



# Wildfire Smoke Protection Policy

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Approved by Tuolumne County Board of

Supervisors on September 06, 2022

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## I. INTRODUCTION:

In response to the dangerous levels of air quality after the 2018 wildfires throughout the state of California, the California Division of Occupational Safety and Health (Cal/OSHA) has issued an emergency regulation addressing hazardous wildfire smoke exposure, California Code of Regulations, title 8, section 5141.1. Effective July 18, 2019, employers must protect outdoor workers by significantly reducing employee exposure to the harmful effects of wildfire smoke. The new standard applies to workplaces where the current Air Quality Index (AQI) for Particulate Matter 2.5 microns (PM2.5) is 151 or greater, regardless of the AQI for other pollutants; and the employer should reasonably anticipate employees may be exposed to wildfire smoke.

## II. POLICY:

Employees who work in environments with heightened exposures to wildfire smoke and an AQI for PM2.5 exceeding 150, are at risk of experiencing negative health effects from breathing in hazardous chemicals. It is the policy of the County of Tuolumne to reduce employee exposure to harmful respiratory hazards when wildfire smoke causes unhealthy air quality by developing employee and supervisor awareness of the health effects of wildfire smoke and proper response. All employees who work in environments where the AQI for PM2.5 exceeds 150 are expected to comply with the procedures in this program.

**Requirements:** the following are requirements to protect employees from wildfire smoke:

1. **Identification of Harmful Exposures** – For worksites not exempt by this policy (see below), employee exposure to PM2.5 must be determined at the start of each shift and periodically thereafter, as needed.
2. **Communication** – Wildfire smoke hazards must be communicated to all employees in a language and manner readily understandable to them.
3. **Training and instruction information** – For worksites not exempt by this policy (see below), training that includes at least the information contained in Appendix B must be provided.
4. **Control of harmful exposures to employees** – With certain exceptions, workers' exposure to wildfire smoke must be reduced in the following ways:
  - If feasible, by providing an enclosed location with filtered air so that employee exposure to PM2.5 is less than a current AQI of 151, or to the extent feasible.
  - If that is not feasible or adequate, by relocating to another outdoor location where the current AQI for PM2.5 is lower, changing work schedules, reducing work intensity, or providing more rest periods.
  - With respiratory protective equipment if the exposure to PM2.5 cannot be reduced to a current AQI of less than 151.
    - Where the current AQI for PM2.5 is from 151 to 500, provide a sufficient number of NIOSH-approved particulate respirators, such as N95 masks, to all employees for voluntary use, and training on the regulation, the health effects of wildfire smoke, and the safe use and maintenance of respirators.
    - Where the current AQI for PM2.5 is higher than 500, provide and require employees to use NIOSH-approved particulate respirators that will

reduce employee exposure to PM2.5 to an equivalent of an AQI less than 151.

**Exemptions:** workplaces and operations in any of the following conditions are exempt from complying with this policy.

- Enclosed buildings or structures in which the air is filtered by a mechanical ventilation system and the windows, doors, bays and other openings are kept closed, except when it is necessary to open doors to enter or exit.
- Enclosed vehicles in which the air is filtered by a cabin air filter and the windows, doors and other openings are kept closed, except when it is necessary to open doors to enter or exit the vehicle.
- It can be demonstrated and documented that the concentration of PM2.5 in the air does not exceed a concentration that corresponds to a current AQI of 151 or greater by measuring PM2.5 levels at the worksite in accordance with Appendix A.
- Employees exposed to a current AQI for PM2.5 of 151 or greater for a total of one hour or less during a shift.
- Firefighters engaged in wildland firefighting.

Any changes to the laws and regulations surrounding this policy will automatically be incorporated and become part of this policy.

### III. DEFINITIONS

**Current Air Quality Index (Current AQI):** The method used by the U.S. Environmental Protection Agency (U.S. EPA) to report air quality on a real-time basis. Current AQI is also referred to as the “NowCast,” and represents data collected over time periods of varying length in order to reflect present conditions as accurately as possible.

The current AQI is divided into six categories as shown in the table below, adapted from Table 2 of Title 40 Code of Federal Regulations, Part 58, Appendix G.

Air Quality Index (AQI) Categories for PM2.5	Levels of Health Concern
0 to 50	Good
51 to 100	Moderate
101 to 150	Unhealthy for Sensitive Groups
151 to 200	Unhealthy
201 to 300	Very Unhealthy
301 to 500	Hazardous

**NIOSH:** The National Institute for Occupational Safety and Health of the U.S. Centers for Disease Control and Prevention. NIOSH tests and approves respirators for use in the workplace.

