach

All forecasts issued by PCAQCD include a discussion identifying at risk individuals and provide recommendations to the general public on what actions to take to minimize exposure to air quality concentrations that are expected to exceed or have exceeded a particular NAAQS. More extensive information is provided on the agency website in the *Air Quality Guide for Particle Pollution*. The guide identifies populations that could be affected depending on the AQI level (e.g., the very young or elderly and those with respiratory disease) and provides recommendations for reducing exposure (e.g., limit outdoor exertion). It also includes advice for populations at risk for identifying and limiting symptoms of exposure such as; advisement to watch for coughing or shortness of breath, follow asthma action plans, and keep quick-relief medicine handy. The County also provides educational materials to residents and stakeholders on actions to mitigate dust emissions.

The *AirNow* webpage[16] provides links to educational materials regarding air pollution and to the PCAQCD webpage.[17] ADEQ's Webpage for the Children's Environmental Health Program[18] and EPA's webpage for Environmental Education[19] contain links to additional resources and information.

Air Quality Flag Program

The Air Quality Flag Program in Pinal County operates in a similar manner as ADEQ's and the one implemented in Maricopa County. The PCAQCD primarily engages with schools in the District's jurisdiction. The current air quality forecast is provided on the PCAQCD's webpage and schools are encouraged to sign up through *EnviroFlash* in order to receive a daily email regarding the forecasted air quality.

*EnviroFlash* is a web-based notification platform that is sponsored by the EPA with support from state and local air quality agencies. *EnviroFlash* provides air quality information such as forecasts and action day notifications sent through email for any area selected by subscribers.

*EnviroFlash* allows subscribers to customize notifications for their own needs. It provides instant information that can be customized to their needs in order to protect their own health and family. Air quality information allows you to adjust your lifestyle when necessary on unhealthy air quality days. Up-to-date air quality information is especially helpful for those with sensitivities, such as the young, people with asthma, and the elderly.

See Appendix G for examples of educational programs in the West Pinal area.

#### 2.1.2.4 Yuma

***Arizona Department of Environmental Quality – Education Programs***

ADEQ Air Quality Flag Program

ADEQ's Air Quality Flag Program is a mechanism to notify the public of air quality conditions. The Program uses nautical-style flags to match the levels of the EPA's AQI that represents the daily air quality in an area. The AQI is an informational tool to indicate how polluted (or clean) the air is and what associated health effects might be a concern for you. The AQI focuses on health effects that a person may experience within a few hours or days after breathing polluted air. ADEQ calculates the AQI for major air pollutants including ground-level ozone, $PM_{10}$, and $PM_{2.5}$.

The AQI values range from 0 to 500 where the higher the value, the greater the level of air pollution and the greater the health concern. For example, when AQI values are above 100 the air quality is considered to be unhealthy at first for certain sensitive groups of people, then for everyone as AQI values get higher. Different colored flags are used to correspond with the level of the AQI to quickly and efficiently

[16] AirNow. Retrieved from https://www.airnow.gov
[17] Pinal County Air Quality. Retrieved from http://www.pinalcountyaz.gov/AirQuality/Pages/home.aspx
[18] Arizona Department of Environmental Quality, Children's Environmental Health Program. Retrieved from http://wwhttps://www.epa.gov/educationw.azdeq.gov/OCEH
[19] U.S. Environmental Protection Agency, Environmental Education. Retrieved from https://www.epa.gov/education

communicate that air quality is good (green), moderate (yellow), unhealthy for sensitive groups (orange), or worse (red).

The flags are posted at participating schools and/or community centers in an area visible to the public. The flags will commonly represent different pollutants during different times of the year. From April through October, the flags will typically pertain to ozone. From October to March, the flags will commonly be for particulate matter pollution. However, if a warning is issued for both ozone and particulates, participating organizations will fly the flag that protects the greater population at risk.

Participating schools and community centers provide information regarding the color of the flag, the corresponding AQI, and the actions individuals can take to minimize their exposure to pollution.

See Appendix H for examples of educational programs in the Yuma area.

## 2.2 Identification and Implementation of Mitigation Measures – 40 CFR 51.930(b)(2)(ii)(A) through (D)

> *"At a minimum, each mitigation plan developed under this paragraph shall contain provisions for the following: … (ii) Steps to identify, study and implement mitigating measures, including approaches to address each of the following: (A) Measures to abate or minimize contributing controllable sources of identified pollutants. (B) Methods to minimize public exposure to high concentrations of identified pollutants. (C) Processes to collect and maintain data pertinent to the event. (D) Mechanisms to consult with other air quality managers in the affected area regarding the appropriate responses to abate and minimize impacts."*

### 2.2.1 Measures to Abate or Minimize Emissions of $PM_{10}$ from Controllable Sources

#### 2.2.1.1 Phoenix

<u>Control Programs in Statute and Rule</u>

In the Maricopa County [Phoenix] $PM_{10}$ nonattainment area, $PM_{10}$ emissions from windblown dust sources have been recognized and addressed for many years.[20] In general, the emission rate of $PM_{10}$ from windblown dust increases with higher wind speeds and greater levels of disturbance on natural surfaces. Since wind speed is not controllable, the best control measures for minimizing $PM_{10}$ emissions from windblown dust are measures that limit the amount of disturbance present on natural surfaces or measures that stabilize previously disturbed surfaces. Disturbed surfaces also create higher $PM_{10}$ emissions under normal or low wind conditions. As such, any measure designed to stabilize disturbed surfaces or minimize the disturbance of natural surfaces will be the most effective at controlling $PM_{10}$ emissions in both high wind and low wind conditions. These measures have been researched, studied, and implemented for decades within the nonattainment area and apply to all significant controllable sources of windblown dust within the Maricopa County $PM_{10}$ nonattainment area.

The Maricopa Association of Governments (MAG) developed the *MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area.* This plan contains a wide variety of control measures and

[20] The Phoenix $PM_{10}$ nonattainment area encompasses parts of Maricopa and Pinal Counties.

projects that have been implemented to reduce and control $PM_{10}$ emissions from disturbed surfaces, including $PM_{10}$ emissions generated under high wind conditions. These measures are required to be in place at all times, including during high wind dust events. Requirements to reduce and control $PM_{10}$ emissions from disturbed surfaces in the plan apply to a broad range of sources including: unpaved roads and shoulders, leaf blowers, unpaved parking lots, vacant lots, sweeping streets with certified sweepers, off-road vehicle use, covered vehicle loads, dust generating operations, nonmetallic mineral processing, and other unpermitted sources. Table 2-1 lists the control measures included in the *MAG 2012 Five Percent Plan*.

**Table 2-1. Control Measures Included in the MAG 2012 Five Percent Plan for $PM_{10}$ for the Maricopa County Nonattainment Area**

| Statute/Rule/Ordinance | Description |
|---|---|
| **Arizona Revised Statutes (A.R.S.)** | |
| A.R.S. § 9-500.04.<br>(Sections A.3., A.5., A.6., A.7., A.8., A.9. and H.) | Air quality control; definitions<br>(City and town requirements in Area A targeting unpaved roads and shoulders; leaf blower restrictions; restrictions related to parking, maneuvering, ingress and egress areas and vacant lots; requirement for certified street sweepers. Area A is a control program implementation area that includes the Phoenix $PM_{10}$ Serious Nonattainment Area.) |
| A.R.S. § 9-500.27. | Off-road vehicle ordinance; applicability; violation; classification<br>(City and town requirements in Area A regarding operation of vehicles on unpaved surfaces.) |
| A.R.S. § 11-871.<br>(Sections A., B. and D.4.) | Emissions control; no burn; exemptions; penalty<br>(No burn restriction for any HPA day, increased civil penalty.) |
| A.R.S. § 11-877. | Air quality control measures<br>(County leaf blower restrictions.) |
| A.R.S. § 28-1098.<br>(Sections A. and C.1.) | Vehicle loads; restrictions; civil penalties<br>(Restrictions for safety or air pollution prevention purposes.) |
| A.R.S. § 49-424.<br>(Section 11.) | Duties of department<br>(Provisions to develop and disseminate air quality dust forecasts for the Maricopa County $PM_{10}$ nonattainment area.) |
| A.R.S. § 49-457.01. | Leaf blower use restrictions and training; leaf blower equipment sellers; informational material; outreach; applicability<br>(Measures to reduce the generation of dust from the use of leaf blowers.) |
| A.R.S. § 49-457.03. | Off-road vehicles; pollution advisory days; applicability; penalties |
| A.R.S. § 49-457.04. | Off-highway vehicle and all-terrain vehicle dealers; informational material; outreach; applicability |
| A.R.S. § 49-457.05.<br>(Sections A., B., C., D. and I.) | Dust action general permit; best management practices; applicability; definitions |

| Statute/Rule/Ordinance | Description |
|---|---|
| A.R.S. § 49-474.01. (Sections A.4., A.5., A.6., A.7., A.8., A.11., B. and H.) | Additional board duties in vehicle emissions control areas; definitions (County requirements for stabilization of targeted unpaved roads, alleys and shoulders; restrictions related to parking, maneuvering, ingress and egress areas and vacant lots; requirement for certified street sweepers.) |
| A.R.S. § 49-474.05. | Dust control; training; site coordinators |
| A.R.S. § 49-474.06. | Dust control; subcontractor registration; fee |
| A.R.S. § 49-501. (Sections A.2., B.1., C., F. and G.) | Unlawful open burning; exceptions; civil penalty; definitions (Ban on outdoor fires from May 1 to September 30; deletion of recreational purpose exemption; no burn day restrictions; penalty provision.) |
| A.R.S. § 49-541. (Section 1.) | Definitions (Area A) |
| **Maricopa County Air Quality Department Rules** | |
| Rule 310 | Fugitive Dust from Dust-Generating Operations |
| Rule 310.01 | Fugitive Dust From Non-Traditional Sources of Fugitive Dust |
| Rule 314 | Outdoor Fires and Commercial/Institutional Solid Fuel Burning |
| Rule 316 | Nonmetallic Mineral Processing |
| Appendix C | Fugitive Dust |
| **Maricopa County Ordinances** | |
| P-26 | Residential Wood Burning Restriction |
| **Appendices to the Plan** | |
| Appendix C, Exhibit 1 | Arizona Revised Statutes Listed in Table 4-1 [of the 2012 plan] |
| Appendix C, Exhibit 2 | Maricopa County Resolution to Evaluate Measures in the MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area |
| Appendix C, Exhibit 3 | Arizona Department of Environmental Quality Dust Action General Permit |
| Appendix C, Exhibit 4 | Arizona Department of Environmental Quality Commitment to Revise the MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area if Necessary for the Emerging and Voluntary Measure |

In addition to the statutes, rules and regulations listed in Table 2-1, other $PM_{10}$ reducing control measures and policies (e.g., paving of unpaved roads, Agricultural Best Management Practices Program, Pinal County Fugitive Dust rules, etc.) have been committed to, and implemented by, local jurisdictions throughout the Maricopa County [Phoenix] $PM_{10}$ nonattainment area. Several of these mitigation programs are listed in Table 2-2. Other measures have also been incorporated into the Arizona State Implementation Plan (SIP) through prior $PM_{10}$ plans, such as the *Revised MAG 1999 Serious Area Particulate Plan for PM-10 for the Maricopa County Nonattainment Area*, and in separate EPA actions. The measures listed and discussed in this section provide significant minimization of $PM_{10}$ emissions from all significant controllable source categories during a high wind dust event in the Maricopa County [Phoenix] $PM_{10}$ nonattainment area.

**Table 2-2. Additional Measures for the Phoenix $PM_{10}$ Nonattainment Area**

| Statute/Rule/ Ordinance/Policy | Description |
|---|---|
| **Arizona Revised Statutes (A.R.S.)** | |
| A.R.S. § 49-457. | Agricultural best management practices committee; members; powers; permits; enforcement; preemption; definitions |
| **Maricopa County Air Quality Department Rules** | |
| Rule 312 | Abrasive Blasting<br>(Establishes limits for particulate emissions from abrasive blasting operations and prohibits dry unconfined abrasive blasting operations when the 60-minute average wind speed is greater than 25 miles per hour) |
| Rule 600 | Emergency Episodes<br>(Suspension of burn permits, reduction/suspension of emission causing activity by permitted sources, voluntary reduction in motor vehicle use, and other mitigation measures during air quality emergency episodes) |
| **Pinal County Air Quality Control District Rules** | |
| Chapter 4. Article 2. | Fugitive Dust<br>[Emissions reduction requirements for fugitive dust for the entire Pinal County area (excluding Indian Reservations).] |
| Chapter 4. Article 3. Sections 4-3-060 through 4-3-090. | Construction Sites – Fugitive Dust<br>(Emissions reduction requirements for construction sites throughout Pinal County.) |
| Chapter 4. Article 4. | Nonattainment Area Rules; Dustproofing for Commercial Parking, Drives and Yards<br>[Emissions reduction requirements for unpaved commercial parking lots located in the Pinal County portion of the Phoenix $PM_{10}$ Serious Nonattainment Area (i.e. Township 1N, Range 8E).] |
| Chapter 4. Article 5. | Nonattainment Area Rules; Stabilization for Residential Parking and Drives<br>[Emissions reductions/stabilization requirements for residential parking and drives in the Pinal County portion of the Phoenix $PM_{10}$ Serious Nonattainment Area (i.e. T1N, R8E).] |
| Chapter 4. Article 6. | Restrictions on Vehicle Parking and Use on Vacant Lots<br>(Emissions reductions/stabilization requirements for unpaved or unstabilized vacant lots in the Pinal County Portion of Area A. Area A is a control program implementation area that includes the Pinal County portion of the Phoenix $PM_{10}$ Serious Nonattainment Area.) |
| Chapter 4. Article 7. | Construction Sites in Nonattainment Areas – Fugitive Dust<br>[Emissions reduction requirements for construction sites in the Pinal County portion of the Phoenix $PM_{10}$ Serious Nonattainment Area (i.e. Township 1N, Range 8E).] |
| Chapter 4. Article 8. | Nonattainment Area Rules, Requirement for Stabilization of Disturbed Areas at Vacant Lots<br>(Emissions reductions/stabilization requirements for the Pinal County portion of the Phoenix $PM_{10}$ Serious Nonattainment Area.) |

| Statute/Rule/ Ordinance/Policy | Description |
|---|---|
| **Pinal County Ordinances** | |
| No. 051408-AQ1 | Leaf Blower Ordinance for Area A<br>(Area A is a control program implementation area that includes the Pinal County portion of the Phoenix $PM_{10}$ Serious Nonattainment Area.) |
| No. 121207-AQ1 | No Burn Ordinance for Area A<br>(Ordinance triggers "no burn" restrictions and prohibitions, including suspension of burn permits, for calendar day(s) covered by ADEQ's High Pollution Advisory for particulate matter.) |
| **Maricopa County Ordinances** | |
| P-25 | Leaf Blower Restriction<br>(Describes restrictions for leaf blowers in incorporated and unincorporated sections of Area A in Maricopa County. Area A is a control program implementation area that includes the Phoenix $PM_{10}$ Serious Nonattainment Area.) |
| P-27 | Vehicle Parking and Use on Unstabilized Vacant Lots<br>(Describes restrictions for vehicle parking and use on unstabilized vacant lots in unincorporated sections of Area A in Maricopa County. Area A is a control program implementation area that includes the Phoenix $PM_{10}$ Serious Nonattainment Area.) |
| P-28 | Off-Road Vehicle Use in Unincorporated Areas of Maricopa County<br>(Describes restrictions for operating vehicles on unpaved property in unincorporated areas of Maricopa County.) |
| **Arizona Department of Environmental Quality Rules** | |
| R18-2-610 | Definitions for R18-2-610.01, R18-2-610.02, and R18-2-610.03 |
| R18-2-610.01 | Agricultural PM General Permit for Crop Operations; Maricopa County PM Nonattainment Area |
| R18-2-611 | Definitions for R18-2-611.01, R18-2-611.02, and R18-2-611.03 |
| R18-2-611.01 | Agricultural PM General Permit for Animal Operations; Maricopa County Serious PM Nonattainment Areas |
| **Arizona Department of Transportation** | |
| Roadway Design Memorandum: Turnout Paving in PM10 Nonattainment Areas, November 3, 2017 | • Construction projects on the State Highway System within the boundaries of $PM_{10}$ Nonattainment Areas will provide a surface treatment on permitted turnouts, when paving operations are an integral part of new construction, reconstruction, or pavement rehabilitation projects.<br>• Any turnout or driveway entering the project area to connect to the highway must be permitted by ADOT, as it needs right-of-way. This policy requires that such a permitted connection will be paved. |

Rapid Response Notification System

In addition to serving as a notification system, Maricopa County's *Rapid Response Notification System*[21] is a mechanism to minimize emissions of $PM_{10}$ from activities that generate dust pollution. When $PM_{10}$ pollution begins to rise, MCAQD sends a message to notify the public where the pollution hot spot is and what steps can be taken to help prevent an exceedance of the health standard.

When a Rapid Response notification is broadcast, MCAQD requests that air quality permit holders with dust generating activities inspect their site as soon as possible and employ Best Available Control Measures to stabilize all disturbed soils to reduce blowing dust. MCAQD inspectors also canvass the hotspot to ensure compliance with its dust control standards. As mentioned in a previous section, the Rapid Response notifications are tailored for individual monitors. The public may sign up to receive notifications through GovDelivery for one, two, or all of the monitors in Maricopa County.

#### 2.2.1.2 Rillito

Control Programs in Statute and Rule

In an effort to help the Rillito $PM_{10}$ nonattainment area become eligible for redesignation to attainment, ADEQ is currently analyzing the adequacy of existing control strategies for the area. The focus of the analysis is to ensure that permanent and enforceable controls, sufficient to maintain the NAAQS and allow development of exceptional event demonstrations, are implemented in the area. Any needed changes to the control strategies for the area will be adopted and submitted to EPA. Table 2-3 lists current regulations and policy applicable to the Rillito $PM_{10}$ planning area.

**Table 2-3. Control Measures for the Rillito $PM_{10}$ Nonattainment Area**

| Statute/Rule/ Ordinance/Policy | Description |
|---|---|
| **Pima County Ordinances** | |
| 17.11.200 | General provisions for permits<br>(Monitoring, calibration, and recordkeeping requirements for stationary sources subject to existing source performance standards) |
| 17.14.040 | Fugitive dust activity permits<br>(Requires activity permit for land stripping, blasting, trenching or road construction activities.) |
| 17.16.050 | Visibility limiting standard<br>(Limits visible emissions in the Rillito area to 20 percent and restricts visible emissions beyond property line.) |
| 17.16.060 | Fugitive dust producing activities<br>(Emissions reduction requirements for permitted sources including windblown dust.) |

[21] Maricopa County – Rapid Response Notification Webpage [https://www.maricopa.gov/1628/Rapid-Response-Notifications]

| Statute/Rule/ Ordinance/Policy | Description |
|---|---|
| 17.16.070 | Fugitive dust emissions standards for motor vehicle operation<br>(Stabilization measures to reduce particulate emissions from operation of vehicles in areas other than roadways.) |
| 17.16.080 | Vacant lots and open spaces<br>(Stabilization measures to reduce activity and windblown particulate emissions from parking areas, livestock feedlots, vacant lots, and other open spaces.) |
| 17.16.090 | Roads and streets<br>(Measures to reduce particulate emissions from use, repair, construction, or reconstruction of roadways and alleys and transport of materials.) |
| 17.16.100 | Particulate materials<br>(Measures to reduce particulate emissions from crushing, screening, handling, transporting or conveying of materials and construction activity.) |
| 17.16.110 | Storage piles<br>(Measures to reduce dust emissions from stacking, piling, and storing of materials.) |
| 17.16.120 | Mineral tailings<br>(Measures to reduce particulate emissions from mineral tailings piles.) |
| 17.32.010-080 | Emergency Episodes and Public Awareness<br>(Prohibits/suspends burn permits, emissions causing activity at permitted sources, and other control measures during emergency episodes. Also contains requirements for air quality and health information dissemination to general public.) |
| **Arizona Department of Transportation** | |
| Roadway Design Memorandum: Turnout Paving in $PM_{10}$ Nonattainment Areas, November 3, 2017 | • Construction projects on the State Highway System within the boundaries of $PM_{10}$ Nonattainment Areas will provide a surface treatment on permitted turnouts, when paving operations are an integral part of new construction, reconstruction, or pavement rehabilitation projects.<br>• Any turnout or driveway entering the project area to connect to the highway must be permitted by ADOT, as it needs right-of-way. This policy requires that such a permitted connection will be paved. |

Other Programs

ADEQ submitted to EPA a moderate area $PM_{10}$ plan for the Rillito area on November 14, 1991. A revised plan, including additional emissions information for point and area sources, was submitted on April 22, 1994. A redesignation request and maintenance plan were submitted to EPA on June 20, 2008. The area was not redesignated as a result of subsequent exceedances of the $PM_{10}$ NAAQS.

The 1994 submission documented a series of control measures designed to reduce $PM_{10}$ emissions. Since then, the area has become more urbanized and less agricultural. Some of the measures included in the 1994 SIP have been discontinued or were one-time only actions. The following table provides the status of those measures.

**Table 2-4. Additional Measures for the Rillito $PM_{10}$ Nonattainment Area**

| Control Measure | Description | Status |
|---|---|---|
| Road Stabilization at Cement plant and quarry operations | Comprehensive road stabilization plan to mitigate emissions. | In effect. Included in the facility operating permit issued on October 7, 2003. |
| Pima County grading ordinance, Chapter 18.81 of the Pima County Zoning Code | Permits for earthmoving require stabilization to mitigate fugitive emissions. | In effect. |
| Bank stabilization of Santa Cruz River | Implemented in 1988 during development of nearby residential neighborhoods. | Complete. |
| Reduced tillage program | U.S. Department of Agriculture pilot program. | Discontinued. |
| Dust Stabilization – Rillito Community | Approximately one mile of dirt roads within the community are now paved. | Complete. |
| Avra Valley Road shoulder dust stabilization | 2.5 miles to undergo blading and rolling followed by application of magnesium chloride once per year. | Implemented on an as needed basis. |

#### 2.2.1.3 West Pinal

Control Programs in Statute and Rule

On December 21, 2015 ADEQ submitted the West Pinal Moderate $PM_{10}$ Nonattainment Area SIP to EPA. The purpose of the SIP revision was to demonstrate how the West Pinal County nonattainment area would attain the 1987 24-hour $PM_{10}$ NAAQS by the end of 2018. The plan included analyses of activity-based and windblown emissions sources. Control strategies developed for minimizing $PM_{10}$ emissions from windblown dust included measures to limit the amount of disturbance present on natural surfaces and measures that stabilize previously disturbed surfaces.

The 2015 SIP revision included a number of rules to minimize emissions from significant controllable sources including: fugitive dust sources (i.e., open areas/vacant lots, unpaved roads, unpaved parking lots and paved public roadways), construction activity, and agricultural sources (i.e., crop operations, commercial animal operations, and irrigation districts). In addition to those areas specific measures, a number of regulations applicable countywide and an ADOT policy provide further emissions reductions during high wind dust events.

EPA approved some elements of the 2015 SIP in 2017. On January 8, 2021, EPA proposed to partially approve and partially disapprove the remaining elements. The partial disapproval, if finalized, would have resulted in the imposition of a conformity freeze, which would have prevented transportation planning and many transportation projects in West Pinal from moving forward. To prevent the imposition of the freeze, ADEQ withdrew the 2015 SIP. However, the controls included in the SIP and

described above continue in place.

On June 24, 2020, EPA determined that the West Pinal PM10 nonattainment area had not attained the PM10 NAAQS by the December 31, 2018 deadline for a moderate area. This determination automatically resulted in reclassification of the area to serious. Under the CAA, Arizona was required to submit a SIP meeting all requirements for a serious PM10 nonattainment area, including an attainment demonstration and the imposition of best available control measures (BACM).

The Maricopa Association of Governments (MAG) assumed planning responsibility for the West Pinal PM10 nonattainment area in 2016 and is therefore responsible for developing the serious area plan.

The new attainment deadline for West Pinal after reclassification to serious is December 31, 2022. Under CAA § 188(e), EPA may extend the serious area deadline by up to five years, if

- attainment by 2022 is impracticable, and
- the serious area SIP "includes the most stringent measures [MSM] that are included in the implementation plan of any State or are achieved in practice in any State, and can feasibly be implemented in the area."

MAG has determined that attainment by 2022 is impractical and is therefore seeking an attainment deadline extension under CAA § 188(e). Control measures included in the serious area plan, therefore have to satisfy the MSM requirement, as well as BACM.

On May 25, 2022, MAG adopted 2022 Serious Area Plan for PM10 for the West Pinal County Nonattainment Area. ADEQ submitted the plan to EPA on June 2, 2022. To satisfy the BACM and MSM requirements, the 2022 SIP includes 61 enhancements to controls for construction, agricultural sources, and paved and unpaved roads. The SIP demonstrated through air dispersion modeling that the enhanced controls would result in attainment of the 24-hour PM10 NAAQS by 2026.

The state and local agencies will track the progress of the SIP and continue to work with EPA to evaluate the effectiveness of implemented control strategies.

Short-Term Notifications

In addition to serving as a public notification system, Pinal County's *Short-Term Notification Program* is also a mechanism to minimize emissions of $PM_{10}$ from activities that generate dust pollution. When $PM_{10}$ pollution begin to rise, PCAQCD sends an email message to notify subscribers when hourly and/or short-term (i.e. 5-minute averages) $PM_{10}$ levels reach certain predetermined (for $PM_{10}$ exceedances) levels. Short-term notifications are a way to minimize emissions of $PM_{10}$ by providing the public advance notice that dust emissions are elevated. The notification allows people to modify their behavior in a manner that may lower emissions.

#### 2.2.1.4 Yuma

Following a SIP call and the rescinding of the area's clean data determination for PM10, AQEQ is currently working with local stakeholders to develop a PM10 non attainment area plan. Table 2-5 provides a list of the current regulations and policies applicable to the Yuma $PM_{10}$ planning area and summaries of their effect on dust mitigation.

