Oregon Wildfire Response Protocol for Severe Smoke Episodes

June 11, 2019

The following agencies collaborated on this guidance document:

Oregon Department of Environmental Quality
Lane Regional Air Pollution Authority
Oregon Health Authority
Oregon Occupational Safety and Health Administration
Oregon Emergency Management
Oregon Department of Forestry
U.S. Forest Service
Bureau of Land Management

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Carolyn Kelly and Nicole Bringolf
USFS

Based on an agreement between the participating agencies, the original version of this multi-agency document is maintained by DEQ. All parties may collaborate on updates.
<table>
<thead>
<tr>
<th>Revision History</th>
<th>Date</th>
<th>Revision Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version 1.0</td>
<td>May 28, 2013</td>
<td>Protocol developed</td>
</tr>
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<td>Version 1.1</td>
<td>Aug. 27, 2013</td>
<td>Agencies added, contact list updated</td>
</tr>
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<td>June 3, 2014</td>
<td>Revised Table 4 recommended health actions, changed Visibility Index to the 5-3-1 Visibility Index, added Wildfire Communications Plan section, added Indoor Air Monitoring section, added 211info Service information, updated contact list, added out-of-state contact list</td>
</tr>
<tr>
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<td>June 16, 2015 –</td>
<td>Updated contact list, added conference call info, checked and updated all website links, updated appendices and added Appendix C and D, various corrections</td>
</tr>
<tr>
<td>Version 5.2</td>
<td>June 29, 2017</td>
<td></td>
</tr>
<tr>
<td>Version 5.3</td>
<td>June 28, 2018</td>
<td>Updated links, contacts, and information involving DEQ’s upgraded AQI, use of EPA AirNow system to guide public health</td>
</tr>
<tr>
<td>Version 6</td>
<td>June 7th, 2019</td>
<td>Updated links, photographs, revised the call agenda, minor edits and corrections</td>
</tr>
</tbody>
</table>

**Alternative formats**

DEQ can provide documents in an alternate format or in a language other than English upon request. Call DEQ at 800-452-4011 or email deqinfo@deq.state.or.us.
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1. Purpose

This protocol is intended to provide guidance for the state and federal agencies in Oregon who respond to severe smoke episodes caused by large or long-duration wildfires, to ensure a coordinated response in order to mitigate impacts on public health. This protocol also identifies other organizations, partners, and other governmental entities (county, city, and tribal) that state and federal responders need to coordinate with during these episodes. For all parties, it highlights general duties and responsibilities, provides examples of agency actions and assistance needed, desired outcomes, and recommended public health actions based on the level and duration of smoke exposure. This protocol is focused specifically on air quality impacts. This protocol is intended to guide the use of resources in response to air quality due to major wildfires. It does not replace, interfere with, or limit any action taken by a public agency in the course of performing its official duties.

2. Participating Agencies and Organizations

This protocol is used by, but is not limited to the following agencies, organizations and offices:

Table 1

<table>
<thead>
<tr>
<th>AGENCY OR ORGANIZATION</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Federal</strong></td>
<td></td>
</tr>
<tr>
<td>3. Environmental Protection Agency</td>
<td>Region 10 office in Seattle</td>
</tr>
<tr>
<td>4. National Weather Service</td>
<td>Boise, Medford, Portland and Pendleton offices</td>
</tr>
<tr>
<td><strong>Tribal</strong></td>
<td></td>
</tr>
<tr>
<td>5. Tribal Government</td>
<td>Any tribal lands affected by wildfire smoke. See Appendix A for contact information.</td>
</tr>
<tr>
<td><strong>National</strong></td>
<td></td>
</tr>
<tr>
<td>6. Air Resource Advisor</td>
<td>Wildland Fire Air Quality Response Program and as assigned to major wildfires in Oregon</td>
</tr>
<tr>
<td>7. American Red Cross</td>
<td>Five regional offices in Oregon</td>
</tr>
<tr>
<td><strong>State</strong></td>
<td></td>
</tr>
<tr>
<td>8. Oregon Department of Environmental Quality</td>
<td>DEQ Regional Offices and Headquarters in Portland</td>
</tr>
<tr>
<td>9. Oregon Health Authority</td>
<td>Public Health Division in Portland</td>
</tr>
<tr>
<td>10. Oregon Emergency Management</td>
<td>Offices in Salem</td>
</tr>
<tr>
<td>11. Oregon Occupational Safety and Health Administration</td>
<td>OR-OSHA Headquarters in Salem, field offices around the state.</td>
</tr>
<tr>
<td>12. Oregon Department of Forestry</td>
<td>Offices in Salem</td>
</tr>
<tr>
<td>13. State Fire Marshal</td>
<td>Offices in Salem</td>
</tr>
</tbody>
</table>
3. Agency areas of expertise and involvement

Table 2 identifies the general areas of expertise of each agency or organization, as an indication of the assistance that would be provided and the level of involvement anticipated. While the level of involvement is relative to the severity of the wildfire smoke and the effect on air quality, some agencies would be expected to play more of a lead role, requiring more frequent daily communication and coordination, while other agencies would have a lesser role and would be involved on an as-needed basis.

