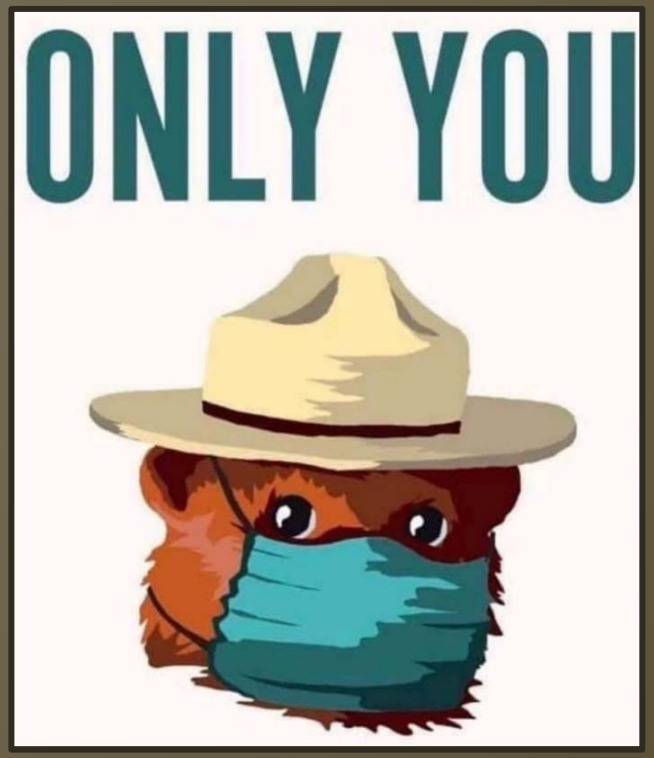
Lincoln County Wildfire Readiness

Module 6: Air Quality Considerations During Wildfire Season

2021 – Lincoln County Public Safety Agencies have separated our wildfire readiness presentation into 6 separate modules. Virtual presentations will be conducted and recorded May – June and will be posted to the County wildfire readiness website for viewing at any time.

The following slides are intended to be used as a self learning guide. The slides have links to additional local, state, federal resource information.

If you have questions, feel free to reach out to any of the agencies represented in this presentation.



Lincoln County 2021 Public Service Announcement

Click Here
to View

- Lincoln County Fire Defense Board:
  - Chief Robert Murphy, Newport Fire
  - Chief Rob Dahlman, North Lincoln Fire
- Lincoln County Sheriff's Office:
  - Sheriff Curtis Landers

Module 6:
Air Quality Considerations During Wildfire Season

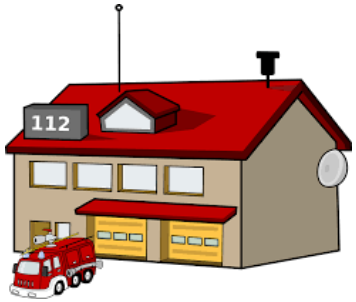
Section Overview

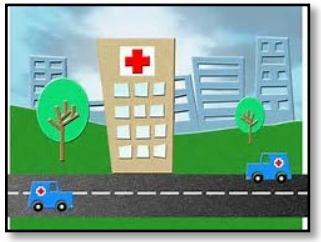
A. Administrative Brief and Sponsors
B. Composition of Wildfire Smoke
C. Air Monitoring Resources
D. Wildfire Smoke and Health Risks
E. Wildfire Smoke and Animals
F. Additional Resources
G. Questions

Section A: Administrative Brief and Sponsors

Wildfire Advocates

Local government, public safety, utilities, healthcare providers and volunteer groups have an advocacy role to ensure their agencies and our communities are prepared for, know how to respond to and recover from wildfire events.





EMERGENCY OPERATIONS CENTER

Community Presentation Sponsors

LINCOLN COUNTY FIRE DEFENSE BOARD OREGON

SHERIFF LINCOLN COUNTY

SEAL ROCK FIRE DISTRICT SEAL ROCK OREGON

NORTH LINCOLN FIRE & RESCUE DIST. #1

OREGON DEPARTMENT OF FORESTRY "STEWARDSHIP IN FORESTRY"

DCBS Consumer and Business Services

OREGON COAST COMMUNITY COLLEGE

DEPOE BAY FIRE AND RESCUE

CENTRAL COAST FIRE EMS RESCUE

YACHATS VOLUNTEER FIRE - RESCUE - EMS FIRE DEPT

Oregon State University Extension Service

NEWPORT FIRE DEPT.

