



SAN DIEGO STATE UNIVERSITY

Wildfire Smoke Exposure Management Program

*For Compliance with Cal/OSHA General Industry Safety
Standard, CCR, Title 8, Sec. 5141.1*

Environmental Health & Safety Department

Rev. October 2019

San Diego State University
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Wildfire Smoke Exposure Management Program

I. INTRODUCTION

Smoke from wildfires contains gases, chemicals, and fine particles that can have adverse health effects. The most significant hazard comes from breathing fine particles in the air, which can cause coughing, wheezing, difficulty breathing, and impact lung function as well as existing respiratory and heart conditions. Fine particulate matter of the 2.5 micrometer diameter or smaller size (PM 2.5) are considered to be the most harmful.

The California Division of Occupational Safety and Health (Cal/OSHA) has established regulatory requirements for employers to protect outdoor workers from wildfire smoke exposure. This regulation, 8 CCR §5141.1. *Protection from Wildfire Smoke*, applies to workplaces where the 2.5 PM Air Quality Index (AQI) is 151 or greater and the employee may be exposed to wildfire smoke.

II. PURPOSE, SCOPE AND APPLICATION

The objective of this Wildfire Smoke Exposure Management Program is to protect the SDSU campus community from exposure to wildfire smoke and to ensure that SDSU is in compliance with 8 CCR §5141.1. *Protection from Wildfire Smoke*. Although the focus of this program is primarily on employee protection to meet Cal/OSHA requirements, this program also addresses non-employee (e.g.- students, campus visitors, etc.) wildfire smoke exposure protection guidelines.

At SDSU, employees who may need to work outdoors for an extended period of time during a wildfire include, but are not limited to, staff from Facilities Services, University Police, Parking & Transportation Services, Environmental Health & Safety, and the Office of Emergency Management. 8 CCR §5141.1. *Protection from Wildfire Smoke* does not apply to:

- Enclosed buildings or structures in which the air is filtered by a mechanical ventilation system and the employer ensures that windows, doors, bays, and other openings are kept closed to minimize contamination by outdoor or unfiltered air.
- Enclosed vehicles in which the air is filtered by a cabin air filter and the employer ensures that windows, doors, and other openings are kept closed to minimize contamination by outdoor or unfiltered air.
- The employer demonstrates that the concentration of PM 2.5 in the air does not exceed a concentration that corresponds to a current AQI of 151 or greater by measuring PM 2.5 levels at the worksite in accordance with Appendix A of 8 CCR §5141.1.
- Employees exposed to a current AQI for PM 2.5 of 151 or greater for a total of one hour or less during a shift.

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.

<i>Air Quality Index (AQI)</i>	
<i>Categories for PM2.5</i>	<i>Levels of Health Concern</i>
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

A. Environmental Health & Safety shall:

1. Maintain and update the written Wildfire Smoke Exposure Management Program.
2. Provide training for employees who perform work activities outdoors during or after wildfires when smoke is present.
3. Measure PM 2.5 levels at the worksite before each shift and at designated intervals during wildfire events.
4. Provide updated information to the Office of Emergency Management and the Department of Strategic Communications and Public Affairs regarding AQI forecasts and the current AQI.

- B. SDSU Managers and Supervisors of employees who perform work activities outdoors during or after wildfires when smoke is present shall:
1. Ensure that their employees are made aware of the SDSU Wildfire Smoke Exposure Management Program.
 2. Ensure that their employees have access to respiratory protection supplies (i.e.- N95s) and are wearing respirators when the AQI is >500.
 3. To the extent feasible, encourage and allow employees to work in enclosed structures or vehicles where the air is filtered.
 4. Implement the following control systems for employees that must work outdoors during a wildfire:
 1. Changing procedures such as moving workers to a place with a lower current AQI for PM2.5;
 2. Reducing work time in areas with unfiltered air;
 3. Increasing rest time and frequency, and providing a rest area with filtered air; and
 4. Reducing the physical intensity of the work to help lower the breathing and heart rates.
 5. Notify EH&S if their employees inform them that the air quality is getting worse or if they are suffering from any symptoms due to the air quality.
- C. Strategic Communications and Public Affairs and the Office of Emergency Management shall:
1. Provide updated information for the campus regarding AQI forecasts and the current AQI.
 2. Provide information to employees, students, and visitors, regarding campus closures.
- D. Employees working outdoors during a wildfire shall:
1. Understand and follow the requirements of the SDSU Wildfire Smoke Exposure Management Program, including participating in training.
 2. Wear respirators when required to do so (i.e.- AQI is >500).
 3. Inform their supervisor if the air quality is getting worse.
 4. Inform their supervisor if they are suffering from any symptoms due to the air quality.
- E. Students and campus visitors are encouraged to:
1. Remain in enclosed structures or vehicles where the air is filtered, as much as possible during a wildfire **unless instructed to evacuate**.
 2. Follow any instructions provided by Strategic Communications and Public Affairs and the Office of Emergency Management.
 3. Seek medical attention if they are suffering from any symptoms due to the air quality.