<table>
<thead>
<tr>
<th>CONTACT AGENCY</th>
<th>General area of expertise/assistance</th>
<th>Anticipated level of involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Federal Land Managers (U.S. Forest Service and BLM)</td>
<td>Wildfire suppression/containment, ensure incident management team is on the ground; provide wildfire status updates, and public outreach/coordination.</td>
<td>Extensive – depends on size of fire, often the lead agency</td>
</tr>
<tr>
<td>2. FEMA</td>
<td>Federal response agency for natural disasters</td>
<td>Low -- Unless smoke levels and fire danger pose an extreme threat.</td>
</tr>
<tr>
<td>3. EPA Region 10</td>
<td>Coordination with tribes, related to air quality on tribal lands/reservations</td>
<td>Depends on the extent wildfire smoke is affecting tribal lands/reservations.</td>
</tr>
<tr>
<td>4. National Weather Service</td>
<td>Coordinates with federal, state and tribal governments in the Pacific Northwest Area (Oregon, Washington, Idaho) as it relates to weather</td>
<td>Disseminates air quality alerts on public websites, social media and other NWS communication systems</td>
</tr>
<tr>
<td>National</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Air Resource Advisor—reports to Incident Command and/or Agency Administrator</td>
<td>Technical specialist who works with Incident Command Team during major wildfires and has expertise in air quality monitoring and modeling, and addressing public health, transportation safety, firefighter safety</td>
<td>Extensive – these positions provide assistance during incidents, and facilitate state response to air quality smoke impacts from major wildfires</td>
</tr>
<tr>
<td>CONTACT AGENCY</td>
<td>General area of expertise/assistance</td>
<td>Anticipated level of involvement</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>6. American Red Cross</td>
<td>Provides aid and assistance for natural disasters, mass care support for sheltering, feeding and distributing relief supplies</td>
<td>Depends on severity of smoke impact and risk to public health</td>
</tr>
<tr>
<td>7. 211info</td>
<td>Provides a statewide “go-to public phone number” for health information about wildfire smoke impacts</td>
<td>Depends on severity of smoke impact and risk to public health</td>
</tr>
<tr>
<td><strong>Tribal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Tribal Government</td>
<td>Coordinate with other agencies and national partners to determine health risk from smoke, need to cancel outdoor events, tribal safety issues, and notify local businesses. Share information with community about health effects, mitigation, strategies, and notify public and media of health risks from smoke.</td>
<td>Can be high if wildfire impact is severe.</td>
</tr>
<tr>
<td><strong>State</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. DEQ</td>
<td>Monitors air quality in the state*, determining if health standards are being exceeded, identifying areas at greatest risk, public/media outreach and coordination with Federal Land Managers, OHA, county health departments, others as needed (*except Lane Co. see LRAPA)</td>
<td>Extensive during periods of elevated smoke levels</td>
</tr>
<tr>
<td>10. OHA</td>
<td>Advises state, federal, tribal, and local authorities on health risk from smoke and potential public health interventions to mitigate it. Assists DEQ, Oregon OSHA, and local health departments in communication and outreach. Assess health impacts as indicated by the situation.</td>
<td>Depends on severity and extent to which local health officials need assistance, or whether a local health authority has primary jurisdiction in the affected areas</td>
</tr>
<tr>
<td>11. Oregon Military Department, OEM</td>
<td>Coordinates and facilitates emergency planning, with state emergency support function, and local emergency services agencies and organizations</td>
<td>Depends on severity and specific requests by local emergency management agencies for state assets. High involvement if Governor declares state of emergency.</td>
</tr>
<tr>
<td>CONTACT AGENCY</td>
<td>General area of expertise/assistance</td>
<td>Anticipated level of involvement</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>12. Oregon OSHA</td>
<td>Address health and safety, of workers and state/private firefighters, through enforcement and/or consultation. Can assist in evaluating air quality concerns.</td>
<td>Depends on severity and specific requests for worker protection</td>
</tr>
<tr>
<td>13. ODF</td>
<td>Provides wildfire smoke forecasts when needed throughout the state. (If fire on state forest lands, ODF is lead response agency, similar to No. 1 above.)</td>
<td>Primarily providing daily smoke forecasts</td>
</tr>
<tr>
<td>14. State Fire Marshal</td>
<td>Lead agency for response to structural protection for Conflagrations in Wildland Urban Interface Fires. Coordinates the same as ODF to provide the Incident Management Team (IMT) updates as needed to required agencies.</td>
<td>Primary response to fire danger and suppression, less on smoke risk</td>
</tr>
<tr>
<td>15. ODOT</td>
<td>Provides safety information for roads and possible closures, travel hazards. Provides traffic management where needed.</td>
<td>Provides safety updates on calls and provides similar information for the smoke blog.</td>
</tr>
<tr>
<td>16. Oregon Governor’s Office</td>
<td>Coordinate with multiple agencies, especially if Governor declares a state of emergency</td>
<td>Update on as-needed basis, unless state of emergency is declared</td>
</tr>
<tr>
<td>17. Governor’s Office, Regional Solution Centers</td>
<td>Coordinate with multiple agencies, especially if Governor declares a state of emergency</td>
<td>Update on as-needed basis, unless state of emergency is declared</td>
</tr>
</tbody>
</table>