TOLEDO VOLUNTEER FIRE DEPARTMENT

SILETZ VALLEY FIRE DIST. READY TO STRIKE

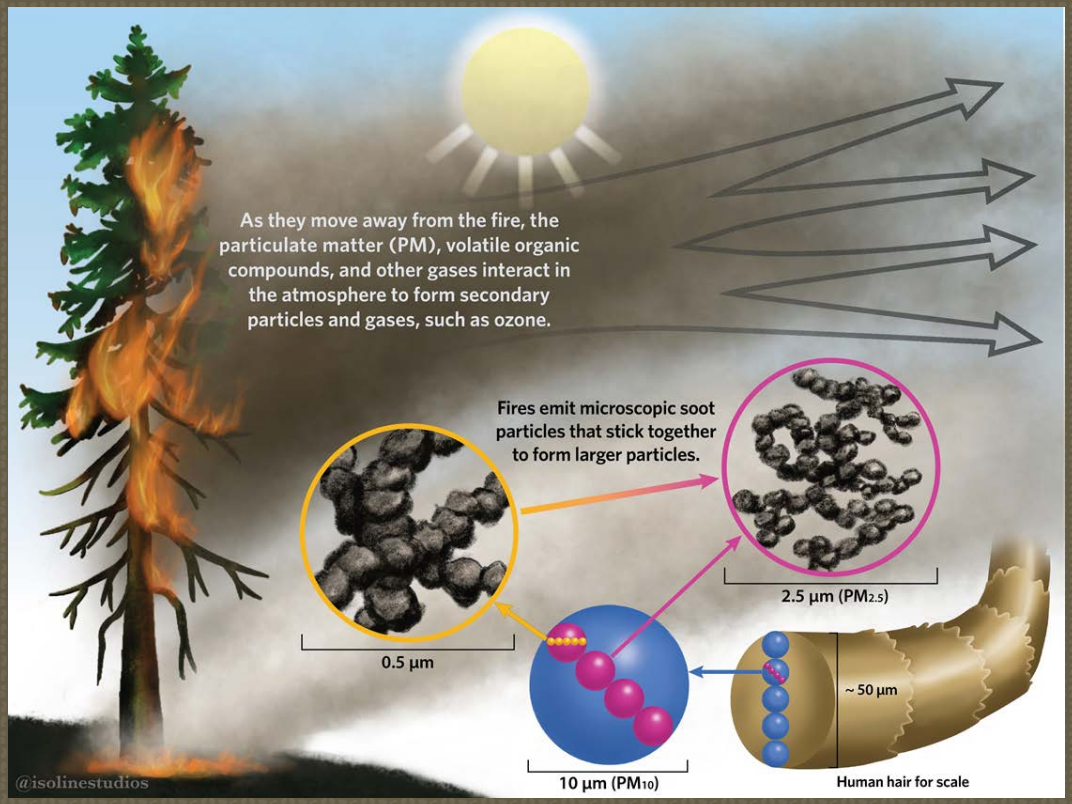
Public Health Prevent. Promote. Protect. Lincoln County

American Red Cross

Our objective!

Strengthening your knowledge of our local wildfire risk and your role in preparedness, response and recovery.

Section B:
Wildfire Smoke Composition



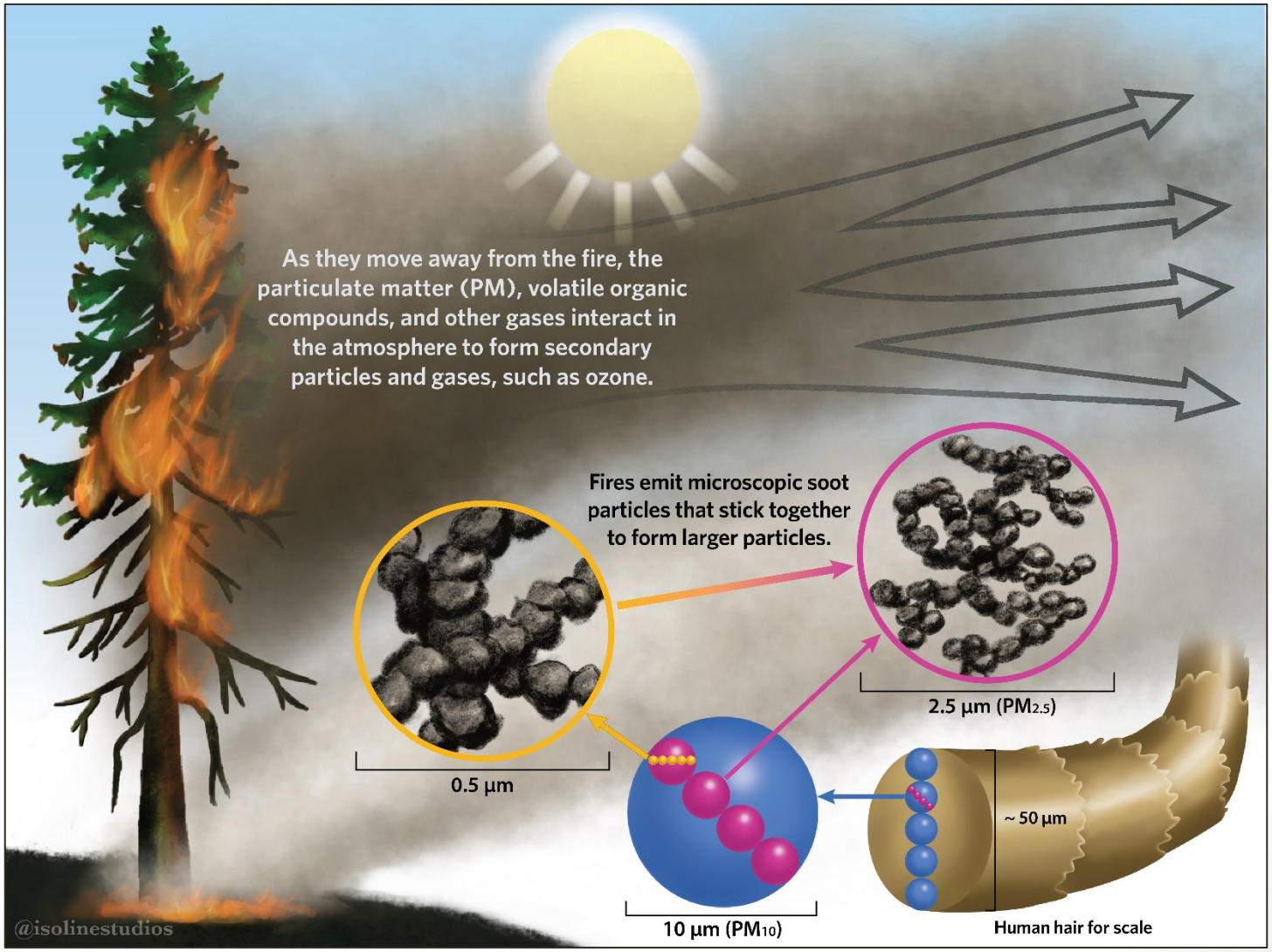
Composition of Wildfire Smoke

- Wildfire smoke is a complex mixture of gases and particles that interact and change as they move away from the fire. Of all the pollutants in wildfire smoke, fine particulate matter ($PM_{2.5}$) poses the greatest risk to human health.

- The microscopic soot particles can be inhaled deep into the lungs, where they may cause inflammation and irritation. Volatile organic compounds and other gases can also irritate the eyes, nose, throat, and lungs.

