

<p><i>Potential Hazard Review</i></p> <ul style="list-style-type: none"><li>• Thermal stress</li><li>• Radiation</li><li>• Smoke inhalation</li></ul> <p><i>Personal Protective Equipment</i></p> <ul style="list-style-type: none"><li>• Sunscreen (optional)</li><li>• Water</li></ul> <p><i>Related Safe Work Practices</i></p> <ul style="list-style-type: none"><li>• Personal Protective Equipment (PPE)</li></ul> <p><i>Authority</i></p> <ul style="list-style-type: none"><li>• CCR Title 8 Section 3395, 5141</li></ul>
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This Safe Work Practice (SWP) addresses the hazards of working in outdoor environments and is organized into the following areas:

- A. Hot Environments
- B. Cold Environments
- C. Ultraviolet (UV) Radiation
- D. Wildfire Smoke

This SWP is dedicated to helping you avoid an injury or illness from known hazards and their consequences - hypothermia, heat-related illness; sunburn, skin cancer, inflammation of the lungs, respiratory failure, death.

You are advised to follow these recommendations, read and follow this SWP and any related SWPs, complete any required or recommended training, and to obtain advice from a Qualified Person if you have any questions.

A Qualified Person is a person **designated** by the employer; and by reason of **training**, experience, or instruction who has demonstrated the ability to perform safely all

assigned duties; and, when required is properly licensed in accordance with federal, state, or local laws and regulations.

All tasks require that you:

- Use the equipment in accordance with the guidelines set forth by the manufacturer. This includes following all signs and labels, and reviewing any manufacturer's operating manuals.
  - If the instructions provided in the operating manual conflict with this SWP, then follow the instructions in the manual. The manufacturer's instructions prevail over this SWP.
- Review the safety data sheets (SDSs) for each chemical.
- Be trained on this SWP and those listed above as related. Training on SWPs must be completed before initial assignment. It is also recommended that you complete refresher training every two years.

## A. HOT ENVIRONMENTS

1. Familiarize yourself with the signs and symptoms of heat related illnesses and prepare for hot environments (plan to vary tasks, have plenty of water available, wear light clothing if possible, etc.).
  - a. People are generally unable to notice their own heat stress symptoms. Their survival depends on their co-worker's ability to recognize symptoms and seek medical help.
  - b. The most serious heat illness is heat stroke, caused by prolonged work in extremely hot environments.
    - i. Heat stroke: Typical symptoms include dry, hot skin (due to failure of sweating) and complete or partial loss of consciousness. Heat stroke can be fatal and requires prompt medical attention call 911.
    - ii. Heat edema: swelling, commonly at the ankles
    - iii. Heat rashes: tiny red spots on the skin that cause a prickling sensation during heat exposure.
    - iv. Heat cramps: sharp muscle pains resulting from the failure to replace salt lost with sweat.
    - v. Heat syncope: fainting caused by the loss of body fluids through sweating, and by lowered blood pressure, due to pooling of blood in legs while working in a standing position.
    - vi. Heat exhaustion: weakness, dizziness, visual disturbances, clammy skin, intense thirst, nausea, headache, vomiting, diarrhea, muscle cramps, breathlessness, palpitations, and/or tingling/numbness of the hands and feet.
  - c. Immediately report signs or symptoms of heat illness in yourself or a coworker.

2. Be aware of certain risk factors that can increase the possibility that heat illness can occur:
  - a. Working conditions: air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees.
  - b. Personal risk factors: an individual's age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body's water retention or other physiological responses to heat.
  
3. Employees shall have access to potable drinking water including but not limited to the requirements that it be fresh, pure, suitably cool, and provided to employees free of charge.
  - a. The water shall be located as close as practicable to the areas where employees are working.
  - b. Where drinking water is not plumbed or otherwise continuously supplied, it shall be provided in sufficient quantity at the beginning of the work shift to provide one quart per employee per hour for drinking for the entire shift.
  - c. Employers may begin the shift with smaller quantities of water if they have effective procedures for replenishment during the shift as needed to allow employees to drink one quart or more per hour.
  - d. Employees shall be encouraged to drink small quantities of water up to 4 cups per hour, when the work environment is hot and employees are likely to be sweating more than usual in the performance of their duties.
  