**Local**

<table>
<thead>
<tr>
<th>CONTACT AGENCY</th>
<th>General area of expertise/assistance</th>
<th>Anticipated level of involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>18. Local Public Health Authorities</td>
<td>Notify public and media of health risk from smoke. Coordinate with DEQ, OHA, FLMs and OR-OSHA determining health risk to community.</td>
<td>Extensive during periods of unhealthy to hazardous smoke levels.</td>
</tr>
<tr>
<td>19. School Districts</td>
<td>With assistance, determine if student health is at risk, the need to cancel school events or announce school closures</td>
<td>On as-needed basis during periods of unhealthy to hazardous smoke levels</td>
</tr>
<tr>
<td>20. City and local government</td>
<td>With assistance help coordinate public safety, need to cancel outdoor events, notify local businesses, alert fire and police to the health risks.</td>
<td>On as-needed basis during periods of unhealthy to hazardous smoke levels</td>
</tr>
</tbody>
</table>
4. Agency actions and desired outcome

Table 3 describes the different actions and assistance needed during major wildfires, the agency or organization expected to take such action and the desired outcome.

<table>
<thead>
<tr>
<th>ACTION NEEDED</th>
<th>Lead agency and action taken</th>
<th>Desired Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Air Monitoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring ambient air quality</td>
<td>Mostly DEQ as lead agency. Air Resource Advisors (ARA) may provide additional monitoring equipment via national cache resources and assist in deployment and data collection.</td>
<td>Ability to track ambient air quality levels in communities receiving the heaviest impact, and identify smoke-free areas where air quality is good</td>
</tr>
<tr>
<td>Indoor air quality exposure</td>
<td>Oregon OSHA is lead agency to evaluate air quality concerns for workers. DEQ and OHA can provide advice to schools.</td>
<td>Ability to monitor indoor smoke levels in work environments and schools</td>
</tr>
<tr>
<td>2. Smoke Forecasting and Modeling</td>
<td>Smoke weather forecast ODF is the lead agency, with back-up and assistance from NWS Meteorologists as requested. DEQ assists in coordination. National Weather Service can be contacted to provide “spot weather forecasts” for wildfire.</td>
<td>Provide advance notice of possible smoke movement and impacts, improve public notification, lower risk of public exposure to high smoke levels</td>
</tr>
<tr>
<td>Smoke modeling</td>
<td>ARAs can provide smoke modeling forecasts if requested.</td>
<td>Complementary to above</td>
</tr>
<tr>
<td>3. Issuing Health Warnings</td>
<td>Coordination between the Incident Management Team, DEQ, ARA, OHA, tribes, local public health authorities, local government, and 211info. Assistance from federal land managers on fire status, and from ODF wildfire forecasting.</td>
<td>Frequent coordinated updates provided to the public via Oregon Smoke Blog, DEQ, OHA, local government websites, press releases and media outreach. 211info is provided with up-to-date health-related information.</td>
</tr>
<tr>
<td>4. Website management</td>
<td>Blog initiated by federal land managers or DEQ, and updated by DEQ Public Affairs who will act as a “gate keeper” to avoid duplicative messaging and crowding of the smoke blog.</td>
<td>Provide the public with comprehensive “one-stop” website/social media on wildfire status, air quality levels, health risk, cleaner air spaces, press releases and other critical info.</td>
</tr>
<tr>
<td>ACTION NEEDED</td>
<td>Lead agency and action taken</td>
<td>Desired Outcome</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Updating DEQ, OHA, ODF and local websites</td>
<td>Managed by respective agency. Supplements the Oregon Smoke Blog website.</td>
<td>Complements the above website.</td>
</tr>
</tbody>
</table>

### 5. Public Actions

| Cancel or modify public events, outdoor and business activities | Decision made within affected jurisdiction, by **local or city government or tribal health authorities** in consultation with local health authorities, and as needed, DEQ, ARA, OHA, federal land managers, and possibly OR-OSHA. | Prompt action taken, via notification of media, 211info, and posting info on Oregon Smoke Blog and other websites |
| Consult with schools on limited hours or closure. Decisions about protecting schools or other public buildings from smoke intrusion | Decision made within affected jurisdiction, by **local authority or tribal health authorities, or city government** in consultation with DEQ, ARA, local public health, OHA, or OR-OSHA as needed. | Identification of measures to protect schools and users of public buildings from smoke |
| Set up general population shelters | **Red Cross** may support the setup and management of general population shelters based on decisions by local health officials. | When determined necessary, general population shelters will be established and opened in coordination with local public health and emergency management. |
| Establish or identify public cleaner air spaces | Decisions made within affected jurisdiction, by **local or tribal health authorities** in consultation with DEQ, ARA OHA, or OR-OSHA as needed. | When determined necessary, prompt action taken to set up or identify cleaner air spaces, using guidance for “Identification of Cleaner Air Spaces for Protection from Wildfire Smoke” [https://www.oregon.gov/oha/PH/PREPAREDNESS/PREPARE/Documents/IdentificationOfCleanAirShelters.pdf](https://www.oregon.gov/oha/PH/PREPAREDNESS/PREPARE/Documents/IdentificationOfCleanAirShelters.pdf) |
| Recommended evacuation/relocation of sensitive populations or populations in general | Decision made at local level, by health officials and tribal/local government (Sheriff or local emergency management), OEM, in consultation with DEQ, ARA, OHA, federal land managers and possibly OR-OSHA. | Prompt action taken if dangerous smoke levels are expected to persist for a prolonged period. Requires close communication with DEQ, OHA, federal land managers, OEM, OR-OSHA, 211info, and possibly Red Cross, State Fire Marshal and State Police. |
5. Recommended Public Health Actions, based on level and anticipated duration of smoke exposure