- Image Credit: Jen Burgess/IsolineStudios for BC Centre for Disease Control.

Composition of Wildfire Smoke

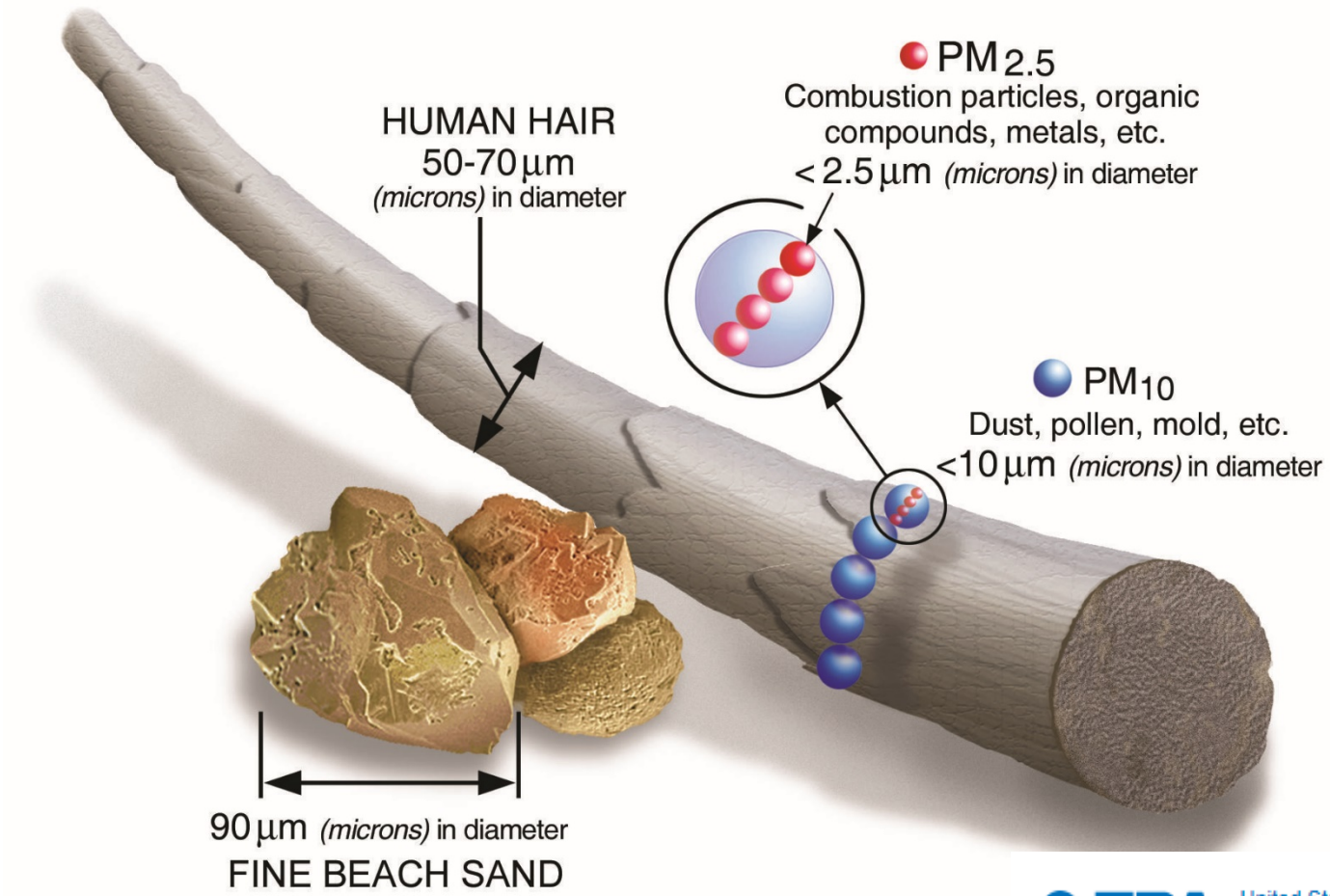


Particulate Matter (PM) Basics

- PM stands for particulate matter (also called particle pollution) - the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope.
- Particle pollution includes:
  - PM10: inhalable particles, with diameters that are generally 10 micrometers and smaller; and
  - PM2.5: fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller. How small is 2.5 micrometers? Think about a single hair from your head. The average human hair is about 70 micrometers in diameter – making it 30 times larger than the largest fine particle.

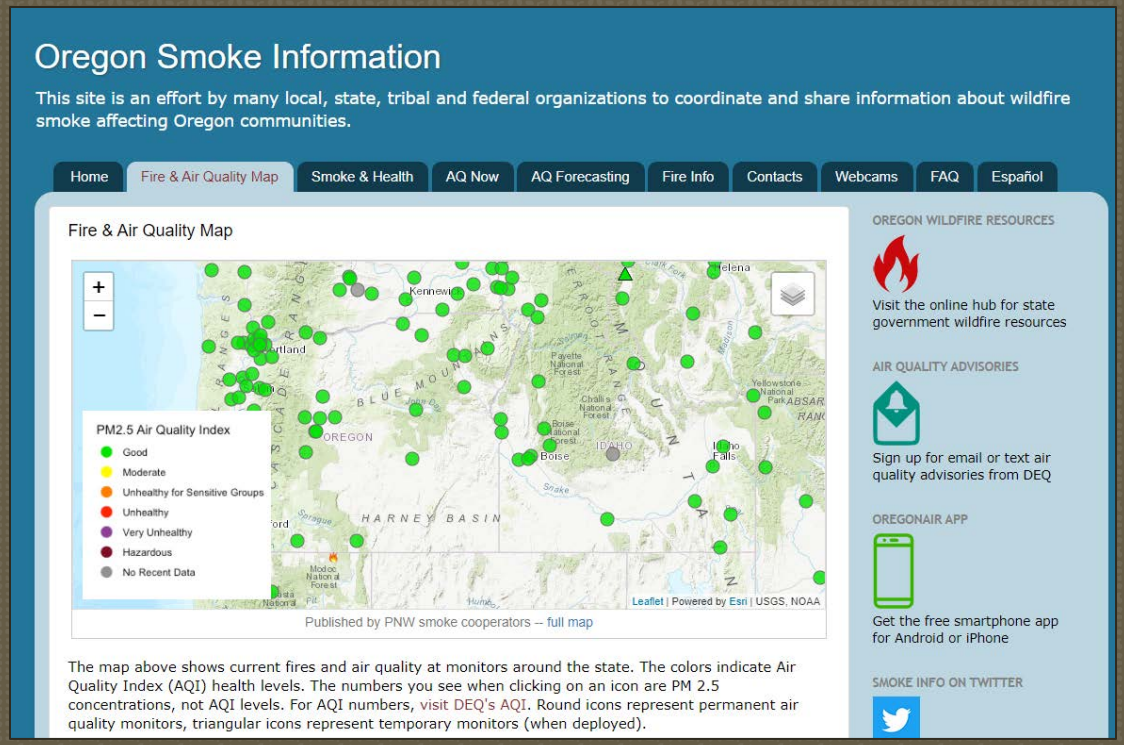
EPA United States Environmental Protection Agency