4. Access to shade shall be made as follows:
  - a. When the outdoor temperature in the work area exceeds 80°F, one or more areas with shade will always be maintained while employees are present.
    - i. This area must be either open to the air or provided with ventilation or cooling.
    - ii. The amount of shade present shall be at least enough to accommodate the number of employees on recovery or rest periods, so that they can sit in a normal posture fully in the shade without having to be in physical contact with each other.
    - iii. The shade shall be located as close as practicable to the areas where employees are working.
    - iv. Subject to the same specifications, the amount of shade present during meal periods shall be at least enough to accommodate the number of employees on the meal period who remain onsite.
  - b. When the outdoor temperature in the work area does not exceed 80°F employers shall either provide shade as per above or provide timely access to shade upon an employee's request.

- c. Employees shall be allowed and encouraged to take a preventative cool-down rest in the shade when they feel the need to do so to protect themselves from overheating. Such access to shade shall always be permitted . An individual employee who takes a preventative cool-down rest
    - i. shall be monitored and asked if he or she is experiencing symptoms of heat illness;
    - ii. shall be encouraged to remain in the shade; and
    - iii. shall not be ordered back to work until any signs or symptoms of heat illness have abated, but in no event less than 5 minutes in addition to the time needed to access the shade.
  - d. If an employee exhibits signs or reports symptoms of heat illness while taking a preventative cool-down rest or during a preventative cool-down rest period, appropriate first aid or emergency response shall be provided.
5. High-heat procedures shall be implemented when the temperature equals or exceeds 95°F. These procedures shall include the following to the extent practicable:
- a. Ensuring that effective communication by voice, observation, or electronic means is maintained so that employees at the work site can contact a supervisor when necessary. An electronic device, such as a cell phone or text messaging device, may be used for this purpose only if reception in the area is reliable.
  - b. Observing employees for alertness and signs or symptoms of heat illness. Effective employee observation/monitoring can be achieved by implementing one or more of the following:
    - i. Supervisor observation of 20 or fewer employees, or
    - ii. Mandatory buddy system, or
    - iii. Regular communication with sole employee such as by radio or cellular phone, or
    - iv. Other effective means of observation.
  - c. Designating one or more employees on each worksite as authorized to call for emergency medical services, and allowing other employees to call for emergency services when no designated employee is available.
  - d. Reminding employees throughout the work shift to drink plenty of water.
  - e. Pre-shift meetings before the commencement of work to review the high heat procedures, encourage employees to drink plenty of water, and remind employees of their right to take a cool-down rest when necessary.
6. Effective emergency response procedures must be in place including:
- a. Ensuring that effective communication by voice, observation, or electronic means is maintained so that employees at the work site can contact a supervisor or emergency medical services when necessary.
    - i. An electronic device, such as a cell phone or text messaging device, may be used for this purpose only if reception in the area is reliable.

- ii. If an electronic device will not furnish reliable communication in the work area, then another means of summoning emergency medical services must be made available.
  - b. Responding to signs and symptoms of possible heat illness, including but not limited to first aid measures and how emergency medical services will be provided.
    - i. If a supervisor observes, or any employee reports, any signs or symptoms of heat illness in any employee, the supervisor shall take immediate action commensurate with the severity of the illness.
    - ii. If the signs or symptoms are indicators of severe heat illness (such as, but not limited to, decreased level of consciousness, staggering, vomiting, disorientation, irrational behavior or convulsions), the employer must implement emergency response procedures.
    - iii. An employee exhibiting signs or symptoms of heat illness shall be monitored and shall not be left alone or sent home without being offered onsite first aid and/or being provided with emergency medical services in accordance with the employer's procedures.
  - c. Contacting emergency medical services and, if necessary, transporting employees to a place where they can be reached by an emergency medical provider.
  - d. Ensuring that, in the event of an emergency, clear and precise directions to the work site can and will be provided as needed to emergency responders.
- 7. EHS shall monitor weather reports and respond to hot weather advisories as advised by other agencies (e.g. DHR, DEM).
  - a. You will be notified through your chain of command as needed.
  - b. Notification of a heat event will be based on [National Weather Service](#) data barring direction from a greater authority (e.g. DHR, DEM).