**PM2.5:** Solid particles and liquid droplets suspended in air, known as particulate matter, with an aerodynamic diameter of 2.5 micrometers or smaller.

**Wildfire Smoke:** Emissions from fires in “wildlands,” as defined in title 8, section 3402,

or in adjacent developed areas.

#### **IV. RESPONSIBILITIES**

Department/Agency Directors and their designated Location Safety Officers are responsible for the effective implementation of this program to ensure the safety of County employees.

Human Resources / Risk Management and the Safety Committee are responsible for:

- Preparing and maintaining a written program that complies with the requirements of applicable Cal/OSHA requirements.
- Assisting with communicating to all potentially impacted employees and their supervisors on the health effects of wildfire smoke, available protections, and the appropriate use of respirators.

Department Heads / Managers / Supervisors are responsible for:

- Identifying all employees, within their respective departments, who are required to work in environments exposed to PM2.5.
- At the beginning of each shift checking AQI forecasts and the current AQI for PM2.5 from any of the following: U.S. EPA AirNow website, U.S. Forest Service Wildland Air Quality Response Program website, California Air Resources Board website, local air pollution control district website, or local air quality management district website. The monitoring station closest to the worksite should be used.
- Control of harmful exposures to employees when AQI for PM2.5 is 151 or greater by:
  - if feasible, by providing an enclosed location with filtered air;
  - relocating to another outdoor location, changing work schedules, reducing work intensity, or providing more rest periods, and;
  - provide respiratory protective equipment for voluntary use if an employee's exposure cannot be reduced (see Requirements under section II).
- Contacting emergency medical services in the event medical assistance is required.
- Ensuring the requirements in this document are followed, that employees have been adequately trained and understand the hazards of wildfire smoke, and employees have been trained and understand how to use all safety equipment provided to them. (See Appendix B.)

Employees are responsible for:

- Complying with the provisions of this Wildfire Smoke Protection Policy, including completing required training.
- Using respirators properly, keeping them clean and keeping track of them to avoid using someone else's respirator.
- Consulting with their doctor before using a respirator if they have a heart or lung

- problem.
- Informing their supervisor if the air quality is getting worse, or if they are suffering from any symptoms due to the air quality.

## V. PROCEDURES

### A. Employer Requirements

The County shall reduce employee exposure to PM<sub>2.5</sub> to less than a current AQI of 151 by engineering controls whenever feasible, for instance providing enclosed buildings, structures, or vehicles where the air is filtered.

Whenever engineering controls are not feasible or do not reduce employee exposures to PM<sub>2.5</sub> to less than a current AQI of 151, the employer shall implement administrative controls, if practicable, such as relocating work to a location where the current AQI for PM<sub>2.5</sub> is lower, changing work schedules, reducing work intensity, or providing additional rest periods.

The County shall provide respirators to all employees for **voluntary** use in accordance with California Code of Regulations, Title 8 Section 5144 and encourage employees to use respirators when the current AQI for PM<sub>2.5</sub> is equal to or greater than 151 but does not exceed 500. Respirators shall be NIOSH-approved devices that effectively protect the wearers from inhalation of PM<sub>2.5</sub>, such as N95 filtering facepiece respirators. Respirators shall be cleaned, stored, maintained, and replaced so they do not present a health hazard to users. The County shall use Appendix B for training regarding voluntary use of respirators.

*Note: For **voluntary** use of filtering facepieces, such as N95 respirators, some of the requirements of section 5144 do not apply, such as fit testing and medical evaluations.*

Where current AQI for PM<sub>2.5</sub> exceeds 500, respirator use is required in accordance with section 5144. The County shall provide respirators with an assigned protection factor, as listed in California Code of Regulations, Title 8 Section 5144, such that the PM<sub>2.5</sub> levels inside the respirator correspond to an AQI less than 151. (Note that a Respiratory Program and Health Surveillance Program are required at this level. Please contact Human Resources / Risk Management before requiring an employee to wear a respirator.)

The County shall provide employees with effective training and instruction. At a minimum, this shall contain the information outlined in Appendix B.