Particulate Matter (PM) Basics



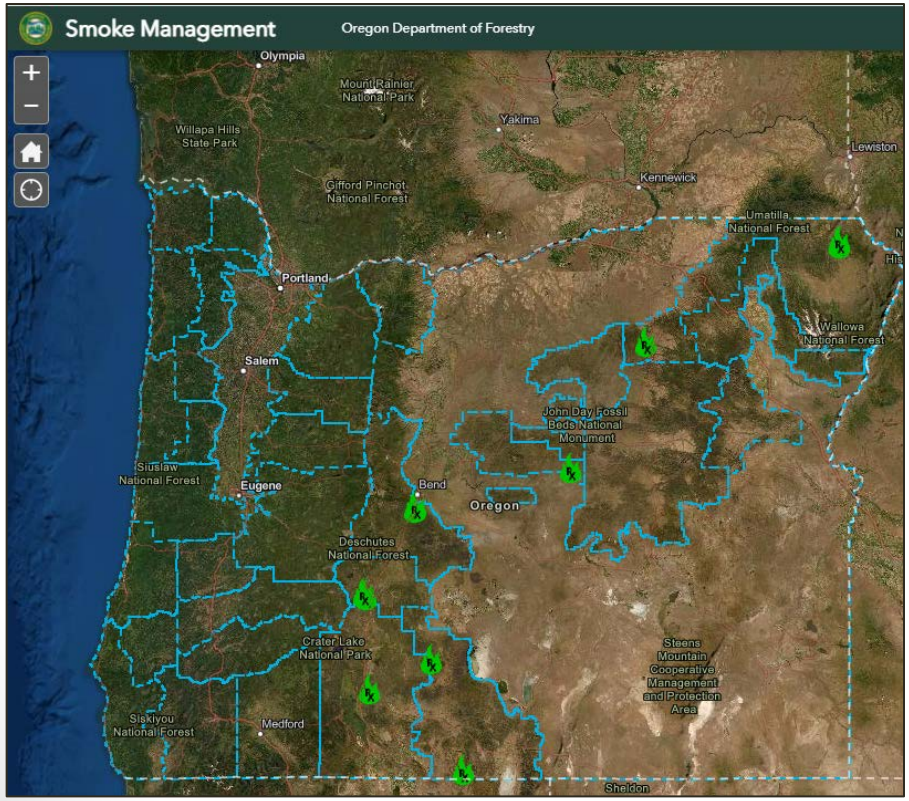
United States Environmental Protection Agency