**Table 2-5. Control Measures for the Yuma $PM_{10}$ Nonattainment Area**

| Statute/Rule/ Ordinance/Policy | Description | Effect on Dust Mitigation |
|---|---|---|
| **Arizona Revised Statutes (A.R.S.)** | | |
| §28-1098 | Vehicle loads; restrictions | • A person shall not drive a vehicle on a highway unless it is constructed/loaded in a manner to prevent it from dropping, sifting, leaking or escaping from the vehicle; the following are permitted:<br>○ Sand may be dropped to secure traction.<br>○ Water or other substance may be sprinkled on a roadway to clean or maintain the roadway.<br>○ Minor pieces of agricultural materials (i.e. leaves and stems) from agricultural loads.<br>• A person shall not operate a vehicle on a highway with a load unless the load and covering are securely fastened to prevent the covering/load from becoming loose, detached or a hazard. |
| **Arizona Administrative Code (A.A.C.)** | | |
| R18-2-220 | Air pollution emergency episodes | Provides for sequential emissions reductions, public notification, and increased ADEQ monitoring and forecasting. |
| R18-2-604 | Open Areas, Dry Washes, or Riverbeds | • Reasonable precautions shall be taken to minimize dust emissions when constructing, altering, repairing, demolishing, clearing, leveling, or other earth moving or excavation on any vacant or sales lot, urban or suburban open area. Reasonable precautions include using a dust suppressant, soil stabilizer, paving, covering, landscaping, continuous wetting, barring access, or other acceptable means.<br>• Reasonable precautions shall be taken to limit excessive amounts of dust emissions from the use of motor vehicles, trucks, cars, cycles, bikes, buggies; or by animals such as horses on vacant lots and urban or suburban open areas. Reasonable precautions include a dust suppressant, adhesive soil stabilizer, paving, barring access to the property, or other acceptable means<br>• No person shall operate a motor vehicle for recreational purposes in a dry wash, riverbed or open area that will cause/contribute to dust emissions that cross property lines into a residential, recreational, institutional, educational, retail sales, hotel, or business premises. |

| Statute/Rule/ Ordinance/Policy | Description | Effect on Dust Mitigation |
|---|---|---|
| R18-2-605 | Roadways and Streets | No person shall cause, suffer, allow or permit the use, repair, construction or reconstruction of a roadway or alley without taking reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne. Dust shall be kept to a minimum by employing temporary paving, dust suppressants, wetting down, detouring or by other reasonable means. |
| R18-2-606 | Material Handling | No person shall cause, suffer, allow or permit crushing, screening, handling, transporting or conveying of materials likely to result in significant amounts of airborne dust without taking reasonable precautions, such as using spray bars, wetting agents, dust suppressants, covering the load, and hoods to prevent excessive amounts of particulates from becoming airborne. |
| R18-2-607 | Storage Piles | • No person shall cause, suffer, allow, or permit organic or inorganic dust producing material to be stacked, piled, or otherwise stored without taking reasonable precautions such as chemical stabilization, wetting, or covering to prevent excessive amounts of particulate matter from becoming airborne.<br>• Stacking and reclaiming machinery utilized at storage piles shall be operated at all times with a minimum fall of material and in such manner, or with the use of spray bars and wetting agents, as to prevent excessive amounts of particulate matter from becoming airborne. |
| R18-2-608 | Mineral Tailings | No person shall cause, suffer, allow, permit construction of, or otherwise own or operate, mineral tailing piles without taking reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne; precautions shall mean wetting, chemical stabilization, revegetation or such other measures as are approved by the Director. |

| Statute/Rule/ Ordinance/Policy | Description | Effect on Dust Mitigation |
|---|---|---|
| R18-2-613 & 613.01 | Yuma $PM_{10}$ Nonattainment Area; Agricultural Best Management Practices | • Applies to commercial farms with 10 or more contiguous acres of land used for agricultural purposes.<br>• Farmers shall implement 1 BMP per category (tillage & harvest, noncropland, and cropland) to reduce dust emissions from agricultural operations.<br>• Farmers shall maintain records demonstrating compliance. Commercial farmers shall provide the records to the Director within two business days of written notice.<br>• Records shall contain the name of commercial farmer, mailing address/ physical location of farm, and BMPs selected for each category and the date each BMP was implemented. |
| Arizona Department of Transportation Policy | Roadway Design Memorandum; November 3, 2017 | • Construction projects on the State Highway System within the boundaries of $PM_{10}$ Non-Attainment Areas will provide a surface treatment on permitted turnouts, when paving operations are an integral part of new construction, reconstruction, or pavement rehabilitation projects.<br>• Any turnout or driveway entering the project area to connect to the highway must be permitted by ADOT, as it needs right-of-way; these permitted connections will be paved. |
| **Yuma County** | | |
| Zoning Ordinances, Article VI, §608.09 and §610.09 | Minimum Development Standards | All roadways within manufactured home parks or recreational vehicle parks shall be a minimum of 32 feet wide, they shall be built and continuously maintained in a dust free condition by application of an aggregate base course covered by a penetration and chip seal coat. |
| Zoning Ordinance, Article VIII, §810.04 | Project Information Signs | • Requirement that any building or grading permit of 1 acre or greater shall install and maintain a project information sign in accordance with the requirements below.<br>• Ordinance prescribes implementation details for posting a sign that provides the public information about the project and instructions for contacting the Yuma County Dust Control Hotline. |

| Statute/Rule/ Ordinance/Policy | Description | Effect on Dust Mitigation |
|---|---|---|
| Zoning Ordinances, Article IX, §906.0 | Parking Area Paving and Surfacing | • Parking areas with lanes for drive-thru windows or have more than 25 required parking spaces shall either: be graded and paved with asphaltic concrete over aggregate base course or have Portland cement concrete over consolidated subgrade.<br>• Parking areas that are not covered with the type of paving specified above that require more than 6 spaces shall be graded and surfaced with a dust-inhibitor treated aggregate base course. The perimeter of such parking areas shall be defined by bricks, stones, railroad ties, or other similar devices. Driveways leading from the street or property line shall be surfaced as provided in Yuma County Public Works Construction Standards. |
| County Strategic Plan | Street Sweeping | • Sweep subdivision streets and designated main arteries 4 times a year.<br>• Sweep collector streets and high volume main arteries on a monthly basis.<br>• Sweep about 1,750 lane miles and collect between 850 - 1200 tons of debris annually.<br>• Maintain sweeping operations to reduce pollution in stormwater runoff, strive to increase the amount of sand/debris removed by 50 tons annually. |
| **City of Yuma Code of Ordinances** | | |
| Title 15, Chapter 150 | Building Regulations | Requires that dust control plans be submitted prior to construction. This plan outlines the steps taken to minimize and control dust associated with project. |
| Title 15, Chapter 154, Article 20 | Landscape Regulations | • Provides minimum standards for landscaping/planting of ground cover for the purposes of erosion control and protecting ambient air quality by reducing dust and loose soil.<br>• Specifies the number and coverage of plant materials. |
| Title 15, Chapter 156 | Erosion & Sediment Control | Control of soil during construction activities to prevent erosion by wind and water by guiding, regulating and controlling the design, construction and use of any development or other activity that disturbs 1 acre or more in public and private projects or one-half acre or more within the City's jurisdiction. |
| Title 21, Chapter 211, §211-07 | Roadways & Street | Same language as Arizona rule R18-2-605 |
| Title 21, Chapter 211, §211-08 | Material Handling | Same language as Arizona rule R18-2-606 |

| Statute/Rule/ Ordinance/Policy | Description | Effect on Dust Mitigation |
|---|---|---|
| City of Yuma Policy | Standard Procedures for Sweeping | • Main arterials and selected collectors are swept a minimum of once a week; 46-52 times per year.<br>• Residential streets are swept a minimum of six times per year; approximately every 2 months.<br>• Teams sweep streets surrounding schools, churches and city parks on a weekly basis. |
| **City of Somerton Code of Ordinances** | | |
| Code of Ordinances, Article 9-7 | Pollutant Discharge Elimination System, Storm Water Phase II Permit Program | No explicit air quality controls are listed, but soil stabilization is required. This could cause fringe benefits to air quality from the reduction of fugitive dust that result from soil stabilization. |
| City Policy - Street Sweeping | Sweeping of roads, alleys, and lots | • Estimated 46 tons of $PM_{10}$ removed annually, as of 2011 Conformity Analysis<br>• Sweeper is not $PM_{10}$ certified, so total debris removed may be much greater than $PM_{10}$ estimate |
| **Arizona Department of Transportation** | | |
| Roadway Design Memorandum; November 3, 2017 | Turnout Paving in PM10 Nonattainment Areas | • Construction projects on the State Highway System within the boundaries of $PM_{10}$ Nonattainment Areas will provide a surface treatment on permitted turnouts, when paving operations are an integral part of new construction, reconstruction, or pavement rehabilitation projects.<br>• Any turnout or driveway entering a project area to connect to the highway must be permitted by ADOT, as it needs right-of-way; such a permitted connection will be paved. |

#### 2.2.1.5 Statewide

The Arizona Department of Transportation's dust control activities generally apply uniformly statewide and are tracked statewide. The Dust Mitigation items provided in Table 2-6 are the minimum standards applied everywhere (within attainment and nonattainment areas alike). There may also be circumstances (e.g., projects located in nonattainment areas) where certain active construction projects require additional dust control items (i.e., dust control permits, dust control training requirements, etc.). These conditions are included as special provisions for each individual project. Compliance with existing dust control rules is the responsibility of the county or state air agency. The following listed items are only those programs that ADOT has immediate control and authority for implementing.

**Table 2-6. Control Measures Applicable Statewide**

| Statute/Rule/ Ordinance/Policy | Description |
|---|---|
| **Arizona Department of Transportation** | |
| *Standard Specifications for Road and Bridge Construction*, 2021; Sections 104.12, 203-2, and 209 | Includes provisions to minimize disturbance and dust emissions during construction. |
| *ADOT Construction Manual,* August 2015; Sections 104.08, 206, and various forms. | Manual of administration practices and inspection procedures includes requirements to mitigate disturbance and dust emissions including: 1) Job Site Dust Control Plan (e.g., earthmoving, disturbed surface areas, unpaved roads, trackout, material hauling and storage, etc.), 2) Dust Palliative Agreement, 3) Daily Dust Palliative Form (certification of treatment), and 4) Water Truck Certification. |
| *ADOT Maintenance and Facilities Best Management Practices Manual,* 2010; Programs 2, 120, 130, and 140. | Manual of Best Management Practices (BMPs) for district roadway maintenance activities and facilities to integrate a variety of temporary and permanent erosion, sediment, and pollutant control measures into the work methods used to complete these activities. Includes programs for 1) unpaved surfaces (soil stabilization unpaved roads, dust control), 2) shoulders (repair unpaved shoulders), 3) vegetation control (soil stabilization), and 4) sites, yards, and grounds (sediment control – track out). |
| *ADOT Erosion and Pollution Control Manual, for highway Design and Construction,* December 2012 | The manual provides guidance for highway construction practices and monitoring of erosion and pollution controls to meet the water quality requirements of federal, state and local agencies. Provides secondary air quality benefit through inclusion of provisions related to erosion control (soil binders), sediment control (stabilized construction roadway), and good housekeeping (street sweeping and vacuuming). |
| ADOT In-House and Contract Sweeping | ADOT Sweeps urban areas statewide. |

### 2.2.2 Methods to Minimize Public Exposure to High Concentrations of $PM_{10}$

State and local agencies will help minimize public exposure to high concentrations of particulate pollution through implementation of air quality forecasting and public notification programs (Section 2.1.1), outreach and education programs for increasing public risk awareness (Section 2.1.2), measures to reduce particulate matter emissions (Section 2.2.1), and inspections and enforcement actions. Efforts to reduce emissions and minimize public exposure include the following examples.

- MCAQD's *Rapid Response Notification System.* Air quality permit holders are sent notification that pollution levels are rising at specified air quality monitors and what steps the permittee will need to take to help reduce dust generating activities and prevent an exceedance of the health standard. See Section 2.2.1 for further information on this program.

- PCAQCD's *Short-Term Notification Program*. Pinal County notifies stakeholders when $PM_{10}$ pollution begins to rise to allow modification of activities in order reduce dust emissions. See Section 2.2.1 for further information on this program.
- ADEQ's *Agricultural Dust Program*. Agricultural Dust Program compliance officers inspect agricultural operations for use of best management practices (Ag BMPs), respond to public agricultural dust complaints, and work to educate agricultural operations about dust impacts and measures to reduce dust. See ADEQ's webpage regarding the Agricultural Dust Program for more information.[22]
- MCAQD's *Air Quality Compliance and Enforcement Program*. Provides compliance assistance and enforcement of fugitive dust reduction programs including earthmoving/dust control, vacant lot stabilization, vehicle parking on unstable lots, and off-road vehicle use. See MCAQD's Compliance and Enforcement Division webpage for more information.[23]
- PDEQ's *Fugitive Dust Activity Permit Program*. The program requires a permit for earthmoving, trenching, blasting, and road construction activities to ensure compliance with fugitive dust regulations. The County also provides investigation and enforcement for complaints of excessive dust without controls and dust crossing property boundaries. See PDEQ's website for more information.[24]
- PCAQCD's *Construction Permitting Program*. The program requires a permit for earthmoving, grading, construction, and other activities associated with land development within the county and West Pinal nonattainment area to ensure ground conditions/disturbance caused by construction activities and windy conditions do not result in elevated particulate matter emissions. The County also provides investigation and enforcement for excessive dust complaints. See Pinal County's Website regarding construction sites and obtaining a permit[25] and general information on fugitive dust[26] for more information.

### 2.2.3 Collection and Maintenance of Pertinent Event Data

#### 2.2.3.1 Phoenix/Rillito/Yuma

After an air quality event has been identified in the Phoenix, Tucson, Rillito, or Yuma area by the ADEQ, the following data are archived to screen whether the event was exceptional in nature:

- hourly pollutant concentration data for exceeding and neighboring monitors,
- surface and upper air weather maps,
- relevant satellite and Doppler radar data,
- hourly weather observations (wind speed, wind gust, and rainfall) at First-order (airports) and Remote Automated Weather Stations (RAWS) near exceeding monitors,

[22] Arizona Department of Environmental Quality, Agricultural Dust Program, http://www.azdeq.gov/AgriculturalDust
[23] Maricopa County Air Quality Department, Compliance and Enforcement, https://www.maricopa.gov/4059/Compliance-and-Enforcement-Information
[24] http://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=54373
[25] http://www.pinalcountyaz.gov/AirQuality/Dust/Pages/ConstructionSites.aspx
[26] http://www.pinalcountyaz.gov/AirQuality/Dust/Pages/WestPinalNon-AttainmentArea.aspx

- pertinent NWS statements, watches, advisories, and warnings highlighting event,
- ADEQ Phoenix Air Quality and Maricopa County Dust Risk forecasts, or Tucson, or Rillito, or Yuma Air Quality forecasts,
- agricultural compliance data,
- county compliance and enforcement data,
- available webcam imagery, and
- any relevant social media coverage.

It is preferred that all collected data sources represent the period during and immediately before and after the event in question to capture preexisting, onset, and demise of weather and air quality conditions related to the event being investigated. Data collection efforts may be done by ADEQ or collaboratively with the Maricopa Association of Governments (MAG), Maricopa County Air Quality Department (MCAQD), Pinal County Air Quality Control District (PCAQCD), Pima Association of Governments (PAG), Pima County Department of Environmental Quality (PDEQ), and local tribal nations. A draft "conceptual model" summary narrative may be created if event is reasoned to be exceptional after initial screening. Data collection and any draft narratives are filed electronically with a unique event identifier for future reference.

#### 2.2.3.2 West Pinal

The PCAQCD employs standard processes to collect and maintain data pertinent to events. The forecaster enters the previous day's air quality and meteorological data into a spreadsheet as part of the morning forecasting process. Additionally, days that are forecasted to be exceedance days and their associated forecast products (discussions, model output statistics, etc.) are saved on a network drive by the forecaster of the day. The day of the forecasted exceedance additional products are compiled such as weather maps, discussions, news stories, social media, etc. in addition to the air quality data which is collected at the PCAQCD monitors. The day(s) following an exceedance, a narrative of the exceedance day is produced and all supporting products/documentation are gathered, filed and organized by the date of the exceedance in preparation for use in exceptional events demonstrations.

### 2.2.4 Consultation with Air Quality Managers

Arizona Revised Statutes Title 49 – "The Environment," divides responsibility and encourages cooperation for meeting the requirements of the Clean Air Act among the state, county agencies, and regional planning organizations.[27] Currently the State and three county agencies operate air quality control programs under direct or delegated authority. The air pollution control agencies are ADEQ, MCAQD, PDEQ, and PCAQCD. See the map in Figure 1-1 for the locations of the Phoenix, Rillito, West Pinal, and Yuma $PM_{10}$ nonattainment areas relative to the local jurisdictions.

Two metropolitan planning organizations, MAG and the Pima Association of Governments (PAG), are certified for the development of certain nonattainment and maintenance area plans and transportation planning within their respective jurisdictions.

ADEQ and local agencies work with their partners and the regulated community to analyze emissions and develop control strategies in order to minimize $PM_{10}$ emissions and protect public health. Participation is encouraged and technical advice sought through meetings and discussion with governmental

[27] *See* the ADEQ *1987 PM10 Infrastructure State Implementation Plan*, June 30, 2017, for more information on state and local agency's authority and roles for air pollution control and mitigation.

departments and agencies, municipalities, members of the regulated community, and other interested parties; and through the public comment process for state implementation plan revisions, rulemakings, and mitigation plans.

Table 2-7 lists the names and roles of governmental entities that participated in the development of this plan. Under the authority noted above, the state and local agencies will continue to consult with other air quality managers in the affected areas regarding appropriate responses to abate and minimize the impacts of exceptional events. Consultation will be initiated by the lead agency upon the occurrence of significant changes in the frequency or magnitude of high wind/$PM_{10}$ events or activities impacting successful implementation of the mitigation plan. Consultation topics may include but are not limited to identification and evaluation of appropriate mitigation measures, improving notification procedures and education programs, and sharing of exceptional event data and coordination of demonstrations for events that may affect the region.

Additionally, regional air quality events necessitated the development of the Southwest Exceptional Events Working Group. The group consists of air quality agencies in EPA Region 9. The working group conducts quarterly teleconference calls (or more frequently if needed) to discuss air quality events and the various agency's efforts in exceptional events documentation and planning including coordination of exceptional event demonstrations.

**Table 2-7. Participating Governmental Entities**

| NAME | ROLE |
|---|---|
| Arizona Department of Environmental Quality (ADEQ) | Coordinate mitigation plan development and public comment process. Provide information and analysis of plan components including public notification and education, identification and implementation of mitigation measures, and periodic review and evaluation of the mitigation plan.<br><br>Participate in a cooperative ongoing effort with other agencies to notify the public of the risks of elevated pollution levels and to implement programs to help reduce exposure and protect public health. |
| Arizona Department of Transportation (ADOT) | Consultation/participation in mitigation plan development. Provide information and analysis of plan components including public notification and education and identification and implementation of mitigation measures. |
| Gila River Indian Community (GRIC) | Consultation/notification regarding mitigation plan development. |
| Maricopa Association of Governments (MAG) | Consultation/participation in mitigation plan development. Provide information and analysis of plan components including public notification and education, identification and implementation of mitigation measures, and periodic review and evaluation of the mitigation plan. |
| Maricopa County Air Quality Department (MCAQD) | Consultation/participation in mitigation plan development. Provide information and analysis of plan components including public notification and education, identification and implementation of |

| NAME | ROLE |
|---|---|
| | mitigation measures, and periodic review and evaluation of the mitigation plan.<br><br>Participate in a cooperative ongoing effort with other agencies to notify the public of the risks of elevated pollution levels and to implement programs to help reduce exposure and protect public health. |
| Pima Association of Governments (PAG) | Consultation/participation in mitigation plan development. Provide information and analysis of plan components including public notification and education, identification and implementation of mitigation measures, and periodic review and evaluation of the mitigation plan. |
| Pima County Department of Environmental Quality (PDEQ) | Consultation/participation in mitigation plan development. Provide information and analysis of plan components including public notification and education, identification and implementation of mitigation measures, and periodic review and evaluation of the mitigation plan.<br><br>Participate in a cooperative ongoing effort with other agencies to notify the public of the risks of elevated pollution levels and to implement programs to help reduce exposure and protect public health. |
| Pinal County Air Quality Control District (PCAQCD) | Consultation/participation in mitigation plan development. Provide information and analysis of plan components including public notification and education, identification and implementation of mitigation measures, and periodic review and evaluation of the mitigation plan.<br><br>Participate in a cooperative ongoing effort with other agencies to notify the public of the risks of elevated pollution levels and to implement programs to help reduce exposure and protect public health. |
| Salt River Pima-Maricopa Indian Community (SRP-MIC) | Consultation/notification regarding mitigation plan development. |

## 2.3 Periodic Review and Evaluation of Mitigation Plan – 40 CFR 51.930(b)(2)(iii)

*"At a minimum, each mitigation plan developed under this paragraph shall contain provisions for the following: … (iii) Provisions for periodic review and evaluation of the mitigation plan and its implementation and effectiveness by the State and all interested stakeholders."*

The mitigation rules require the state to specify in its plan the periodic review and evaluation process that it intends to follow for reviews following the initial plan development. The Arizona Department of Environmental Quality and local air quality agencies will review and evaluate this dust mitigation plan,

including its implementation and effectiveness, every five years. The review will include opportunity for consultation and participation with local governments, municipalities, members of the regulated community, and all interested parties. The dust mitigation plan will be updated accordingly and submitted to EPA Region 9 after consideration of public comment.

# Appendix A
# Air Quality Forecasts/Notifications – Phoenix

Visit OpenBooks | Ombudsman-Citizens Aide | Get the facts on COVID-19 | Search AZ.Gov | az.gov

ADEQ Arizona Department of Environmental Quality

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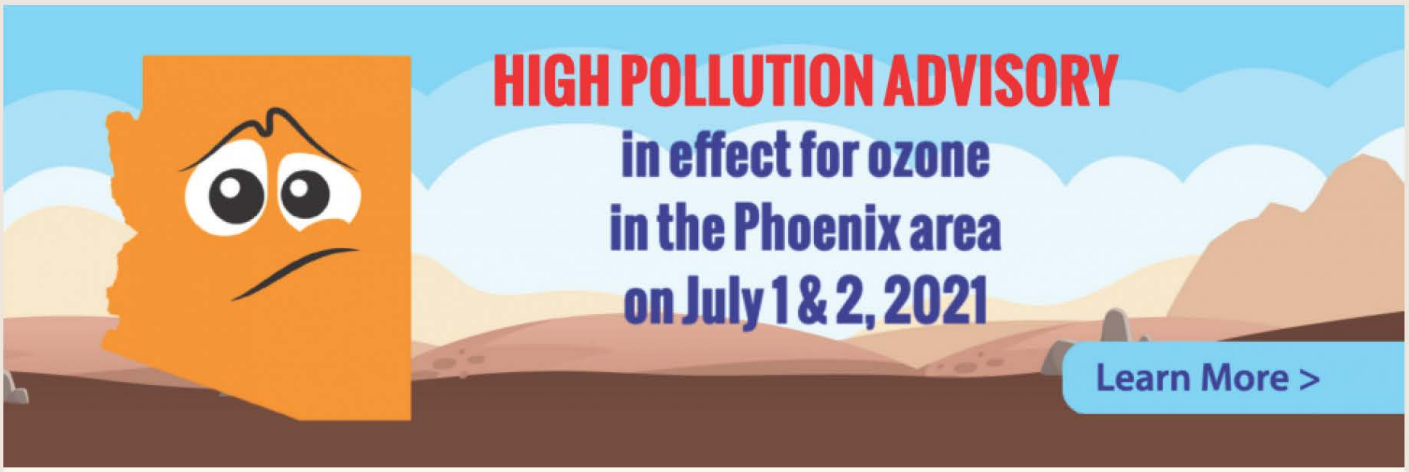


## OUR MISSION

**To protect and enhance public health and the environment.**

Learn More >

- Emergency Response
- Submit Feedback
- Report an Environmental Complaint

## FEATURED CURRENT NEWS

To better serve the people of Arizona, ADEQ created My Community to provide information about environmental issues, plus actions to address them, in your community. With this easy-to-use online tool, you can quickly learn about what's important to you and your family | View My Community

### FREQUENTLY VIEWED

- Welcome to ADEQ
- Air Quality Hourly Forecast | Phoenix
- Arizona Air Quality Monitor Report
- Welcome to myDEQ
- Vehicle Emissions Control (VEC)
- About Us
- The Importance of Issuing Environmental Permits
- Air Forecasting
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- Operator Certification
- Wildfire Support
- Contact Us

### NEW PUBLIC NOTICES

See all >

07/01/21 - COMMENT PERIOD BEGINS | Preliminary Decision to Issue a State Water Quality Certification of a Federal Action for the Bartlett Lake Marina Maintenance and Expansion
On Thursday, July 1, 2021,... See Notice >

08/02/21 - COMMENT PERIOD ENDS | Preliminary Decision to Issue a State Water Quality Certification of a Federal Action for the Bartlett Lake Marina Maintenance and Expansion
On Aug. 2, 2021, the public... See Notice >

06/23/21 - COMMENT PERIOD BEGINS | Preliminary Decision to Issue a New Aquifer Protection Permit for Pinyon Plain Mine in Coconino County
On Wednesday, June 23, 2021,... See Notice >

08/07/21 - COMMENT PERIOD ENDS | Preliminary Decision to Issue a New Aquifer Protection Permit for Pinyon Plain Mine in Coconino County
On Aug. 7, 2021, the public... See Notice >

06/17/21 - PUBLIC NOTICE | Proposed Plan for the Kingman Range Munitions Response Site in Mohave County
As part of the Department of... See Notice >

07/19/21 - COMMENT PERIOD ENDS | Proposal to Issue Air Quality Control Renewal Permit for Pinyon Plain Mine in Coconino County
On July 19, 2021, the public... See Notice >

### NEW EVENTS | MEETINGS | HEARINGS

See all >



This high pollution advisory is an example for ozone. Similar advisories are issued for particulate matter.

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What Permits Do You Need For Your Business?
What Environmental Issues Are in My Community?
Records Center
What are GIS eMaps?
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Compliance Assistance

07/06/21 - PUBLIC MEETING | Proposed Fiscal Year 2022 Master Priority List : ADEQ is holding... See Event Details >

07/08/21 - PUBLIC HEARING | Preliminary Decision to Issue an Individual APP for Cactus Mine in Pinal County : ADEQ is holding... See Event Details >

07/12/21 - WEBINAR | UST Applications in myDEQ | UST Notification Forms : ADEQ invites... See Event Details >

07/15/21 - WEBINAR | Groundwater Protection: Monitoring, Reporting and Contingency Requirements for Aquifer Protection Permitted Facilities : ADEQ is holding... See Event Details >

07/19/21 - WEBINAR | UST Applications in myDEQ | UST Financial Responsibility : ADEQ invites... See Event Details >

07/19/21 - PUBLIC HEARING | Proposal to Issue Air Quality Control Renewal Permit for Pinyon Plain Mine in Coconino County : ADEQ is holding... See Event Details >

07/26/21 - WEBINAR | UST Applications in myDEQ | Suspected Release : ADEQ invites... See Event Details >

07/28/21 - VIRTUAL MEETING | Lead and Copper Rule Revisions (LCRR) Focus Group : ADEQ seeks... See Event Details >

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# PRESS RELEASE | ADEQ Issues PM-10 High Pollution Advisory for Maricopa County Effective June 28 & 29, 2021

ADEQ is issuing a High Pollution Advisory (HPA) for coarse particulate matter ($PM_{10}$) effective June 28 & 29, 2021, in Maricopa County. $PM_{10}$ is made up of small particles found in dust. ADEQ recommends that people limit outdoor activity while the HPA is in effect, especially children and adults with respiratory problems.

## Health Impacts

People most vulnerable to the impacts of air pollution include children, older adults, adults exercising outdoors, people with heart or lung disease, and those suffering from asthma and bronchitis. Exposure can increase the number and severity of asthma attacks, cause or aggravate bronchitis or other lung disease, and reduce the body's ability to fight infection. Symptoms may include itchy eyes, nose and throat, wheezing, coughing, shortness of breath, chest pain and upper respiratory issues. Long-term exposure is linked to premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat and decreased lung function.

Please help reduce $PM_{10}$ by doing one or more of the following:

- Avoid dirt roads
- Avoid the use of leaf blowers
- Ride transit, carpool or telework
- Eliminate all unnecessary driving and/or combine trips

## Background

**High Pollution Advisory (HPA):** Notifies the public that the level of an air pollutant is forecast to exceed the federal health standard.

**High Pollution Watch (HPW):** Notifies the public when there is potential for a pollutant to exceed the federal health standard.

Particulate Matter Fact Sheet | View >

## Resources

Air Quality Hourly Forecast | View >

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Together we can make a difference to improve air quality for everyone in Arizona by following simple steps | Learn More >

## Contacts

**Arizona Department of Environmental Quality (ADEQ):** Provides hourly forecasts for air quality in certain areas of the state and issues HPAs or HPWs when the appropriate conditions exist.

Public Information Officer | 602-540-8072 | Email >

**Maricopa County Air Quality Department (MCAQD):** Regulatory agency for air quality in Maricopa County | View MCAQD Website >

Public Information Officer | 602-506-6713 (office) | 602-526-7307 (cell)

**Valley Metro:** Eco-friendly public transit options to residents of greater Phoenix and Maricopa County | View Valley Metro Website >

Communications Manager | 602-523-6004 | Email >


< RETURN TO WHAT ENVIRONMENTAL ISSUES ARE IN MY COMMUNITY?

# Air Forecasting

Revised on: July 30, 2021 - 7:48am

ADEQ meteorologists provide Air Quality Index (AQI) and Air Quality Risk-Based (AQR) forecasts to serve and assist the public, industry and agricultural operations in Arizona.

## Air Quality Index (AQI) Hourly Forecast

These forecasts are based on the Environmental Protection Agency (EPA)'s AQI federal health standards and are issued for the following areas:

- Douglas | View Forecast >
- Flagstaff | View Forecast >
- Hayden | View Forecast >
- Miami | View Forecast >
- Nogales | View Forecast >
- Phoenix | View Forecast >
- Prescott | View Forecast >
- Rillito | View Forecast >
- Tucson | View Forecast >
- Yuma | View Forecast >

The AQI Forecast lets the public know expected air quality conditions and provides advice about what they can do to protect their health, especially that of children, seniors and people with respiratory problems.

Forecasts are also available on the Air Arizona mobile app | View >

**ADEQ also issues a:**

- **High Pollution Watch (HPW)** when there is the potential for a pollutant to exceed the federal health standard
- **High Pollution Advisory (HPA)** when it is imminent or there is a high probability for a pollutant to exceed the federal health standard

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Understanding the Hourly Forecast >

Learn more about EPA's AQI | View AQI Guide >

## Air Quality Risk-Based (AQR) Dust Forecasts for PM-10

ADEQ forecasts for $PM_{10}$ in the following areas:

- Maricopa County | View Forecast >
- Pinal County | View Forecast >

ADEQ issues these forecasts to assist industrial and agricultural operations with reducing dust pollution through planning work activities.
Learn more about Particulate Pollution | View Fact Sheet > | En español >

## Air Quality Risk-Based (AQR) Lead Forecast

ADEQ Lead (PB) forecast for:

- Hayden Area | View Forecast >

ADEQ studied historical weather patterns as they relate to lead air pollution to develop three lead risk categories – low, moderate and high. The risk-based lead forecast for Hayden predicts the possibility of reduced air quality due to lead. ADEQ monitors for air lead levels in Hayden according to EPA's requirements (one sample every six days). These samples are analyzed by a certified laboratory and take one month to process. These results are used to refine future lead forecasts.

## Air Quality Monitoring Locations & Cameras

- ADEQ Statewide Monitors | View >
- Maricopa County Monitors | View >
- Current Visibility in Phoenix Metro via ADEQ Webcams | View >

## Sign Up to Receive Air Quality Forecasts

Receive ADEQ air quality forecast notifications by email or text | Subscribe >

## Unfamiliar with some of the acronyms or technical terms used on this page?

Visit our glossary | View Glossary >

### WILDFIRES IN ARIZONA

Wildfire Smoke Forecast >

### AQ RISK-BASED FORECAST

**Dust Risk:**
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**Lead Risk:**
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### CRACKING THE AQ CODE

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< RETURN TO AIR FORECASTING

# Air Quality Hourly Forecast | Phoenix

Updated On: 7/1/2021 - 8:55 AM

Click on each day to view forecast.