### B. Hazard Identification

The County shall determine employee exposure to PM<sub>2.5</sub> before each shift and periodically thereafter as needed by any of the following methods:

- Check AQI forecasts and the current AQI for PM<sub>2.5</sub> from any of the following: U.S. EPA AirNow website, U.S. Forest Service Wildland Air Quality Response Program website, California Air Resources Board website, local air pollution control district website or local air quality management district website; or

- Obtain AQI forecast and the current AQI for PM2.5 directly from the EPA, California Air Resources Board, local air pollution control district, or local air quality management district by telephone, email, text or other effective method; or

*EXCEPTION: this section does not apply where an employer assumes the current AQI for PM2.5 is greater than 500 and uses that assumption to comply with section II (4).*

### **C. Reporting and Response**

The County establishes this system for communicating wildfire smoke hazards to all affected employees.

When wildfire smoke is present, supervisors shall meet and review with their staff, in a form readily understandable:

- a. The current AQI for PM2.5 as identified above, and protective measures available to employees to reduce their wildfire smoke exposures.
- b. Review and ensure proper understanding of how all safety equipment is used.
- c. Encouraging employees to inform their supervisor of worsening air quality, and any adverse symptoms that may be the result of wildfire smoke exposure such as asthma attacks, difficulty breathing, and chest pain.

## **VI. ONLINE RESOURCES**

- <https://www.dir.ca.gov/dosh/Worker-Health-and-Safety-in-Wildfire-Regions.html>
- <https://www.dir.ca.gov/dosh/wildfire/Worker-Protection-from-Wildfire-Smoke.html>
- <https://ww3.arb.ca.gov/research/aaqs/common-pollutants/pm/pm.htm>
- [https://www.dir.ca.gov/dosh/dosh\\_publications/N95-mask-questions.html](https://www.dir.ca.gov/dosh/dosh_publications/N95-mask-questions.html)

**VII. ACKNOWLEDGEMENT**

I certify that I have read and understand the County of Tuolumne’s Wildfire Smoke Policy, including my responsibilities with respect to the policy and procedures outlined therein. I further agree to comply with all safe work practices. I understand that failure to follow this policy could put my own and other employees’ health and safety at risk and result in discipline up to and including termination.

\_\_\_\_\_

Print Name

\_\_\_\_\_

Date

\_\_\_\_\_

Employee Signature



**APPENDIX A  
PROTECTION FROM WILDFIRE SMOKE MEASURING PM2.5 LEVELS AT THE  
WORKSITE (MANDATORY IF MONITORING WITH A DIRECT READING  
INSTRUMENT)**

- (a) A direct-reading particulate monitor to determine PM2.5 levels may be used, if the department can demonstrate that it has complied with this appendix and selected a monitor that:
1. Does not underestimate employee exposures to wildfire smoke; or
  2. May underestimate wildfire smoke exposures, but the department has obtained information on the possible error of the monitor from the manufacturer and has accounted for the error of the monitor when determining exposures to PM2.5 to ensure that employee exposure levels are not underestimated.
- (b) The monitor shall be designed and manufactured to measure the concentration of airborne particle sizes ranging from an aerodynamic diameter of 0.3 micrometers or less up to and including 2.5 micrometers ( $\leq 0.3\mu\text{m}$  to  $2.5\mu\text{m}$ ).
- (c) The department shall ensure that the monitor and all necessary monitor accessories are calibrated, maintained, and used, in accordance with the manufacturer's instructions for accurately measuring particles with an aerodynamic diameter of 0.3 micrometers or less up to and including 2.5 micrometers ( $\leq 0.3\mu\text{m}$  to  $2.5\mu\text{m}$ ) The department may use an air monitor that measures particles less than 0.3 micrometers to greater than 2.5 micrometers ( $\leq 0.3\mu\text{m}$  to  $\geq 2.5\mu\text{m}$ ) if the department treats the result as the PM2.5 level.
- (d) The department shall use the following table to convert the PM2.5 concentration to the AQI for PM2.5.

PM2.5 in Micrograms per Cubic Meter ( $\mu\text{g}/\text{m}^3$ )	Air Quality Index (AQI) Categories for PM2.5
0 to 12.0	0 to 50
12.1 to 35.4	51 to 100
35.5 to 55.4	101 to 150
55.5 to 150.4	151 to 200
150.5 to 250.4	201 to 300
250.5 to 500.4	301 to 500

- (e) The person supervising, directing, or evaluating workplace monitoring for PM2.5 shall have the training or experience necessary to apply this section and to ensure the correct use of the monitor and the interpretation of the results, so that exposures are not underestimated.