## **B. COLD ENVIRONMENTS**

- 8. Cold exposure can occur in weather that is not freezing, such as what we have in the San Francisco Bay Area. Cold weather primarily affects the extremities of the body. Hands and feet are farthest from the body core and have less blood flow than the core. The extremities of the body are thinner than the core and cool down faster. How one will be affected by the weather depends upon the conditions. When the wind blows, the wind chill factor takes effect. The wind, humidity and moisture remove body heat.
- 9. Physical ailments caused by cold weather include:
  - a. Trench Foot: Working with the feet under cold water or in wet fields for a long time causes trench foot or immersion foot. The feet feel cold and numb and

- blisters often form. As the feet begin to warm, they become red and feel hot to the person. To care for trench foot, gradually warm and elevate the feet. Put on a sterile dressing, taking care not to break the blisters. Get medical attention, because trench foot can cause severe disability.
- b. Chilblains: Repeated, prolonged exposure to cold weather can cause chilblains. They are red, swollen areas that feel hot, tender and itchy. Chilblains can occur on the ears, fingers, and toes and are chronic. This means they can reoccur when there is another prolonged exposure to cold weather. If chilblains occur, cover the affected area and get to a physician.
  - c. Hypothermia: Hypothermia is the general cooling of the entire body. When body temperature drops very much below 98.6°F, serious problems can arise. Symptoms of hypothermia include uncontrollable shivering, numbness, drowsiness and trouble doing simple tasks. As hypothermia progresses, the shivering stops, the breathing and pulse rate slow, and eyesight may begin to fail. The person may begin to stagger and become uncoordinated. If the person does not receive treatment, he may become unconscious, and then the heart will stop. To treat hypothermia victims, immediately get them into a warm environment and gradually warm them. Remove any wet clothing, dry the person and dress them in dry clothing. Wrap them in blankets and use heating pads and other heat sources to warm them. Keep a barrier, such as a blanket, towel or clothing between the person and the heat source. If the person is alert, give them warm liquids. Get medical treatment for the victim immediately. Handle the person gently until medical help arrives.
  - d. Frostbite: Frostbite occurs when parts of the body freeze. Ice crystals form inside the skin. This can destroy the tissue and kill the affected part. The areas most often affected are the ears, nose, fingers and toes. Frostbitten areas in white-skinned people turn reddish and can be painful. Frostbitten areas turn pale on dark-skinned people. The pain subsides and the area can become numb. The area then becomes white or grayish-yellow and very cold to the touch. To heat, gradually warm the area. Do not use alcohol or rub the frostbitten skin. The affected area can be warmed by soaking it in lukewarm water. Loosely bandage the area with a dry, sterile dressing, taking care not to break any blisters. Get medical attention as soon as possible.
10. Wear several under-layers of clothing. These provide better insulation, and a layer can be removed if the body becomes over heated.
  11. In extremely cold weather, protect the ears, face, hands and feet. A hat will keep your entire body warmer by reducing heat loss from the head. Body heat will be available for other parts of your body if it is not lost through the head. Wear a couple pairs of socks and insulated, water-proof boots.
  12. On extremely cold days, limit the amount of time outside, if possible.

13. Keep yourself as warm as possible. Move into a warm location periodically.
14. Have access to or carry with you cold weather survival gear including
  - a. A thermos of hot liquid
  - b. A change of clothes
  - c. Extra socks
  - d. Gloves
  - e. Hats
  - f. A jacket
15. Cold weather affects equipment:
  - a. When it is cold, do not touch or brush up against metal surfaces with bare skin. The skin may stick to it and get immediate frostbite
  - b. Greases and oils get thick and hard which makes equipment difficult to use. If equipment must be heated to make it work, follow the proper procedures and use the right tools.
  - c. Tools also get brittle in the cold, so use caution when working with them.

## **C. ULTRAVIOLET (UV) RADIATION**

16. UV exposure may cause damage to the skin and eyes. UV rays are an invisible part of sunlight, and exposure to it is of concern mainly in the summer months. However, in winter, harmful exposures may occur as a result of direct exposure to sunlight and reflections from sand, water and concrete. Additionally, up to 80% of UV rays can penetrate clouds, thus skin can be damaged on cloudy, foggy or hazy days.
17. The UV Index is a number between 0 and 15 (the lower number being safer) which is based on atmospheric pressure and temperature, and which forecasts the next day's UV radiation intensity when the sun is at its highest in the sky.
  - a. Snow, water and sand reflect the sun's light, so you can get a double dose of UV exposure in these environments. The UV Index does NOT take these factors into account.
  - b. Some medications (e.g. some antibiotics) and diseases (e.g. lupus) cause serious sun sensitivity. The UV index is not intended for use by seriously sun-sensitive individuals. Consult your doctor about additional precautions you may need to take.
  - c. The EPA's SunWise Web site includes a feature that allows the user to enter their zip code and receive the UV Index forecast for that location, for the current day ([www.epa.gov/sunwise](http://www.epa.gov/sunwise)).
18. Apply on exposed skin a waterproof sunscreen with a sun protection factor (SPF) of 15 or higher, and which has both UVA and UVB protection. Do not use sunscreen that has

expired or is over 3 years old (it is not as effective). If it causes a skin irritation or reaction, try using sensitive skin formulas or brands made for children.