V. WILDFIRE SMOKE EXPOSURE CONTROL PLAN

A. Exposure Monitoring

SDSU EH&S will use the following methods to determine employees' potential exposure to PM 2.5 while working outdoors during a wildfire:

- i. Monitoring AQI information available via the U.S. Environmental Protection Agency (EPA), San Diego Air Pollution Control District (APCD), or the U.S. Forest Service Wildland Air Quality Response Program. See *Appendix A* for additional information on how to access these AQI resources; and/or
- ii. Using a direct-reading particulate monitor to determine PM 2.5 levels at the worksite.

B. Communication of Air Quality and Protective Measures

Strategic Communications and Public Affairs and the Office of Emergency Management are responsible for informing the campus about air quality, protective measures, and campus closures, with consultation provided by EH&S. Communication methods can include emails, text alerts, and/or SDSU website updates.

Employees are encouraged to notify their supervisors of worsening air quality and any adverse symptoms they may be experiencing due to smoke exposure. Supervisors must then relay this information to EH&S (619-594-6778) for follow-up.

C. Exposure Control Methods

The primary method of controlling exposure to wildfire smoke at SDSU is Engineering Controls. Acceptable Engineering Controls include enclosed buildings, structures, or vehicles where the air is filtered.

Whenever Engineering Controls are not feasible or do not reduce employee exposure to PM 2.5 to less than a AQI of 151, SDSU will implement Administrative Controls. Acceptable Administrative Controls include relocating workers to a location where the AQI is lower, changing work schedules, reducing work intensity, or providing rest periods.

D. Control by Respiratory Protective Equipment

The AQI will determine whether respirator use is voluntary or required for employees that must work outdoors during a wildfire.

1. AQI of 151-500 (Voluntary use)
 - a. N95 Filtering Facepiece Respirators will be provided to employees working outdoors to wear on a voluntary basis.
 - b. **N95s are available at EH&S (619-594-6778).**
 - c. Refer to Appendix B *Cal/OSHA – Using Disposable Respirators* for additional information on proper use and care of N95s.
 - d. Dispose of N95 immediately if damaged, soiled/wet, or difficulty breathing through the mask.
 - e. Do not reuse N95s, put on a new N95 at the start of each work shift.
 - f. If you experience difficulty breathing, dizziness, or nausea while wearing the N95, go to an area with cleaner air to remove the mask and seek medical attention
2. AQI of >500 (Required use)
 - a. Use must be in compliance with 8 CCR §5144. *Respiratory Protection*. Meaning, the respirator user must be:

- i. Medically cleared for tight-fitting respirator use;
 - ii. Trained on using a tight-fitting respirator; and
 - iii. Fit-Tested for the specific tight-fitting respirator they will be using.
- b. EH&S will provide NIOSH certified respirators with the appropriate protection factor (i.e. - half-face or full-face respirators based on the AQI) to medically cleared, trained, and fit-tested respirator users.

E. Training

Computer based training is available for SDSU employees who may need to work outdoors for an extended period of time during a wildfire. This group of employees may include, but are not limited to, staff from Facilities Services, University Police, Parking & Transportation Services, Environmental Health & Safety, and the Office of Emergency Management.

Employees can access the training material by visiting the EH&S website:

<https://bfa.sdsu.edu/safety/ehs>

EH&S can also provide in-person training for SDSU employees. To schedule in-person training, contact the EH&S office at 619-594-6778.

In accordance with Appendix B of 8 CCR §5141.1, this training will include, at a minimum, the following topics:

1. The health effects of wildfire smoke;
2. The right to obtain medical treatment without fear of reprisal;
3. How employees can obtain the current Air Quality Index (AQI) for PM2.5;
4. The requirements in Title 8, section 5141.1 about wildfire smoke;
5. The employer's two-way communication system;
6. The employer's methods to protect employees from wildfire smoke;
7. The importance, limitations, and benefits of using a respirator when exposed to wildfire smoke; and
8. How to properly put on, use, and maintain the respirators provided by the employer.

For additional resources and information on the SDSU Wildfire Smoke Exposure Management Program, please visit the EH&S website (<https://bfa.sdsu.edu/safety/ehs>) or contact EH&S at 619-594-3088.

VII. Appendix A (Air Quality Index Resources)

In the event of a wildfire, the SDSU Office of Emergency Management and/or the SDSU Department of Strategic Communications and Public Affairs will provide Air Quality Index (AQI) information to the campus community. However, individuals can also monitor the AQI by visiting one of the following websites:

United States Environmental Protection Agency: <https://www.airnow.gov/>

San Diego Air Pollution Control District: <https://www.sdapcd.org/>

U.S. Forest Service Wildland Air Quality Response Program: <https://wildlandfiresmoke.net>

VIII. Attachment B (Cal/OSHA – Using Disposable Respirators)

N95 Mask Commonly Asked Questions (9/10/19)

Q: What is an N95 mask?