Thursday | Friday | Saturday | Sunday | Monday

## Thursday Forecast:

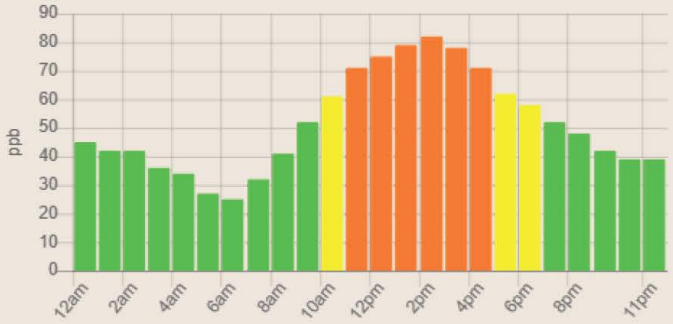
HPA **Alert: Ozone High Pollution Advisory in effect for Thursday**

**Notice: Blowing dust possible**

### Ozone


105 AQI

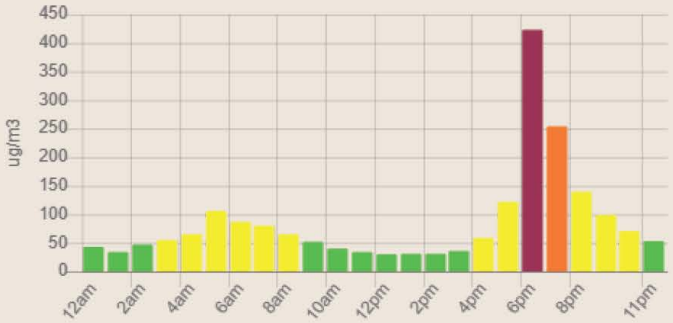
Max 8-hr Avg: 72 ppb




### PM10


66 AQI

24-hr Avg: 85 µg/m$^3$

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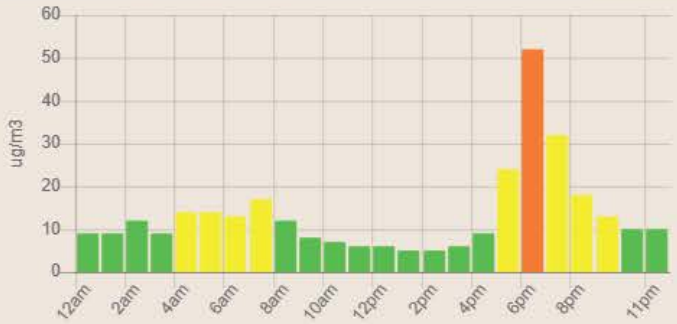
AQ Monitoring Data >
Air Quality Visibility Cameras >


## Air Quality By Pollutant:

| Pollutant | Thursday 7/1/2021 | Friday 7/2/2021 | Saturday 7/3/2021 | Sunday 7/4/2021 | Monday 7/5/2021 |
|---|---|---|---|---|---|
| $O_3$ | 105 | 101 | 101 | 97 | 90 |
| $PM_{10}$ | 66 | 55 | 52 | 51 | 54 |
| $PM_{2.5}$ | 54 | 50 | 45 | 63 | 53 |

$O_3$ = Ozone, $PM_{10}$ = Particles ≤ 10 microns, $PM_{2.5}$ = Particles ≤ 2.5 microns

## Forecast Discussion:

There were a couple thunderstorms that moved into the Valley yesterday afternoon, but most of the activity stayed on the outskirts of town. Fortunately, outflow winds associated with the thunderstorms were not strong enough for any significant blowing dust here in Phoenix. However, the winds were enough to help lower ozone levels. Neither $PM_{10}$ nor ozone exceeded the federal health standard yesterday.

Thunderstorm activity will return to the area this afternoon and will continue to bring potential for dust along with them. We are forecasting elevated $PM_{10}$ levels this afternoon due to potential dust. The timing of thunderstorm outflows will be critical for ozone. We are forecasting there to be enough time for ozone to reach the Unhealthy for Sensitive Groups AQI category before outflow winds shut down ozone. Thunderstorm activity is forecast to decrease a little on Friday and Saturday, but overall we are expecting similar conditions as today. Therefore, there is an **Ozone High Pollution Advisory in effect for today and tomorrow, and an Ozone High Pollution Watch for Saturday**.

By Sunday and Monday, better ventilation should be enough to lower ozone down into the Moderate AQI range. Additionally, thunderstorm activity looks like it will be isolated across the area and have less of a chance to cause any dust issues. While ozone and blowing dust potential are forecast to decrease, $PM_{2.5}$ will likely see an increase Sunday evening. With calmer conditions during the late evening hours, along with celebratory fireworks for Independence Day, we will likely see elevated particulate concentrations late on Sunday.

- R. Nicoll
ADEQ Meteorologist

## What Flag Should I Fly?

Thursday: Orange


Friday: Orange


What is the Flag Program and how can my school/organization join? | Learn More >

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Contrails Vs. Chemtrails >
Current Air Quality Information >
High Pollution Watch (HPW) Explained >
PM Fact Sheet > | Air Arizona Mobile App >
What is Area A & B? >
What is Inversion and How Does It Affect AQ? >
What to Do When AQ Is at Unhealthy Levels? >

< RETURN TO AIR FORECASTING

# Dust Risk-Based Forecast | Maricopa County

Updated On: 06/25/21 - 9:15 AM [View Previous Forecast]

## Saturday


**Stagnation:** Morning and evening stagnation

**Wind:** Westerly winds of 5-15 mph

## Sunday


**Stagnation:** Morning and evening stagnation

**Wind:** Northerly winds of 5-15 mph

## Monday


**Stagnation:** Morning stagnation

**Wind:** Easterly winds of 10-20 mph

## Tuesday


**Stagnation:** Evening stagnation

**Wind:** Easterly winds of 10-20 mph

## Wednesday


**Stagnation:** Morning and evening stagnation

**Wind:** Light easterly winds

## Forecast Discussion:

Ozone reached Unhealthy for Sensitive Groups at one monitor in Maricopa County yesterday. Seeing how quickly this pollutant ramped up, a **High Pollution Advisory (HPA)** has been issued for today, tomorrow, and Sunday. Light winds and abundant sunlight are warranting the HPA's in place. There are no statements for Monday and Tuesday as we are expecting cloud cover and breezy winds to set in next week.

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AQ RISK-BASED FORECAST

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Maricopa County >
Pinal County >

Lead Risk:
Hayden >

AIR QUALITY DATA ARCHIVES

Yesterday's Air Monitor Data >
Observed Pollution Year-to-Date Report >
Exceedance Report >

A high-pressure system is sitting over the California Baja that is bringing those calm conditions and clear skies into the valley. As we get into the weekend, this high-pressure is looking to combine with one moving in from the Pacific Northwest. There will also be a trough lying across the midwest that leaves Arizona between the two systems. This will result in our northerly flow that is expected to roll in on Sunday. As these systems shift around our region, we will begin to see breezy easterly winds come through Monday and Tuesday.

Other than a shift in winds next week, a chance of thunderstorms is also in the forecast. We are expecting our monsoon set up to build up once again, resulting in precipitation chances. Dry thunderstorms look to hit the valley on Monday, and more moisture-prone storms are expected to come through later in the week. We'll have more on these storms in upcoming discussions.

Overall, **HPA** in place for ozone today, tomorrow, and Sunday. Particulates remained low yesterday due to the moisture received earlier this week. Over the weekend, both $PM_{10}$ (dust) and $PM_{2.5}$ (smoke) are expected to remain in the Good Air Quality Index (AQI) range with less industrial activity taking place. With the breezy winds coming in on Monday and Tuesday, elevated $PM_{10}$ levels can be expected.

Have a great weekend!

- P. Swenson
ADEQ Meteorologist

# NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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City, ST

Enter Your City, ST or ZIP Code

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Get Weather

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## NWS Forecast Office Phoenix, AZ

Weather.gov > NWS Phoenix

**NWS Phoenix**
Weather Forecast Office

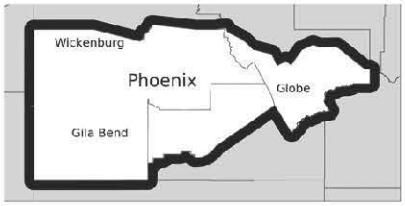
Current Hazards | Current Conditions | Radar | Forecasts | Rivers and Lakes | Climate and Past Weather | Local Programs

# Monsoon Threat Index

**Created at 12:30 AM on Wednesday, August 25**

EXTREME WIDESPREAD
MAJOR NUMEROUS
MODERATE SCATTERED
LOW ISOLATED
LITTLE TO NONE

| Threat | Today WED AUG 25 | Tomorrow THU AUG 26 | Day 3 FRI AUG 27 |
|---|---|---|---|
| Heat | | | |
| Dust Storm | | | |
| Lightning | | S Gila Co | S Gila Co |
| Flash Flooding | | | |
| T-Storm Winds | | | |
| Hail | | | |




South Central Arizona

Interact With Us NWSPhoenix Weather.Gov/PSR @NWSPhoenix YouTube NWSPhoenix

Show Caption

**Click a location below for detailed forecast.**


Watches, Warnings & Advisories

Zoom Out

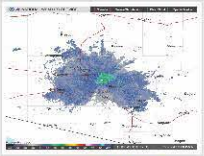
- Excessive Heat Warning
- Heat Advisory
- Air Quality Alert
- Hazardous Weather Outlook

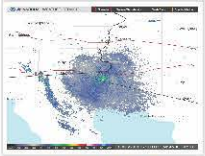
**Last Map Update: Wed, Aug. 25, 2021 at 11:33:43 am MST**

Text Product Selector (Selected product opens in current window)

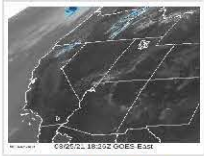
Latest Text Products Issued by PSR

MRMS Radar Imagery

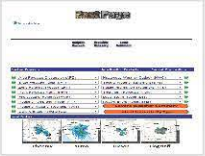

Phoenix Radar


Yuma Radar

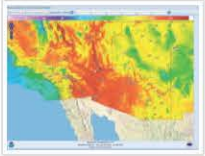

GOES-17 Satellite

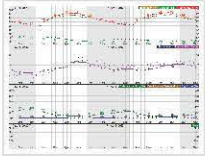

GOES-16 Satellite

Forecast Discussion


Fast Page


Local Climate Information


Local Graphical Forecast


Hourly Forecasts

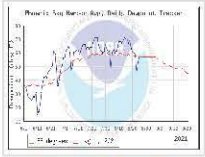

Fire Weather


Heat Safety

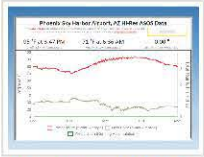
Social Media


Monsoon Safety


SPC Outlooks


Monsoon Tracker


Phoenix Rainfall Index


Hi-res KPHX ASOS Data

# OZONE HIGH POLLUTION ADVISORY


The Arizona Department of Environmental Quality has issued an **Ozone High Pollution Advisory (HPA) for Thursday, May 5, 2022**. A High Pollution Advisory is issued when the highest concentration of pollution may exceed the federal health standard. The air is unhealthy for sensitive groups including students and employees with asthma and other respiratory or cardiac conditions. These individuals may experience more serious symptoms.

**Please take the following actions to protect student health:**

| ACTIONS for School Staff (principals, teachers, nurses, athletic coaches, para-professionals and other support staff) | ACTIONS for District Administration, School Maintenance and Transportation |
|---|---|
| **Watch for symptoms.** Air pollution can make asthma symptoms worse and trigger attacks.<br>- coughing<br>- wheezing<br>- difficulty breathing<br>- chest tightness<br>**Follow asthma action plans.** Students with asthma should follow their asthma action plans and keep quick relief medicine in an easily accessible location. | **Notify parents and staff of HPA.** Encourage parents and staff to carpool, use alternate modes of transportation, and park their vehicles at drop-off and pick-up times to reduce excessive idling.<br>**Reduce bus idling.** When possible, turn off bus in pick-up and drop-off zones or other areas where students congregate before and after school.<br>**Prohibit leaf blowing.** Avoid leaf blowing and landscape activities that produce fumes |



This high pollution advisory is an example for ozone. Similar advisories are issued for particulate matter.

| | |
|---|---|
| **Reduce duration of outdoor play.** Allow students to take frequent breaks from activities. Utilize indoor facilities that accommodate physical activity for recess and PE classes whenever possible. | or dust. Use dust control measures on playgrounds and athletic fields.<br><br>**Implement districtwide Travel Reduction Plan.** |

Plan your day with the hourly air quality forecasts on Maricopa.gov/aq.

If your school participates in the Air Quality Flag Program, please display the recommended flag color based on the Air Quality Index. For more information regarding the Air Quality Flag Program, email airqualityflagprogram@azdeq.gov or call 602-771-2355. For additional information on air quality forecasting and pollution advisories, please visit the Arizona Department of Environmental Quality website.

We thank you for taking these important public health actions within your schools when a High Pollution Advisory is issued. For additional tips on how to help reduce air pollution, please visit CleanAirMakeMore.com.

HPA Guidelines for Schools

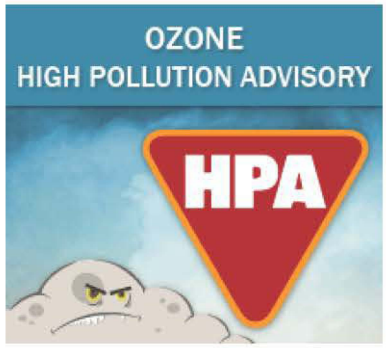
Search

Air Quality

Posted on: August 23, 2021

## Ozone High Pollution Advisory issued for Tuesday, 8/24 and Wednesday, 8/25

The Arizona Department of Environmental Quality (ADEQ) is issuing an Ozone High Pollution Advisory (HPA) for Maricopa County effective Tuesday, August 24 through Wednesday, August 25. This HPA is due to ozone levels expected to accumulate enough to exceed the federal health standard for ozone.




Ground-level ozone forms when emissions from vehicles, gasoline and diesel equipment, industrial and chemical processes, and other everyday activities react to sunlight. Because these emissions react more readily to sunlight, ozone pollution is more prevalent during the spring and summer months.

Although some people are more sensitive than others, all county residents can be affected by ground-level ozone pollution, which is harmful to lungs and can trigger asthma. Children are at the greatest risk from ozone because their lungs are still developing, they are most likely to be active outdoors, and they are more likely than adults to have asthma. Adults with asthma or other lung diseases and older adults are also sensitive to ozone.

This High Pollution Advisory includes the following restrictions:

- Wood burning in residential fireplaces, chimeneas, outdoor fire pits, and similar outdoor fires is prohibited in Maricopa County. This includes individuals and businesses which have burn permits for open burning.
- Employees and contractors of government entities are prohibited from operating leaf blowers. Residents are encouraged to avoid leaf blowing during HPAs.
- Off-road vehicle use should be avoided.

ADEQ recommends that the general public limit outdoor activity while the HPA is in effect, especially children and adults with respiratory problems.

ADEQ and Maricopa County Air Quality Department (MCAQD) recommend residents and businesses use the following tips and resources to reduce ozone pollution and make the air healthier to breathe:

- Promote remote. Telework to reduce traffic.
- Drive less. When possible, carpool, van pool, or use public transportation.
- Avoid waiting in long drive-thru lines. Park your car and go inside.
- Ride your bike or walk to work.
- Sweep instead of using your leaf blower.
- Refuel your vehicle after dark or during cooler evening hours.
- Use low-volatile organic compounds (VOC) or water-based paints, stains, finishes, and paint strippers.
- Delay painting projects until high pollution advisories or health watches have passed.



This high pollution advisory is an example for ozone. Similar advisories are issued for particulate matter.

- Make sure containers of household cleaners, garage and yard chemicals, and other solvents are sealed properly to prevent vapors from evaporating into the air
- Visit CleanAirMakeMore.com to learn more about reducing air pollution

Search

BACKGROUND

High Pollution Advisory (HPA): Notifies the public that the level of an air pollutant is expected to exceed the federal health standard.

Ozone: Ground-level ozone is formed by a chemical reaction among sunlight, nitrogen oxides (NOx) and VOCs.

MEDIA CONTACT

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ari.halpert@maricopa.gov

###

**About Maricopa County Air Quality Department**

MCAQD's mission is to improve the air of Maricopa County so customers, residents, and visitors can live, work, and play in a healthy environment. MCAQD is governed by the Maricopa County Board of Supervisors and follows air quality standards set forth by the federal Clean Air Act. For air quality information and resources, visit CleanAirMakeMore.com.

Follow us on Instagram: @maricopacountycleanair
Follow us on Twitter: @cleanairmakemor
Like us on Facebook: @CleanAirMakeMore

Download MCAQD's Clean Air Make More app! It is free to download and use and is available on iTunes for iPhone and iPad and on Google Play for Android.

**Next** ⇒
Maricopa County Air Quality Department Awarded by National Association of Counties

## Other News in Air Quality

### Maricopa County Air Quality Department Awarded by National Association of Counties

Posted on: June 22, 2021

### New MCAQD Public Information Officer and Media Contact

Posted on: May 4, 2021

Select Language

## ‘Commit to One Day, Help Keep Ozone Away’ Campaign Kicks Off

Posted on: April 19, 2021


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## Improper Weed Removal Can Lead to Serious Health Effects

Posted on: February 22, 2021

---

## Diesel Emissions Reduction Act (DERA) Program Subawards Announced

Posted on: February 11, 2021

---

## Funding Available Through DERA FY21 State Clean Diesel Grant Program

Posted on: February 1, 2021

---

Search

Select Language

Search

# RAPID RESPONSE NOTIFICATION SYSTEM

As Maricopa County strives to meet the federal health standards for dust pollution, the awareness and actions of every individual can go a long way towards reaching that goal. You can help maintain compliance with air quality standards by signing up to be notified of rapid response events. When dust pollution levels begin to rise, the department will send a message notifying you where the pollution hot spot is, and what steps you will need to take to help prevent an exceedance of the health standard. Our dust pollution prevention tips can help prevent these rapid response events.

When a rapid response notification is broadcasted, the department will also contact permit holders that engage in dust generating activities. The department will request the permit holders to inspect their sites as soon as possible, and to also employ their best available control measures in order to stabilize all disturbed areas to reduce wind blown dust. Department inspectors will also canvas the hot spot areas to ensure compliance.

To report a dust control violation or issue, call the department at 602-372-2703 or use our Air Quality Violations Report form.

## Sign Up for Rapid Response Notifications

A rapid response notification will be sent from one of our 15 air monitoring locations. Select one or more location provided below and subscribe to email or text message when dust pollution levels begin to rise.

- Buckeye [BE] Arizona Highway 85 and Maricopa County Highway 85
- Central Phoenix [CP] 16th Street and Roosevelt
- Durango Complex [DC] 27th Avenue and Durango Street
- Dysart [DY] Dysart Road and Bell Road
- Glendale [GL] 59th Avenue and West Olive
- Higley [HI] Higley Road and Williams Field Road
- Mesa [ME] Broadway and Alma School Roads
- North Phoenix [NP] 7th Street and Dunlap Avenue
- South Phoenix [SP] Central Avenue and Broadway
- South Scottsdale [SS] near Scottsdale Road and Thomas Road
- Tempe [TE] near College Avenue and Apache Boulevard
- West Chandler [WC] Ellis Street and Frye Road

Select Language

- West 43rd Avenue [WF] 43rd Avenue and Broadway Road
- West Phoenix [WP] 39th Avenue and Earll Drive
- Zuni Hills [ZH] 109th Avenue and Deer Valley Road

Search

*Page reviewed 27 May 2022*

Select Language

# Appendix B
# Air Quality Forecasts/Notifications – Rillito

**Health Alert:** COVID-19 Transmission Level: **HIGH** More information
Get vaccinated.

PIMA COUNTY

# Environmental Quality

**COVID-19 Update**
Some information on these pages may be out of date or moot following Gov. Doug Ducey's March 25 order barring Pima County from taking additional mitigation efforts to limit the spread of COVID-19. We will update these pages as soon as necessary and possible.

## Changes to PDEQ Office Procedures

In response to the COVID-19 pandemic, PDEQ requests customers contact the department to set up a meeting prior to arrival in order to provide a safe environment for customers and staff. Employees, vendors and the public are required to have their temperature checked and wear face masks in lobbies, elevators, and common areas of County facilities. In addition, proper physical distancing (six feet) is required. Additional information on COVID-19 is available here.

Please contact the department by telephone (520) 724-7400 Monday - Friday from 8:00 a.m. to 5:00 p.m. for more information or if an appointment is needed.

## Our Mission

Preserve and protect the environment of Pima County for the long-term benefit of residents' health, welfare, safety, and quality of life. Identify and respond to environmental issues by providing public services including monitoring, enforcement, information, education, and solid waste management.

## Featured News

- August 04, 2021 - PDEQ Issues High Pollution Advisory for Ozone
- August 03, 2021 - PDEQ Issues Ozone Air Pollution Advisory
- August 02, 2021 - PDEQ Issues Ozone Air Pollution Advisory
- July 28, 2021 - PDEQ Issues High Pollution Advisory for Ozone
- July 22, 2021 - PDEQ Issues Ozone Air Pollution Advisory

View more news articles

## COVID-19 Environmental Concerns

Information related to specific environmental concerns related to COVID-19 is available here.

## Pima DEQ GIS Maps

Pima County Department of Environmental Quality (PDEQ) has compiled data from various sources to provide interested parties with mapped information of environmental aspects within Pima County. PDEQ serves Pima County by protecting public health and the environment. The Pima DEQ GIS Maps contain data layers that display environmental aspects managed by Pima County and the State of Arizona.

Air | Water | Waste & Recycling | Code Compliance | Outreach | Complaints | Kids Corner | Fees

## Air Program

The Air Program is comprised of multiple sections which address different issues regarding air quality.

## Air Quality Monitoring

- Current Air Quality
- Air Monitoring
- Air Quality Advisories
- Air Quality Forecasting & Maps

## Stationary Source Permitting

- Air Quality Permits
- Air Quality Permit Public Notices

## Activity Permits

- Fugitive Dust
- Asbestos NESHAP
- Open Burning

## Clean Air Program

- Clean Air Program
- Tire Inflation Education Program
- "Drive-Less Pledge" for Healthy Air
- Use The Loop for Your Commute


## Education and Outreach

- #ThisIsCleanAir photo challenge
- Healthy Air
- "Cut Down Pollution" Lawn & Garden Equipment Retirement Program
- Information, Education, Public Outreach
- Community Events and Activities
- "Healthy Air Is In Our Hands" Campaign
- Wildfire Smoke and Your Health
- Contrails in the Sky
- "Desert Dwellers Know" Project
- Ground-level Ozone Information
- Trees and Air Quality
- Vehicle Idle Reduction

PIMA COUNTY

# PDEQ Issues Ozone Air Pollution Advisory

Aug 03, 2021 | Read More News

Share

PDEQ Issues Ozone Air Pollution Advisory
Pima County, August 3, 2021 - Pima County Department of Environmental Quality is issuing a High Pollution Advisory for ground-level ozone air pollution for the Tucson metropolitan area. Individuals who are especially sensitive to air pollution may experience shortness of breath, coughing, throat irritation, wheezing and breathing discomfort. It is possible that ozone levels may be elevated tomorrow, if weather conditions are similar.

If you are especially sensitive to ozone, you may want to limit your level of exertion outside between noon and 6 p.m. when elevated levels of ozone pollution are more likely to occur. Intense physical outdoor activity causes faster and deeper breathing, which allows ozone to penetrate into the parts of the lungs that are more likely to be injured.

Those who are most likely to be sensitive to ozone include children, people with respiratory disease, adults who are active outdoors, and certain individuals who have an unusual sensitivity to this particular pollutant.

There are many types of emissions that contribute to the creation of ground-level ozone. Motor vehicle exhaust, industrial and power plant emissions, gasoline vapors, chemical solvents, as well as natural sources, emit oxides of nitrogen and volatile organic compounds that form ozone in the presence of intense sunlight and heat.

Actions to reduce the production of ground level ozone:

- Reduce driving - combine errands into one trip.
- Ride the bus, walk or share a ride with friends and family.
- Avoid idling your vehicle's engine. It wastes gas and causes air pollution.
- During the summer, re-fuel your car after 6 p.m. when vapors are less likely to form ozone.
- While re-fueling, always stop at the click.
- Make sure your gas cap is tightly sealed after re-fueling.
- Avoid using gas powered lawn and gardening equipment.
- Check your tire pressure monthly to reduce gasoline use and associated pollution.
- Conserve electricity to reduce emissions from power plants.

PDEQ's Clean Air Program works to educate Pima County residents about potential health effects associated with elevated levels of air pollution and to promote actions to reduce air pollution levels.

This high pollution advisory is an example for ozone. Similar advisories are issued for particulate matter.


< RETURN TO AIR FORECASTING

# Air Quality Hourly Forecast | Tucson

Updated On: 6/25/2021 - 8:56 AM

Click on each day to view forecast.

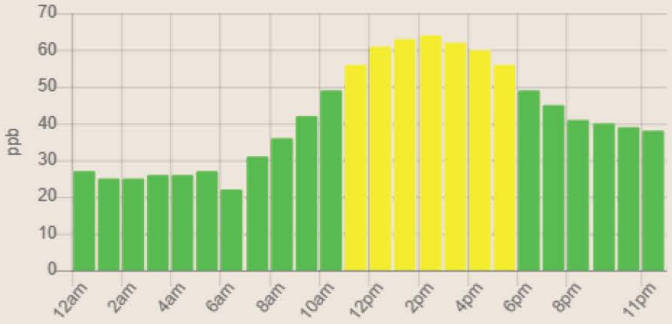
Friday | Saturday | Sunday | Monday | Tuesday

## Friday Forecast:

### Ozone


61 AQI

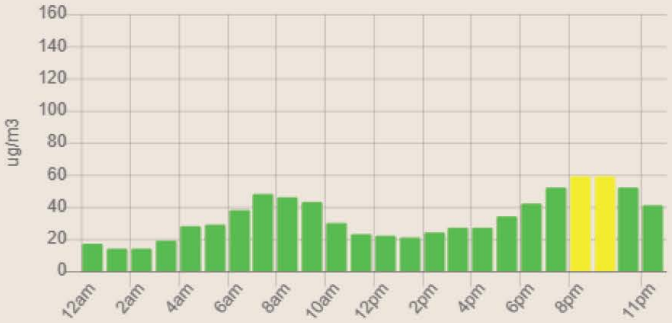
Max 8-hr Avg: 58 ppb




### PM10


31 AQI

24-hr Avg: 33 µg/m$^3$




### PM25

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AQ RISK-BASED FORECAST

Dust Risk:
Maricopa County >
Pinal County >

Lead Risk:
Hayden >

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Pima County DEQ >

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Yesterday's Air Monitor Data >
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Exceedance Report >

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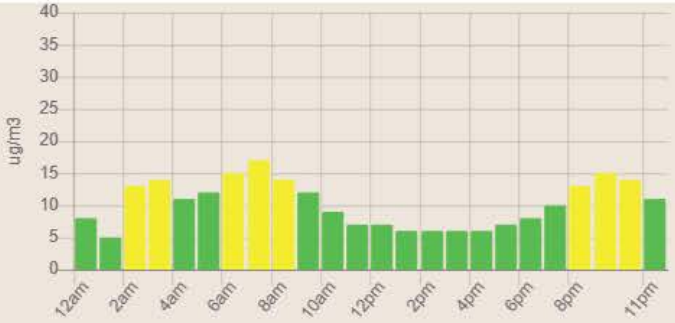


## Air Quality By Pollutant:

| Pollutant | Friday 6/25/2021 | Saturday 6/26/2021 | Sunday 6/27/2021 | Monday 6/28/2021 | Tuesday 6/29/2021 |
|---|---|---|---|---|---|
| $O_3$ | 61 | 80 | 77 | 48 | 46 |
| $PM_{10}$ | 31 | 39 | 41 | 57 | 55 |
| $PM_{2.5}$ | 43 | 43 | 44 | 58 | 53 |

$O_3$ = Ozone, $PM_{10}$ = Particles ≤ 10 microns, $PM_{2.5}$ = Particles ≤ 2.5 microns

## Forecast Discussion:

Ozone reached into the Moderate AQI category again yesterday while $PM_{10}$ and $PM_{2.5}$ ended up in the Good range. There will be some light breezes this afternoon, but ozone should still be able to reach the low Moderates. Ozone is forecast to increase tomorrow and Sunday with calmer conditions. On Monday and Tuesday, strong easterly winds are expected to develop over the area, which should be enough to lower ozone into the Good range.

Looking at particulates, we aren't expecting any issues until next week. $PM_{10}$ and $PM_{2.5}$ are forecast to stay in the Good AQI range through Sunday. However, the strong easterly winds on Monday and Tuesday may be enough blow dust from the Willcox Playa into the Tucson area. Because of this, we are forecasting particulate levels to be in the Moderate range on Monday and Tuesday.

