UNLV BUSINESS AFFAIRS
Risk Management & Safety

WILDFIRE SMOKE GUIDANCE FOR EMPLOYEES

SCOPE

This document is intended to provide guidance for UNLV employees who might need to work outdoors for one hour or more during periods of high wildfire smoke activity. This is not intended to apply to workers who primarily are located indoors. It is also not intended to serve as guidance for when University teaching, research, or work activities should be suspended or curtailed; such guidance should come from the Clark County Division of Air Quality, or other local and state authorities.

INTRODUCTION

Wildfire smoke is a complex mixture of gases and particles from burning vegetation and other materials, and a frequently generated pollutant in the Western and Southwestern United States. As a wildfire burns, different compounds are released in the smoke, such as carbon monoxide, carbon dioxide, hydrocarbons, benzene, acrolein, aldehydes, and fine particulate matter with mean diameter of 2.5 micrometers or less (commonly known as $PM_{2.5}$). The composition and concentration of wildfire smoke can change very quickly depending on environmental factors such as wind, fire behavior, and the type of vegetation burning. Because of this, workers may be exposed to varying types and amounts of compounds in wildfire smoke throughout their work shift or during different fire events.

Wildfire smoke is unhealthy to breathe and can be especially dangerous for children, the elderly, pregnant women, and people with heart or respiratory conditions. Symptoms of exposure can include burning eyes, coughing, runny nose, chest pain or discomfort, dizziness, and irregular heart rhythms.

The US Environmental Protection Agency (EPA), with the support of state and local level agencies such as the Nevada Division of Environmental Protection and the Clark County Division of Air Quality, maintains an extensive network of monitoring sites where real-time air quality information is collected. This information is made available to the public at multiple sites such as https://www.airnow.gov/.

$PM_{2.5}$ is one of the EPA's Criteria Air Pollutants monitored by these community sites. The following numerical and color-coded system is applied to the criteria pollutant monitoring data

on an hourly basis, in order to create an Air Quality Index (AQI) that can guide community and individual actions:

Air Quality Index (AQI) Values	Levels of Health Concern	Colors
When the AQI is in this range:	*...air quality conditions are:*	*...as symbolized by this color:*
0 to 50	Good	Green
51 to 100	Moderate	Yellow
101 to 150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon

Source: https://www.airnow.gov

GUIDANCE

At the present time, neither the State of Nevada Division of Industrial Relations nor the federal Occupational Safety and Health Administration have official standards for reducing occupational exposures to wildfire smoke. The State of California Code of Regulations (CCR) covers wildfire smoke, in Section 5141.1. The UNLV guidance mirrors CCR 5141.1, and has the following expectations for employers and employees.

Applicability

- When outdoor will be conducted for more than one hour per day in areas where the AQI for $PM_{2.5}$ will exceed 151 (in other words, higher than Code Orange), the guidance applies.
- It is the responsibility of the employer to determine at the beginning of a work shift if proximal wildfire events are likely to result in current or forecasted AQI for $PM_{2.5}$ greater than 150, and if it is possible that employees might have to work outdoors and possibly be exposed to wildfire smoke.

- If the potential for wildfire smoke exposure exists, the employer shall use https://www.airnow.gov or other websites/apps that provide up-to-date AQI data, at the start of each shift and periodically (at least hourly) thereafter.

Communication and Training

- The employer shall communicate wildfire smoke hazards to employees in a language and manner readily understandable. Communication must include the current AQI for $PM_{2.5}$, protective measures available to employees to reduce wildfire smoke exposures, how to recognize worsening air quality, and adverse symptoms that might result from wildfire smoke exposures.
- The employer shall provide employees with effective training and instruction, in a language and manner readily understandable. The information in Appendix A to this guidance shall be provided at a minimum.