19. Ideally, apply the sunscreen 20 minutes before going out into the sun. Reapply every 2 hours or more if you are perspiring (including water resistant sunscreen).
20. Sunscreen should be spread liberally on all exposed parts of the body, including the ears, lips, back of the neck and bald spots. Be careful how you apply sunscreen around eyes; once you start to sweat, some brands of sunscreen may run into your eyes and may sting.
21. Avoid unnecessary exposure. Seek shade when you don't have to be in the sun. If you can, avoid midday sun (10 a.m-4 p.m. especially in summer months).
22. Wear full-length clothing that is tightly woven to block sunlight, but that is loose fitting.
23. Wear a broad-brimmed hat with a close-weave fiber that will shade your face, neck and ears.
24. Wear UV-filtering sunglasses; wrap-around style is best. Plastic safety glasses and plastic sunglasses may be good UV filters, but always check the label to make sure.
25. Repeated applications of sunscreen will not provide extra protection allowing for longer sun exposure. However, sunscreen should be reapplied every 2 hours, and after heavy perspiring or getting wet to offer renewed protection.

## **D. WILDFIRE SMOKE**

26. If you are working in an enclosed building with a mechanical ventilation system which filters the air, this section will not apply to you if you ensure that windows, doors, bay or other openings are kept closed to minimize smoke infiltration (*see [Appendix A, RPD Sites with Mechanically Filtered Air](#) for list of sites which meet this criteria*).
27. The health effects of wildfire smoke:
  - a. 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.
  - b. 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.
  - c. People over 65 and people who already have heart and lung problems are the most likely to suffer from serious health effects.

- d. The smallest—and usually the most harmful—particulate matter is called PM2.5 because it has a diameter of 2.5 micrometers or smaller.
28. If you show signs of injury or illness due to wildfire smoke exposure, you may seek medical treatment, and may not be punished for seeking such treatment.
  29. How to obtain the current Air Quality Index (AQI) for PM2.5:
    - a. 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.
    - b. Although there are AQIs for several pollutants, Cal OSHA only uses the AQI for PM2.5.
    - c. The easiest way to find the current and forecasted AQI for PM2.5 is to go to <https://www.airnow.gov/> and enter the zip code of the location where you will be working. The EPA website <http://www.enviroflash.info/> can transmit daily and forecasted AQIs by text or email for particular cities or zip codes.
    - d. If you do not have access to the internet you can contact EHS for the current AQI.
  30. If the current AQI for PM2.5 is 151 or more, RPD is required to:
    - a. Check the current AQI before and periodically during each shift.
    - b. Provide training to employees.
    - c. Lower employee exposures.
    - d. Provide respirators and encourage their use.
  31. You will be alerted through your chain of command when the air quality is harmful and what protective measures are available. You can inform your supervisor if you notice the air quality is getting worse, or if you are suffering from any symptoms due to the air quality, without fear of reprisal.
  32. RPD will act to protect you from PM2.5 when the current AQI for PM2.5 is 151 or greater. Examples of protective methods include:
    - a. Locating work in enclosed structures or vehicles where the air is filtered.
    - b. Changing procedures such as moving workers to a place with a lower current AQI for PM2.5.
    - c. Reducing work time in areas with unfiltered air.
    - d. Increasing rest time and frequency, and providing a rest area with filtered air.
    - e. Reducing the physical intensity of the work to help lower the breathing and heart rates.
  33. Use of respirators
    - a. When the current AQI for PM2.5 is 151 or greater, RPD will provide you with proper respirators for voluntary use. The voluntary use of respirators is detailed in the Personal Protective Equipment (PPE) SWP.
    - b. If the current AQI is greater than 500, respirator use is required in accordance with the PPE SWP (medical clearance, fit testing and training must have been provided). It is likely that in this case, the Department will stop all operations.

- c. Surgical masks or items worn over the nose and mouth such as scarves, T-shirts, and bandannas will not provide protection against wildfire smoke.
- d. An N95 filtering facepiece respirator is the minimum level of protection for wildfire smoke.
- e. Keep track of your respirator so that you do not mistakenly use someone else's respirator.
- f. If you have a heart or lung problem, you should ask your doctor before using a respirator.

**For any questions, please contact EHS at 415-831-2780.**

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References:

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