Answering the Burning Questions
Stoking Wildfire Preparedness with Community Partnerships

Photo: Associated Press
The 2017 Eagle Creek Fire

**Sept 2 – Nov 30 2017**

- Started from a misuse of fireworks

- **Sept 4 - 6**
  - Worst air quality days for the Portland metro area
  - ~50,000 acres burned
  - 13+ hiking trails

- Negative impact on business in the Gorge

- 3 weeks: Sections of I-84 closed
- 3 months: Multnomah Falls Lodge shut down

Negative impact on business in the Gorge
Wildfire and Public Health

Health effects of exposure to wildfire smoke:

- Exacerbations of asthma and COPD
- Possible association with cardiovascular events
- Growing evidence suggests associated with respiratory infections and all-cause mortality

More research is needed:

- Mental health effects
- Perinatal effects
- Vulnerable subpopulations (children, elderly, pregnant women, homeless, agricultural and construction workers, etc.)
- All-cause mortality
HUMAN HAIR
50-70 μm
(microns) in diameter

PM$_{2.5}$
Combustion particles, organic compounds, metals, etc.
< 2.5 μm (microns) in diameter

PM$_{10}$
Dust, pollen, mold, etc.
< 10 μm (microns) in diameter

90 μm (microns) in diameter
FINE BEACH SAND
Eagle Creek Fire – Study Findings

Significant correlation: PM2.5 levels & asthma ED visits

Stronger positive correlation during known wildfire event

Photo: The Columbia
Next Steps

Interagency collaboration

• Regional, national wildfire workgroups

Resource development

• Tools to better measure hospital visits associated with poor air quality
• Guidance for schools
• Resources for healthcare facilities
• Communications templates and materials

Assessment of impact on vulnerable populations

• Age groups
• Homeless
• People living with chronic health conditions
• Outdoor employment
• Pregnant women
Community partnerships
Washington clean air agencies
Clark County air monitors
Vancouver air
Air quality forecasting and advisories

Forecasting
Washington State University (WSU)  
Forecasts

United States Forest Service (USFS)  
BlueSky Daily Runs

High Resolution Rapid Refresh (HRRR) Smoke  
Pacific Northwest air quality forecast

National Oceanic & Atmospheric Administration (NOAA)  
1Hr Average Surface Smoke

Canada's Wildfire Smoke Prediction System (Firework)  
FireWork daily model runs
Communication and outreach
Identified need for communication resources and statewide coordination around wildfire smoke impacts.

Wildfire Smoke Impacts Advisory Group created in 2018

- 27 members

Three workgroups created to address three priorities for 2019 wildfire season:

<table>
<thead>
<tr>
<th>Communication workgroup</th>
<th>Closures workgroup</th>
<th>Sensors workgroup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop custom toolkit for local outreach and communication</td>
<td>Develop guidance for school and outdoor event closures</td>
<td>Develop guidance for low-cost sensors to use for health decisions</td>
</tr>
</tbody>
</table>
Target audiences

- general public
- health care providers
- school officials and nurses
- child care providers
- facility managers for outdoor camps/athletic activities
- long-term care and assisted living facilities
- public event planners
Messages and resources

General public

*Wildfire smoke can be harmful to health. Prepare ahead of time to minimize exposure to smoke.*

- Know how to access forecast and real-time air quality information
- Know how to prepare yourself and family for wildfire smoke
  - Cleaner-air rooms; AC to recirculate; HEPA filter; N95 masks, if appropriate; proactive in managing symptoms, particularly those with medical conditions
- Plan alternatives for family activities
  - Indoor exercise options; summer camp alternatives; medical response plan
Know the symptoms

Exposure to smoke from fires can cause or worsen health problems. **KNOW THE SYMPTOMS**

If you have a **health condition**, smoke from fires may worsen your symptoms. When smoke levels are high, even healthy people can have symptoms or health problems.

Symptoms can range from minor irritations to life-threatening complications, including:

- sore throat
- headaches
- burning eyes
- coughing
- wheezing
- shortness of breath
- chest pain

**Health conditions can include:**
- Asthma
- COPD
- Diabetes
- Heart or lung diseases
- Respiratory illnesses
- Colds
- Strokes survivors
Real-time air quality

Washington Department of Ecology
www.ecology.wa.gov/WAQA

Southwest Clean Air Agency
www.swcleanair.org
Communication and outreach

June 28, 2019

Contact: Marissa Armstrong, communications specialist, Public Health 564.397.7307, marissa.armstrong@clark.wa.gov

Prepare now for wildfire smoke, unhealthy air quality

Vancouver, Wash. – With the warming weather and dry conditions, wildfire season is heating up. Clark County Public Health officials are urging residents to take steps now to prepare for unhealthy air quality.

Breathing smoke from wildfires isn’t healthy for anyone, but some people are more at risk of problems when the air quality isn’t good. People at risk for problems include children and adults older than 65, people with heart and lung diseases, people with respiratory problems, and pregnant women and people who smoke.

The best way to protect your health when the air is smoky is to limit time outdoors and stay indoors. This is especially important for people at risk for health problems when air quality is poor.

Here are some steps to take now, before air quality worsens from wildfire smoke:

- Know where to find information about local air quality. The Washington State Department of Ecology’s Air Quality Monitoring website has a map of air quality stations that color-code categories to report when air quality is good, moderate or unhealthful. Southwest Clean Air Agency has current air quality information for Clark County and may issue advisories when poor air quality is forecast.

Who is most sensitive to wildfire smoke?

- Babies & Children
- People Over Age 65
- People with Heart Conditions
- Pregnant Women

Stay indoors and keep indoor air clean. Concerns? Contact your healthcare provider.