Engineering and Administrative Controls

- Where feasible, engineering controls should be considered. These could include moving work to enclosed buildings, structures, or vehicles where the air is filtered.
- Administrative controls must also be considered, such as relocating work to a location where the AQI for $PM_{2.5}$ is lower, changing work schedules, reducing work intensity, or providing additional rest periods.

Respiratory Protective Equipment When AQI for $PM_{2.5}$ is >150 but <500

- Where the current AQI for $PM_{2.5}$ is equal to or greater than 151, but does not exceed 500, the employer shall provide a sufficient number of respirators to all employees who will work outdoors, and encourage employees to use them.
- Respirators provided for voluntary use should be certified by the National Institute for Occupational Safety and Health (NIOSH) for effectively protecting the wearers from inhalation of $PM_{2.5}$, such as N95 filtering facepiece respirators.
- Disposable respirators that are not certified by NIOSH, but are instead certified by equivalent agencies in China and South Korea, should be used with caution. Some manufacturers of KN95 and KF94 respirators are reputable, and some are not. If you have questions , consult with RMS, or the Food and Drug Administration's list of KN95 respirators that were authorized during the COVID-19 Emergency Use Authorization:
    - https://www.fda.gov/medical-devices/emergency-use-authorizations-medical-devices/revoked-euas-non-niosh-approved-disposable-filtering-facepiece-respirators#nolongerauth

- For outdoor workers voluntarily wearing filtering facepiece (e.g. N95 disposable) respirators during a wildfire smoke impact event, there will not be an expectation that employees must receive fit testing, medical evaluations, or training (other than the provision of Appendix A information) prior to wearing the respirator. In all other circumstances, the expectations of voluntary use spelled out in 29 CFR 1910.134(c)(2) (link: https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134) remain fully intact.
- Respirators shall be cleaned or replaced as appropriate, stored, and maintained, so that they do not present a health hazard to users. Employers shall use Appendix A to this section for training regarding voluntary use of respirators.

Respiratory Protective Equipment When AQI for $PM_{2.5}$ is >500

- When the AQI for $PM_{2.5}$ exceeds 500 due to wildfire smoke impact events, managers of employees who work outdoors need to give every consideration to postponing outdoor work until the air quality improves.
- Respirator use is required at all times when AQI for $PM_{2.5}$ is greater than 500. Respirators shall be used in accordance with 29 CFR 1910.134 and the UNLV Respiratory Protection Program (https://www.unlv.edu/sites/default/files/page_files/27/respiratory_program.pdf). The employer shall provide respirators with an assigned protection factor such that the $PM_{2.5}$ levels inside the respirator correspond to an AQI less than 151. As with all situations when respiratory use is mandatory, all the required program elements, including training, medical evaluation, and fit testing, are mandatory. Contact RMS if you have any questions about this.

FOR MORE INFORMATION

Please contact Brent Webber (brent.webber@unlv.edu or 702-895-5522) for questions, concerns, or feedback regarding this guidance.

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APPENDIX A to the UNLV WILDFIRE SMOKE GUIDANCE FOR EMPLOYEES

(source: California Code of Regulations, 5141.1, Appendix B, online at https://www.dir.ca.gov/title8/5141_1b.html)

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 $PM_{2.5}$ because it has a diameter of 2.5 micrometers or smaller.

The Right to Obtain Medical Treatment Without Fear of Reprisal

Employers 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. Employers 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.

How Employees Can Obtain the Current Air Quality Index (AQI) for $PM_{2.5}$

Various government agencies monitor the air at locations throughout Nevada, California, and all other states, 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.

The easiest way to find the current and forecasted AQI for $PM_{2.5}$ is to go to AirNow.gov and enter the zip code, town, or city where you will be working. The current AQI is also available at fire.AirNow.gov, an interactive map which also provides information about fires and smoke

plumes. You can also visit the website of the Clark County Division of Air Quality. Employees who do not have access to the internet can contact their employer for the current AQI. The EPA website enviroflash.info can transmit daily and forecasted AQIs by text or email for particular cities or zip codes.