Section C:
Air Monitoring Resources

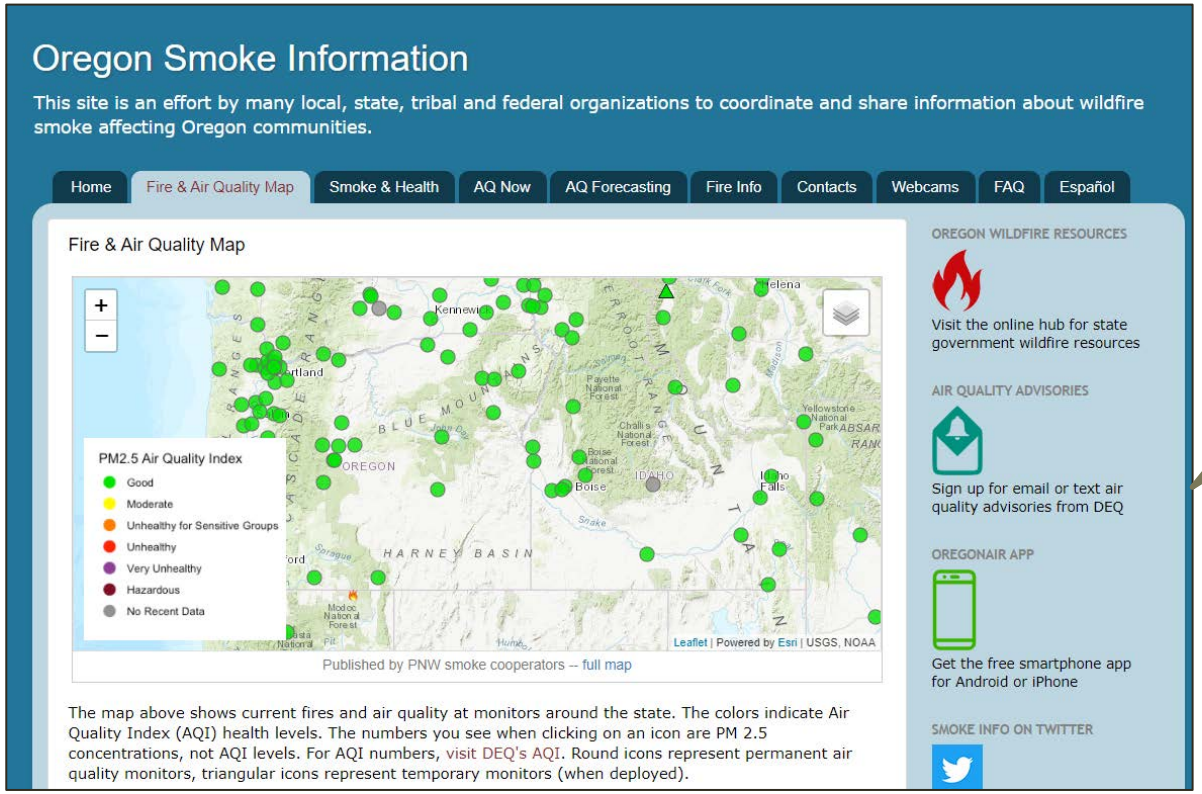


ODF Prescribed Burns

- Displays current dates planned or accomplished prescribed burns throughout the state of Oregon; Oregon Department of Forestry (ODF).



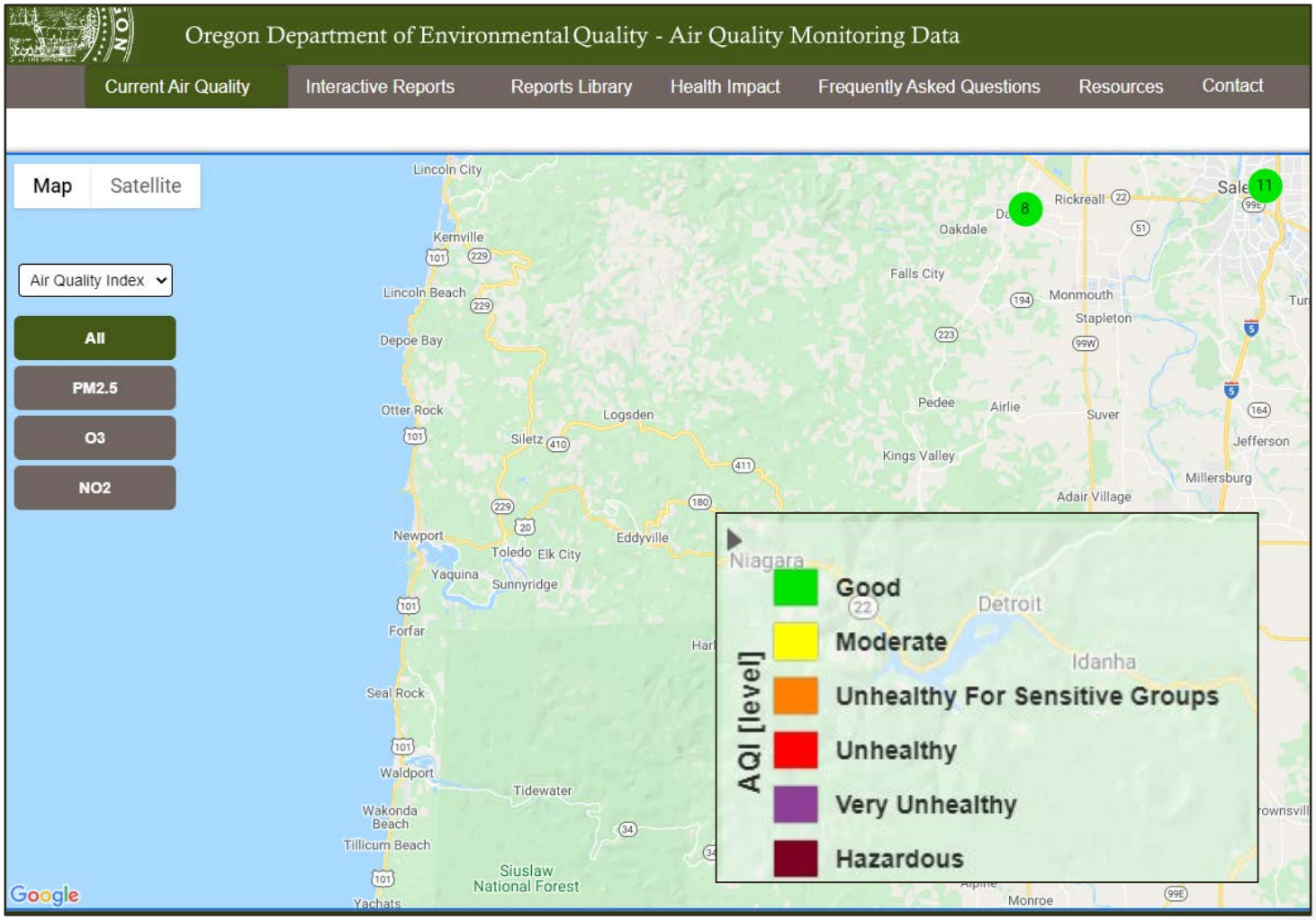
OR Smoke Information Blog



Subscribe for updates!

- Access current air quality information from Department of Environmental Quality (DEQ) and learn if there is a health advisory in your community.