**APPENDIX B**  
**PROTECTION FROM WILDFIRE SMOKE**  
**INFORMATION TO BE PROVIDED TO EMPLOYEES**

**CONTENTS**

- (a) The health effects of wildfire smoke.
  - (b) The right to obtain medical treatment without fear of reprisal.
  - (c) How employees can obtain the current Air Quality Index (AQI) for PM2.5.
  - (d) The requirements in Title 8, section 5141.1 about wildfire smoke.
  - (e) The department’s two-way communication system.
  - (f) The department’s methods to protect employees from wildfire smoke.
  - (g) The importance, limitations, and benefits of using a respirator when exposed to wildfire smoke.
  - (h) How to properly put on, use, and maintain the respirators provided by the employer.
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- (a) The health effects of wildfire smoke.

Although there are many hazardous chemicals in wildfire smoke, the main harmful pollutant for people who are not very close to the fire is “particulate matter,” the tiny particles suspended in the air. Particulate matter can irritate the lungs and cause persistent coughing, phlegm, wheezing, or difficulty breathing. Particulate matter can also cause more serious problems, such as reduced lung function, bronchitis, worsening of asthma, heart failure, and early death. People over 65 and people who already have heart and lung problems are the most likely to suffer from serious health effects. The smallest—and usually the most harmful—particulate matter is called PM2.5 because it has a diameter of 2.5 micrometers or smaller.

- (b) The right to obtain medical treatment without fear of reprisal.

The County shall allow employees who show signs of injury or illness due to wildfire smoke exposure to seek medical treatment, and may not punish affected employees for seeking such treatment. The County shall also have effective provisions made in advance for prompt medical treatment of employees in the event of serious injury or illness caused by wildfire smoke exposure.

- (c) How employees can obtain the current Air Quality Index (AQI) for PM2.5.

Various government agencies monitor the air at locations throughout California and report the current AQI for those places. The AQI is a measurement of how polluted the air is. An AQI over 100 is unhealthy for sensitive people and an AQI over 150 is unhealthy for everyone.

Although there are AQIs for several pollutants, California Code of Regulations, Title 8, section 5141.1 about wildfire smoke only uses the AQI for PM2.5.

The easiest way to find the current and forecasted AQI for PM2.5 is to go to [www.AirNow.gov](http://www.AirNow.gov) and enter the zip code of the location where you will be working. The current AQI is also available from the U.S. Forest Service at <https://tools.airfire.org/> or a local air district, which can be located at [www.arb.ca.gov/capcoa/dismap.htm](http://www.arb.ca.gov/capcoa/dismap.htm). Employees who do not have access to the internet can contact their supervisor for the current AQI. The EPA website [www.enviroflash.info](http://www.enviroflash.info) can transmit daily and forecasted AQIs by text or email for particular cities or zip codes.

- (d) The requirements in California Code of Regulations, Title 8, section 5141.1 about wildfire smoke.

If employees may be exposed to wildfire smoke, then the department is required to find out the current AQI applicable to the worksite. If the current AQI for PM2.5 is 151 or more, the employer is required to:

- (1) Check the current AQI before and periodically during each shift.
- (2) Provide training to employees.
- (3) Lower employee exposures.
- (4) Provide respirators and encourage their use.

- (e) The department's two-way communication system.

Departments shall alert employees when the air quality is harmful and what protective measures are available to employees.

Departments shall encourage employees to inform their supervisor if they notice the air quality is getting worse, or if they are suffering from any symptoms due to the air quality, without fear of reprisal.

The department's communication system is: Notification via email and/or notification via phone or radio for employees out in the field.

- (f) The department's methods to protect employees from wildfire smoke.

Departments shall take action to protect employees from PM2.5 when the current AQI for PM2.5 is 151 or greater. Examples of protective methods include:

- (1) Locating work in enclosed structures or vehicles where the air is filtered.
- (2) Changing procedures such as moving workers to a place with a lower current AQI for PM2.5.
- (3) Reducing work time in areas with unfiltered air.
- (4) Increasing rest time and frequency, and providing a rest area with filtered air.
- (5) Reducing the physical intensity of the work to help lower the breathing and heart rates.

- (g) The importance, limitations, and benefits of using a respirator when exposed to wildfire smoke.

Respirators can be an effective way to protect employee health by reducing exposure to wildfire smoke, when they are properly selected and worn. Respirator use can be beneficial even when the AQI for PM2.5 is less than 151, to provide additional protection.

When the current AQI for PM2.5 is 151 or greater, departments shall provide their workers with proper respirators for voluntary use. If the current AQI is greater than 500, respirator use is required.