Wildfire smoke is a mixture of gases and fine particles that can irritate eyes and respiratory systems, and worsen chronic heart and respiratory diseases. The quantity and duration of smoke exposure, as well as a person’s age and degree of susceptibility, play a role in determining whether or not someone will experience smoke-related health problems. Persons with pre-existing health conditions such as asthma or other chronic respiratory conditions and cardiovascular disease, people older than 65 years of age, infants and children, pregnant women, and smokers are particularly sensitive to smoke.

Particulate matter in smoke poses the greatest risk to public health. The potential health effects vary depending on the size of the particles and composition of the smoke. Particles larger than 10 micrometers usually irritate only the eyes, nose and throat. Particles smaller than 2.5 micrometers (PM$_{2.5}$) can be inhaled deeply into the lungs and enter the bloodstream, increasing the risk of cardiovascular and respiratory problems. When smoke levels are high, even healthy people may experience symptoms.

Table 4 is designed for use by affected jurisdictions in consultation with the Oregon Department of Environmental Quality, Oregon Health Authority and other agencies that are parties to this protocol. The table identifies recommended public health actions to be taken, based on the intensity and expected duration of smoke exposure. The Air Quality Index levels in the table are based on the U.S. Environmental Protection Agency’s NowCast method and integrated into the AirNow network. They take into account the levels of key air pollutants over the prior 12 hours, as well as the most recent trends. Decisions about which public health actions to recommend would be based on monitoring data and the projected smoke duration. The duration of smoke exposure noted in the table uses a cut-off of twenty-four hours as the basis for two sets of recommended health actions. This is because there is some evidence that sheltering-in-place (staying indoors with windows and doors closed) offers some protection in the first 24 hours, but there is minimal evidence for benefit beyond that.

Recommendations in Table 4 are cumulative. For each level and duration of exposure, unless the listed actions supersede previous ones, the recommendations above and to the left still apply.

In the absence of any PM$_{2.5}$ monitoring data, a visual evaluation can be made by using the visibility index (based on the viewing distance) in the column next to the Air Quality Index category. This index is referred to as the “5-3-1 Visibility Index” for estimating smoke levels, as described further below Table 4. Both the Air Quality Index category and 5-3-1 Visibility Index are intended to be used together to identify the public health risk and mitigation actions.
# Table 4