- R. Nicoll
ADEQ Meteorologist

## What Flag Should I Fly?

Friday: Yellow


Saturday: Yellow


What is the Flag Program and how can my school/organization join? | Learn More >

Air Pollutants Defined >
Air Quality Annual Reports >
Air Quality Monitoring >
AQ Monitoring Data >
Air Quality Visibility Cameras >
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What is Inversion and How Does It Affect AQ? >
What to Do When AQ Is at Unhealthy Levels? >


< RETURN TO AIR FORECASTING

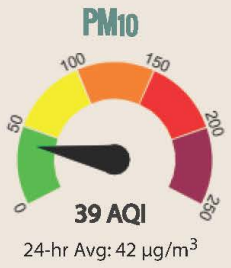
# Air Quality Hourly Forecast | Rillito

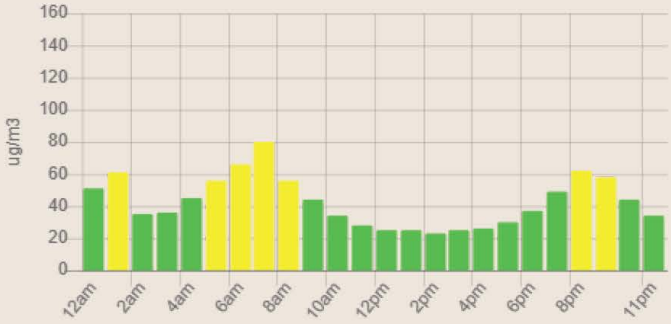
Updated On: 8/25/2021 - 9:02 AM

Click on each day to view forecast.

| Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|

## Wednesday Forecast:




## Air Quality By Pollutant:

| Pollutant | Wednesday 8/25/2021 | Thursday 8/26/2021 | Friday 8/27/2021 | Saturday 8/28/2021 | Sunday 8/29/2021 |
|---|---|---|---|---|---|
| $PM_{10}$ | 39 | 34 | 36 | 35 | 34 |

$O_3$ = Ozone, $PM_{10}$ = Particles ≤ 10 microns, $PM_{2.5}$ = Particles ≤ 2.5 microns

## Forecast Discussion:

Yesterday, $PM_{10}$ (dust) managed to reach the Moderate Air Quality Index (AQI) category at the Rillito monitor. A jump in $PM_{10}$ levels in the morning, followed by one later in the night, were the main reasons for the higher 24-hr average value of $PM_{10}$.

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AIR QUALITY FORECAST

Douglas ›
Flagstaff ›
Hayden ›
Miami ›
Nogales ›
Phoenix ›
Prescott ›
Rillito ›
Tucson ›
Yuma ›

Statewide ›

Understanding the Hourly Forecast ›

AQ RISK-BASED FORECAST

Dust Risk:
Maricopa County ›
Pinal County ›

Lead Risk:
Hayden ›

AIR QUALITY DATA ARCHIVES

Yesterday's Air Monitor Data ›
Observed Pollution Year-to-Date Report ›
Exceedance Report ›

Looking ahead, this week, weather conditions in Rillito are expected to be warm and dry, with light winds each day. The only deviation from this would be possible gusty winds from distant thunderstorms affecting the area. But these winds are currently expected in the evenings.

Overall, local $PM_{10}$ levels will be mostly dependent on local activity this week. And similar to yesterday's outcome, we can't rule out occasional sudden jumps in $PM_{10}$ levels.

- M. Graves
ADEQ Meteorologist

## What Flag Should I Fly?

Wednesday: Green


Thursday: Green


What is the Flag Program and how can my school/organization join? | Learn More >

SEE MORE

Air Pollutants Defined >
Air Quality Annual Reports >
Air Quality Monitoring >
AQ Monitoring Data >
Air Quality Visibility Cameras >
Contrails Vs. Chemtrails >
Current Air Quality Information >
High Pollution Watch (HPW) Explained >
PM Fact Sheet > | Air Arizona Mobile App >
What is Area A & B? >
What is Inversion and How Does It Affect AQ? >
What to Do When AQ Is at Unhealthy Levels? >

SEARCH DATABASES | COMPLAINTS | COMPLIANCE ASSISTANCE | FORMS | PERMIT APPLICATION STATUS | MEDIA/PRESS RELEASES | PUBLIC NOTICES | LAW & RULE

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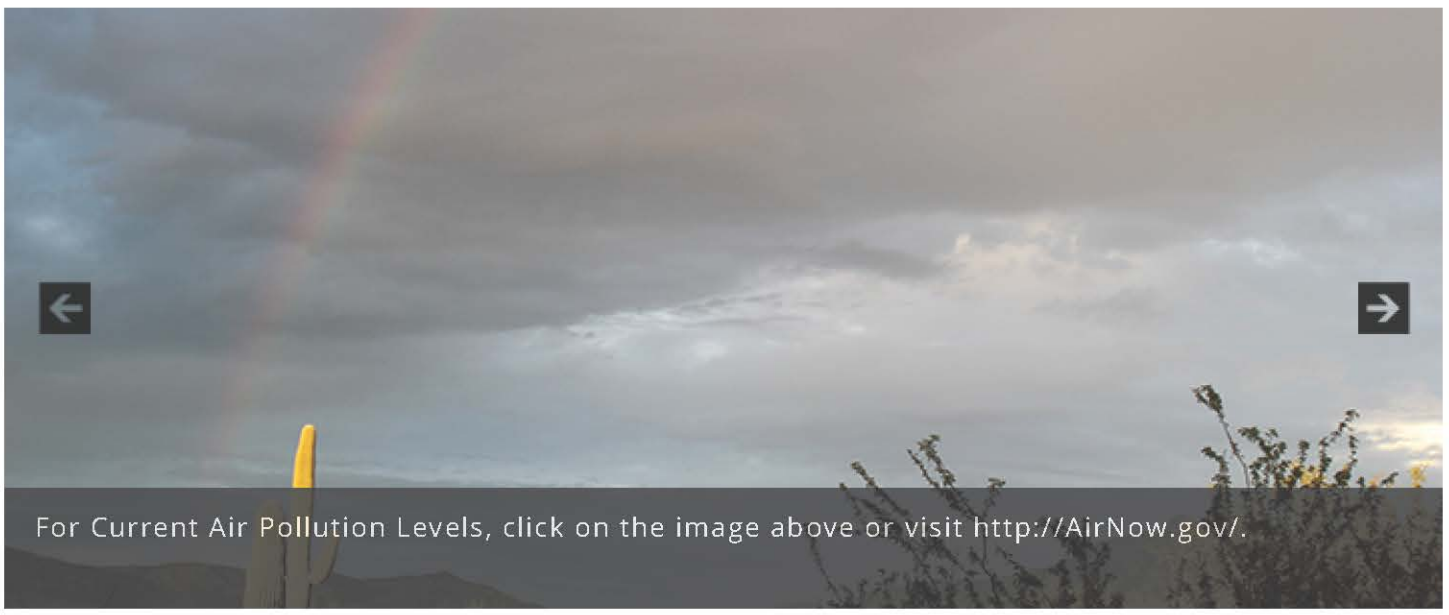
PIMA COUNTY

# Air Monitoring




AIRNOW Tucson Data

Current Levels of Air Pollution in the Tucson Area

## Tucson Air Quality Forecast

See Tucson's Air Quality forecast. The AQI Forecast lets the public know expected air quality conditions and provides advice about what they can do to protect their health, especially that of children, seniors and people with respiratory problems.

## Current Particulate Matter Data

See PurpleAir.com for current particulate matter air quality data from non- regulatory sensors.

Carbon Monoxide (CO) Ozone ($O_3$) Particulate Matter (PM)

Besides the tabs below the Information, Education, Public Outreach and the Clean Air Program area will have additional information about air quality. As part of its role in the community, PDEQ staff offers educational, regulatory and professional group tours of its air quality monitoring facilities. Please call our Community Outreach Contact, at (520) 724-7400 for more information on this service. Notify us if you would like to receive air quality advisories and related information. Thanks to a collaborative effort between the Arizona Department of Environmental Quality (ADEQ) and PDEQ a 5 day Air Quality Forecast for the Tucson Area is available from ADEQ.

Pima County DEQ Visibility Camera is being repaired. We are sorry for the inconvenience.

Monitoring | Air Quality Index | Air Pollution Data | Monitoring Information & Locations | Reports

## Monitoring in Pima County

The ultimate goal of the Pima County Department of Environmental Quality (PDEQ) air quality control program is to reduce harmful contaminants in ambient air to healthy levels and maintain those levels. Key to controlling air pollution is defining the nature and extent of air quality problems through monitoring.

Pima County is in attainment of U.S. Environmental Protection Agency (EPA) National Ambient Air Quality Standards with the exception of the Rillito area which is non-attainment for $PM_{10}$. The Ajo area was redesignated as attainment of the $PM_{10}$ standard by EPA on September 3, 2020. Pima County exceeded the 2015 EPA ground-level ozone standard several times during the 2018 and 2020 ozone season. The designation as attainment of the 2015 ozone standard will stay until EPA makes a change.

PDEQ monitors six criteria pollutants in the Tucson and Green Valley area in accordance with regulations established by the EPA. Data is reported hourly to PDEQ's air monitoring website, to the EPA's Air Now website and other agencies.

# NATIONAL WEATHER SERVICE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Customize Your Weather.gov

City, ST

Enter Your City, ST or ZIP Code

Remember Me

Get Weather

Privacy Policy

## NWS Forecast Office Tucson, AZ

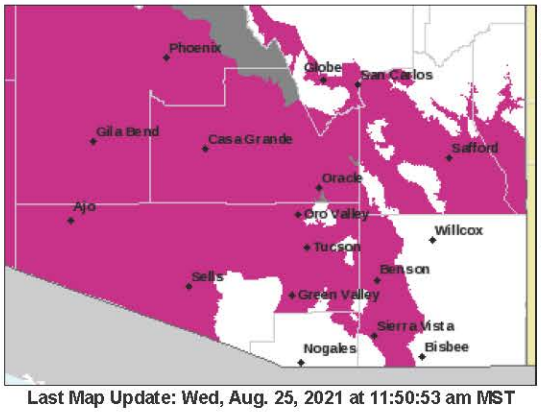
Weather.gov > NWS Tucson Arizona

**NWS Tucson Arizona**
Weather Forecast Office

Current Hazards | Current Conditions | Radar | Forecasts | Rivers and Lakes | Climate and Past Weather | Local Programs


Show Caption

**Click a location below for detailed forecast.**




Watches, Warnings & Advisories

Zoom Out

- Excessive Heat Warning
- Air Quality Alert
- Hazardous Weather Outlook

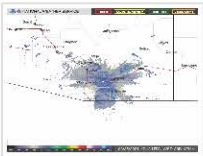
**Last Map Update: Wed, Aug. 25, 2021 at 11:50:53 am MST**

Text Product Selector (Selected product opens in current window)

Latest Text Products Issued by TWC


Social Media

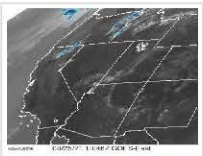

Forecast Discussion



Tucson Radar

New Radar Tutorial

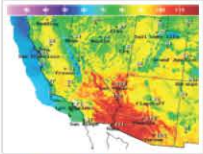
GOES-17 Satellite



GOES-16 Satellite

Detailed Hazards

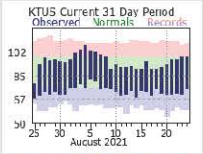
Weather Map



Graphical Forecasts

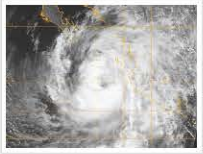
Forecast Weather Tables

Monsoon Tracker




Recent Temperatures

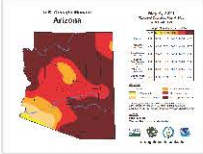
Fire Weather



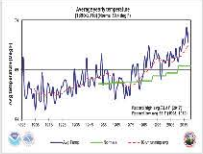
Tropical

Hydrology

Skywarn




Drought Page



Past Tucson Climate reports


AQI Legend

ZIP Code, City, or State

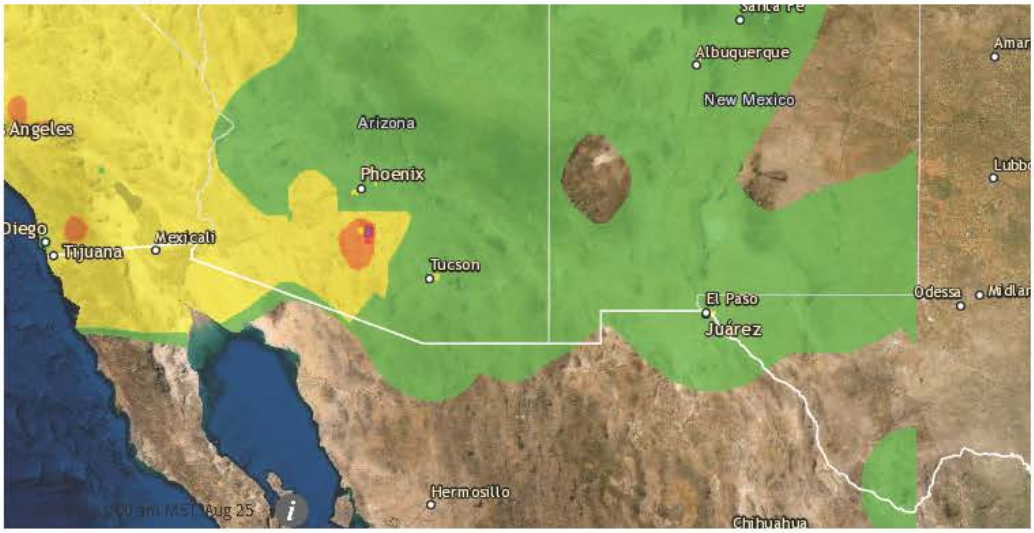
Rillito, AZ
Pinal Air Park Reporting Area

Monitors Near Me (https://gispub.epa.gov/airnow/?xmin=-12446149.59124131&ymin=3758282.9794695675&xmax=-12297433.70900967&ymax=3852344.6576625165&clayer=none&mlayer=ozonepm)

Recent Trends (/trends/?cityName&stateName&countryCode)

**(https://www.epa.gov/) and PARTNERS (/partners)**

**Data Providers**




National Maps

**Primary Pollutant**
This pollutant currently has the highest AQI in the area.

PM10 **41** Good

Enjoy your outdoor activities.

OZONE **35** Good

## Air Quality Forecast

**Forecast courtesy of**
Pinal County Air Quality Control District (http://www.pinalcountyaz.gov/AirQuality/Pages/home.aspx)

**Forecast Discussion:** Updated Wednesday, August 25, 2021 We thankfully did not have an ozone exceedance yesterday, the High Pollution Advisory was lifted for tod...

Full Forecast Discussion

| Today | Tomorrow | Friday | Saturday | Sunday |
|---|---|---|---|---|
| Moderate<br>OZONE | Moderate<br>OZONE | Unhealthy for Sensitive Groups<br>OZONE | Unhealthy for Sensitive Groups<br>OZONE | Moderate<br>OZONE |

AQI Legend

**Primary Pollutant**

| | | |
|---|---|---|
| OZONE | **88** | Moderate |
| PM2.5 | **54** | Moderate |
| PM10 | **48** | Good |

If you are **unusually sensitive** to ozone, consider reducing your activity level or shorten the amount of time you are active outdoors.

# Announcements

(/announcement/4806)
**Fire and Smoke Map Now Available in AirNow App**
**2021-07-29**
We've updated the AirNow mobile app to give you even more information by adding the Fire and Smoke Map, which gives you information on fire location, smoke plumes, and air quality that you can use to protect yourself and your family from wildfire smoke. Update or download the updated app for free on the Apple App Store (https://apps.apple.com/us/app/epa-airnow/id467653238) or the Google Play Store (https://play.google.com/store/apps/details?id=com.saic.airnow).

(/announcement/4766)
**Fire and Smoke Map Update**
**2021-07-19**
AirNow and the US Forest Service have updated the Fire and Smoke Map (https://fire.airnow.gov) to give you even more information! Click on the icon for a monitor or low-cost sensor to pull up a dashboard with more info – including the current NowCast AQI, info about actions to take, and info showing how the particle pollution in smoke has recently changed.

(/announcement/3336)
**Updated AirNow Website**
**2020-04-15**
Welcome to the updated AirNow website. If you have questions, let us know (/contact-us).

Learn how to use this site. (/how-to-use-this-site)

# Explore

| Current Fire Conditions | Embassies and Consulates | Archived Dates |
|---|---|---|
| (/fires) | (/international/us-embassies-and-consulates) | (https://gispub.epa.gov/airnow/index.html?tab=3) |
| **Webcams** | **Air Quality Flag Program** | **Email Notifications** |
| (/resources/web-cams) | (/air-quality-flag-program) | (http://www.enviroflash.info/) |

(https://www.facebook.com/airnow)

AirNow.gov - Home of the U.S. Air Quality Index

Home (/) | Site Map (/site-map)

AQI Legend

# Appendix C
# Air Quality Forecasts/Notifications – West Pinal


**Hydrogen Sulfide Readings @ Oasis Magic Ranch**

**********

## Air Quality Report

View the 24-hour average report from the last day's data.

Measurements are reported by station location. Details include Ozone and Particulate Matter.

**MORE INFORMATION**

## Burn Permits

All outside burning (unless exempt) requires a permit—residential, commercial, agriculture, bonfires, training exercise fires, building demolition, dangerous material, or Air Curtain Burning.

**MORE INFORMATION**

## Dust Permits

Dust kicked up by vehicles, construction, burning and wind events create pollution called particulate matter. Learn about rules and regulations to limit particulate matter produced.

**MORE INFORMATION**

## Complaint Filing

Report Air Quality health hazards such as Asbestos, Burning, Dust, Industrial Emissions, Odors, etc. Fill out the online complaint form to report your concern.

**COMPLAINT FILING**

## Industrial Permits

Any industrial operation that has the potential to emit 5.5 pounds per day or 1 ton per year of any regulated air pollutant is required to obtain a permit from Pinal County Air Quality.

**MORE INFORMATION**

## Monitoring Stations

View a map of all federally mandated monitoring stations. The address for each site is provided along with the station's details. Click on the DETAILS link, to see picture and trends analysis.

**MORE INFORMATION**

**Michael Sundblom - Director**

**Air Quality**

*NEW OFFICE LOCATION*
85 N. Florence St.
(Development Services Building)

Mailing Address:
PO Box 987
Florence, AZ 85132

Office: 520.866.6929
Fax: 520.866.6967
airquality@pinal.gov


**Sign up for Updates**

## Public Notices

Public Notices inform you about proposed changes to Air Quality rules/ordinances, industrial permits to be issued or renewed, and the monitoring network review in Pinal County. Public notices provide an opportunity for public comment.

**Have questions or comments?**
Email: airquality@pinal.gov

Or mail to:

Air Quality/Public Notices
P.O. Box 987
Florence, AZ 85132

**MORE INFORMATION**

## Online Payments

Air Quality Permits
Building Permits
Burn Permits
And more...

**PAY ONLINE**

**Public Record Request Form**

**Pinal County Government**
31 N. Pinal Street
Florence, AZ 85132
520.509.3555 (Local)
888.431.1311 (Toll Free)

PINAL COUNTY

AQI
AIR QUALITY INDEX

# FORECAST

| GOOD (0-50) | MODERATE (51-100) | UNHEALTHY FOR SENSITIVE GROUPS (USG) (101-150) | UNHEALTHY (151-200) | VERY UNHEALTHY (201-300) | HAZARDOUS (301-500) |
|---|---|---|---|---|---|

## FOR THURSDAY, JULY 8, 2021

This forecast is updated by 10:00 a.m. Monday through Friday and as needed
(AQI Forecast on Twitter – see tables below for location specific Twitters)

| | Highest AQI value/Site in Pinal County | Highest AQI forecasted value (see tables below for forecasts by monitoring location) | | | | | |
|---|---|---|---|---|---|---|---|
| | TUE 7/6/21 | WED 7/7/21 | THU 7/8/21 | FRI 7/9/21 | SAT 7/10/21 | SUN 7/11/21 | MON 7/12/21 |
| OZONE | 97 QUEEN VALLEY | 110 | 110 | 105 | 95 | 100 | 90 |
| $PM_{2.5}$ | 39 HIDDEN VALLEY | 60 | 75 | 70 | 55 | 55 | 75 |
| $PM_{10}$ | 65** STANFIELD | 55** | 60** | 55** | 85** | 60** | 65** |
| HEALTH WATCH/ ADVISORY * | | OZONE HPA | | OZONE HPW | *BLOWING DUST POSSIBLE* | NONE | NONE |

** Excludes the Hidden Valley Monitor, see Hidden Valley $PM_{10}$ table below

HPW - Symbol for **High Pollution Watch (HPW)** – Issued when there is potential for a pollutant to exceed the federal health standard. Issued in advance (2 or more days) as a lookout for potential poor air quality (Above 100 AQI). As the date nears and the confidence in the forecast increases, the High Pollution Watch will be upgraded to a High Pollution Advisory.

HPA - Symbol for **High Pollution Advisory (HPA)** – When it's imminent or there is a high probability for a pollutant to exceed the federal health standard.

**AQI and your health** | **Air Quality Guide for Ozone** | **Air Quality Guide for Particulates**

## Discussion

Updated Wednesday, July 7, 2021

**** OZONE HIGH POLLUTION ADVISORY**
**WEDNESDAY AND THURSDAY JULY 7-8, 2021 ****

The ozone levels rose quickly yesterday and got close to the health standard at Apache Junction and Queen Valley. The conditions today and Thursday will be favorable for ozone formation (i.e. hot and sunny) and so expect ozone levels to exceed the health standard and so have issued a same day ozone High Pollution Advisory (HPA) and extended it into Thursday. Anyone with respiratory and/or heart ailments should limit outdoor activities during the afternoon and early evening hours when ozone levels are at their highest. Additionally, reducing polluting activities can help, such as refueling vehicles after sunset and limiting automobile use such as idling and using drive thru's. The high ozone levels may continue into Friday and so have an ozone High Pollution Watch (HPW). Stay tuned.

The particulates at Stanfield also rose quicker than forecast and reached the moderate AQI category yesterday mainly due to evening $PM_{10}$ spikes. Considering not much is expected to change weather-wise and the hot and dry conditions typically lead to elevated particulates concentrations, have bumped up Stanfield's $PM_{10}$ AQI forecasts into the moderate AQI category today and Thursday.

High pressure will park to our northwest for a few days before meandering around a bit this upcoming weekend and bringing better chances for daily storm activity. The U of Arizona long range forecast model has a potential outflow event for Saturday and so have bumped up the $PM_{10}$ AQI forecasts to reflect that possibility. However this far out in the forecast period, that is subject to change so check back tomorrow for an updated air quality forecast. Forecaster: S. DiBiase.

HOURLY MONITORING DATA (Draft, preliminary data - subject to change)
MONITORING NETWORK MAP  YESTERDAY'S AQI LEVELS

| | Yesterday's Daily Maximum AQI @ Hidden Valley | HIDDEN VALLEY $PM_{10}$ AQI FORECAST | | | | | |
|---|---|---|---|---|---|---|---|
| SITE NAME | TUE 7/6/21 | WED 7/7/21 | THU 7/8/21 | FRI 7/9/21 | SAT 7/10/21 | SUN 7/11/21 | MON 7/12/21 |
| **Hidden Valley** (Twitter: HV_AQI) | 42 | 80 | 95 | 90 | 75 | 75 | 95 |

| | AIR QUALITY FORECAST FOR $PM_{2.5}$ (PARTICLES) | | | | | |
|---|---|---|---|---|---|---|
| SITE NAME | **WED 7/7/21** | **THU 7/8/21** | **FRI 7/9/21** | **SAT 7/10/21** | **SUN 7/11/21** | **MON 7/12/21** |
| **Casa Grande** (Twitter: CG_AQI) | 39 | 40 | 41 | 42 | 41 | 38 |
| **Hidden Valley** (Twitter: HV_AQI) | 60 | 75 | 70 | 55 | 55 | 75 |

| AIR QUALITY FORECAST BY LOCATION FOR OZONE | | | | | | |
|---|---|---|---|---|---|---|
| SITE NAME | **WED 7/7/21** | **THU 7/8/21** | **FRI 7/9/21** | **SAT 7/10/21** | **SUN 7/11/21** | **MON 7/12/21** |
| **Apache Junction** (Twitter: AJ_AQI) | 108 | 108 | 104 | 92 | 95 | 88 |
| **Casa Grande** (Twitter: CG_AQI) | 90 | 90 | 85 | 80 | 85 | 80 |
| **Pinal Air Park** (Twitter: PAP_AQI) | 88 | 90 | 82 | 80 | 85 | 80 |
| **Queen Valley** | 110 | 110 | 105 | 95 | 100 | 90 |

| AIR QUALITY FORECAST BY LOCATION FOR $PM_{10}$ (PARTICLES) | | | | | | |
|---|---|---|---|---|---|---|
| SITE NAME | **WED 7/7/21** | **THU 7/8/21** | **FRI 7/9/21** | **SAT 7/10/21** | **SUN 7/11/21** | **MON 7/12/21** |
| **Apache Junction** (Twitter: AJ_AQI) | 27 | 30 | 31 | 45 | 30 | 35 |
| **Casa Grande** (Twitter: CG_AQI) | 36 | 38 | 40 | 60 | 45 | 49 |
| **Eleven Mile Corner** (Twitter: PC_Housing_AQI) | 37 | 40 | 42 | 75 | 46 | 50 |
| **Eloy** (Twitter: Eloy_AQI) | 38 | 41 | 42 | 75 | 47 | 50 |
| **Maricopa** (Twitter: Maricopa City_AQ) | 41 | 42 | 43 | 65 | 40 | 45 |
| **Pinal Air Park** (Twitter: PAP_AQI) | 32 | 33 | 34 | 70 | 38 | 45 |
| **San Tan Valley** Twitter: Santan_AQI) | 31 | 32 | 35 | 50 | 29 | 32 |
| **Stanfield** (Twitter: Stanfield_AQI) | 55 | 60 | 55 | 85 | 60 | 65 |

## AIR POLLUTANTS IN DETAIL

### $PM_{10}$ & $PM_{2.5}$ (PARTICLES):

**Description** – The term "particulate matter" (PMS) includes both solid particles and liquid droplets found in air. Many manmade and natural sources emit PM directly or emit other pollutants that react in the atmosphere to form PM. Particles less than 10 micrometers in diameter tend to pose the greatest health concern because they can be inhaled into and accumulate in the respiratory system. Particles less than 2.5 micrometers in diameter are referred to as "fine" particles and are responsible for many visibility degradations such as the "Valley Brown Cloud" (see http://www.phoenixvis.net/). Particles with diameters between 2.5 and 10 micrometers are referred to as "coarse".

**Sources** – Fine = All types of combustion (motor vehicles, power plants, wood burning, etc.) and some industrial processes. Coarse = crushing or grinding operations and dust from paved or unpaved roads.

**Potential health impacts** – PM can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases, such as asthma and chronic bronchitis.

**Units of measurement** – Micrograms per cubic meter ($ug/m^3$)

**Averaging interval** – 24 hours (midnight to midnight).

**Reduction tips** – Stabilize loose soils, slow down on dirt roads and carpool.

## $O_3$ OZONE:

**Description** – This is a secondary pollutant that is formed by the reaction of other primary pollutants (precursors) such as VOCs (volatile organic compounds) and NOx (Nitrogen Oxides) in the presence of heat and sunlight. The ozone "season" generally occurs during the spring and summer months (April-October) when high temperatures and extended daylight hours create the conditions most conducive to ozone formation.

**Sources** – VOCs are emitted from motor vehicles, chemical plants, refineries, factories, and other industrial sources. NOx is emitted from motor vehicles, power plants, and other sources of combustion.

**Potential health impacts** – Exposure to ozone can make people more susceptible to respiratory infection, result in lung inflammation, and aggravate pre-existing respiratory diseases such as asthma. Other effects include decrease in lung function, chest pain, and cough.

**Unit of measurement** – Parts per million (ppm).

**Averaging interval** – Highest eight-hour period within a 24-hour period (midnight to midnight).

**Reduction tips** – Curtail daytime driving, refuel cars and use gasoline-powered equipment as late in the day as possible.

< RETURN TO AIR FORECASTING

# Dust Risk-Based Forecast | Pinal County

Updated On: 08/25/2021 - 9:27 AM

## Thursday


**Stagnation:** Morning and evening stagnation

**Wind:** Mainly light winds

## Friday


**Stagnation:** Morning and evening stagnation

**Wind:** Mainly light winds

## Saturday


**Stagnation:** Morning and evening stagnation

**Wind:** Mainly light winds. Outflow winds possible in the afternoon

## Sunday


**Stagnation:** Morning and evening stagnation

**Wind:** Mainly light winds. Outflow winds possible in the afternoon

## Monday


**Stagnation:** Morning and evening stagnation

**Wind:** Mainly light winds. Outflow winds possible in the afternoon

## Forecast Discussion:

For more information on Pinal County air quality information, click here.