The Requirements of the UNLV Wildfire Smoke Guidance for Employees

If employees may be exposed to wildfire smoke, then the employer is required to find out the current AQI applicable to the worksite. If the current AQI for $PM_{2.5}$ is 151 or more, the employer is required to:

- Check the current AQI at the start of each shift and periodically thereafter.
- Provide training to employees.
- Lower employee exposures.
- Provide respirators and encourage their use.

The Employer's Two-Way Communication System

- Employers shall alert employees when the air quality is harmful and what protective measures are available to employees.
- Employers shall encourage employees to inform their employers 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 employer's communication system is:

_____

_____

The Employer's Methods to Protect Employees from Wildfire Smoke

Employers shall act to protect employees when the current AQI for $PM_{2.5}$ is 151 or greater. Examples of protective methods include:

- Locating work in enclosed structures or vehicles where the air is filtered.
- Changing procedures such as moving workers to a place with a lower current AQI for $PM_{2.5}$.
- Reducing work time in areas with unfiltered air.
- Increasing rest time and frequency, and providing a rest area with filtered air.
- Reducing the physical intensity of the work to help lower the breathing and heart rates.

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The employer's control system at this worksite is: _____
_____

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 $PM_{2.5}$ is less than 151, to provide additional protection.

When the current AQI for $PM_{2.5}$ is 151 or greater, employers shall provide their workers with proper respirators for voluntary use. If the current AQI is greater than 500, respirator use is required, except in emergencies. A respirator should be used properly and kept clean.

The following precautions shall be taken:

- Employers shall select respirators certified for protection against the specific air contaminants at the workplace. Respirators must be certified by NIOSH, the National Institute for Occupational Safety and Health of the U.S. Center for Disease Control and Prevention. 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 bandanas 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.
- Read and understand the manufacturer's instructions on the respirator's use, care, and replacement, along with any warnings regarding the respirator's limitations. If the respirator is reusable, read and understand the instructions for cleaning and maintenance. The manufacturer's instructions must be followed except for medical evaluations, fit testing, and shaving of facial hair, which are recommended but not required for voluntary use of filtering facepiece respirators.
- 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.
- Employees should keep track of their respirator so that they do not mistakenly use someone else's respirator.
- Employees who have a heart or lung problem should ask their health care provider before using a respirator.

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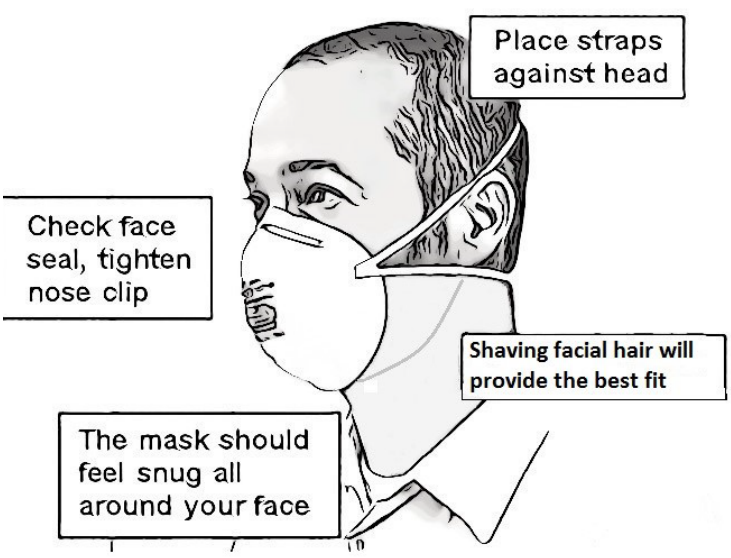
How to Properly Put on and Use the Respirators Provided by the Employer

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 made of filter material:

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



- For a respirator that relies on a tight seal to the face, check how well it seals 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, get medical help immediately.