A respirator should be used properly and kept clean. The following precautions shall be taken:

- (1) Departments shall select respirators certified for protection against the specific air contaminants at the workplace. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Center for Disease Control and Prevention certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will list what the respirator is designed for (particulates, for example).

Surgical masks or items worn over the nose and mouth such as scarves, T-shirts, and bandannas will not provide protection against wildfire smoke. An N95 filtering facepiece respirator, shown in the image below, is the minimum level of protection for wildfire smoke.

- (2) Read and follow the manufacturer's instructions on the respirator's use, maintenance, cleaning and care, along with any warnings regarding the respirator's limitations. The manufacturer's instructions for medical evaluations, fit testing, and shaving should also be followed, although doing so is not required by Title 8, section 5141.1 for voluntary use of filtering facepiece respirators.
- (3) Do not wear respirators in areas where the air contains contaminants for which the respirator is not designed. A respirator designed to filter particles will not protect employees against gases or vapors, and it will not supply oxygen.
- (4) Employees should keep track of their respirator so that they do not mistakenly use someone else's respirator.
- (5) Employees who have a heart or lung problem should ask their doctor before using a respirator.

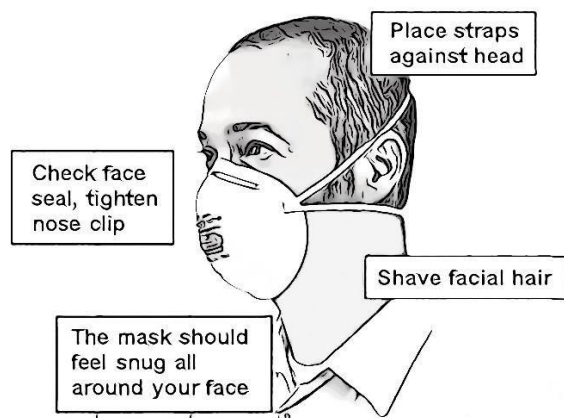
- (h) How to properly put on, use, and maintain the respirators provided by the employer.

To get the most protection from a respirator, there must be a tight seal around the face. A respirator will provide much less protection if facial hair interferes with the seal. Loose-fitting powered air purifying respirators may be worn by people with facial hair since they do not have seals that are affected by facial hair.

The proper way to put on a respirator depends on the type and model of the respirator.

For those who use an N95 or other filtering facepiece respirator mask that is made of filter material:

- (1) Place the mask over the nose and under the chin, with one strap placed below the ears and one strap above.
- (2) Pinch the metal part (if there is one) of the respirator over the top of the nose so it fits securely.



*Drawing Showing Proper Fitting of a Filtering Facepiece Respirator  
(shaving is not required for voluntary respirator use)*

For a respirator that relies on a tight seal to the face, check how well it seals to the face by following the manufacturer's instructions for user seal checks. Adjust the respirator if air leaks between the seal and the face. The more air leaks under the seal, the less protection the user receives.

Respirator filters should be replaced if they get damaged, deformed, dirty, or difficult to breathe through. Filtering facepiece respirators are disposable respirators that cannot be cleaned or disinfected. A best practice is to replace filtering facepiece respirators at the beginning of each shift.

If you have symptoms such as difficulty breathing, dizziness, or nausea, go to an area with cleaner air, take off the respirator, and get medical help.

**APPENDIX B ACKNOWLEDGEMENT  
PROTECTION FROM WILDFIRE SMOKE  
INFORMATION TO BE PROVIDED TO EMPLOYEES**

This acknowledgement must be signed before an employee is provided a filtering facepiece (N95) respirator for voluntary use to work in environments where they could be exposed to wildfire smoke.

I certify that I have read and understand the County of Tuolumne's Wildfire Smoke Policy's Appendix B Protection from Wildfire Smoke Information including my responsibilities with respect to the policy and procedures outlined therein. Furthermore, I understand that use of a filtering facepiece (N95) respirator is voluntary.

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Employee Signature

**BOS APPROVAL**

The County of Tuolumne's Wildfire Smoke Protection Policy was approved by the Board of Supervisors and became effective on SEPTEMBER 06, 2022.

APPROVED AS TO LEGAL FORM:



Sarah Carrillo, County Counsel

APPROVED:



Daniel Anaiah Kirk, CHAIR

ATTEST:



Heather D. Ryan,  
Board Clerk of the Board of Supervisors

I hereby certify that according to the provisions of Government Code Section 25103, delivery of this document has been made.

HEATHER D. RYAN  
Board Clerk

By: 