- M. Pace
ADEQ Meteorologist

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AQ RISK-BASED FORECAST

Dust Risk:
Maricopa County >
Pinal County >

Lead Risk:
Hayden >

AIR QUALITY DATA ARCHIVES

Yesterday's Air Monitor Data >
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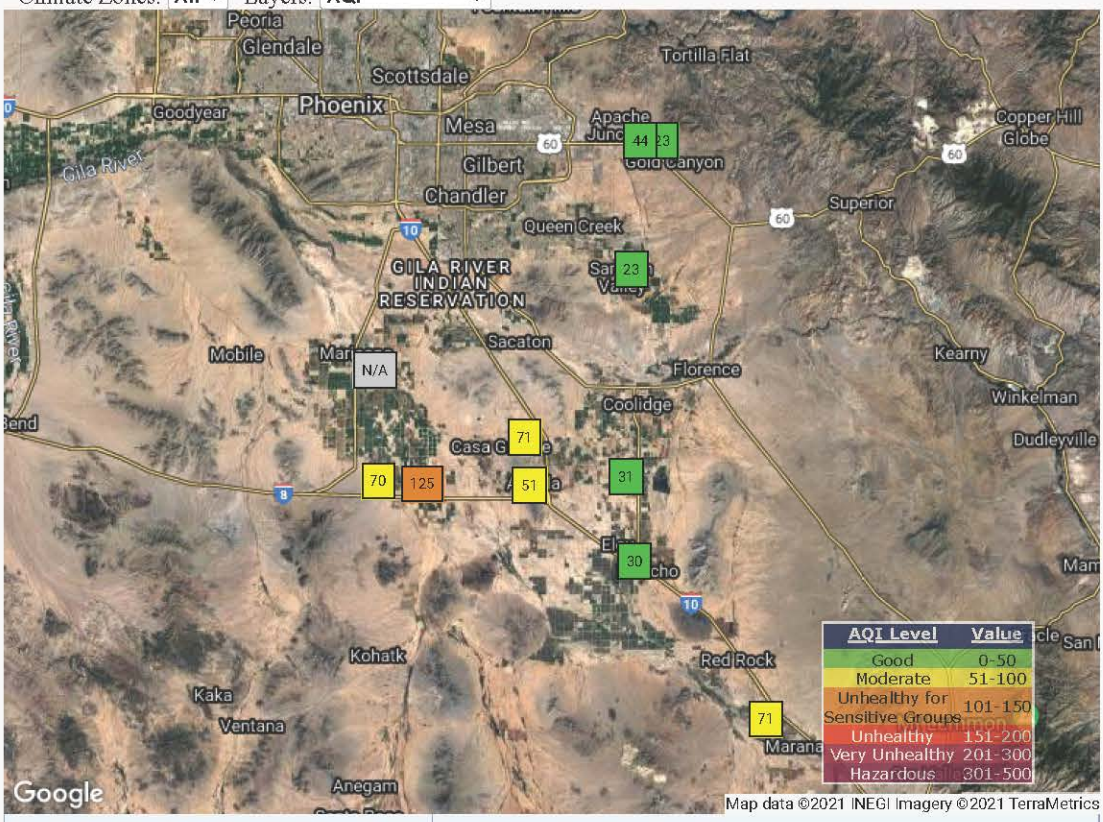
Exceedance Report >

Follow us on Twitter

Climate Zones: All Layers: AQI




| Link | Description |
|---|---|
| Air Quality Index Report | AQI values and concentrations for the last 24 hours. |
| Daily Parameter Report | Ozone, PM2.5 and PM10 (Preliminary and subject to change) |
| Daily Summary Report | |
| PM10 5-Minute Daily Summary Report | |

**View Current Hourly Ozone, PM2.5 and PM10** (preliminary subject to change)

**View Current Air Quality Index Report**

**Background Information for Hourly Data** **View Past Air Quality Index Reports** (3 days)

**View Current and Past PM10 5-Minute Data (3 days) Txt/CSV**

**Meteorological Data:**

**Hourly pdf/csv 5 Minute csv**

The Pinal County Air Quality Index map above shows the most recent ozone and particulate matter (PM10 – particulate matter 10 microns and less in size, PM2.5 - particulate matter 2.5 microns and less in size) levels. The AQI is a yardstick that runs from 0 to 500 with the higher the AQI value the greater the level of air pollution and thus a greater health concern. The health standard for each pollutant is represented by 100 on the AQI scale. Any AQI value over 100 represents an exceedance of the health standard for that particular pollutant and the air quality is considered to be unhealthy for either sensitive groups (asthmatics), 101 to 150 on the AQI scale or unhealthy for all people (151+ on the AQI scale). In addition to the AQI values, the ozone and particulate matter concentrations can also be displayed on the map by selecting each pollutant for the "Layers" dropdown menu.

## Helpful Information

**Definitions**

- Ozone
- Particulate Matter 2.5 (PM2.5)
- Particulate Matter 10 (PM10)

**Links**

- ADEQ Air Quality Forecast
- EPA AIRNow Homepage
- Current Hourly Ozone and PM10 data (preliminary results subject to change)

**Pinal County Government**
31 N. Pinal Street
Florence, AZ 85132
520.509.3555 (Local)
888.431.1311 (Toll Free)

# NATIONAL WEATHER SERVICE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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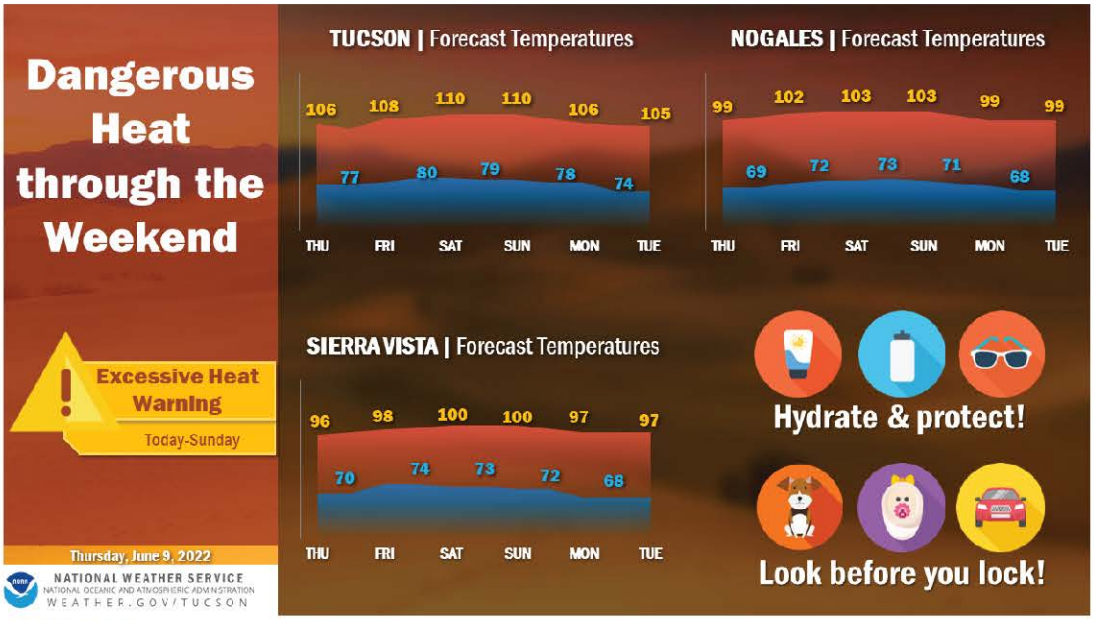
## NWS Forecast Office Tucson, AZ

Weather.gov > NWS Tucson Arizona

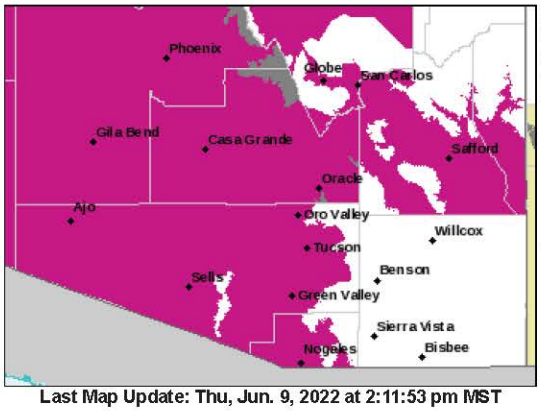
**NWS Tucson Arizona**
Weather Forecast Office

Current Hazards | Current Conditions | Radar | Forecasts | Rivers and Lakes | Climate and Past Weather | Local Programs




Show Caption

**Click a location below for detailed forecast.**




Watches, Warnings & Advisories

Zoom Out

- Excessive Heat Warning
- Air Quality Alert
- Hazardous Weather Outlook

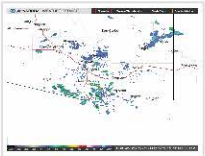
**Last Map Update: Thu, Jun. 9, 2022 at 2:11:53 pm MST**

Text Product Selector (Selected product opens in current window)

Latest Text Products Issued by TWC

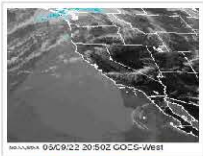

Social Media


Forecast Discussion

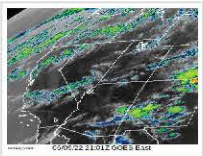


Tucson Radar

New Radar Tutorial



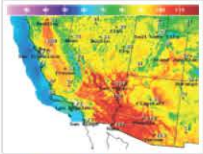
GOES-17 Satellite



GOES-16 Satellite

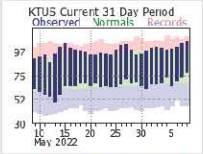

Detailed Hazards


Weather Map


Graphical Forecasts

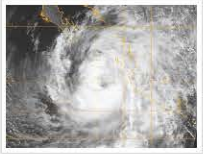

Forecast Weather Tables


Monsoon



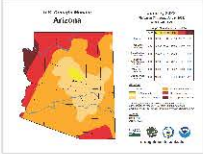
Recent Temperatures

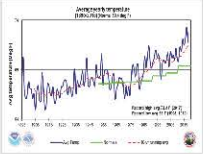

Fire Weather


Tropical


Hydrology

Skywarn


Drought Page


Past Tucson Climate reports

# Appendix D
# Air Quality Forecasts/Notifications – Yuma

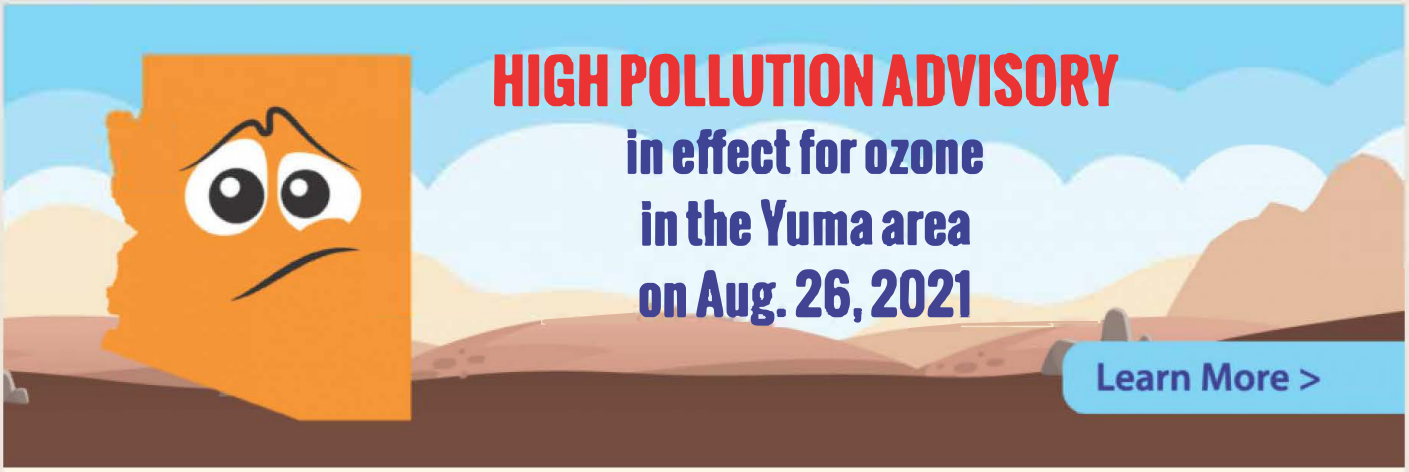
Visit OpenBooks | Ombudsman-Citizens Aide | Get the facts on COVID-19 | Search AZ.Gov | az.gov

ADEQ Arizona Department of Environmental Quality

SEARCH GO>

HOME | ABOUT | PERMIT AND COMPLIANCE ASSISTANCE | PROGRAMS | ONLINE SERVICES | MY COMMUNITY | RECORDS CENTER | EMAPS

QUICK PAY | myDEQ




## OUR MISSION

**To protect and enhance public health and the environment.**

Learn More >

- Emergency Response
- Submit Feedback
- Report an Environmental Complaint

## FEATURED CURRENT NEWS

To better serve the people of Arizona, ADEQ created My Community to provide information about environmental issues, plus actions to address them, in your community. With this easy-to-use online tool, you can quickly learn about what's important to you and your family | View My Community

## FREQUENTLY VIEWED

- Welcome to ADEQ
- Air Quality Hourly Forecast | Phoenix
- Arizona Air Quality Monitor Report
- Welcome to myDEQ
- Vehicle Emissions Control (VEC)
- About Us
- The Importance of Issuing Environmental Permits
- Air Forecasting
- Search Databases
- Operator Certification
- Contact Us
- Wildfire Support

## NEW PUBLIC NOTICES

See all >

08/26/21 - COMMENT PERIOD BEGINS | Proposal to Issue Air Quality Permit Renewal for Fort Huachuca in Cochise County
On Aug. 26, 2021, the public... See Notice >

09/25/21 - COMMENT PERIOD ENDS | Proposal to Issue Air Quality Permit Renewal for Fort Huachuca in Cochise County
On Sept. 25, 2021, the public... See Notice >

09/17/21 - COMMENT PERIOD ENDS | Preliminary Decision to Issue a State Water Quality Certification of a Federal Action for the Bureau of Reclamation Lower Colorado River O&M Activities
On Friday, Sept. 17, 2021,... See Notice >

08/18/21 - COMMENT PERIOD BEGINS | Preliminary Decision to Issue a State Water Quality Certification of a Federal Action for the Bureau of Reclamation Lower Colorado River O&M Activities
On Wednesday, Aug. 18, 2021,... See Notice >

09/14/21 - COMMENT PERIOD ENDS | Proposed Water Quality Assurance Revolving Fund Site Listing for Bahama Avenue and Bimini Lane
On Tuesday, Sept. 14, 2021,... See Notice >

08/16/21 - COMMENT PERIOD BEGINS | Proposed Water Quality Assurance Revolving Fund Site Listing for Bahama Avenue and Bimini Lane
On Monday, Aug. 16, 2021, the... See Notice >

## NEW EVENTS | MEETINGS | HEARINGS

See all >



This high pollution advisory is an example for ozone. Similar advisories are issued for particulate matter.

Send ADEQ Your Feedback
Registrations and Permits
What Permits Do You Need For Your Business?
What Environmental Issues Are in My Community?
Records Center
What are GIS eMaps?
Learn More About the Water Quality Programs
Compliance Assistance

08/26/21 - WEBINAR | Funding Workshop for Water System Owners/Operators/Managers : ADEQ is holding... See Event Details >

08/26/21 - STAKEHOLDER MEETING | Surface Water Quality Rulemaking Virtual Meeting : ADEQ invites... See Event Details >

08/31/21 - RESCHEDULED - STAKEHOLDER MEETING | Opportunity to Provide Feedback for ADEQ's Drinking Water Program : ADEQ has... See Event Details >

09/15/21 - PUBLIC MEETING | Park-Euclid, 7th Street and Arizona Avenue, Stone Avenue and Grant Road Community Advisory Board : ... See Event Details >

BACK TO TOP

SEARCH DATABASES | COMPLAINTS | COMPLIANCE ASSISTANCE | FORMS | PERMIT APPLICATION STATUS | MEDIA/PRESS RELEASES | PUBLIC NOTICES | LAW & RULE

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< RETURN TO AIR FORECASTING

# Air Quality Hourly Forecast | Yuma

Updated On: 7/7/2021 - 8:47 AM

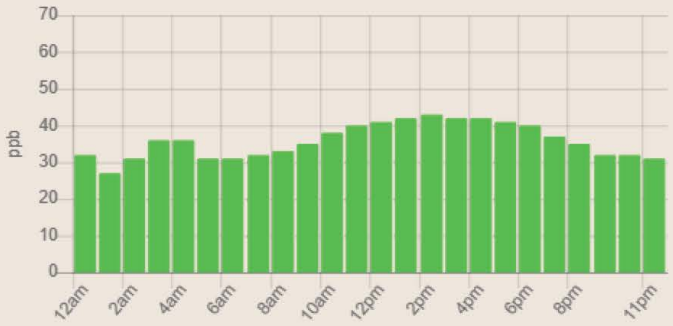
Click on each day to view forecast.

Wednesday | Thursday | Friday | Saturday | Sunday

## Wednesday Forecast:

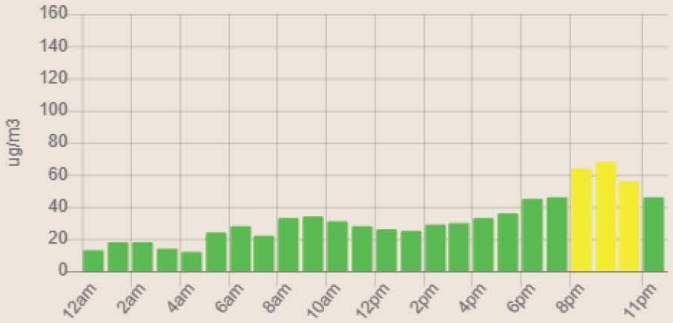
### Ozone


Max 8-hr Avg: 41 ppb




### PM10


24-hr Avg: 32 µg/m$^3$




### PM25

AIR QUALITY FORECAST

Phoenix >
Yuma >
Nogales >
Tucson >

Statewide >

Understanding the Hourly Forecast >

AQ RISK-BASED FORECAST

Dust Risk:
Maricopa County >
Pinal County >

Lead Risk:
Hayden >

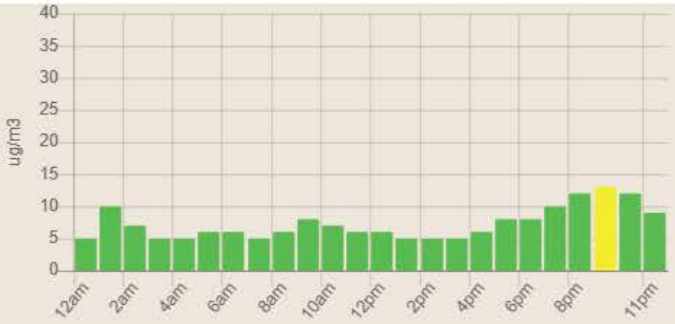
AIR QUALITY DATA ARCHIVES

Yesterday's Air Monitor Data >
Observed Pollution Year-to-Date Report >
Exceedance Report >

SEE MORE

Air Pollutants Defined >
Air Quality Annual Reports >
Air Quality Monitoring >
AQ Monitoring Data >
Air Quality Visibility Cameras >


24-hr Avg: 7.2 µg/m$^3$




Contrails Vs. Chemtrails >
Current Air Quality Information >
High Pollution Watch (HPW) Explained >
PM Fact Sheet > | Air Arizona Mobile App >
What is Area A & B? >
What is Inversion and How Does It Affect AQ? >
What to Do When AQ Is at Unhealthy Levels? >

## Air Quality By Pollutant:

| Pollutant | Wednesday 7/7/2021 | Thursday 7/8/2021 | Friday 7/9/2021 | Saturday 7/10/2021 | Sunday 7/11/2021 |
|---|---|---|---|---|---|
| $O_3$ | 38 | 40 | 40 | 42 | 39 |
| $PM_{10}$ | 30 | 36 | 33 | 36 | 35 |
| $PM_{2.5}$ | 30 | 38 | 35 | 34 | 34 |

$O_3$ = Ozone, $PM_{10}$ = Particles ≤ 10 microns, $PM_{2.5}$ = Particles ≤ 2.5 microns

## Forecast Discussion:

We are still expecting Good air quality to continue through the week. We are forecasting fairly consistent southerly winds this week, which should limit any ozone influence from California. Therefore, ozone is forecast to remain in the Good AQI range through the forecast period. As for particulates, there will be some breezy afternoon winds at times, but we don't expect these winds to be strong enough for any significant dust issues. As a result, we are forecasting $PM_{10}$ and $PM_{2.5}$ to also remain in the Good AQI range through the week.

- R. Nicoll
ADEQ Meteorologist

## What Flag Should I Fly?

Wednesday: Green


Thursday: Green


What is the Flag Program and how can my school/organization join? | Learn More >

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# NWS Forecast Office Phoenix, AZ

Weather.gov > NWS Phoenix

**NWS Phoenix**
Weather Forecast Office

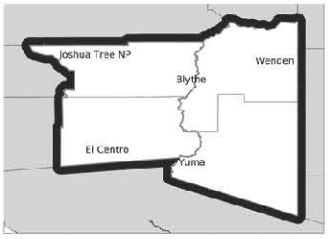
Current Hazards | Current Conditions | Radar | Forecasts | Rivers and Lakes | Climate and Past Weather | Local Programs

# Monsoon Threat Index

**Created at 12:30 AM on Wednesday, August 25**

EXTREME WIDESPREAD
MAJOR NUMEROUS
MODERATE SCATTERED
LOW ISOLATED
LITTLE TO NONE

| Threat | Today WED AUG 25 | Tomorrow THU AUG 26 | Day 3 FRI AUG 27 |
|---|---|---|---|
| Heat | | | |
| Dust Storm | | | |
| Lightning | | | |
| Flash Flooding | | | |
| T-Storm Winds | | | |
| Hail | | | |

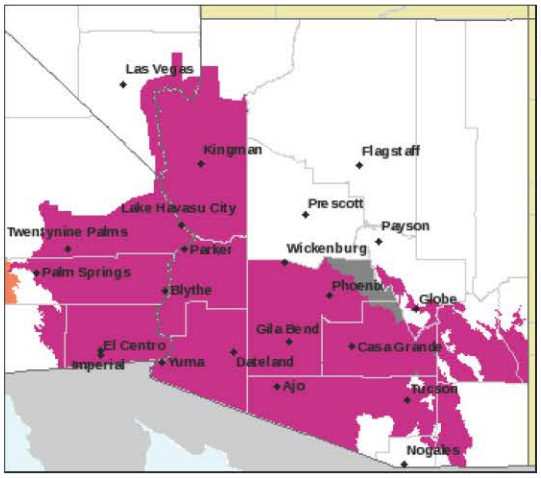



Southeast California & Southwest Arizona

Interact With Us NWSPhoenix Weather.Gov/PSR @NWSPhoenix YouTube NWSPhoenix

Show Caption

**Click a location below for detailed forecast.**




Watches, Warnings & Advisories

Zoom Out

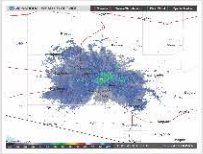
- Excessive Heat Warning
- Heat Advisory
- Air Quality Alert
- Hazardous Weather Outlook

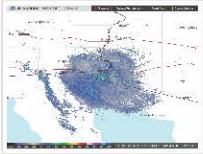
**Last Map Update: Wed, Aug. 25, 2021 at 12:34:41 pm MST**

Text Product Selector (Selected product opens in current window)

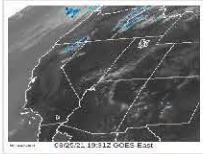
Latest Text Products Issued by PSR

MRMS Radar Imagery

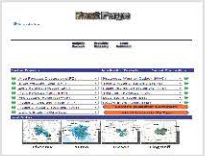

Phoenix Radar


Yuma Radar

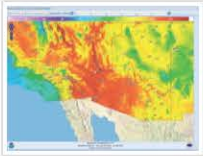

GOES-17 Satellite

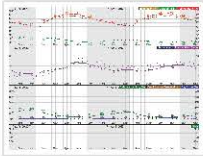

GOES-16 Satellite

Forecast Discussion


Fast Page


Local Climate Information


Local Graphical Forecast


Hourly Forecasts

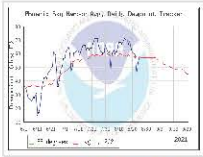

Fire Weather


Heat Safety

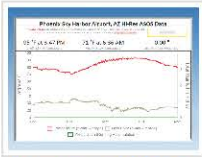
Social Media


Monsoon Safety


SPC Outlooks


Monsoon Tracker


Phoenix Rainfall Index


Hi-res KPHX ASOS Data

# Appendix E
# Education Programs – Phoenix

# Air Quality Guide for Particle Pollution

Harmful particle pollution is one of our nation's most common air pollutants. Use the chart below to help reduce your exposure and protect your health. For your local air quality forecast, visit www.airnow.gov

| Air Quality Index | Who Needs to be Concerned? | What Should I Do? |
|---|---|---|
| Good (0-50) | It's a great day to be active outside. | |
| Moderate (51-100) | Some people who may be unusually sensitive to particle pollution. | **Unusually sensitive people:** *Consider reducing* prolonged or heavy exertion. Watch for symptoms such as coughing or shortness of breath. These are signs to take it easier.<br>**Everyone else:** It's a good day to be active outside. |
| Unhealthy for Sensitive Groups (101-150) | Sensitive groups include **people with heart or lung disease, older adults, children and teenagers.** | **Sensitive groups:** *Reduce* prolonged or heavy exertion. It's OK to be active outside, but take more breaks and do less intense activities. Watch for symptoms such as coughing or shortness of breath.<br>**People with asthma** should follow their asthma action plans and keep quick relief medicine handy.<br>**If you have heart disease:** Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your heath care provider. |
| Unhealthy (151-200) | **Everyone** | **Sensitive groups:** *Avoid* prolonged or heavy exertion. Consider moving activities indoors or rescheduling.<br>**Everyone else:** *Reduce* prolonged or heavy exertion. Take more breaks during outdoor activities. |
| Very Unhealthy (201-300) | **Everyone** | **Sensitive groups:** *Avoid all* physical activity outdoors. Move activities indoors or reschedule to a time when air quality is better.<br>**Everyone else:** *Avoid* prolonged or heavy exertion. Consider moving activities indoors or rescheduling to a time when air quality is better. |
| Hazardous (301-500) | **Everyone** | **Everyone:** *Avoid all* physical activity outdoors.<br>**Sensitive groups**: Remain indoors and keep activity levels low. Follow tips for keeping particle levels low indoors. |

## Key Facts to Know About Particle Pollution:

- Particle pollution can cause serious health problems – including asthma attacks, heart attacks, strokes and early death.
- Particle pollution can be a problem at any time of the year, depending on where you live.
- You can reduce your exposure to pollution and still get exercise! Use daily Air Quality Index (AQI) forecasts at www.airnow.gov to plan your activity.

## What is particle pollution?

Particle pollution comes from many different sources. Fine particles (2.5 micrometers in diameter and smaller) come from power plants, industrial processes, vehicle tailpipes, woodstoves, and wildfires. Coarse particles (between 2.5 and 10 micrometers) come from crushing and grinding operations, road dust, and some agricultural operations.

## Why is particle pollution a problem?

Particle pollution is linked to a number of health problems, including coughing, wheezing, reduced lung function, asthma attacks, heart attacks and strokes. It also is linked to early death.

## Do I need to be concerned?

While it's always smart to pay attention to air quality where you live, **some people may be at greater risk from particle pollution.** They include:

- People with cardiovascular disease (diseases of the heart and blood vessels)
- People with lung disease, including asthma and COPD
- Children and teenagers
- Older adults
- Research indicates that obesity or diabetes may increase risk.
- New or expectant mothers may also want to take precautions to protect the health of their babies.

## How can I protect myself?

**Use AQI forecasts to plan outdoor activities.** On days when the AQI forecast is unhealthy, take simple steps to reduce your exposure:

- Choose a less-strenuous activity
- Shorten your outdoor activities
- Reschedule activities
- Spend less time near busy roads

**When particle levels are high outdoors, they can be high indoors – unless the building has a good filtration system.**

Keep particles lower indoors:

- Eliminate tobacco smoke
- Reduce your use of wood stoves and fireplaces
- Use HEPA air filters and air cleaners designed to reduce particles
- Don't burn candles

## Can I help reduce particle pollution?

Yes! Here are a few tips.

- Drive less: carpool, use public transportation, bike or walk
- Choose ENERGY STAR appliances
- Set thermostats higher in summer and lower in winter
- Don't burn leaves, garbage, plastic or rubber
- Keep car, boat and other engines tuned

EPA United States Environmental Protection Agency

Office of Air Quality and Radiation (6301A)
EPA-456/F-15-005
www.airnow.gov
August 2015

# Children's Environmental Health Program

Revised on: June 27, 2019 - 3:54pm

The Office of Children's Environmental Health's (OCEH) mission is to protect children from environmental health risks. Since children's bodies and organs are still developing, they are especially susceptible to adverse health effects related to contaminants in the air, water, food and soil.

As part of their mission, OCEH works to develop and implement practical ways to reduce children's exposure to environmental pollutants. They make an effort to identify and help remediate pollutants that put children most at risk and provide information on pollution-specific issues for families, teachers, day care providers and other concerned individuals.

## OCEH's Core strategy is CARE:

CARE stands for **C**oordination, **A**ssessment, **R**eduction, and **E**ducation

OCEH aims to create a cleaner, safer, healthier environment for our children. The CARE strategy involves developing programs and providing tools that address specific types of environmental concerns. Such no-cost programs enable caregivers, educators and parents to mitigate public health risk and take environmentally responsible actions that safeguard children.

## OCEH Programs Include:

- Air Quality Flag Program >
- Idle Reduction Program >
- Green Schools >

### CONTACT

Ombudsman
602-771-2288
Email >

### SEE MORE

- Air Quality Flag Program >
- Idle Reduction Program >
- Green Schools >
- Environmental Health Risk For Children >

### ADDITIONAL RESOURCES

- Arizona Asthma Coalition >
- EPA - Asthma >
- EPA - Healthy Schools, Healthy Kids >


< RETURN TO CHILDREN'S ENVIRONMENTAL HEALTH PROGRAM

# Air Quality Flag Program

Revised on: January 20, 2021 - 10:30am

*"Poor air quality creates risk for those with chronic respiratory diseases, such as asthma, and impacts lung health for all Arizonans. We support the Air Quality Flag program as a valuable resource for schools and other organizations to take action to protect people's health. By adopting the Flag Program, people will know when to adjust their physical activity and reduce exposure to outdoor air pollution."*

— Barbara Burkholder, Board Member and Advocacy Chair
of the Arizona Asthma Coalition

*"By starting the flag program, I am able to better communicate with school officials when students with asthma should take it easy during outdoor recess or even stay inside. As the nurse, I help children with their inhalers when at school. Since flying the flags this school year, I noticed that some students are not coming to my office as often and needing their inhaler."*

— Julie Hull, Nurse
of Mesa Public Schools

## Helping Communities Become More Air Aware

ADEQ's Air Quality Flag Program promotes a healthy environment for our children, workers, family, friends and neighbors by providing Arizona communities with resources to inform residents about:

- Local outdoor air quality conditions
- How air pollution impacts health
- Actions we can take to protect ourselves
- Ways we can improve the quality of the air we breathe

The program is especially important for children, including teens, and those with asthma or other respiratory illnesses, whose risk of experiencing health issues from air pollution is greater.