A: An N95 mask is a disposable filtering facepiece respirator with two straps. When worn properly (with the mask making a tight seal with the user's face), it can protect against hazardous airborne particles. N95 masks do not protect against gases, vapors and cannot be used for asbestos, and they do not provide oxygen. The "N" designation means the mask is not resistant to the effects of oil mists. For instruction on using filtering facepieces, see [Using Disposable Respirators](#) in English and Spanish.

Q: When and how should an N95 mask be worn?

A: When working conditions include harmful exposure to airborne contaminants such as wildfire smoke. The masks will not protect the user if the mask does not make a tight seal with the user's face due to factors such as facial hair that interferes with the seal or the mask not being put on correctly.



Q: Is an employer required to provide N95 masks to workers?

A: The employer must first determine whether respirator use is **voluntary** or **required**. Employers are **required** to provide respiratory protection **if the working conditions include harmful exposures**. Along with providing the respirators, the employer must have a written respiratory protection program that addresses: proper selection of respiratory equipment; employee training; medical evaluation of an employee's ability to wear a respirator; ensuring proper fit of the respirators; and proper respirator use, storage, and cleaning. The employer must also follow all other applicable requirements in [section 5144](#).

Where it's reasonable to anticipate employee exposure to wild fire smoke, employers are required to provide employees with respirators for voluntary use in accordance with section 5144 when the current AQI for PM 2.5 is 151 or higher but less than 500. Use of respirators becomes mandatory when the current AQI for PM2.5 exceeds 500. Reference [section 5141.1](#).

When protecting employees from wildfire smoke when the AQI is greater than 500, the employer must provide respirators with an assigned protection factor, as listed in section 5144, such that the PM2.5 levels inside the respirator correspond to an AQI less than 151. When the AQI is greater than 535, a respirator with an assigned protection factor greater than 10 (not a disposable dust mask) is required.

Q: Can an employer distribute N95 masks to workers?

A: Where respirator use is **voluntary**, the employer may provide respirators at the workers' request, or permit workers to use their own respirators. In this situation, employers are not required to have a written respiratory protection program or medically evaluate and fit test workers. However, the employer must ensure that the workers' use of a respirator will not create a hazard. The employer must also provide respirator users with the information contained in California Code of Regulations, Title 8, [section 5144, Appendix D](#), and must follow all other requirements in [section 5144](#), subsection (c)(2).

Where it's reasonable to anticipate employee exposure to wild fire smoke, employers are required to provide employees with respirators for voluntary use in accordance with section 5144 when the current AQI for PM 2.5 is 151 or higher but less than 500. Reference [section 5141.1](#). The employer must also provide training to employees that contains the information of [section 5141.1 Appendix B](#).

Q: Can workers bring in their own N95 masks?

A: Where respirator use is **voluntary**, the employer may permit workers to use their own respirators or provide respirators at the workers' request. In this situation, employers are not required to have a written respiratory protection program or medically evaluate and fit test workers. However, the employer must ensure that the workers' use of a respirator will not create a hazard. The employer must also provide respirator users with the information contained in California Code of Regulations, title 8, [section 5144, Appendix D](#), and must follow all other requirements in [section 5144](#), subsection (c)(2).

Where it's reasonable to anticipate employee exposure to wild fire smoke, the employer can allow employees to use their own respirators when the current AQI for PM2.5 is less than 151. Reference [section 5141.1](#).

Q: Where can employers and workers obtain N95 masks?

A: N95 masks can be purchased from online retailers and from businesses such as hardware stores and industrial supply stores. N95 masks from federal, state, and local agencies are sometimes available at various locations in response to recent wildfires, such as the [California Governor's Office of Emergency Services](#) (Cal OES).

Q: Where can employers and workers find additional information?

A:

Using Disposable Respirators www.dir.ca.gov/DOSH/wildfire/n95EngSpan.pdf

Section 5144 Respirator Protection www.dir.ca.gov/Title8/5144.html

Section 5144 Appendix D *Guide to Respiratory Protection at Work*
www.dir.ca.gov/Title8/5144d.html

Section 5141.1 *Protection from Wildfire Smoke* www.dir.ca.gov/Title8/5141_1.html

Governor's Office of Emergency Services (Cal OES) wildfirerecovery.org/general-info/air-monitoring/

Worker Safety and Health in Wildfire Regions www.dir.ca.gov/dosh/Worker-Health-and-Safety-in-Wildfire-Regions.html

Cal/OSHA's Respiratory Protection publication
www.dir.ca.gov/dosh/dosh_publications/respiratory.pdf

AirNow <https://airnow.gov/>

U.S. Forest Service Wildland Air Quality Response Program
wildlandfiresmoke.net/outlooks

California Air Resources Board ww2.arb.ca.gov

Local air pollution control district ww2.arb.ca.gov/air-pollution-control-districts

Local air quality management district ww3.arb.ca.gov/capcoa/dismap.htm