OR DEQ – Air Quality Monitoring Data

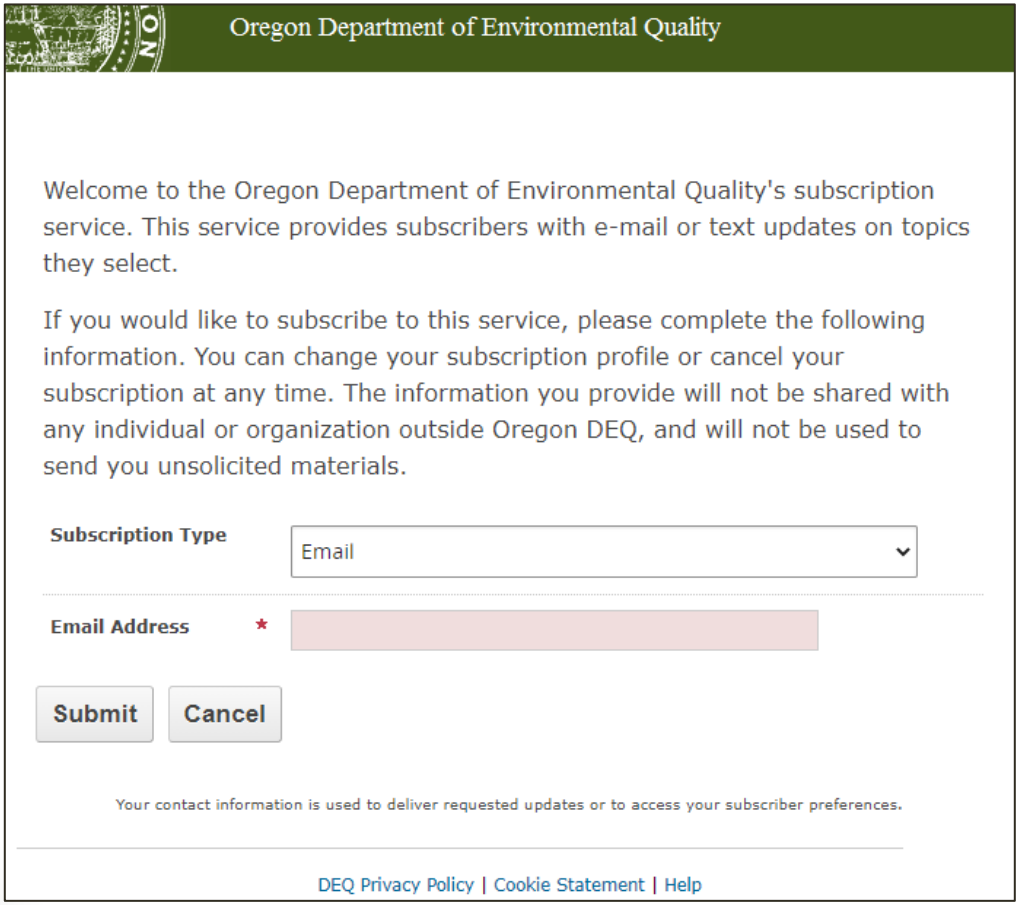


Air Quality Index (AQI) Basics

Air Quality Index Levels of Health Concern	Numerical Value	Meaning
Good	0 to 50	Air quality is considered satisfactory, and air pollution poses little or no risk.
Moderate	51 to 100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	151 to 200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201 to 300	Health alert: everyone may experience more serious health effects.
Hazardous	301 to 500	Health warnings of emergency conditions. The entire population is more likely to be affected.

Note: Values above 500 are considered Beyond the AQI. Follow recommendations for the "Hazardous category." Additional information on reducing exposure to extremely high levels of particle pollution is available here.

DEQ - Subscribe for Updates



- You can sign up with Oregon DEQ to receive email or text updates.

Lincoln Co. Current Conditions

Bookmark Lincoln Current Conditions page on your mobile device

https://www.co.lincoln.or.us/emergencymanagement/page/current-conditions-alerts-and-warnings

Current Conditions (Alerts and Warnings)

Listed in Most Referenced Order:

- Weather Alerts-Warnings (National Weather Service)
- Weather Forecast (National Weather Service)
- River Levels (National Weather Services)
- Road Conditions (ODOT)
- Earthquakes (US Geological Services)
- Tsunamis (National Tsunami Warning Center)
- Fire: Wildfire Map - Federal InciWeb
- Fire: Wildfire Map - Oregon Dept. of Forestry
- Fire: Prescribed Burns-Controlled Burns (Map - State Oregon Dept. of Forestry)
- Air Quality (Oregon Health Authority)
- Tides (National Weather Services)
- Drought - US Drought Monitor - Oregon
- Volcano Activity - Cascades Volcano Observatory
- Weather Alerts to Your Mobile Phone - FEMA Preparedness App/Weather Alerts
- National Weather Service Social Media Page
- 911: When to Call 911 and Local Public Safety Non-Emergency Numbers
- RAPTOR - State of Oregon, Public, Real-time Assessment and Planning Tool for Oregon (RAPTOR)!
- National Terrorism Advisory System (NTAS) - Current Advisories

Section D: Wildfire Smoke and Health Risks

Wildfire Smoke and Your Health

Populations With Increased Risk

Sensitive Groups

- Pre-existing heart and respiratory disease, allergies
- Elderly, infants and children, pregnant women (fetus)
- Healthy subjects can also be affected; some may not

Vulnerable Groups

- Working or living downwind of smoke
- Labored breathing (heavy work, exercise)

Impacts of Wildfire Smoke

- Breathing in smoke can affect you right away, causing:
  - Coughing
  - Trouble breathing
  - Wheezing
  - Asthma attacks
  - Stinging eyes
  - Scratchy throat
  - Runny nose
  - Irritated sinuses
  - Headaches
  - Tiredness
  - Chest pain
  - Fast heartbeat

- Be ready to protect yourself against smoke and ash before, during, and after a wildfire.

Recommendations For Everyone

- **Pay attention to local air quality reports.** Listen and watch for news or health warnings about smoke. Find out if your community provides reports about the Environmental Protection Agency's Air Quality Index (AQI). Also pay attention to public health messages about taking additional safety measures.

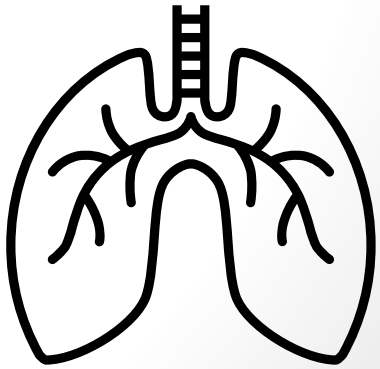
- **Refer to visibility guides if they are available.** Not every community has a monitor that measures the amount of particles that are in the air. In the Western part of the United States, some communities have guidelines to help people estimate the Air Quality Index (AQI) based on how far they can see.