BACK TO TOP

What Are Air Qual...

Watch video on YouTube >

### CONTACT

602-771-0004
Email >

### SEE MORE

AQ Flag Program >
Start A Flag Program At Your School/Organization >
Flag Colors & Recommended Activity >
AQ Flag Program FAQs >
What is Today's Air Quality? >

### FLAG PROGRAM TOOLKIT

**FACT SHEETS**
Program > | Español >
Ozone > | Español >
PM > | Español >

## How Does It Work?

The program provides participating facilities with educational materials and colored flags that notify communities about local air quality conditions and correspond with the Environmental Protection Agency's (EPA's) Air Quality Index (AQI). By sharing educational materials with residents and flying the flags in a visible spot, the facilities help alert people to that particular day's air quality, so they know when and how to modify their outdoor activities | Learn More >

Watch the Video >

## Who Can Participate?

Eligible Air Quality Flag Program participants include schools, environmental education centers, after-school/early-childcare facilities, community health centers, fire departments, parks and recreation centers, tribes, and businesses located in Maricopa, Pima, Pinal, Yuma and Santa Cruz counties.

Want to start a Flag Program at your school or organization? | **Learn How >**

**POSTERS**

For Schools > | Español >
For Orgs > | Español >

**OTHER RESOURCES**

Program Handbook >
Program Implementation Video >
Outdoor Activity Guide > | Español >
Welcome Email for Parents and Staff (Template) >
Morning Announcement Script (For Schools) >

### ADDITIONAL RESOURCES

Classroom Activities & Curricula >
Air Quality Index Calculator >
Pinal County Flag Program >
EPA Flag Program >
Facebook Photo Gallery >

**STUDIES**

PM10 Pollution & Childhood Asthma >
PM10 Pollution & Asthma in Children >
Children's Health Study >
Asthma Hospital Visits & Ozone Concentration in Maricopa County >
High PM-2.5 Days & Asthma-Related Hospital Encounters (Phoenix) >


< RETURN TO AIR QUALITY FLAG PROGRAM

# Flag Colors and Recommended Activity

Revised on: January 20, 2021 - 10:31am

Flags posted at participating schools and/or community organizations match AQI's warning level colors, indicating the amount of pollution in the air and any possible associated health effects experienced within a few hours or days after breathing polluted air. ADEQ and some local districts calculate the AQI for four major air pollutants regulated by the Clean Air Act: ground-level ozone, particulate matter ($PM_{10}$ and $PM_{2.5}$) and carbon monoxide | Learn More About Pollutants >

Outdoor Activity Guide | View >
PM Fact Sheet | View >
Ozone Fact Sheet | View >

For each of these pollutants, the Environmental Protection Agency (EPA) has established National Air Quality Standards to protect public health. If a warning is issued, the flag's purpose is to protect the greater at-risk population.

## Flag Colors

**Green** — Air quality is good. Weather permitting, it's a great day to be active outside.

**Yellow** — Air quality is fair, but may be a health concern to those who are unusually sensitive to air pollution. Watch for symptoms and reduce prolonged outdoor exertion.

**Orange** — Air quality is approaching unhealthy. Sensitive people, including children, older adults, pregnant women and those with heart or lung disease should take more breaks, lower outdoor activity intensity and watch for symptoms.

**Red** — Air quality is unhealthy. Take more breaks, shorten outdoor activities or choose less-intense activities. Consider rescheduling longer or more intense outdoor activities or moving them indoors.

## Watch for Symptoms

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602-771-0004
Email >

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Common symptoms to look out for are irritation of the eyes, nose and throat, including coughing, chest tightness and shortness of breath. You may need to take breaks, choose less-intense outdoor activities (e.g., walking instead of running), or move activities indoors. Air pollution may also make asthma symptoms worse and trigger attacks. Those with asthma should follow their asthma action plan and keep quick-relief medicine handy on moderate to unhealthy days.

Start a Flag Program at your school or organization | **Learn How >**

# Outdoor Activity Guide for ADEQ's Air Quality Flag Program

Regular physical activity promotes health and fitness. The table below shows what the flag colors mean, including when and how outdoor physical activity may be modified based on the air quality. Following these guidelines can help protect the health of all Arizonans from the impacts of air pollution. Ideas for school classroom activities on less healthy days can be found online at azdeq.gov/FlagProgram.

***Those with asthma, follow your asthma action plan and keep quick relief medicine handy.***

| Flag Color | Air Quality | Sensitive Groups | General Public |
|---|---|---|---|
| GOOD | Air quality is good. | Weather permitting, it's a great day to be active outside. | |
| MODERATE | Air quality is fair. | Unusually sensitive people should consider reducing prolonged outdoor exertion. Watch for symptoms such as coughing or shortness of breath. | It's a good day to be active outside. |
| UNHEALTHY For Sensitive Groups | Air quality is approaching unhealthy. | Sensitive people including children, older adults, pregnant women and those with heart or lung disease should take more breaks, lower the activity's intensity and watch for symptoms. | It's OK to be active outside, especially for short periods. |
| UNHEALTHY | Air quality is unhealthy. | For everyone working or playing outdoors, take more breaks and do less intense activity. Consider rescheduling longer or more intense outdoor activities or moving them indoors. | |

TM-19-01


< RETURN TO AIR QUALITY FLAG PROGRAM

# Air Quality Flag Program Frequently Asked Questions

***How long can people stay outside when air quality is unhealthy?***

There isn't an exact amount of time. The worse the air quality, the more important it is to take breaks, participate in less intense activities and watch for symptoms. Remember that people with asthma will be more sensitive to unhealthy air.

***What time of day is air pollution most prevalent?***

It depends. Ozone pollution is often worse on long, sunny days, especially during the afternoon and early evening. Particle pollution can be high any time of day. To plan your day, check ADEQ's hourly forecast (available in Nogales, Phoenix, Tucson, Yuma) | Find Forecast in Your Area >

Understanding the hourly forecast | Forecast Guidance >

***If people stay inside because of unhealthy outdoor air quality, can they still be active?***

It depends on which pollutant is causing the problem:

- Ozone pollution — If windows are closed, the amount of ozone should be much lower indoors, so it is ok to keep moving.
- Particle pollution — If the building has a forced air heating or cooling system that filters out particles, the amount of particle pollution should be lower indoors and it is ok to keep moving. It is important that the particle filtration system is installed properly and well maintained.

***Why should people take breaks and participate in less intense activities when air quality is unhealthy?***

More pollution enters sensitive group's lungs when they are active for a longer period of time or when they participate in more intense activities. Decreasing activity (e.g., taking breaks or walking instead of running) helps reduce intensity and the amount of time spent breathing hard.

***re times when air pollution is expected to be worse?***

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602-771-0004
Email >

AQ INFORMATION ARCHIVE

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Ozone pollution is often worse on hot sunny days, especially during the afternoon and early evening. Plan outdoor activities in the morning, when air quality is better and it is not as hot.

Particle pollution can be high any time of day. Since vehicle exhaust contains particle pollution, limit activity near idling cars and buses and near busy roads when possible, especially during rush hours. Also, limit outdoor activity when there is smoke in the air.

***How can I find out the daily local air quality?***

Many cities have an Air Quality Index (AQI) that provides current and forecasted local air quality information. ADEQ forecasts offer public health advisories based on the Environmental Protection Agency's AQI.

***For schools, what are some physical activities students can do inside?***

Encourage indoor activities that keep all students moving. Plan activities that include aerobic exercise and involve muscle and bone strengthening components (e.g. jumping, skipping, sit-ups or pushups). If a gymnasium or open space is accessible, promote activities that use equipment, such as cones, hula-hoops and sports balls. If restricted to the classroom, encourage students to come up with fun ways to get everyone moving (e.g., act out action words from a story). Teachers and recess supervisors can work with PE teachers to identify additional indoor activities.

***What is an asthma action plan?***

An asthma action plan is a written plan developed with a doctor for daily management of asthma. It includes medication plans, control of triggers, and how to recognize and manage worsening asthma symptoms.

< RETURN TO AIR FORECASTING

# Air Pollutants Defined

Revised on: July 26, 2018 - 5:48pm

## OZONE (O3)

**Ozone** is a secondary pollutant that is formed by the reaction of other primary pollutants (precursors), such as Volatile Organic Compounds (VOCs) and Nitrogen Oxides (NOx), to the presence of sunlight.
**Sources:** VOCs are emitted from motor vehicles, chemical plants, refineries, factories and other industrial sources. NOx is emitted from motor vehicles, power plants and other sources of combustion.
**Potential health impacts:** Exposure to ozone can make people more susceptible to respiratory infection, result in lung inflammation and aggravate pre-existing respiratory diseases such as asthma. Other effects include decrease in lung function, chest pain and coughing.
**Unit of measurement:** Parts per billion (ppb)
**Averaging interval:** Highest eight-hour period within a 24-hour period (midnight to midnight)
**Reduction tips:** Curtail daytime driving, refuel cars and use gasoline-powered equipment as late in the day as possible.

## PARTICULATE MATTER ($PM_{10}$ and $PM_{2.5}$)

The term "**particulate matter**" (PM) includes extremely small solid particles and liquid droplets that circulate in the air. Commonly called dust, particles 10 micrometers in diameter or less ($PM_{10}$) can be inhaled and accumulate in the respiratory system.

Commonly called soot, particles 2.5 micrometers in diameter or less ($PM_{2.5}$)

are responsible for visibility degradations such as the "Valley Brown Cloud." High levels of PM occur when the air is especially stagnant or windy.
**Sources:** All types of combustion (motor vehicles, industry, wood burning, etc.) and some industrial processes cause fine PM (less than 2.5 micrometers in diameter). Crushing or grinding operations and dust from paved or unpaved roads cause coarse PM (between 2.5 and 10 micrometers in diameter).
**Potential health impacts:** PM can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases, such as asthma and chronic bronchitis.
**Units of measurement:** Micrograms per cubic meter (µg/m3)
**Averaging interval:** 24 hours (midnight to midnight)
**Reduction tips:** Stabilize loose soils, slow down on dirt roads, carpool and use public transit.

## CARBON MONOXIDE (CO)

**Carbon Monoxide** is a colorless, odorless, poisonous gas formed when the carbon in fuels is not burned completely.

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AIR QUALITY FORECAST

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Understanding the Hourly Forecast ›

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Air Pollutants Defined ›
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Air Quality Monitoring ›
AQ Monitoring Data ›
Air Quality Visibility Cameras ›
Contrails Vs. Chemtrails ›
Current Air Quality Information ›
High Pollution Watch (HPW) Explained ›
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What is Inversion and How Does It Affect AQ? ›
What to Do When AQ Is at Unhealthy Levels? ›

**Sources:** In cities, as much as 95 percent of all CO emissions emanate from automobile exhaust. Other sources include industrial processes, non-transportation-related fuel combustion and natural sources such as wildfires. Peak concentrations occur in colder winter months.
**Potential health impacts**: Reduces oxygen delivery to the body's organs and tissues. The health threat is most serious for those who suffer from cardiovascular disease.
**Unit of measurement:** Parts per million (ppm)
**Averaging interval:** Highest eight-hour period within a 24-hour period (midnight to midnight)
**Reduction tips:** Keep motor vehicles tuned properly and minimize nighttime driving.

ADEQ
Arizona Department of Environmental Quality
Douglas A. Ducey, Governor • Misael Cabrera, Director
azdeq.gov

# FACT SHEET

Publication Number: FS-19-13

## AIR POLLUTANT: Particulate Matter

### What is particulate matter?

Particulate matter (PM) is a mixture of microscopic solids and liquid droplets suspended in air. This pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, soil or dust particles and allergens (such as fragments of pollen or mold spores).

There two types of PM that the U.S. Environmental Protection Agency (EPA) has established air quality standards for, which include:

- Coarse particulates (PM-10) with diameters 10 micrometers or less
- Fine particulates (PM-2.5) with diameters 2.5 micrometers or less.

### Where does it come from?

Particulate matter comes from many different sources. PM-10 is often from winds blowing dust off the desert or farm fields, crushing and grinding operations, dust disturbed from driving on dirt roads and some agricultural operations. PM-2.5 is generally created from power plants, industrial processes, vehicle tailpipes, residential fireplaces, woodstoves and wildfires.

### Why is particulate matter a problem?

Both coarse and fine particulate matter pose a problem to health because they are small enough to get deep into your lungs and may even get into your bloodstream. As a result, exposure to these pollutants can lead to a variety of health effects.

Short-term exposures to particulate matter (hours and days) can aggravate lung disease, causing asthma attacks and acute bronchitis, and may also increase susceptibility to respiratory infections. It has also been linked to an increased risk of heart attacks and arrhythmias (irregular heartbeat).

Long-term exposures (years) have been associated with problems such as reduced lung function and the development of chronic bronchitis.

### What are the symptoms of exposure to particulate matter?

Even if you are healthy, you may experience temporary symptoms such as irritation of the eyes, nose, and throat, including coughing, phlegm, chest tightness and shortness of breath.

If you have lung disease, you may not be able to breathe as deeply or as vigorously as normal and you may experience coughing, chest discomfort, wheezing, shortness of breath and unusual fatigue. If you have heart disease, you may be more at risk for heart attacks. Symptoms such as chest pain or tightness, palpitations, shortness of breath or unusual fatigue may indicate a serious problem. If you have any of these symptoms, follow your doctor's advice.

### Do I need to be concerned?

While it's always smart to pay attention to air quality where you live, some people may be at greater risk from particle pollution. This includes:

- People with lung disease, including asthma and chronic obstructive pulmonary disease (COPD)
- People with cardiovascular disease (diseases of the heart and blood vessels)
- Children and teenagers
- Older adults
- People with diabetes
- People considered obese
- New or expectant mothers

### How can I protect myself?

For Phoenix, Tucson, Yuma and Nogales, the ADEQ Forecast Team issues an air quality forecast including at least one type of PM. These provide an hour-by-hour outlook; helping people plan for outdoor activities through the day to minimize the impacts of air pollution. This forecast is based on the Environmental Protection Agency's Air Quality Index (AQI).

*(See next page)*

When you see that the air quality forecast predicts an AQI indicating potentially harmful pollutant levels, take simple steps to reduce your exposure, including:

- Choosing a less-strenuous activity
- Shortening your outdoor activities
- Rescheduling outdoor activities
- Spending less time near busy roads

When particulate levels are high outdoors, they can be high indoors, unless the building has a good filtration system. Use HEPA filters and air cleaners designed to reduce particulates indoors.

## Can I help reduce particle pollution?

Yes! You can:

- Drive less—carpool, use public transportation, bike, walk, telecommute
- Avoid driving on unpaved roads
- Put away the leaf blower; sweep instead
- Don't burn leaves, yard waste, garbage, plastic or rubber—mulch or compost leaves and yard waste instead
- Keep your engine tuned
- Consider using gas logs instead of wood, and if you use a wood-burning stove or fireplace insert, make sure it meets EPA design specifications
- Burn only dry, seasoned wood—wet wood releases more particulates when burned

## Where can I learn more?

Visit the ADEQ Air Forecasting webpage at *www.azdeq.gov/forecasting* for air quality forecasts. There you can find more information, plus ways to access the forecasts online or through text, e-mail and mobile apps.

## Contact the Forecast Team directly at:

ForecastTeam@azdeq.gov

# OZONE HIGH POLLUTION ADVISORY


The Arizona Department of Environmental Quality has issued an **Ozone High Pollution Advisory (HPA) for Thursday, May 5, 2022**. A High Pollution Advisory is issued when the highest concentration of pollution may exceed the federal health standard. The air is unhealthy for sensitive groups including students and employees with asthma and other respiratory or cardiac conditions. These individuals may experience more serious symptoms.

**Please take the following actions to protect student health:**

| ACTIONS for School Staff (principals, teachers, nurses, athletic coaches, para-professionals and other support staff) | ACTIONS for District Administration, School Maintenance and Transportation |
|---|---|
| **Watch for symptoms.** Air pollution can make asthma symptoms worse and trigger attacks.<br>- coughing<br>- wheezing<br>- difficulty breathing<br>- chest tightness<br>**Follow asthma action plans.** Students with asthma should follow their asthma action plans and keep quick relief medicine in an easily accessible location. | **Notify parents and staff of HPA.** Encourage parents and staff to carpool, use alternate modes of transportation, and park their vehicles at drop-off and pick-up times to reduce excessive idling.<br>**Reduce bus idling.** When possible, turn off bus in pick-up and drop-off zones or other areas where students congregate before and after school.<br>**Prohibit leaf blowing.** Avoid leaf blowing and landscape activities that produce fumes |



This high pollution advisory is an example for ozone. Similar advisories are issued for particulate matter.

| | |
|---|---|
| **Reduce duration of outdoor play.** Allow students to take frequent breaks from activities. Utilize indoor facilities that accommodate physical activity for recess and PE classes whenever possible. | or dust. Use dust control measures on playgrounds and athletic fields.<br><br>**Implement districtwide Travel Reduction Plan.** |

Plan your day with the hourly air quality forecasts on Maricopa.gov/aq.

If your school participates in the Air Quality Flag Program, please display the recommended flag color based on the Air Quality Index. For more information regarding the Air Quality Flag Program, email airqualityflagprogram@azdeq.gov or call 602-771-2355. For additional information on air quality forecasting and pollution advisories, please visit the Arizona Department of Environmental Quality website.

We thank you for taking these important public health actions within your schools when a High Pollution Advisory is issued. For additional tips on how to help reduce air pollution, please visit CleanAirMakeMore.com.

HPA Guidelines for Schools

# Appendix F
# Education Programs – Rillito

PIMA COUNTY

# Air

Pima County Department of Environmental Quality (PDEQ) has regulatory authority for air quality within Pima County including municipalities as an Air Quality Control District , with the exception of the Tohono O'Odham, Pasqua Yaqui and San Xavier Indian Reservations established pursuant to applicable provisions of the Arizona Revised Statutes (A.R.S.), Arizona Administrative Code (A.A.C.), Pima County Code (PCC), Federal Environmental Statutes, delegation from the U.S. Environmental Protection Agency (EPA) via the Clean Air Act, and by delegation from the Arizona Department of Environmental Quality (ADEQ). PDEQ regulates ambient outdoor air quality according to rules codified in Title 17 of the Pima County Code, conducts Air Quality Monitoring and provides Community Education about air quality issues.

## Sources of Air Pollution Requiring Permits

PDEQ issues air quality operating permits to facilities known as Stationary Sources which may be any building, structure or installation subject to regulation which emits or may emit air pollution. These facilities must comply with the conditions in their operating permits to limit air pollution. The tab below for **Stationary Sources** includes information regarding **Operating Permits** and **Compliance Guidance** for these sources. Other sources of air pollution include **Fugitive Dust**, **Asbestos** and **Open Burning**, which are also regulated by PDEQ. Air quality regulations lay out the requirements and process for the application and issuance of an air quality permit.

## Find a Source and View its Permit

PDEQ maintains searchable tables of stationary sources within Pima County. These tables contain links to view, search and print each permit and other air quality stationary source, permit related documents. **Use the links below to view the tables.** Browser will open documents in a new window.

**Class I Permit Search** - **Class II Permit Search** - **Class III Permit Search**

Air Permits | Air Compliance | Air Quality Monitoring | Emissions Inventory

## Stationary Source Permits

Air quality operating permits issued by PDEQ include a listing of all air pollution regulatory requirements that apply to the source. The program clarifies the air pollution control obligations of facilities by compiling in one document all of a source's air compliance requirements. The intent is that by including all applicable requirements in one permit it will be easier for the source owner, the regulatory agency, and the public to determine if the source is in compliance.

- Air Quality Operating Permits - (for Stationary Sources)
- Prevention of Significant Deterioration (PSD) Permits
- Air Quality Permits in Public Notice
- Becton, Dickinson and Company (BD) proposed ethylene oxide sterilization facility
- Monthly Summary of Air Quality Permit Notices and Applications
- Air Quality information for Copper Mines
- Air Quality information for Materion Ceramics, Inc.

## Asbestos NESHAP

PDEQ administers their asbestos program having adopted by reference in Pima County Code the Asbestos NESHAP (National Emissions Standards for Hazardous Air Pollutants). The program's intent is to minimize the release of asbestos-containing material. The regulations require the owner of the building and/or the operator to notify PDEQ before any demolition, or before renovations of buildings that contain a certain threshold amount of asbestos or asbestos containing materials. Additionally, specific work practices are to be followed during demolitions and renovations.

## Fugitive Dust

Fugitive dust is particulate matter which becomes airborne, is not emitted from a stack or vent, and has the potential to adversely affect human health or the environment. High levels of dust particles often originate from agricultural, mining, construction and manufacturing activities. PDEQ protects air quality by regulating fugitive dust emissions and inspecting dust-producing activities and sites.

## Open Burning

Open burning is the burning of materials such as trees, brush, leaves, grass and other debris where smoke and other emissions are released directly into the air without passing through a chimney or stack. Air pollution from open burning can cause serious health problems, obscure visibility, or damage the

pollution from open burning can cause serious health problems, obscure visibility, or damage the environment. PDEQ regulates open burning to address these concerns. PDEQ rules require a permit for open burning, with the exception of campfires, barbecues, and small fires for warmth.

PIMA COUNTY

# Information, Education, Public Outreach

PDEQ offers free environmentally-related presentations, information and tips for a variety of audiences including schools and youth groups, community groups, businesses, associations, agencies, and industries. We co-sponsor and attend community events and provide environmental information using hands-on exhibits to engage a wide variety of participants. PDEQ also operates the state-mandated Clean Air Program to improve air quality by increasing public awareness and encouraging community action to reduce air pollution. In addition, PDEQ initiates special programs or campaigns to highlight specific actions that can be taken to reduce vehicle emissions and improve air quality, such as the "Use The Loop for Your Commute" and the "Healthy Air Is In Our Hands" campaigns including a "Drive-Less Pledge for Healthy Air". In addition, there is the "Pump Up Your MPG" Tire Inflation Education Program which promotes monthly tire checks for improved air quality and reduced waste.

PDEQ works with local organizations to expand the reach of our programs and recently partnered with the Tucson Audubon Society and others to create the "Desert Dwellers Know" poster and coloring/activity book. The dramatic use of Byrd Baylor's poetry and beautiful images provides inspiration for ways to live gently in the Sonoran Desert.

The goal of PDEQ's Environmental Justice Program is equal and fair treatment of all residents and meaningful involvement of all regardless of race, color, national origin, or income with respect to environmental programs, laws and policies.

If you are looking for information from our department such as records on a specific property or records regarding the day-to-day operations of our Air, Water, Waste Programs, those can be obtained by making a public records request. Other types of general information requests regarding the environment and/or copies of forms, procedures, pamphlets, or other printed information designed for public distribution can be obtained by calling (520) 724-7447.

Business | School & Youth | General Public | Environmental Justice | Public Records Request | FAQs

## Business

Businesses and industry associations can request presentations to learn or refresh knowledge about airborne dust and stormwater regulations. Businesses planning benefits or transportation fairs can invite PDEQ staff as an exhibitor or speaker to share information about air quality and alternative modes of transportation.

- Air Quality Advisories
- Benefits of Driving Less
- Buffelgrass
- Clean Air Program Activities
- Compliance Regarding Airborne Dust Rules
- Current Air Quality Information
- Health and Wellness Related to Air Quality
- Presentations
- Public Service Announcements
- Reports and Publications
- Rules and Regulations
- Stormwater Information
- "Use The Loop for Your Commute "Campaign
- Vehicle Idle Reduction

PIMA COUNTY

# Fugitive Dust

Fugitive dust is particulate matter which becomes airborne, is not emitted from a stack or vent, and has the potential to adversely affect human health or the environment. High levels of dust particles often originate from agricultural, mining, construction and manufacturing activities. PDEQ protects air quality by regulating fugitive dust emissions and inspecting dust-producing activities and sites. The Fugitive Dust Activity Permit Program ensures that those involved in activities likely to generate dust are aware of fugitive dust regulations and requires them to provide information regarding the location and types of dust-generating activities.

## Who needs a Fugitive Dust Activity Permit?

Find out if your construction or other activity requires a Fugitive Dust Activity Permit by reviewing Pre-Application Guidance.

## How much does the permit cost?

Permit fees are based on the type and quantity of work conducted for each project, and can be determined from the Fee Schedule.

### How to apply for a Fugitive Dust Activity Permit

If your work requires a Fugitive Dust Activity Permit, you can apply for the permit online, in person, or by mail/fax. Payment may be cash, check or credit card. Apply for a Fugitive Dust Activity Permit.

## What are the Fugitive Dust Rules?

Even if you don't need a Fugitive Dust Activity Permit for your work, you still must maintain controls for dust during activities likely to create dust. Find out what your responsibilities are by reading the Fugitive Dust Rules contained in Pima County Code Title 17.

## FAQs

Find answers to most Frequently Asked Questions concerning dust.

## Additional Information & Training

Have more questions regarding specific situations, or want more detailed information on construction sites? PDEQ provides brochures and Additional Information on dust from vacant lands, off-highway vehicles, leaf blowers, dirt roads, sand blasting, concrete or brick cutting and other specific sources and training on opacity.

## Report a Complaint

If you are observing excessive dust without controls, dust crossing property boundaries or other dust issues subject to Pima County Code Title 17, you may File a Complaint with PDEQ.

PIMA COUNTY

# Additional Information & Training

## Construction Activity

For more information and brochures for methods of dust control at construction sites:

- Dust Control and Construction Activity
- Dust Control Methods (English)
- Dust Control Methods (Spanish)
- Dust Palliative Guide
- Dust Palliative Resource List
- Hauling Companies

Find out what inspectors look for by checking the Fugitive Dust Inspection Report form. To obtain additional information, or to arrange for a presentation on dust control, please contact PDEQ at (520) 724-7400.

## Training

Opacity Certification, also known as Smoke School, is the formal training required to determine the opacity of visible emissions, including fugitive dust. The test method to determine opacity is EPA Method 9, as provided in 40 CFR Appendix A. For more information about opacity:

- EPA Emissions Measurement Center - Method 9 Test
- Visible Emission Observation Form
- The Arizona Smoke School
- California Air Resources Board
- Carl Koontz Associates
- AeroMet Engineering, Inc.
- Compliance Assurance Associates, Inc.

## Other Fugitive Dust Sources

Sources of fugitive dust which do not require a permit must also follow the dust rules in Pima County Code Title 17.

Homeowners | Vacant Land | OHV Use | Leaf Blowers | Dirt Roads | Sand Blasting | Concrete Cutting

Homeowners may have sources of dust which include:

- Horse corrals
- Driveways and parking areas
- Home improvement projects
- Yard maintenance
- ATV Tracks

Title 17 of the Pima County Code, Section 17.16.070.A states in part, *"No person shall cause, suffer, allow, or permit a vacant lot, or an urban or suburban open area, to be driven over or used by motor vehicles, trucks, cars, cycles, bikes, or buggies, or by animals such as horses, without taking reasonable precautions to limit excessive amounts of particulates from becoming airborne."*

Homeowners need to ensure that these types of activities do not create excessive dust. Learn how Homeowners can control dust at home.

**Pima County Department of Environmental Quality**
33 North Stone Avenue, Suite 700
Tucson, AZ 85701
(520) 724-7400
www.pima.gov/deq



# Look What the Wind Blew In! Homeowners, Got Dust? Keep it Down!

## Airborne Dust is Particulate Matter Pollution

Particulate Matter (PM) is simply airborne dust. It consists of complex microscopic solid particles or liquid droplets that become airborne from many types of sources. PM is harmful to human health, is a public nuisance, and is a regulated pollutant that must be minimized.

## Particulate Matter is Hazardous

Airborne dust affects human health in significant ways. Children, the elderly, and people with existing heart and respiratory disease are most at risk from breathing particulates. Healthy individuals are affected as well, especially outdoor workers and exercisers. Breathing PM can cause:

- Reduced lung function;
- Aggravated heart and respiratory disease;
- Irritations to the nose, throat, and ear canal;
- Chronic bronchitis;
- Difficulty breathing;
- Heart attacks;
- Weakened immune system; and even
- Premature death (by 1-8 years).

In addition, the quality of life of neighbors exposed to airborne dust may also be compromised. Besides health affects, neighbors complain about the inability to have backyard barbecues, needing to keep windows and doors closed, and having to dust more frequently than usual during airborne dust episodes caused by human activity.

## Homeowners Are Responsible for Airborne Dust

Title 17 of the Pima County Code, Section17.16.050 states in part, *"No person shall cause, suffer, allow, or permit activities likely to result in excessive amounts of airborne dust without taking reasonable precautions to prevent particulate matter from becoming airborne."*

This means that you must take action to prevent too much dust from becoming airborne on your property, no matter what the activity is that is causing the dust. Some areas of concern include horse corrals and arenas, home improvement projects, all-terrain vehicle tracks, yard maintenance, and dirt roads and driveways.