<table>
<thead>
<tr>
<th>Air Quality Index Category</th>
<th>5-3-1 Visibility Index&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Projected Smoke Exposure under 24 hours</th>
<th>Projected Smoke Exposure over 24 Hours</th>
</tr>
</thead>
</table>
| **Good/Green (0-50)**      | > 5 Miles with no noticeable haze in the air | • If smoke event is forecast in your area we suggest reviewing any of the following: review this Protocol, the Crisis and Emergency Risk Communication Toolkit for Wildfires<sup>2</sup>, Frequently Asked Questions about Wildfire Smoke and Public Health document, and more health tips on the Oregon Public Health Division webpage.<sup>2</sup>  
  • The Oregon Smoke Blog has information about the latest air quality and other wildfire information: [http://oregonsmoke.blogspot.com](http://oregonsmoke.blogspot.com) | |
| **Moderate/Yellow (51-100)** | 5-15 Miles with noticeable haze in the air | • Distribute information (i.e., FAQs<sup>2</sup>) to public health partners and the public  
  • Identify and provide information to vulnerable populations  
  • Refer people to Oregon Smoke Blog for more information  
  • Recommend sensitive groups use an air cleaner at home during wildfires<sup>2</sup>  
  | Follow recommended actions to the left and above, plus:  
  • Respond to media inquiries. (Use the Crisis and Emergency Risk Communication toolkit<sup>2</sup> for guidance) |
| **Unhealthy for Sensitive Groups/Orange (101-150)** | 3-5 Miles | Above, plus:  
  • Issue a press release, outlining sensitive groups and encouraging them to reduce exposure. (Use the Crisis and Emergency Risk Communication toolkit and FAQs<sup>2</sup> document for guidance.)  
  • If school is in session or an outdoor function with children is or will occur, refer to *Public Health Guidance for School Outdoor Activities during Wildfire Events*<sup>2</sup> [https://apps.state.or.us/Forms/Served/le8815h.pdf](https://apps.state.or.us/Forms/Served/le8815h.pdf) | Follow recommended actions to the left and above, plus:  
  • In the release, include consideration of sensitive groups leaving area until air quality improves or if that is not feasible, using an air cleaner at home<sup>3</sup> or spending time in a cleaner-air space in the community (e.g., air-conditioned library)  
  • Consider opening cleaner-air spaces for sensitive groups |
<table>
<thead>
<tr>
<th>Air Quality Index Category</th>
<th>5-3-1 Visibility Index</th>
<th>Projected Smoke Exposure under 24 hours</th>
<th>Projected Smoke Exposure over 24 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unhealthy/Red (151-200)</td>
<td>1-3 Miles</td>
<td>Above, plus:</td>
<td>Follow recommended actions to the left and above, plus:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Consider cancelling public events held outdoors</td>
<td>• Consider opening and publicizing cleaner-air spaces for sensitive groups</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Recommend public limit strenuous outdoor activities</td>
<td>• Review health benefits for sensitive groups of leaving area until air quality improves, and that intermittent time in cleaner-air spaces or sheltering in-place might not be as protective</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Recommend that sensitive groups consider leaving area until air quality improves. If they can’t, recommend spending time in a cleaner-air space in the community (i.e., air conditioned library) or sheltering in place at home</td>
<td></td>
</tr>
<tr>
<td>Very Unhealthy/ Purple (201-300)</td>
<td>1 Mile</td>
<td>Above, plus:</td>
<td>Follow recommended actions to the left and above, plus:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cancel outdoor events</td>
<td>• Open and publicize cleaner-air spaces for the general public</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• If school is in session, measure indoor air quality if possible, discuss school closure with school administrators</td>
<td>• Share information about periods of improved air quality to guide essential outdoor activity and ventilation of dwellings (refer to FAQs for more information)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Recommend shelter-in-place for general population</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Share information about periods of improved air quality to guide essential outdoor activity and ventilation of dwellings (refer to FAQs for more information)</td>
<td></td>
</tr>
<tr>
<td>Hazardous/ Dark Purple (&gt;300)</td>
<td>&lt;1 Mile</td>
<td>Above, plus:</td>
<td>Follow recommended actions to the left and above, plus:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Recommend voluntary evacuation for sensitive groups</td>
<td>• Open and publicize cleaner-air spaces for the general public</td>
</tr>
</tbody>
</table>

1 For use of the 5-3-1 Visibility Index, see below. The visibility test is not appropriate or effective in areas with high humidity, such as in Western Oregon near or on the coast, where water vapor (fog) may limit visibility.

2 Crisis and Emergency Risk Communication Toolkit for Wildfires: www.healthoregon.org/cerc

The kit includes many tools including:
- FAQs in English, Spanish, Russian, Simplified Chinese, Somali, and Vietnamese.
- Important Public Health Guidance for School Outdoor Activities during Wildfire Events
Considerations that may influence implementation of the above mitigating actions:

- Clear/predictable fluctuations in air quality throughout the day can allow for modifications in the recommendations from the above table. For example, schools could delay recess instead of canceling it if there is a pattern of clearing in the afternoon. Also, if cleaner air spaces are provided, they should be open and available at the times of day that smoke is heaviest (i.e., may be at night).

- If smoke is predicted to be heavy for short durations (i.e., a few hours) the public health messaging should be to encourage people to avoid spending time outdoors.

Indoor air quality may be poor in older dwellings. These may include schools, community centers with care centers, nursing homes, or group homes. When air quality is “unhealthy” for an extended smoke duration, it may be worthwhile to assess indoor air quality for these and other types of facilities where people who are sensitive to smoke live or stay. OR-OSHA can assist employers in assessing indoor air quality.

**Using the Visibility 5-3-1 Index**

Since wildfires often occur in remote areas, air monitoring equipment may not be available. Smoke levels can rise and fall rapidly, depending on weather conditions including wind direction. Making visual observations using the 5-3-1 visibility index is a simple way to estimate smoke levels and what precautions to take, as noted in Table 4. While this method can be useful, you should always use caution and avoid going outside if visibility is limited, especially if you are sensitive to smoke.

The procedure for using this visibility index is as follows:

1. Determine the limit of your visual range by looking for distant targets or familiar landmarks such as mountains, mesas, hills, or buildings at known distances. The visual range is that point at which these targets are no longer visible. As a general rule of thumb: if you can clearly see the outlines of individual trees on the horizon it is generally less than five miles away.

2. Ideally, the viewing of any distant targets should be made with the sun behind you. Looking into the sun or at an angle increases the ability of sunlight to reflect off of the smoke, and thus making the visibility estimate less reliable.

Once distance has been determined, follow this simple guide:

1. If visibility is well over five miles and with no noticeable haze in the air, the air quality can be considered generally good.

2. Even if visibility is five miles away but generally hazy, air quality could be considered moderate and beginning to deteriorate, and is generally healthy, except possibly for smoke-sensitive persons. The general public should avoid prolonged exposure if conditions are smoky to the point where visibility is closer to the five-mile range. See Table 4.