- **If you are advised to stay indoors, keep indoor air as clean as possible.** Keep windows and doors closed unless it is extremely hot outside. Run an air conditioner if you have one but keep the fresh air intake closed and the filter clean to prevent outdoor smoke from getting inside. Running a high efficiency particulate air (HEPA) filter or an electro-static precipitator (ESP) can also help you keep your indoor air clean. If you do not have an air conditioner and it is too warm to stay inside with the windows closed, seek shelter elsewhere.

Recommendations For Everyone

- **Do not add to indoor pollution.** When smoke levels are high, do not use anything that burns, such as candles, fireplaces, or gas stoves. Do not vacuum, because vacuuming stirs up particles already inside your home. Do not smoke, because smoking puts even more pollution into the air.

- **Do not rely on masks for protection.** For more information about effective masks, see the Respirator Fact Sheet provided by CDC's National Institute for Occupational Safety and Health.

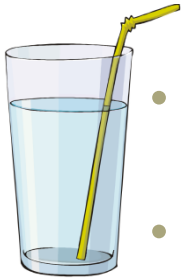


Recommendations for People With Chronic Diseases

- Have an **adequate supply of medication** (more than five days).
- If you have asthma, make sure you **have a written asthma management plan.**
- If you have heart disease, **check with your health care** providers about **precautions** to take during smoke events.
- If you plan to use a **portable air cleaner**, select a high efficiency particulate air (HEPA) filter or an electro-static precipitator (ESP). Buy one that matches the room size specified by the manufacturer.
- Call your health care provider if **your condition gets worse** when you are exposed to smoke.

What can you do?

- **Reduce** time **spent outdoors**
- Reduce time you engage in **vigorous outdoor activity**



- Stay **hydrated.** Drink plenty of water
- **Reduce other sources** of indoor smoke and dust
  - This includes cigarettes, candles, gas, propane and wood burning stoves, and vacuuming
- If you are advised to stay indoors – **Keep indoor air clean**!
  - Close doors and windows
  - Run a HEPA Filter
  - Run an air conditions with the fresh air intake closed and the filter clean
  - If necessary, seek shelter in a location where you can close windows and doors or outside of the impacted area

OHA Resources

- Oregon Health Authority has several resources in *multiple languages* to assist you.

- OHA Fact Sheets and Frequently Asked Questions
  - Hazy, smoky air: Do you know what to do?
  - Wildfire Smoke and Your Health
  - Air Cleaner – How/When to Use
  - Do It Yourself Air Filter
  - Use of Masks

Oregon Health Authority

Frequently asked questions about wildfire smoke and public health

Wildfire smoke

Q: Why is wildfire smoke bad for my health?

A: Wildfire smoke is a mixture of gases and fine particles from burning trees and other plant material. The gases and fine particles can be dangerous if inhaled. In wildfires, carbon monoxide is mainly a risk to people (like firefighters) who work near smoldering areas. Smoke can irritate your eyes and your respiratory system, and worsen chronic heart and lung diseases. The amount and length of smoke exposure, as well as a person's age and degree of susceptibility, play a role in determining if someone will experience smoke-related health problems. If you are experiencing serious medical problems for any reason, seek medical attention immediately.

Q: Why is everyone talking about particulate matter?

A: The particulate matter (also called "PM") in wildfire smoke poses the biggest risk to the public's health. The potential health effects vary based on the type of plants burning, atmospheric conditions and, most importantly, the size of the particles. Particles larger than 10 micrometers usually irritate only the eyes, nose and throat. Fine particles 2.5 micrometers or smaller (PM2.5) can be inhaled into the deepest part of the lungs, and may cause greater health concern.

Health effects of wildfire smoke

Q: Who is most likely to have health effects from wildfire smoke exposure?

A: Smoke may worsen symptoms for people who have pre-existing health conditions and those who are particularly sensitive to air pollution. Sensitive groups include:

- Persons with asthma or other chronic respiratory disease
- Persons with cardiovascular disease
- Persons ≥ 65 years of age
- Infants and children
- Pregnant woman
- Smokers, especially those who have smoked for several years

Oregon Health Authority

FACT SHEET

Air Cleaner

Why you may need an air cleaner

Wildfires, wood stoves, cigarettes and smoke from cooking all contain fine particles from smoke.

When you breathe, these particles can get into the blood stream and cause serious health problems. Some people are more sensitive to the harmful effects of fine particles. These include children and people who have heart disease or chronic lung disease including asthma. People age 65 or over and pregnant women can also be at higher risk.

What to do to decrease health risk from smoke

People in danger of serious health problems from smoke can use an air cleaner at home to decrease their risk. Effective air filters include:

- High efficiency particulate air (HEPA) filters
- Electro-static precipitator (ESP) filters

Is there a DIY filter option?

If a HEPA or ESP filter is not available, you might consider a DIY option.

- You can make a DIY air filter by attaching a furnace filter on a box fan.
- For a DIY filter to be effective, you will need to completely cover the fan's surface with a HEPA or rated MERV-13 or higher.
- Filters 3 to 5 inches thick will last longer than thinner ones.

Keep these safety tips in mind with DIY filters

- It is very important to turn off the filter when you leave the house.
- Turn off and unplug the fan and contact the retailer or manufacturer if you notice a burning smell or unusual noises.
- Make sure your fire and smoke alarms are functional.
- Replace the fan every several years and change filters when dirty or when the manufacturer recommends.

Oregon Health Authority
PUBLIC HEALTH DIVISION
Health Security, Preparedness and Response
Phone: 971-673-1315 | Fax: 971-673-1309
OHA website: http://public.health.oregon.gov/Preparedness/Prepare/Pages/PrepareForWildfire.aspx
OHA Facebook: www.facebook.com/OregonHealthAuthority
OHA Twitter: www.twitter.com/OHAOregon

Document accessibility: For individuals with disabilities or individuals who speak a language other than English, OHA can provide information in alternate formats such as translations, large print, or braille. Contact Mavel Morales at 1-844-882-7889, 711 TTY or OHA.ADAModifications@dhsoha.state.or.us.