## Horse Corrals and Arenas

**Special Concerns:** Soil in areas used regularly is disturbed. Dust may become airborne during activity and later during wind events.

**Solutions to Consider:**

- Make sure the base is properly compacted.
- Water heavily (at least 2" down) and seldom (as opposed to lightly and frequently) to coat particles and make them stick together.
- Apply stable/wood shavings, wood chips, mulch, compost, or fiber additives to footing to help retain moisture and prevent footing breakdown.
- Use environmentally friendly dust suppressant products
- Do your research. Check the internet and read articles to learn about costs, advantages, and limitations of these methods.

## Home Improvement Projects

**Special Concerns:** Earthmoving activity kicks up dust. Untreated disturbed soil is vulnerable to wind. Wind may pick up dust from stockpiles and blow it into neighboring homes or property.

**Solutions to Consider:**

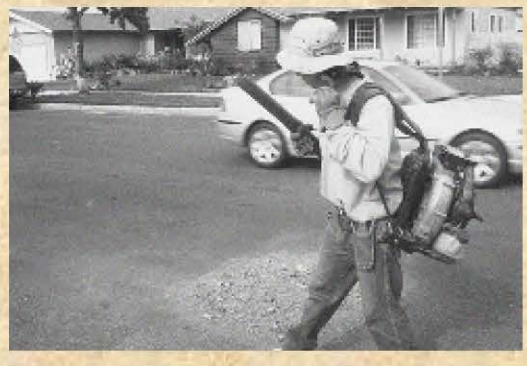
- Water effectively before and during activity as necessary.
- Water after activity to form a temporary crust to combat wind.
- Keep stockpiles away from neighboring property.
- Cover stockpiles with a tarp

## ATV Tracks

**Special Concerns:** Fast, repetitive action kicks up dust and disturbs the topsoil crust, leaving the soil vulnerable to future wind events.

**Solutions to Consider:**

- Avoid riding in residential areas.
- Keep tracks away from property boundaries.
- Avoid riding on windy days.
- Reduce speed in dry areas, or if you see too much dust kicking up.
- Water or use another dust suppressant effectively before, during as necessary, and after activity.



## Yard Maintenance

**Special Concerns:** Leaf blowers can relocate leaves, debris, and dirt into the street or neighboring property instead of removing them. Not only are emissions of gas-powered blowers thick in a concentrated area, swirling clouds of airborne debris, dust, pollen, and mold spores may pollute the air. Earthmoving activity disturbs the soil crust, leaving it vulnerable to wind.

**Solutions to Consider**

- Use manual rakes and brooms instead of blowers.
- Use electric vacuum blowers instead of gas-powered units, and limit the power or air speed to keep dirt from getting picked up.
- Refrain from using commercial sized blowers that are employed for blowing off large areas.
- Use water before and during earth moving activity as necessary, and afterwards to create a soil crust.
- Use native, drought-tolerant vegetation or rocks.

## Dirt Driveways and Roads

**Special Concerns:** Frequent traffic continually breaks down the soil into smaller particle sizes. The act of driving kicks up dust and makes the area more vulnerable to later wind events.

**Solutions to Consider:**

- Pave, gravel, or apply dust suppressant products on driveways and private right-of-ways.
- Drive slower on dirt roads.
- Be considerate of homes that are likely to get the most dust depending on bends in the road, wind direction, and condition of the road.

## Attention Contractors, Subcontractors & Developers

You must take action to keep dust (Particulate Matter) down at your project sites, 24 hours a day, 365 days a year.

### What activities cause dust at our work sites?

- Earth moving
- Land stripping
- Road building
- Trenching
- Storage piles
- Paved road trackout
- Screening operations
- Diesel fueled vehicle use
- Disturbing surface areas
- Driving on haul roads
- Loading and unloading haul trucks
- Untarped and overloaded haul trucks
- High winds

### The desert is naturally dusty. What's the problem?

If left alone, the soils of undisturbed desert land naturally bind together forming a crust. This crust resists wind and helps prevent dust from becoming airborne. When disturbed, small particles get into the air during high wind events and create problems with human health and the environment.

### *Title 17 of the Pima County Code*

Article III, Section 17.16.050 states in part:

*"No person shall allow activities likely to result in excessive amounts of airborne dust without taking reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne."*

### What are dust suppressants?

There are many types of dust suppressants, or palliatives, available from companies throughout the U.S. Basic categories of suppressants include: water, water absorbing products, petroleum based products, organic non-petroleum based products, electrochemical products, polymer products, and clay additive products.

Contact PDEQ for more information on product selection and manufacturers.

### For Pima County Dust Rules, Complaints, or Air Information:


**Pima County Department of Environmental Quality**

33 N. Stone Ave, Suite 700
Tucson, AZ 85701
520.724.7400 • Fax: 520.838.7432
www.deq.pima.gov
www.AirInfoNow.org





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3/04


# Dust Control and Construction Activity

**Contractors, Subcontractors and Developers Are Required to Control Airborne Particulates**

# Dust Control Issues

## What is Particulate Matter?

Particulate Matter (PM) is one of the most significant air pollutants in Pima County. PM is made up of tiny particles (a fraction of the thickness of a human hair) that float in the air we breathe. The fine particles can pass through your body's defense system, travel into the deepest parts of your lungs, and cause damage.

## What can Particulate Matter cause?

- Breathing difficulties
- Respiratory pain
- Reduced lung function
- Weakened immune systems
- Increased severity of acute bronchitis, pneumonia, asthma, and emphysema
- Heart attacks
- Premature death (1-8 years)

PM also reduces visibility which can be hazardous while driving, and interferes with beautiful views.

## What are major sources of Particulate Matter?

- Disturbed vacant or open lands
- Construction and mining activity
- Unpaved parking lots
- Industrial sources
- Off-road vehicle activity
- Unpaved roads
- Paved roads
- Diesel exhaust

## What are the rules?

Title 17 of the Pima County Code lists many regulations with which you must comply. These rules basically state that you must take reasonable precautions to control dust at all times, whether or not the site is active, at night time, on weekends, or on holidays. You must also not let airborne dust cross property boundaries, and the opacity of dust plumes must be 20% or less. (Completely obscured visibility = 100% opacity, clear = 0%.)

## What happens if we don't control dust on our project sites?

Pima County violated the Environmental Protection Agency's national PM health standards in 1999. Currently, we are maintaining the air quality standards under new Pima County rules and regulations. If airborne PM is not controlled, we risk having more stringent federal rules, more costly fines, and losing federal monies for transportation projects.

Pima County Department of Environmental Quality (PDEQ) employs inspectors who are dedicated to respond to complaints, and also provide routine surveillance on active and inactive operations (including weekends). If you are found to be in violation, PDEQ will contact you requesting that you take effective action to control dust. If you fail to take reasonable measures, escalated enforcement may be necessary, including fines.

## The Following Actions May Help Control Dust:

- ❑ Get an Activity Permit from PDEQ.
- ❑ Plan responsibly:
  - Locate entrance, exit, and trailer to minimize traffic.
  - Post and enforce lower speed limits.
  - Locate haul roads and storage piles away from existing housing.
  - Grade each phase separately timed to coincide with construction phase.
  - Have an appropriate number of water trucks available.
  - Educate and empower equipment operators to control dust.
  - Monitor wind conditions.
- ❑ Water at sufficient frequency, quantity, and depth, including pre-soaking.
- ❑ Use chemical stabilizers.
- ❑ Use windbreaks like fences or trees.
- ❑ Cover haul material.
- ❑ Do not overload haul vehicle.
- ❑ Use grizzlies, gravel, or paving to prevent trackout.
- ❑ Have vehicles stay on established routes, and keep these routes moist.
- ❑ If all else fails, stop vehicle and work activities temporarily.
- ❑ Plant vegetation after active operations have ceased.

***Take Action Now!***

***Avoid Fines Later.***

# Dust Control Methods

The following are suggested dust control methods that may be used to control fugitive dust from the sources listed.

***Please note:*** *Use of these control methods* ***DOES NOT*** *automatically assure compliance with the fugitive dust standards in Chapter 17.16 Articles II and III of the Pima County Code.* ***Use of more than one method may be necessary.***

## Landclearing Activities

| Control Method | Description |
|---|---|
| Watering | Application by means of trucks and/or hoses during land clearing operations. |
| During periods of high winds | 1. Apply chemical stabilizers per manufacturer's directions, and prior to expected wind events.<br>2. Apply water as necessary, and prior to expected wind events.<br>3. Stop work activities temporarily. |

## Earthmoving Activities

| Control Method | Description |
|---|---|
| Watering | 1. Application of water by means of trucks, hoses, and/or sprinklers at sufficient frequency and quantity prior to conducting, during, and after earthmoving operation.<br>2. Pre-application of water to the depth of the proposed cuts or equipment penetration. |
| Pre-grading planning | 1. Grade each phase separately and time to coincide with the construction phase.<br>2. Grade entire project but apply chemical stabilizers or ground cover to graded areas where construction is scheduled to begin more than 60 days after grading is complete. |
| Chemical stabilizers | 1. Most effective in areas that are not subject to daily disturbances.<br>2. Apply per manufacturer's recommendations. |
| Wind fencing | 1. Three to five foot barriers with 50% or less porosity, adjacent to roadways or urban areas.<br>2. Normally used in conjunction with watering or chemical stabilization.<br>3. Use trees and shrubs for long-term sites. |
| Operate on-road haul vehicles appropriately | 1. Cover entire surface of hauled material once vehicle is full.<br>2. Mix material with water prior to loading, and/or to entire surface of material after loading.<br>3. Do not overload haul vehicle. Freeboard should not be less than 3".<br>4. Remove spillage from body of truck before/after loading or unloading.<br>5. Empty loader slowly and keep bucket close to the truck while dumping.<br>6. Apply water as necessary during loading operation. |
| Operate off-road haul vehicles appropriately | 1. Mix material with water prior to loading, and/or to entire surface of material after loading.<br>2. Empty loader slowly and keep bucket close to the truck while dumping.<br>3. Apply water as necessary during loading operation. |
| Alternative haul vehicles | Use bottom-dumping haul vehicles. |
| During periods of high winds | 1. Apply chemical stabilizers per manufacturer's directions, and prior to expected wind events.<br>2. Apply water as necessary, and prior to expected wind events.<br>3. Stop work activities temporarily. |

## Storage Piles

| Control Method | Description |
|---|---|
| Watering | 1. Application methods include spray bars, hoses, and water trucks.<br>2. Frequency of application will vary with site-specific conditions. |
| Wind sheltering | Install three-sided barriers, with no more than 50% porosity, equal to material height. |
| Chemical stabilizers | Best for use on storage piles subject to infrequent disturbances. |
| Altering loading and unloading procedures | 1. Confine loading and unloading procedures to the downwind side of storage piles.<br>2. May need to be used in conjunction with wind sheltering. |
| Coverings | 1. Tarps, plastic, or other material can be used as a temporary covering.<br>2. When used, coverings must be anchored to prevent wind from removing them. |
| During periods of high winds | 1. Apply chemical stabilizers per manufacturer's directions, and prior to expected wind events.<br>2. Apply water as necessary, and prior to expected wind events.<br>3. Install temporary covers. |

## Disturbed Surface Areas or Inactive Construction Sites

| Control Method | Description |
|---|---|
| Chemical stabilization | 1. Most effective when used on areas where active operations have ceased.<br>2. Apply per manufacturer's recommendations. |
| Watering | Apply at sufficient frequency and quantity to develop a surface crust. |
| Wind fencing | 1. Three to five foot barriers with 50% or less porosity located adjacent to roadways or urban areas.<br>2. Normally used in conjunction with watering or chemical stabilization. |
| Vegetation | Establish as quickly as possible when active operations have ceased. |
| Prevent Access | 1. Install fencing around the perimeter of property.<br>2. Install "No Trespassing" signs. |
| Site access improvements | Stay on established routes. |
| During periods of high winds | 1. Apply chemical stabilizers per manufacturer's directions, and prior to expected wind events.<br>2. Apply water as necessary, and prior to expected wind events. |

## Unpaved Roads and Shoulders

| Control Method | Description |
|---|---|
| Paving or chip sealing | Requires routine street sweeping if subject to material accumulation. |
| Chemical stabilization | 1. Not recommended for high volume or heavy equipment traffic use.<br>2. Apply per manufacturer's recommendations. |
| Watering | 1. Need sufficient quantities to keep the surface moist.<br>2. Required application frequency will vary according to soil type, weather conditions, and amount of vehicle traffic. |
| Reduce speed | May need to be used with watering or chemical stabilization. |
| Eliminate Unnecessary travel | Restrict access or redirect traffic to reduce vehicle trips. |
| Gravel/Recycled Asphalt | Maintained to a size and depth effective in controlling dust. |
| Location | Locate haul roads as far from existing housing as possible. |
| Site access improvements | Stay on established routes. |
| During periods of high winds | 1. Apply chemical stabilizers per manufacturer's directions, and prior to expected wind events.<br>2. Apply water as necessary, and prior to expected wind events.<br>3. Stop work and vehicle activity temporarily. |

## Paved Road Track-Out

| Control Method | Description |
|---|---|
| Wheel washers | 1. Should be placed where vehicles exit unpaved areas onto paved areas.<br>2. May be adjusted to spray entire vehicle including bulk-stored material in haul vehicles. |
| Sweep/Clean roadways | Either sweeping or water flushing may be used. |
| Cover haul vehicles | Entire surface should be covered with water or tarps once vehicle is fully loaded. |
| Site access improvements | 1. Install a gravel pad or grizzly at the access point to your site.<br>2. Designate a single site entrance and exit.<br>3. Stay on established routes. |
| During periods of high winds | 1. Cover all haul vehicles.<br>2. Clean streets with water flushing. |

## Thank You for Keeping Our Air Healthy to Breathe!

## Questions? Call or Click:

**Pima County Department of Environmental Quality**
33 N Stone Ave, #700 • Tucson, AZ 85701 • Phone: 520.724.7400 • Fax: 520.838.7432
www.deq.pima.gov/air/pcneap/Dust.htm • www.deq.pima.gov • www.AirInfoNow.org

# Métodos de Control de Polvo

Los siguientes son métodos sugeridos de control de polvo que se pueden utilizar para controlar polvo fugitivo de las fuentes listadas.

***Por favor tome nota:*** *El uso de estos métodos de control* ***NO*** *asegura automáticamente la conformidad con las normas de polvo fugitivo en el Capítulo 17/16 Artículos II y III del Código del Condado de Pima.*
***Puede ser necesario usar más de un método.***

## TRABAJOS DE DESMONTE

| METODO DE CONTROL | DESCRIPCION |
|---|---|
| Riego | Aplicación por medio de camiones de agua, riege durante operaciones de desmonte. |
| Durante períodos de vientos fuertes | 1. Aplique estabilizadores químicos según instrucciones del fabricante, y antes de las situaciones de vientos pronosticados.<br>2. Aplique agua conforme sea necesario, y antes de las situaciones de vientos pronosticados.<br>3. Detenga temporalmente las actividades de trabajo. |

## TRABAJOS DE MOVIMIENTO DE TIERRA

| METODO DE CONTROL | DESCRIPCION |
|---|---|
| Riego | 1. Aplique agua por medio de camiones, mangueras o aspersores con suficiente frecuencia y cantidad antes, durante y después de operaciones de movimiento de tierra.<br>2. Aplicación de agua hasta la profundidad propuesta de los cortes o de la penetración del equipo. |
| Planificación antes de nivelar | 1. Nivele separadamente cada fase y programe para coincidir con la fase de construcción.<br>2. Nivele todo el proyecto, pero aplique estabilizadores químicos o vegetación de superficie a las áreas niveladas, donde el comienzo de la construcción está programado más de 60 días después de terminar nivelación. |
| Estabilizadores químicos | 1. Son más efectivos en áreas no sujetas a disturbios diarios.<br>2. Aplicación según instrucciones del fabricante. |
| Cercos para protección contra el viento | 1. Barreras de tres a cinco pies con porosidad de 50% o menos, localizadas junto a los caminos o las áreas urbanas.<br>2. Normalmente usadas con metodos de riego o estabilización química.<br>3. Use árboles y arbustos para sitios de largo plazo. |
| Opere apropiadamente los vehículos de carga de uso en caminos | 1. Cubra el material cuando esté lleno el vehículo.<br>2. Mezcle el material con agua antes de cargarlo, o aplique agua después de ser cargado.<br>3. No sobrecargue el vehículo de carga. El área libre de carga no debe ser menor de 3”.<br>4. Quite el material derramado sobre la carrocería del camión antes/después de cargar o descargar.<br>5. Descarge lentamente el cargador manteniendo la cuchara lo mas cerca posible del camion mientras cargando.<br>6. Aplique agua conforme sea necesario durante la operación de carga. |
| Opere apropiadamente los vehículos de carga de todo terreno | 1. Mezcle el material con agua antes de cargarlo, o aplique agua después de ser cargado.<br>2. Descarge lentamente el cargador manteniendo la cuchara lo mas cerca posible del camion mientras cargando.<br>3. Aplique agua conforme sea necesario durante la operación de carga. |
| Vehículos de carga alternos | Use vehículos de carga que descargan por el fondo. |
| Durante períodos de vientos fuertes | 1. Aplique estabilizadores químicos según instrucciones del fabricante, y antes de las situaciones de vientos pronosticados.<br>2. Aplique agua conforme sea necesario, y antes de las situaciones de vientos pronosticados.<br>3. Detenga temporalmente las actividades de trabajo. |

## MONTÍCULOS DE ALMACENAJE

| METODO DE CONTROL | DESCRIPCION |
|---|---|
| Riego | 1. Los métodos de aplicación incluyen barras de rociar, mangueras y camiones de agua.<br>2. La frecuencia de aplicación varía según las condiciones específicas del sitio. |
| Protección contra el viento | Instale barreras de tres lados, con porosidad no mayor de 50%, de la misma altura que el material. |
| Estabilizadores químicos | El uso preferido para montículos de almanacenaje sujetos a disturbios infrecuentes. |
| Alternando los procedimientos de carga y descarga | 1. Limite los procedimientos de carga y descarga al lado a favor del viento de los montículos de almacenaje.<br>2. Puede usarlo con metodos de protección contra el viento. |
| Coberturas | 1. Pueden usar lonas, plásticos y otros materiales como coberturas temporales.<br>2. Cuando se usen, las coberturas deben ser sujetadas para evitar que el viento las desprenda. |
| Durante períodos de vientos fuertes | 1. Aplique estabilizadores químicos según instrucciones del fabricante, y antes de las situaciones de vientos pronosticados.<br>2. Aplique agua conforme sea necesario, y antes de las situaciones de vientos pronosticados<br>3. Instale coberturas temporales. |

## AREAS DE SUPERFICIE PERTURBADA O SITIOS DE CONSTRUCCIÓN INACTIVOS

| METODO DE CONTROL | DESCRIPCION |
|---|---|
| Estabilización química | 1. Es más efectiva cuando se usa en áreas en donde las operaciones activas han cesado.<br>2. Aplique según las recomendaciones del fabricante. |
| Riego | Aplique con suficiente frecuencia y cantidad para desarrollar una costra de superficie. |
| Cercos para protección contra el viento | 1. Barreras de tres a cinco pies con porosidad de 50% o menos, localizadas junto a los caminos o las áreas urbanas.<br>2. Normalmente usadas con metodos de riego o estabilización química. |
| Vegetación | Establecer lo antes posible después de terminar las operaciones activas. |
| Prevenga el acceso | 1. Instale cercos en el perímetro de la propiedad.<br>2. Instale rótulos de "Prohibido el Paso". |
| Mejoras al acceso al sitio | Manténgase en rutas establecidas. |
| Durante períodos de vientos fuertes | 1. Aplique estabilizadores químicos según instrucciones del fabricante, y antes de las situaciones de vientos pronosticados.<br>2. Aplique agua conforme sea necesario, y antes de las situaciones de vientos pronosticados. |

## CAMINOS Y BORDES SIN PAVIMENTO

| METODO DE CONTROL | DESCRIPCION |
|---|---|
| Pavimento o sellador | Requiere el barrido de rutina de las calles si sufren de acumulación de material. |
| Estabilización química | 1. No se recomienda para uso con tráfico de alto volumen o equipo pesado.<br>2. Aplicación según instrucciones del fabricante. |
| Riego | 1. Se necesitan cantidades suficientes para mantener húmeda la superficie.<br>2. La frecuencia requerida de aplicación dependerá del tipo de suelo, las condiciones de clima y la cantidad de tráfico de vehículos. |
| Reduzca la velocidad | Puede ser necesario hacerlo junto con metodos de riego o la estabilización química. |
| Elimine viajes innecesarios | Restrinja el acceso o redirija el tráfico para reducir los viajes de vehículos. |
| Grava/asfalto reciclado | Manténgalos de un tamaño y profundidad efectivos para controlar el polvo. |
| Localización | Localice los caminos de carga tan lejos como sea posible de las viviendas. |
| Mejoras al acceso al sitio | Manténgase en rutas establecidas. |
| Durante períodos de vientos fuertes | 1. Aplique estabilizadores químicos según instrucciones del fabricante, y antes de las situaciones de vientos pronosticados.<br>2. Aplique agua conforme sea necesario, y antes de las situaciones de vientos pronosticados.<br>3. Detenga temporalmente las actividades de trabajo. |

## HUELLAS DE SALIDA EN CAMINOS PAVIMENTADOS

| METODO DE CONTROL | DESCRIPCION |
|---|---|
| Lavaderos de llantas | 1. Deben ser colocados donde los vehículos salen de áreas sin pavimento a áreas pavimentadas.<br>2. Pueden ajustarse para rociar todo el vehículo incluyendo material acariado por el vehículo de carga. |
| Barra/limpie los caminos | Pueden ser barridos o limpiados con agua. |
| Cubra los vehículos de carga | La superficie completa del material acariado debe ser cubierta con agua o lonas una vez el vehículo está completamente cargado. |
| Mejoras al acceso al sitio | 1. Instale una capa de grava o una parrilla en el punto de acceso a su sitio.<br>2. Establezca una sola entrada y salida del sitio.<br>3. Manténgase en rutas establecidas. |
| Durante períodos de vientos fuertes | 1. Cubra todos los vehículos de carga.<br>2. Limpie las calles lavándolas con agua. |

# ¡GRACIAS POR MANTENER NUESTRO AIRE SALUDABLE PARA RESPIRAR!

***¿PREGUNTAS? LLAME U OPRIMA:***

**DEPARTAMENTO DE CALIDAD AMBIENTAL DEL CONDADO DE PIMA**
33 N. Stone Ave., #700 • Tucson, AZ 85701 • Tel.: 520.724.7400 • Fax: 520.838.7432
www.deq.pima.gov/air/pcneap/Dust.htm • www.deq.pima.gov • www.AirInfoNow.org

## What is Particulate Matter?

There are things floating around in the air. Most of them, you cannot even see. They are a kind of air pollution called particles or particulate matter. In fact, particulate matter may be the air pollutant that most commonly affects people's health.

**Have a Look.**

Particles can come in almost any shape or size, and can be solid particles or liquid droplets. We divide particles into two major groups. These groups differ in many ways. One of the differences is size, we call the bigger particles PM10 and we call the smaller particles PM2.5.

**BIG.** The big particles are between 2.5 and 10 micrometers (from about 25 to 100 times thinner than a human hair). These particles are called PM10 (we say "P M ten", which stands for Particulate Matter up to 10 micrometers in size). These particles cause less severe health effects.

**SMALL.** The small particles are smaller than 2.5 micrometers (100 times thinner than a human hair). These particles are called PM2.5 (we say "P M two point five", as in Particulate Matter up to 2.5 micrometers in size).

**Where particulate matter comes from ...**

Size isn't the only difference. Each type of particle is made of different material and comes from different places.

| | **Coarse Particles ($PM_{10}$)** | **Fine Particles ($PM_{2.5}$)** |
|---|---|---|
| **What they are** | • smoke, dirt and dust from factories, farming, and roads<br>• mold, spores, and pollen | • toxic organic compounds<br>• heavy metals |
| **How they're made** | crushing and grinding rocks and soil<br><br>then blown by wind | • driving automobiles<br>• burning plants (brush fires and forest fires or yard waste)<br>• smelting (purifying) and processing metals |

**These particles get around.**

**Which particles do you think travel farther?**
$PM_{10}$ (big) **OR** $PM_{2.5}$ (small)
**How far do you think $PM_{10}$ particles can travel?**
100 feet 25 miles 500 miles
**How far do you think $PM_{2.5}$ particles can travel?**
100 feet 25 miles 500 miles

The smaller particles are lighter and they stay in the air longer and travel farther. PM10 (big) particles can stay in the air for minutes or hours while PM2.5 (small) particles can stay in the air for days or weeks. And travel? PM10 particles can travel as little as a hundred yards or as much as 30 miles. PM2.5 particles go even farther; many hundreds of miles.

## Particulate Matter and Your Health

**Getting into your body.**

When you inhale, you breathe in air along with any particles that are in the air. The air and the particles travel into your respiratory system (your lungs and airway). Along the way the particles can stick to the sides of the airway or travel deeper into the lungs.

The farther particles go, the worse the effect.

**Which particles can go farther into the lungs?**
$PM_{10}$ (big) **OR** $PM_{2.5}$ (small)

**Answer:** the smaller PM2.5 particles. Smaller particles can pass through the smaller airways. Bigger particles are more likely to stick to the sides or get wedged into one of the narrow passages deep in the lung.

Other factors that affect how deep into the lungs particles can go:

- **Mouth or nose breathing.** Breathing through your mouth allows particles to travel deeper into your lungs.
- **Exercise.** While exercising, particles can travel deeper.
- **Age.** Older people breath less deeply so particles may not get as deep.
- **Lung disease.** If lung disease causes shallow breathing, particles will remain in the upper sections of the airways and lung.
- **Weather** (temperature).
- **Other pollutants in the air.**

**Your body responds to the particulate invasion!**

Your lungs produce mucous to trap the particles, and tiny hairs wiggle to move the mucous and particles out of the lung. You may notice something in the back of your throat (this is

the mucous); the mucous leaves the airway by coughing or swallowing. If the particle is small and it gets very far into the lungs, special cells in the lung trap the particles and then they can't get out and this can result in lung disease, emphysema, lung cancer.

**Health Effects**

Both PM10 (big) and PM2.5 (small) particles can cause health problems; specifically respiratory health (that's the lungs and airway). Because the PM2.5 **travels deeper** into the lungs AND because the PM2.5 is made up things that are **more toxic** (like heavy metals and cancer causing organic compounds), PM2.5 can have worse health effects than the bigger PM10.

Exposure to particulate matter leads to increased use of medication and more visits to the doctor or emergency room. Health effects include the following:

- Coughing, wheezing, shortness of breath
- Aggravated asthma
- Lung damage (including decreased lung function and lifelong respiratory disease)
- Premature death in individuals with existing heart or lung diseases

## Particulate Matter -- Air Quality Index (AQI) and Health Concerns

| AQI Values | Air Quality Descriptor | Health Concerns* | |
|---|---|---|---|
| | | $PM_{2.5}$ | $PM_{10}$ |
| 0 - 50 | Good | None | None |
| 51 - 100** | Moderate | None | None |
| 101 - 150 | Unhealthy for Sensitive Groups | People with respiratory or heart disease, the elderly, and children should limit prolonged exertion. | People with respiratory disease, such as asthma, should limit outdoor exertion. |
| 151 - 200 | Unhealthy | People with respiratory or heart disease, the elderly, and children should avoid prolonged exertion; everyone else should limit prolonged exertion. | People with respiratory disease, such as asthma, should avoid outdoor exertion; everyone else, especially the elderly and children, should limit prolonged outdoor exertion. |

| | | | |
|---|---|---|---|
| 201 - 300 | Very Unhealthy | People with respiratory or heart disease, the elderly, and children should avoid any outdoor activity; everyone else should avoid prolonged exertion. | People with respiratory disease, such as asthma, should avoid any outdoor activity; everyone else, especially the elderly and children, should limit outdoor exertion. |
| 301 - 500 | Hazardous | Everyone should avoid any outdoor exertion; people with respiratory or heart disease, the elderly, and children should remain indoors. | Everyone should avoid any outdoor exertion; people with respiratory disease, such as asthma, should remain indoors. |

* PM has two sets of cautionary statements, which correspond to the two sizes of PM that are measured:

- Particles up to 2.5 micrometers in diameter ($PM_{2.5}$)
- Particles up to 10 micrometers in diameter ($PM_{10}$)

** • An AQI of 100 for $PM_{2.5}$ corresponds to a $PM_{2.5}$ level of 35 micrograms per cubic meter (averaged over 24 hours).

- An AQI of 100 for $PM_{10}$ corresponds to a $PM_{10}$ level of 150 micrograms per cubic meter (averaged over 24 hours).

# Appendix G
# Education Programs – West Pinal


This page provides a list of workshops, meetings, educational outreach, reports and Air Quality news to pique your interest. Workshops are arranged to provide training that will help in completing Air Quality forms, submitting Air Quality reports, and being in compliance with new Air Quality rules.