3. If under five miles, the air quality is unhealthy for young children, adults over age 65, pregnant women, and people with heart and/or lung disease, asthma or other respiratory illness. These people should minimize outdoor activity. See Table 4.
4. If under three miles, air quality is unhealthy for everyone. Young children, adults over age 65, pregnant women, and people with heart and/or lung disease, asthma or other respiratory illness should avoid all outdoor activities. See Table 4.

5. If under one mile, the air quality is hazardous. Everyone should avoid all outdoor activities. See Table 4.

6. Oregon Smoke Blog website

The Oregon Smoke Blog provides the public current air quality and health information on smoke impacts from wildfires. This blog provides timely “one-stop shopping” by including links to various agency websites, and providing critical information on wildfire status, air quality conditions and forecasts, school and activity closures, burn bans, location of cleaner air spaces and travel restrictions due to visibility. This blog is activated by the U.S. Forest Service or DEQ, and managed by a team of state, federal, and local agencies. The link to this blog is www.oregonsmoke.blogspot.com/. The 2019 point of contact for the Oregon smoke blog is DEQ’s Katherine Benenati (see appendix A for contact information).

7. Annual Pre-Wildfire Season conference call

Each year prior to the summer wildfire season, in late May or June, representatives from the agencies, organizations, or offices listed in this protocol will hold a conference call to prepare for the upcoming season. The purpose of this call is to review this protocol, discuss any changes or specific preparation needs for the summer, and update the contact list of staff expected to be using this protocol if major wildfires occur. This contact list is provided in Appendix A, or the main call distribution list will be used.

8. As-Needed Wildfire conference calls and briefings

A daily or as-needed conference call will be held during major wildfires to brief the parties identified in this protocol. These conference calls and briefings can be requested by any party, with concurrence then sought out amongst ODF, OHA, DEQ, USFS and National Weather Service as available, and will usually take place in the morning. They will include updates on the status of major on-going wildfires, and provide an opportunity to discuss current conditions related to air quality, smoke forecasts, local health impacts, recommended public actions, communications, emergency actions such as evacuation, and other issues important to the group. These briefings will include a wildfire status update from public information officers (if available) associated with Incident Command and any Air Resource Advisor assigned to the wildfire.

The lead agencies hosting these calls will alternate between the DEQ and OHA. For major wildfires in neighboring states (Washington, Idaho, Nevada or California) that are affecting Oregon, the daily briefing may include the appropriate contacts in those states that have essential information. In situations where a smaller group conference call is needed, such as between state and local health officials to discuss specific local public health issues, or with DEQ to discuss air quality levels in areas being heavily affected by wildfire smoke, the calls will be convened as needed. Requests for such calls should be made to either DEQ or the OHA, depending on the primary topic of concern.

Unless otherwise announced, conference calls will be held on an as-needed basis from 8:30-9:30 a.m. Below is an agenda outline for the calls. The order of the agenda may be changed to accommodate those who have time constraints. An email announcing the call will be sent by the call host to the participants the day before the call. Any participant who wishes to suggest additional discussion topics for the agenda should inform the host in advance. Unless previously arranged, discussions should be limited to the participating protocol entities.
## AGENDA

<table>
<thead>
<tr>
<th>Topic</th>
<th>Anticipated discussion leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Introductions (may be limited to key participants for brevity) DEQ, ODF, USFS, ARAs, Tribes, OHA-OEM-OrOSHA and LPHA's by Region</td>
<td>Host</td>
</tr>
<tr>
<td>The current air quality situation using the state monitoring network and portable monitors</td>
<td>DEQ ARAs</td>
</tr>
<tr>
<td>Fire and smoke forecast</td>
<td>ODF (primary), NWS (secondary)</td>
</tr>
<tr>
<td>State-wide smoke model (as available)</td>
<td>USFS / other (Blue Sky, HRRR and so forth)</td>
</tr>
<tr>
<td>The current fire situation (location, size, etc.) and maps showing fire locations and detail as available</td>
<td>Incident Command PIO, ARA, USFS staff</td>
</tr>
<tr>
<td>Any emergency issues for all to be aware?</td>
<td>OEM/ODOT</td>
</tr>
<tr>
<td>Messaging and information sharing for DEQ posts to the Oregon Smoke Blog and social media (all posts to be made through Katherine Benenati unless otherwise directed).</td>
<td>Host &amp; DEQ PIO</td>
</tr>
<tr>
<td>Special Issues – Open discussion</td>
<td>Local entities such as schools, school camps and so forth are asked to route updates or questions through your local public health agency.</td>
</tr>
<tr>
<td>Need for additional calls with a smaller group or follow on call between NWS and AQ agencies to determine AQ alert dissemination, areas, start times, duration Set date and time of next call as needed</td>
<td>Host</td>
</tr>
</tbody>
</table>

### Wildfire Calls for Neighboring States

- **Washington**: Subject to change or availability: 888-844-9904, 2103767#
- **California**: 1 PM Call (when they occur): 888-844-9904, 9857932#
- **Idaho**: 10-11 PDT, 202-991-0477, 4455737#
9. Oregon Wildfire Communications Group

The Oregon Wildfire Communications Group is a multiagency communications group consisting of the public affairs staffs from the agencies participating in this protocol, which coordinate the dissemination of wildfire smoke information to the public and media. The group oversees the Oregon Smoke Blog, works with the 211info service, responds to requests for air quality data and health effects information, coordinates multiagency press releases and public service messaging, and schedules briefings and meetings to ensure participants are up to date on wildfire status and air quality conditions in areas being affected by wildfire smoke. For further information on this communications group, contact Cory Grogan at OEM or Katherine Benenati at DEQ (see appendix A).