Oregon Health Authority

FACT SHEET

Hazy, smoky air: Do you know what to do?

- **Limit your exposure to wildfire smoke.**
- **Reduce time spent outdoors.**
  This can usually provide some protection, especially in a tightly closed, air-conditioned house. Set your A/C to recycle or recirculate, when at home or in your car, to limit your exposure.
- **Reduce time you engage in vigorous outdoor activity.**
  It can be an important, effective way to lower the amount of smoke you are breathing in. It can minimize health risks during a smoke event.
- **Stay hydrated. Drink plenty of water.**
- **Reduce other sources of indoor smoke and dust.**
  These can be burning cigarettes, candles, gas, propane and wood burning stoves and furnaces, and vacuuming.
- **Check current air quality conditions.**
  Go to http://oregonsmoke.blogspot.com/ to find the current air quality.
- **If you have heart or lung disease or respiratory illnesses such as asthma,** follow your health care provider's advice about prevention and treatment of symptoms.

Oregon Health Authority
PUBLIC HEALTH DIVISION
Health Security, Preparedness and Response
Phone: 971-673-1315
Fax: 971-673-1309
OHA website: http://public.health.oregon.gov/Preparedness/Prepare/Pages/PrepareForWildfire.aspx
OHA Facebook: www.facebook.com/OregonHealthAuthority
OHA Twitter: www.twitter.com/OHAOregon

You can get this document in other languages, large print, braille or a format you prefer. Contact Health Security, Preparedness and Response at 971-673-1315 or email health.security@state.or.us. We accept all relay calls or you can dial 711.

OHA 8622 (6/17)

Mask Guidelines

Oregon Health Authority
PUBLIC HEALTH DIVISION

Oregon OSHA

Statement from Oregon OSHA and OHA on N95, KN95, and P100 masks

People who must be outdoors may be considering the use of masks to help protect their lungs from wildfire smoke. Masks can create a false sense of security if not properly selected, fitted and used. There are a few things you should know if you are considering the use of a mask:

- Review these guidelines from OHA/OSHA regarding masks during smoke conditions.

Section E: Wildfire Smoke and Animals

Wildfire Smoke and Animals

- As irritating as smoke can be to people**, it can cause health problems for animals as well.** Smoke from wildfires and other large blazes affects pets, horses, livestock and wildlife. If you can see or feel the effects of smoke yourself, you also should take precautions to keep your animals – both pets and livestock – safe.

- Animals with cardiovascular or respiratory disease are especially at risk from smoke and should be closely watched during all periods of poor air quality. Look for the following signs of possible smoke or dust irritation in animals. **If any of your animals are experiencing any of these signs, please consult your veterinarian.**
  - Coughing or gagging
  - Difficulty breathing, including open mouth breathing and increased noise when breathing
  - Eye irritation and excessive watering
  - Inflammation of throat or mouth
  - Nasal discharge
  - Asthma-like symptoms
  - Increased breathing rate
  - Fatigue or weakness
  - Disorientation or stumbling
  - Reduced appetite and/or thirst

Wildfire Smoke and Animals

- **Tips to protect pets**
  - Keep **pets indoors** as much as possible, and keep your windows shut.
  - **Birds** are particularly susceptible and should **not be allowed outside** when smoke or particulate matter are present.
  - Let dogs and cats outside only for **brief bathroom breaks** if air quality alerts are in effect.
  - Avoid intense **outdoor exercise** during periods of poor air quality. Exercise pets when dust and smoke has settled.
  - Have a pet evacuation kit ready and include your animals in your disaster preparedness planning.

Wildfire Smoke and Animals

- **Tips to protect livestock**
  - **Limit exercise when smoke is visible**. Especially don't require animals to perform activities that substantively increase airflow into and out of the lungs.
  - Provide plenty of **fresh water** near feeding areas.
  - **Limit dust exposure** by feeding low-dust or dust-free feeds and sprinkling or misting the livestock holding area.
  - Plan to give livestock **4 to 6 weeks to recuperate** after the air quality returns to normal. Attempting to handle, move, or transport livestock may delay healing and compromise your animals' performance.
  - Have a livestock evacuation plan ready in advance. If you don't have enough trailers to quickly transport all of your animals, contact neighbors, local haulers, farmers, producers, or other transportation providers to establish a network of reliable resources that can provide transportation in the event you need to evacuate your animals.
  - **Good barn and field maintenance** can reduce fire danger for horses and other livestock. Make sure barns and other structures are stable, promptly remove dead trees, clear away brush, and maintain a defensible space around structures.

Section F:
Additional Resources

Additional Resources

- Lincoln County:
  - Lincoln Alerts
  - Seasonal - Wildfire Readiness Information
  - Active Wildfires – Lincoln County
  - Current Conditions (all weather conditions)
  - When to Call 911 and Public Safety Agency Contact Info
- State – Oregon:
  - Keep Oregon Green
  - Oregon State University Extension Service - Wildfire Wednesdays
  - Oregon State Fire Marshall's Office – Wildland Urban Interface
  - Oregon Department of Forestry – Fire Prevention
  - Oregon Health Authority – Prepare for Wildfire/Reducing Health Effects of Wildfire Smoke
  - Oregon Emergency Management – Oregon Wildfire Response
- State – California:
  - Ready for Wildfire
- Federal/National:
  - Ready.Gov
  - National Fire Protection Agency – Wildfire Community Preparedness Day
  - American Red Cross

Section G:

Questions

Contact Information
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Emergency Manager
Lincoln County Sheriff's Office
(541) 265-4199
vdemaris@co.lincoln.or.us
County EM Website

Public Health
Prevent. Promote. Protect.
Lincoln County