## Seminar

**Air Quality Permit Compliance Assistance Seminar**

AESA Seminar Flyer March 17, 2020

## Educational Outreach

Dust Education Flash Movie
Adobe Flash 10 Required to View

Alternative Transportation

Burn

Flag Program

Industrial Permits

Ozone

## Air Quality History

**Clean Air Act**

The Plain English Guide to the Clean Air Act

Origins of Modern Air Pollution Regulations

## Enforcement Reports

2014 Enforcement Summary

2015 Enforcement Summary

2016 Enforcement Summary

2017 Enforcement Summary

2018 Enforcement Summary

2019 Enforcement Summary

## Maps

Area A

Area A & C

Apache Junction PM10 Non-Attainment Area

Pinal County Non-Attainment Areas

West Central PM2.5 Nonattainment Area

West Pinal PM10 Nonattainment Area

## Links

**Arizona Air Quality Links**

Arizona Department of Environmental Quality

Maricopa County Department of Air Quality

Pima County Department of Environmental Quality

Arizona Department of Agriculture

**EPA Links**

AirData: Access to Air Pollution Data

## Other Topics

Public Records Request Form

AQI Forecast Now On Twitter

**Pinal County Government**
31 N. Pinal Street
Florence, AZ 85132
520.509.3555 (Local)
888.431.1311 (Toll Free)

**Due to office limitations in Florence - please apply for dust permits online (click this message to go to Citizen Access portal). NOTE: Casa Grande and Apache Junction offices closed - please apply online)**

**Pinal County Air quality accepts dust permits online or in-person at any of our outlying offices.**

**There are 3 versions of the dust permit. To choose one, will depend on where you are building.**

**Apache Junction Non-Attainment**

**General Area**

**West Pinal Non-Attainment**

**Clicking on one of the above options will provide a map that you will be able to locate the area of your construction project to determine what dust application is the right one for you. If you need help in locating the correct application, please give us a call. We will be glad to help.**


Dust kicked up by vehicles traveling on roads, construction, agriculture, burning and wind events create a type of air pollution called particulate matter. Particulate matter is classified into two categories PM10 and PM2.5. Rules and regulations have been adopted to limit the amount of particulate matter produced by certain types of activities.

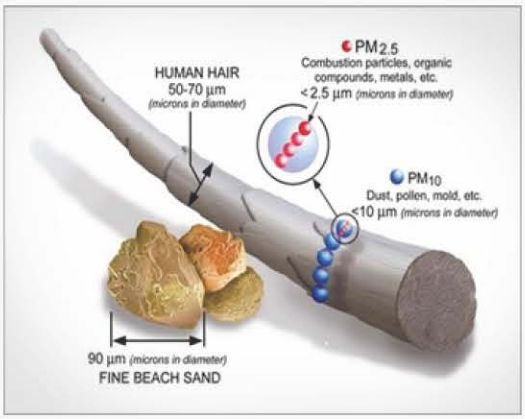

**Outdoor Pollution Education**
(Flash Movie)

| Title | Address | Phone | Weekdays | Time |
|---|---|---|---|---|
| **Apache Junction** Pinal County Complex | 575 N Idaho Rd. Suite 800 | 520-866-6929 | Monday & Thursday only | 8:30 a.m.-03:30p.m. 8:30a.m.-12:30pm |
| **Casa Grande** Pinal County Complex | 820 E Cottonwood Ln. Bldg A | 520-866-6929 | Wednesday October - April only | 8:30a.m. - 12:30p.m. |
| **Florence** Pinal County Complex | 85 N Florence St. **NEW Location in the* Development Services Building | 520-866-6929 | Monday - Friday | 8:00 a.m.-4:30p.m. |

## What is Particulate Matter (PM10)?

PM10 is particulate matter where the size of the actual particles is 10 microns in diameter or less. PM10 is a type of air pollution that includes dust, soot, and tiny bits of solid materials that are released and move around in the air.

This includes burning of diesel fuels, incineration of garbage, mixing and applying fertilizers and pesticides, road construction, steel making, mining, field burning, forest fires, fireplaces and woodstoves. It causes eye, nose and throat irritation and respiratory problems.




## What is PM 2.5?

The term PM2.5 includes both solid particles and liquid droplets (excluding water droplets) that are found in outdoor air. Particulate matter may be emitted directly into the air or can form from pollutants that react in the atmosphere. PM2.5 refers to the size of the actual particles as 2.5 microns in diameter or less. Fine particles tend to pose the greatest health concern because they can be inhaled into and accumulate in the respiratory system.

Sources of fine particle emissions include all types of combustion (motor vehicles, power plants, wood burning, etc.) and some industrial processes. Organic compounds, nitrogen oxides, ammonia and sulfur dioxide can react in the atmosphere to form secondary PM2.5.

## What is Fugitive Dust?

Fugitive dust are particles lifted into the air caused by man-made and natural activities such as the movement of soil, vehicles, equipment, blasting, and wind. Fugitive dust is emitted into the air by activities that disturb the soil, such as earthmoving and vehicular/equipment traffic on unpaved surfaces.

## Dust Information

- Air Quality Guide 2013
  Particule Matter
- Special Event Application
  {PDF Fill-In}

## Dust Fees

- Dust Permit Fee Schedule

**Pinal County Government**
31 N. Pinal Street
Florence, AZ 85132
520.509.3555 (Local)
888.431.1311 (Toll Free)

# Terms & Definitions

## ADEQ
Arizona Department of Environmental Quality. State agency charged with protecting the Arizona environment.

## Area A
"Area A" (A.R.S. Sec. 49-541) as used in this rule for Pinal County, is the area delineated on the 1994 Supervisor District Map of Pinal County as follows:

- Township 1 north, range 8 east, and range 9 east
- Township 1 south, range 8 east and range 9 east
- Township 2 south, range 8 east and range 9 east
- Township 3 south, range 7 east through range 9 east

## BACT
Best Available Control Technology. An emissions limitation, based on the maximum degree of air pollution reduction, that is achievable through certain production methods, after taking into account energy, economic, and environmental impacts and other costs.

## BMP
Best Management Practice. Methods determined to be the most effective, practical means of preventing or reducing pollution.

## Clean Air Act
The original Clean Air Act was passed in 1963, but our national air pollution control program is actually based on the 1970 version of the law. The 1990 Clean Air Act Amendments are the most far-reaching revisions of the 1970 law.

## Criteria Pollutants
A group of very common air pollutants regulated by EPA on the basis of criteria (information on health and/or environmental effects of pollution). Criteria air pollutants are widely distributed all over the country.

## EPA
Environmental Protection Agency. Federal agency charged with protecting the environment.

## HAPs
Hazardous Air Pollutants. Chemicals that cause serious health and environmental effects. Health effects include cancer, birth defects, nervous system problems and death. Hazardous air pollutants are released by sources such as chemical plants, dry cleaners, printing plants, and motor vehicles (cars, trucks buses, etc.)

## High Pollution Advisory Day
During the winter, a layer of cooler air is trapped by a layer of warmer air above, forming a temperature inversion. An inversion is an atmospheric condition caused by increasing temperature with elevation, resulting in a layer of warm air preventing the rise of cooler air trapped beneath. An inversion traps pollutants from vehicles, fireplaces, and other sources close to the ground, thus increasing the chances for carbon monoxide and particulates to reach unhealthy levels.

## Inversion
During the winter, a layer of cooler air is trapped by a layer of warmer air above, forming a temperature inversion. An inversion is an atmospheric condition caused by increasing temperature with elevation, resulting in a layer of warm air preventing the rise of cooler air trapped beneath. An inversion traps pollutants from vehicles, fireplaces, and other sources close to the ground, thus increasing the chances for carbon monoxide and particulates to reach unhealthy levels.

## MACT

Maximum Available Control Technology. The emission standard requiring the maximum reduction of hazardous emissions while taking cost and feasibility into account.

### Mobile Source
Moving objects that release pollution; mobile sources include cars, trucks, buses, planes, trains, motorcycles and gasoline-powered lawn mowers. Mobile sources are divided into two groups: road vehicles, which include cars, trucks and buses, and non-road vehicles, which include trains, planes and lawn mowers.

### NAAQS
National Ambient Air Quality Standards promulgated by the EPA for the Criteria Air Pollutants.

### NESHAPS
National Emission Standards for Hazardous Air Pollutants. Emissions standards set by EPA to control certain air pollutants.

### Nonattainment
A geographic area in which the level of a criteria air pollutant is higher than the level allowed by the federal standards.

### No Burn Day
No burning may be conducted in Area A when monitoring or weather forecasting indicates the carbon monoxide or particulate matter standard is likely to be exceeded in Area A.

### Nonroad Source
Also referred to as "off-road" or "off-highway," the nonroad category includes outdoor power equipment, recreational vehicles, farm and construction equipment, boats, and locomotives.

### Onroad Source
All vehicles that are driven on the roadway.

### Ozone
Ground level ozone is a colorless gas produced when sunlight and heat stimulate reactions between volatile organic compounds and nitrogen oxides. Elevated levels are generally recorded during the summer months and can aggravate respiratory problems, especially in sensitive groups.

### Particulate Matter 10 (PM10)
Particulate Matter 10 ($PM_{10}$) is dispersed airborne particles smaller than 10 microns (1 micron = $10^{-4}$ centimeters) that results from vehicles traveling on unpaved roads, material handling and wind blown dust. Particles this small can be deposited deep into the respiratory system and increase respiratory distress.

### Particulate Matter 2.5 (PM2.5)
Particulate Matter 2.5 ($PM_{2.5}$) is dispersed airborne fine particulate matter smaller than 2.5 microns (1 micron = $10^{-4}$ centimeters) that results from the combustion of fuels in motor vehicles, power generation, and industrial facilities, as well as from residential fireplaces and wood stoves. Particles this small can be deposited deep into the respiratory system and elevated levels may aggravate respiratory and cardiopulmonary problems.

### PCAQCD
Pinal County Air Quality Control District. County agency charged with protecting Pinal's air quality environment.

### Point Source
Any stationary source for which individual records are collected and maintained. A facility that releases more than a specified amount of a pollutant.

### Pollutant
Generally, any substance introduced into the environment that adversely affects the usefulness of a resource.

### RACT
Reasonably Available Control Technology. Control technology that is reasonably available and both technologically and economically feasible.

### SIP

State Implementation Plan. A detailed description of the programs a state will use to carry out its responsibilities under the Clean Air Act. A SIP is a collection of the regulations used by a state to reduce air pollution. The EPA must approve each SIP and the public is given opportunities to participate in the review and approval.

### Stationary Source

A source that remains at a fixed location while emitting pollutants. Any non-mobile source of pollutants.

### Synthetic Minor 80% (SM80)

Facilities that are operating between 80% and 99% of the applicable major source threshold. A SM80 permit imposes federally enforceable limits to restrict a facility's potential emissions to below major source thresholds.

### Title V

One of several programs authorized in the 1990 Amendments to the federal Clean Air Act (CAA). The program requires air quality agencies to issue Title V permits to major stationary sources of air pollutants.

**Pinal County Government**
31 N. Pinal Street
Florence, AZ 85132
520.509.3555 (Local)
888.431.1311 (Toll Free)


< RETURN TO CHILDREN'S ENVIRONMENTAL HEALTH PROGRAM

# Air Quality Flag Program

Revised on: January 20, 2021 - 10:30am

*"Poor air quality creates risk for those with chronic respiratory diseases, such as asthma, and impacts lung health for all Arizonans. We support the Air Quality Flag program as a valuable resource for schools and other organizations to take action to protect people's health. By adopting the Flag Program, people will know when to adjust their physical activity and reduce exposure to outdoor air pollution."*

— Barbara Burkholder, Board Member and Advocacy Chair
of the Arizona Asthma Coalition

*"By starting the flag program, I am able to better communicate with school officials when students with asthma should take it easy during outdoor recess or even stay inside. As the nurse, I help children with their inhalers when at school. Since flying the flags this school year, I noticed that some students are not coming to my office as often and needing their inhaler."*

— Julie Hull, Nurse
of Mesa Public Schools

## Helping Communities Become More Air Aware

ADEQ's Air Quality Flag Program promotes a healthy environment for our children, workers, family, friends and neighbors by providing Arizona communities with resources to inform residents about:

- Local outdoor air quality conditions
- How air pollution impacts health
- Actions we can take to protect ourselves
- Ways we can improve the quality of the air we breathe

The program is especially important for children, including teens, and those with asthma or other respiratory illnesses, whose risk of experiencing health issues from air pollution is greater.

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### CONTACT

602-771-0004
Email >

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AQ Flag Program FAQs >
What is Today's Air Quality? >

### FLAG PROGRAM TOOLKIT

**FACT SHEETS**
Program > | Español >
Ozone > | Español >
PM > | Español >

## How Does It Work?

The program provides participating facilities with educational materials and colored flags that notify communities about local air quality conditions and correspond with the Environmental Protection Agency's (EPA's) Air Quality Index (AQI). By sharing educational materials with residents and flying the flags in a visible spot, the facilities help alert people to that particular day's air quality, so they know when and how to modify their outdoor activities | Learn More >

Watch the Video >

## Who Can Participate?

Eligible Air Quality Flag Program participants include schools, environmental education centers, after-school/early-childcare facilities, community health centers, fire departments, parks and recreation centers, tribes, and businesses located in Maricopa, Pima, Pinal, Yuma and Santa Cruz counties.

Want to start a Flag Program at your school or organization? | **Learn How >**

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For Schools > | Español >
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Morning Announcement Script (For Schools) >

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< RETURN TO AIR QUALITY FLAG PROGRAM

# Flag Colors and Recommended Activity

Revised on: January 20, 2021 - 10:31am

Flags posted at participating schools and/or community organizations match AQI's warning level colors, indicating the amount of pollution in the air and any possible associated health effects experienced within a few hours or days after breathing polluted air. ADEQ and some local districts calculate the AQI for four major air pollutants regulated by the Clean Air Act: ground-level ozone, particulate matter ($PM_{10}$ and $PM_{2.5}$) and carbon monoxide | Learn More About Pollutants >

Outdoor Activity Guide | View >
PM Fact Sheet | View >
Ozone Fact Sheet | View >

For each of these pollutants, the Environmental Protection Agency (EPA) has established National Air Quality Standards to protect public health. If a warning is issued, the flag's purpose is to protect the greater at-risk population.

## Flag Colors

**Green** — Air quality is good. Weather permitting, it's a great day to be active outside.

**Yellow** — Air quality is fair, but may be a health concern to those who are unusually sensitive to air pollution. Watch for symptoms and reduce prolonged outdoor exertion.

**Orange** — Air quality is approaching unhealthy. Sensitive people, including children, older adults, pregnant women and those with heart or lung disease should take more breaks, lower outdoor activity intensity and watch for symptoms.

**Red** — Air quality is unhealthy. Take more breaks, shorten outdoor activities or choose less-intense activities. Consider rescheduling longer or more intense outdoor activities or moving them indoors.

## Watch for Symptoms

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Common symptoms to look out for are irritation of the eyes, nose and throat, including coughing, chest tightness and shortness of breath. You may need to take breaks, choose less-intense outdoor activities (e.g., walking instead of running), or move activities indoors. Air pollution may also make asthma symptoms worse and trigger attacks. Those with asthma should follow their asthma action plan and keep quick-relief medicine handy on moderate to unhealthy days.

Start a Flag Program at your school or organization | **Learn How >**

< RETURN TO AIR FORECASTING

# Air Pollutants Defined

Revised on: July 26, 2018 - 5:48pm

## OZONE (O3)

**Ozone** is a secondary pollutant that is formed by the reaction of other primary pollutants (precursors), such as Volatile Organic Compounds (VOCs) and Nitrogen Oxides (NOx), to the presence of sunlight.
**Sources:** VOCs are emitted from motor vehicles, chemical plants, refineries, factories and other industrial sources. NOx is emitted from motor vehicles, power plants and other sources of combustion.
**Potential health impacts:** Exposure to ozone can make people more susceptible to respiratory infection, result in lung inflammation and aggravate pre-existing respiratory diseases such as asthma. Other effects include decrease in lung function, chest pain and coughing.
**Unit of measurement:** Parts per billion (ppb)
**Averaging interval:** Highest eight-hour period within a 24-hour period (midnight to midnight)
**Reduction tips:** Curtail daytime driving, refuel cars and use gasoline-powered equipment as late in the day as possible.

## PARTICULATE MATTER ($PM_{10}$ and $PM_{2.5}$)

The term "**particulate matter**" (PM) includes extremely small solid particles and liquid droplets that circulate in the air. Commonly called dust, particles 10 micrometers in diameter or less ($PM_{10}$) can be inhaled and accumulate in the respiratory system.

Commonly called soot, particles 2.5 micrometers in diameter or less ($PM_{2.5}$)

are responsible for visibility degradations such as the "Valley Brown Cloud." High levels of PM occur when the air is especially stagnant or windy.
**Sources:** All types of combustion (motor vehicles, industry, wood burning, etc.) and some industrial processes cause fine PM (less than 2.5 micrometers in diameter). Crushing or grinding operations and dust from paved or unpaved roads cause coarse PM (between 2.5 and 10 micrometers in diameter).
**Potential health impacts:** PM can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases, such as asthma and chronic bronchitis.
**Units of measurement:** Micrograms per cubic meter (µg/m3)
**Averaging interval:** 24 hours (midnight to midnight)
**Reduction tips:** Stabilize loose soils, slow down on dirt roads, carpool and use public transit.

## CARBON MONOXIDE (CO)

**Carbon Monoxide** is a colorless, odorless, poisonous gas formed when the carbon in fuels is not burned completely.

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What to Do When AQ Is at Unhealthy Levels? ›

**Sources:** In cities, as much as 95 percent of all CO emissions emanate from automobile exhaust. Other sources include industrial processes, non-transportation-related fuel combustion and natural sources such as wildfires. Peak concentrations occur in colder winter months.
**Potential health impacts**: Reduces oxygen delivery to the body's organs and tissues. The health threat is most serious for those who suffer from cardiovascular disease.
**Unit of measurement:** Parts per million (ppm)
**Averaging interval:** Highest eight-hour period within a 24-hour period (midnight to midnight)
**Reduction tips:** Keep motor vehicles tuned properly and minimize nighttime driving.

# Appendix H
# Education Programs – Yuma

# Air Quality Guide for Particle Pollution

Harmful particle pollution is one of our nation's most common air pollutants. Use the chart below to help reduce your exposure and protect your health. For your local air quality forecast, visit www.airnow.gov

| Air Quality Index | Who Needs to be Concerned? | What Should I Do? |
|---|---|---|
| Good (0-50) | It's a great day to be active outside. | |
| Moderate (51-100) | Some people who may be unusually sensitive to particle pollution. | **Unusually sensitive people:** *Consider reducing* prolonged or heavy exertion. Watch for symptoms such as coughing or shortness of breath. These are signs to take it easier.<br>**Everyone else:** It's a good day to be active outside. |
| Unhealthy for Sensitive Groups (101-150) | Sensitive groups include **people with heart or lung disease, older adults, children and teenagers.** | **Sensitive groups:** *Reduce* prolonged or heavy exertion. It's OK to be active outside, but take more breaks and do less intense activities. Watch for symptoms such as coughing or shortness of breath.<br>**People with asthma** should follow their asthma action plans and keep quick relief medicine handy.<br>**If you have heart disease:** Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your heath care provider. |
| Unhealthy (151-200) | **Everyone** | **Sensitive groups:** *Avoid* prolonged or heavy exertion. Consider moving activities indoors or rescheduling.<br>**Everyone else:** *Reduce* prolonged or heavy exertion. Take more breaks during outdoor activities. |
| Very Unhealthy (201-300) | **Everyone** | **Sensitive groups:** *Avoid all* physical activity outdoors. Move activities indoors or reschedule to a time when air quality is better.<br>**Everyone else:** *Avoid* prolonged or heavy exertion. Consider moving activities indoors or rescheduling to a time when air quality is better. |
| Hazardous (301-500) | **Everyone** | **Everyone:** *Avoid all* physical activity outdoors.<br>**Sensitive groups**: Remain indoors and keep activity levels low. Follow tips for keeping particle levels low indoors. |

## Key Facts to Know About Particle Pollution:

- Particle pollution can cause serious health problems – including asthma attacks, heart attacks, strokes and early death.
- Particle pollution can be a problem at any time of the year, depending on where you live.
- You can reduce your exposure to pollution and still get exercise! Use daily Air Quality Index (AQI) forecasts at www.airnow.gov to plan your activity.

## What is particle pollution?

Particle pollution comes from many different sources. Fine particles (2.5 micrometers in diameter and smaller) come from power plants, industrial processes, vehicle tailpipes, woodstoves, and wildfires. Coarse particles (between 2.5 and 10 micrometers) come from crushing and grinding operations, road dust, and some agricultural operations.

## Why is particle pollution a problem?

Particle pollution is linked to a number of health problems, including coughing, wheezing, reduced lung function, asthma attacks, heart attacks and strokes. It also is linked to early death.

## Do I need to be concerned?

While it's always smart to pay attention to air quality where you live, **some people may be at greater risk from particle pollution.** They include:

- People with cardiovascular disease (diseases of the heart and blood vessels)
- People with lung disease, including asthma and COPD
- Children and teenagers
- Older adults
- Research indicates that obesity or diabetes may increase risk.
- New or expectant mothers may also want to take precautions to protect the health of their babies.

## How can I protect myself?

**Use AQI forecasts to plan outdoor activities.** On days when the AQI forecast is unhealthy, take simple steps to reduce your exposure:

- Choose a less-strenuous activity
- Shorten your outdoor activities
- Reschedule activities
- Spend less time near busy roads

**When particle levels are high outdoors, they can be high indoors – unless the building has a good filtration system.**

Keep particles lower indoors:

- Eliminate tobacco smoke
- Reduce your use of wood stoves and fireplaces
- Use HEPA air filters and air cleaners designed to reduce particles
- Don't burn candles

## Can I help reduce particle pollution?

Yes! Here are a few tips.

- Drive less: carpool, use public transportation, bike or walk
- Choose ENERGY STAR appliances
- Set thermostats higher in summer and lower in winter
- Don't burn leaves, garbage, plastic or rubber
- Keep car, boat and other engines tuned

EPA United States Environmental Protection Agency

Office of Air Quality and Radiation (6301A)
EPA-456/F-15-005
www.airnow.gov
August 2015


< RETURN TO CHILDREN'S ENVIRONMENTAL HEALTH PROGRAM

# Air Quality Flag Program

Revised on: January 20, 2021 - 10:30am

*"Poor air quality creates risk for those with chronic respiratory diseases, such as asthma, and impacts lung health for all Arizonans. We support the Air Quality Flag program as a valuable resource for schools and other organizations to take action to protect people's health. By adopting the Flag Program, people will know when to adjust their physical activity and reduce exposure to outdoor air pollution."*

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- How air pollution impacts health
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- Ways we can improve the quality of the air we breathe

The program is especially important for children, including teens, and those with asthma or other respiratory illnesses, whose risk of experiencing health issues from air pollution is greater.

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### FLAG PROGRAM TOOLKIT

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## How Does It Work?

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Watch the Video >

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Want to start a Flag Program at your school or organization? | **Learn How >**

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< RETURN TO AIR QUALITY FLAG PROGRAM

# Flag Colors and Recommended Activity

Revised on: January 20, 2021 - 10:31am

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PM Fact Sheet | View >
Ozone Fact Sheet | View >

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**Yellow** — Air quality is fair, but may be a health concern to those who are unusually sensitive to air pollution. Watch for symptoms and reduce prolonged outdoor exertion.

**Orange** — Air quality is approaching unhealthy. Sensitive people, including children, older adults, pregnant women and those with heart or lung disease should take more breaks, lower outdoor activity intensity and watch for symptoms.

**Red** — Air quality is unhealthy. Take more breaks, shorten outdoor activities or choose less-intense activities. Consider rescheduling longer or more intense outdoor activities or moving them indoors.

## Watch for Symptoms

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ADDITIONAL RESOURCES

Classroom Activities & Curricula >
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EPA Flag Program >
Facebook Photo Gallery >

STUDIES

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High PM-2.5 Days & Asthma-Related Hospital Encounters (Phoenix) >

Common symptoms to look out for are irritation of the eyes, nose and throat, including coughing, chest tightness and shortness of breath. You may need to take breaks, choose less-intense outdoor activities (e.g., walking instead of running), or move activities indoors. Air pollution may also make asthma symptoms worse and trigger attacks. Those with asthma should follow their asthma action plan and keep quick-relief medicine handy on moderate to unhealthy days.

Start a Flag Program at your school or organization | **Learn How >**

# Children's Environmental Health Program

Revised on: June 27, 2019 - 3:54pm

The Office of Children's Environmental Health's (OCEH) mission is to protect children from environmental health risks. Since children's bodies and organs are still developing, they are especially susceptible to adverse health effects related to contaminants in the air, water, food and soil.

As part of their mission, OCEH works to develop and implement practical ways to reduce children's exposure to environmental pollutants. They make an effort to identify and help remediate pollutants that put children most at risk and provide information on pollution-specific issues for families, teachers, day care providers and other concerned individuals.

## OCEH's Core strategy is CARE:

CARE stands for **C**oordination, **A**ssessment, **R**eduction, and **E**ducation

OCEH aims to create a cleaner, safer, healthier environment for our children. The CARE strategy involves developing programs and providing tools that address specific types of environmental concerns. Such no-cost programs enable caregivers, educators and parents to mitigate public health risk and take environmentally responsible actions that safeguard children.

## OCEH Programs Include:

- Air Quality Flag Program >
- Idle Reduction Program >
- Green Schools >

### CONTACT

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### SEE MORE

- Air Quality Flag Program >
- Idle Reduction Program >
- Green Schools >
- Environmental Health Risk For Children >

### ADDITIONAL RESOURCES

- Arizona Asthma Coalition >
- EPA - Asthma >
- EPA - Healthy Schools, Healthy Kids >

ADEQ
Arizona Department of Environmental Quality
Douglas A. Ducey, Governor • Misael Cabrera, Director
azdeq.gov

# FACT SHEET

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## AIR POLLUTANT: Particulate Matter

### What is particulate matter?

Particulate matter (PM) is a mixture of microscopic solids and liquid droplets suspended in air. This pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, soil or dust particles and allergens (such as fragments of pollen or mold spores).

There two types of PM that the U.S. Environmental Protection Agency (EPA) has established air quality standards for, which include:

- Coarse particulates (PM-10) with diameters 10 micrometers or less
- Fine particulates (PM-2.5) with diameters 2.5 micrometers or less.

### Where does it come from?

Particulate matter comes from many different sources. PM-10 is often from winds blowing dust off the desert or farm fields, crushing and grinding operations, dust disturbed from driving on dirt roads and some agricultural operations. PM-2.5 is generally created from power plants, industrial processes, vehicle tailpipes, residential fireplaces, woodstoves and wildfires.

### Why is particulate matter a problem?

Both coarse and fine particulate matter pose a problem to health because they are small enough to get deep into your lungs and may even get into your bloodstream. As a result, exposure to these pollutants can lead to a variety of health effects.

Short-term exposures to particulate matter (hours and days) can aggravate lung disease, causing asthma attacks and acute bronchitis, and may also increase susceptibility to respiratory infections. It has also been linked to an increased risk of heart attacks and arrhythmias (irregular heartbeat).

Long-term exposures (years) have been associated with problems such as reduced lung function and the development of chronic bronchitis.

### What are the symptoms of exposure to particulate matter?

Even if you are healthy, you may experience temporary symptoms such as irritation of the eyes, nose, and throat, including coughing, phlegm, chest tightness and shortness of breath.

If you have lung disease, you may not be able to breathe as deeply or as vigorously as normal and you may experience coughing, chest discomfort, wheezing, shortness of breath and unusual fatigue. If you have heart disease, you may be more at risk for heart attacks. Symptoms such as chest pain or tightness, palpitations, shortness of breath or unusual fatigue may indicate a serious problem. If you have any of these symptoms, follow your doctor's advice.

### Do I need to be concerned?

While it's always smart to pay attention to air quality where you live, some people may be at greater risk from particle pollution. This includes:

- People with lung disease, including asthma and chronic obstructive pulmonary disease (COPD)
- People with cardiovascular disease (diseases of the heart and blood vessels)
- Children and teenagers
- Older adults
- People with diabetes
- People considered obese
- New or expectant mothers

### How can I protect myself?

For Phoenix, Tucson, Yuma and Nogales, the ADEQ Forecast Team issues an air quality forecast including at least one type of PM. These provide an hour-by-hour outlook; helping people plan for outdoor activities through the day to minimize the impacts of air pollution. This forecast is based on the Environmental Protection Agency's Air Quality Index (AQI).

*(See next page)*

When you see that the air quality forecast predicts an AQI indicating potentially harmful pollutant levels, take simple steps to reduce your exposure, including:

- Choosing a less-strenuous activity
- Shortening your outdoor activities
- Rescheduling outdoor activities
- Spending less time near busy roads

When particulate levels are high outdoors, they can be high indoors, unless the building has a good filtration system. Use HEPA filters and air cleaners designed to reduce particulates indoors.

## Can I help reduce particle pollution?

Yes! You can:

- Drive less—carpool, use public transportation, bike, walk, telecommute
- Avoid driving on unpaved roads
- Put away the leaf blower; sweep instead
- Don't burn leaves, yard waste, garbage, plastic or rubber—mulch or compost leaves and yard waste instead
- Keep your engine tuned
- Consider using gas logs instead of wood, and if you use a wood-burning stove or fireplace insert, make sure it meets EPA design specifications
- Burn only dry, seasoned wood—wet wood releases more particulates when burned

## Where can I learn more?

Visit the ADEQ Air Forecasting webpage at *www.azdeq.gov/forecasting* for air quality forecasts. There you can find more information, plus ways to access the forecasts online or through text, e-mail and mobile apps.

## Contact the Forecast Team directly at:

ForecastTeam@azdeq.gov