10. Air Quality Advisory Coordination with National Weather Service

The National Weather Service Offices and air quality agencies in Oregon and Southwest Washington developed a procedure for the coordination of air quality events (advisories and alerts) and the associated messaging. Events which may cause need for a coordination call between the National Weather Service offices and air quality agencies include:

- Forest fires and associated transport of smoke
- Air quality approaching unhealthy levels
- Weather pattern conducive to deteriorating Air Quality

1. If during the Wildfire Smoke Response conference call the agencies determine further meteorological support is desired or the regulatory groups have decided to issue an air quality advisory, DEQ would organize a second conference call to include the National Weather Service for discussion of any additional meteorology, and primarily to coordinate dissemination (time, location, condition) of the advisory.

2. During weekends if conditions improve to the point of good or a green AQI category and are expected to remain stable for an area with an existing advisory, the National Weather Service offices considering dropping or expiring the advisory will attempt to contact the responsible air quality Agencies to evaluate the situation. If no contact can be made, the National Weather Service offices can proceed to stop messaging and drop the advisory from their dissemination systems. Also if conditions are deteriorating to unhealthy levels over the weekend and there might be a need for air quality agencies to issue an advisory, either the National Weather Service offices or air quality agency point of contact can contact each other to coordinate the need for an air quality alert. The National Weather Service offices will not originate an advisory for smoke impacts on their own.

3. The National Weather Service system of messaging includes web services, email distribution, social media, NOAA Port, NOAA Weather Wire and several others that reach the public, broadcast media, social media outlets, emergency managers, and many more. The air quality agencies agree to email the press release containing the air quality advisory message to the National Weather Service offices. The National Weather Service agrees to disseminate air quality advisories from the air quality agencies as a National Weather Service product. National Weather Service offices will give attribution to the air quality agency and also include a link to the air quality website in the product. The National Weather Service product in essence amplifies the
message from the air quality agencies to further reach the public with important information involving weather.

11. Indoor Air Monitoring Equipment

Wildfire smoke can also affect indoor air quality. Research has shown that when there are heavy outdoor smoke levels, a significant amount of smoke can still infiltrate indoors, even when windows and doors are closed. Many commercial buildings and schools mechanically draw in the outdoor air through air filtration systems. However, standard heating and cooling air filters will not remove most of the ultra-fine smoke particles. More information about the use of air filters, cleaners and other ways to reduce indoor smoke levels can be found in the document cited in section 12 below *Wildfire Smoke: A Guide for Public Officials* (2016).

There are different types of indoor air monitors that can be used to indicate the potential health risk when indoors. This monitoring equipment is generally focused on PM2.5, but may also detect carbon monoxide and other toxic gases. Other features include measuring temperature and relative humidity. Indoor monitoring equipment is typically less expensive than outdoor equipment, is relatively low maintenance, and can provide the same real-time measurements in micrograms per cubic meter, via handheld or portable monitors. These monitors can be purchased, or in some cases rented, during wildfires. Contact DEQ for more information on the different types, availability and cost of this equipment. As noted in Table 3 of the protocol, DEQ is responsible for monitoring air quality outdoors, and does not have equipment for indoor air monitoring. For questions about employee health and possible indoor air monitoring in the workplace, contact an OR-OSHA field office ([Oregon OSHA Field Office](#)) or visit [OR-OSHA Wildfires: Addressing worker concerns](#).

12. Other references, resources, and links

*Wildfire Smoke: A Guide for Public Officials*. The smoke exposure levels listed in Table 4 are adapted from the 2016 guidance document *Wildfire Smoke: A Guide for Public Health Officials* (2016). This document is currently used in many states as a reference guide for how public agencies can best protect public health during wildfires. The document is undergoing a revision and will be available sometime in the summer of 2019.