Clark County Public Health
Published by Marissa Armstrong 7/11: 12:30 PM

Breathing smoke from wildfires isn’t healthy for anyone, but some people are more likely to have problems when air quality isn’t good. If you or a family member has heart or lung disease (including asthma), talk to your doctor about precautions to take when air quality is unhealthy. Make sure you have the necessary medications, and ask your doctor how to manage symptoms and when to seek medical care.

Clark County Public Health
Published by Marissa Armstrong 7/11: 12:30 PM

The Washington State Department of Ecology’s Air Quality Monitoring website, where you can find a map of current air quality across the state, has seen the warnings about the potential for a bad wildfire season. How to prepare for days with poor air quality?

Check the Washington State Department of Ecology’s Air Quality Monitoring website, where you can find a map of current air quality across the state. Use the map before going to outdoor events or heading out of town for a trip and prepare to adjust plans if air quality isn’t good.
Messages and resources

K-12 schools

*Wildfire smoke can be harmful to health. Prepare teachers, parents and students ahead of time to minimize exposure to smoke. Talk to teachers, parents and students about managing symptoms.*

- Know how to access forecast and real-time air quality information.
- Know how air quality could impact school activities.
- Adapt alternative plan for recess/outdoor school activities impacted by smoke.
- Identify and take steps to improve indoor air quality
## Messages and resources

### Air Pollution and School Activities

*Public Health Recommendations for Schools on Fine Particle Air Pollution*

<table>
<thead>
<tr>
<th>Air Quality Conditions*</th>
<th>Good</th>
<th>Moderate</th>
<th>Unhealthy for Sensitive Groups</th>
<th>Unhealthy</th>
<th>Very Unhealthy/Hazardous</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recess</strong> (15 minutes)</td>
<td>No restrictions. Allow students with asthma, respiratory infection, lung or heart disease to stay indoors.</td>
<td>Keep students with asthma, respiratory infection, lung or heart disease indoors.</td>
<td>Keep all students indoors and keep activity levels light.</td>
<td>Keep all students indoors and keep activity levels light.</td>
<td></td>
</tr>
<tr>
<td><strong>P.E.</strong> (1 hour)</td>
<td>No restrictions. Monitor students with asthma, respiratory infection, lung or heart disease, increase rest periods or substitutions for those students as needed.</td>
<td>Keep students with asthma, respiratory infection, lung or heart disease, and diabetes indoors. Limit these students to moderate activities.</td>
<td>Conduct P.E. indoors. Limit students to light indoor activities.</td>
<td>Keep all students indoors and keep activity levels light.</td>
<td></td>
</tr>
<tr>
<td><strong>Athletic Events and Practices</strong> (Vigorous activity 2-3 hours)</td>
<td>No restrictions. Monitor students with asthma, respiratory infection, lung or heart disease, increase rest periods and substitutions for those students as needed.</td>
<td>Students with asthma, respiratory infection, lung and heart disease, or conditions like diabetes shouldn’t play outdoors.</td>
<td>Consider moving events indoors. If events are not canceled, increase rest periods and substitutions to allow for lower breathing rates.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**CLARK COUNTY WASHINGTON PUBLIC HEALTH**

1601 E Fourth Plain Blvd, Bldg 17
PO Box 9825
Vancouver, WA 98666-8825
360.397.8000

**June 2019**

Hello superintendents, principals and school health care teams,

Wildfire season is fast approaching! Smoke from wildfires impacts local air quality and can impact the health of students and faculty. Children are especially sensitive to smoke pollution because their lungs and airways are still developing, and they breathe more air per pound of body weight than adults.

We’ve compiled the following resources to help you prepare now to minimize student and faculty exposure to wildfire smoke.

**Know how and where to access air quality and health information**

- [Washington Air Quality Advisory graphic](#): Graphic explaining the various air quality categories – good, moderate, unhealthy and hazardous – and populations most sensitive to wildfire smoke.
- [Department of Ecology’s Washington Air Quality Monitoring Network](#): Webpage with interactive map and real-time air quality information.

**Understand how air quality will impact students and faculty.** Educate teachers, parents, and students about managing physical and mental symptoms when the air is smoky.

- [Washington Department of Health: Smoke from Fires](#): Comprehensive webpages with frequently asked questions about wildfire smoke. You should be able to find the answer to most questions and links to other resources.
During wildfire season

**LIMIT OUTDOOR ACTIVITY WHEN AIR QUALITY IS POOR**

**KEEP INDOOR AIR CLEAN**
- Close windows
- Use A/C if possible
- Consider air purifiers
- Don’t use candles or a vacuum

**CONCERNS? CONTACT YOUR HEALTHCARE PROVIDER**
Closure recommendations

Outdoor public events

- **Very unhealthy for everyone:** Health officer consider recommending cancelation
- **Hazardous for everyone:** Health officer strongly recommend cancelation
- Consider other factors (number of days of poor air quality, air quality forecast, temperature, economic impacts)

Schools

- **Very unhealthy for everyone (indoors):** Health officer may consider recommending school closure.
- Consider other factors (number of days of poor air quality, attempts to improve indoor air quality, air quality in other indoor locations, economic impacts for parents missing work, safe to walk to school)
Contact Information

Kathleen Lovgren, MPH
Epidemiologist
Clark County Public Health
p: 564.397.8491
e: kathleen.lovgren@clark.wa.gov

Madison Riethman, MPH, CPH
Epidemiologist
Clark County Public Health
p: 564.397.8242
e: madison.riethman@clark.wa.gov

Marissa Armstrong
Public Information Officer
Clark County Public Health
p: 564.397.7307
e: marissa.armstrong@clark.wa.gov

Uri Papish
Executive Director
Southwest Clean Air Agency
p: 360.574.3058 ext. 112
e: uri@swcleanair.org