In addition to providing background information on the composition of smoke, potential health effects, and recommended actions, it contains specific strategies on how to reduce smoke exposure, such as indoor air filters and cleaners, use of masks and respirators, setting up cleaner air spaces, and examples of public service announcements for wildfire. This document is referenced here as general guidance to provide additional information, and like this protocol, is not intended to replace, interfere with, or limit any action taken by a public agency in the course of performing its official duties, nor does it represent a legally binding document.
Wildfire-related websites. In addition to the Oregon Smoke Blog, these web links can provide current information on wildfire and smoke:

- InciWeb (Incident Information System). Information on fires in the nation and the Northwest: [https://inciweb.nwcg.gov/](https://inciweb.nwcg.gov/)
- Oregon Department of Forestry – information on fires handled by ODF: [http://wildfireoregondeptofforestry.blogspot.com/](http://wildfireoregondeptofforestry.blogspot.com/)
- RAPTOR - Oregon Emergency Management’s real-time web mapping application allows the public to view incident data about wildfires, areas impacted by flooding, live weather radar, contact information for county emergency managers and more. [https://www.oregon.gov/oem/emops/Pages/RAUTOR.aspx](https://www.oregon.gov/oem/emops/Pages/RAUTOR.aspx)

Air Quality related websites:

- AIRNow – AQI and related information across the nation: [https://www.airnow.gov/](https://www.airnow.gov/)
- Oregon DEQ Wildfire website: [https://www.oregon.gov/deq/aq/Pages/Wildfires.aspx](https://www.oregon.gov/deq/aq/Pages/Wildfires.aspx)
- Oregon DEQ Air Quality Index maps (smoke levels provided in current conditions with current day hour by hour averages shown by selecting the station): [https://oraqi.deq.state.or.us/home/map](https://oraqi.deq.state.or.us/home/map)
- Air Monitoring in Oregon APP: AQI and Pollutant Information by monitoring site: Look for OregonAir on your app store (free)

Oregon Webcams. The following are links to live webcams that can be used to view wildfire smoke conditions around the state. However, many are designed to show only traffic and road conditions, and do not provide very good image resolution for viewing smoke.

- Oregon Department of Transportation Trip Check. Has a custom feature that allows multiple webcams to be viewed on the same [page: www.tripcheck.com/Pages/CamerasEntry.asp](http://www.tripcheck.com/Pages/CamerasEntry.asp)
- Northwest Web Cams. This website is a comprehensive list of all the webcams in Oregon. Note that some may no longer be operational, have broken links, or not good image quality: [http://www.northwestwebcams.com/oregon-web-cams.shtm](http://www.northwestwebcams.com/oregon-web-cams.shtm)

Map of Wildfire Risk Areas in Oregon. Here is a current ODF map on Significant Fire Potential (frequently updated):
[http://nfdrs.smkmgt.com/sfp/expanded_sfp.htm](http://nfdrs.smkmgt.com/sfp/expanded_sfp.htm)

and predicted national significant multi-month and 7-day significant fire potential:
[https://www.predictiveservices.nifc.gov/outlooks/outlooks.htm](https://www.predictiveservices.nifc.gov/outlooks/outlooks.htm)

Oregon Health Authority - health effects from wildfire smoke. The Oregon Health Authority maintains information to support communication about the health effects of wildfire smoke and strategies to minimize these effects.
The OHA Wildfires and Smoke webpage contains general information about wildfire smoke and health. http://public.health.oregon.gov/Preparedness/Prepare/Pages/PrepareForWildfire.aspx

OHA Wildfire Smoke Crisis and Emergency Risk Communication Toolkit contains sample press releases, approved talking points, fact sheets, sample social media posts and more. It was developed for local and tribal health authorities to support clear, consistent and coordinated statewide public information during a severe smoke event. Updates to the kit can occur so check the Crisis and Emergency Risk Communication website throughout this season for updated materials. Changes last year included improved reading level and translations for Spanish, Russian, Chinese, Vietnamese and Somali speakers. Find it at healthoregon.org/cerc

13. Other Air Monitoring Networks, AQI Pages and Apps

We can now find online a few other air monitoring networks or sites showing AQI values. These are private networks or data displaying systems and can measure or show PM$_{2.5}$ to varying degrees of accuracy. One network more known than others is the Purple Air network. It has good data once it has been adjusted, however is generally not presented in an adjusted or corrected manner. It has been found in Oregon to read in 1.5 to 2 times higher than actual PM$_{2.5}$ values. Viewing this data should be done in a cautious manner and using it for possible trending information (such as where smoke is and is it at relatively high concentrations or lower).

Other networks or AQI sites exist. One from China is known to be inaccurate for western Oregon, while one from Europe was more reasonable and used data from existing monitors around the regions. Exercise caution when viewing other AQI apps or monitoring networks. Only the data represented on DEQ’s website or the OregonAir app and as shown on the Smoke Blog should be taken to be valid.

14. Appendices

A. Current Agency Contact List. Appendix A of this protocol is a contact list of representatives from the agencies and organizations identified in this protocol. Annual updating of this contact list will be necessary, and should be conducted at the annual pre-wildfire season conference call, as noted in section 7 above.

B. Examples of Wildfire Smoke Public Announcements. Appendix B of this protocol provides examples of two DEQ public announcement/press releases from prior years, which can be used as a guide for future announcements.

C. Monitoring Network in Oregon for PM$_{2.5}$ AQI

The monitoring network and current data can be viewed on the ODEQ webpages as shown in the wildfire related websites link and the locations can be viewed in the appendix for general information. The locations of the various monitors for 2019 is shown here in Appendix C. Note that some of the sensors are being installed summer 2019 and may not show up on the DEQ AQ APP or our AQI monitoring web pages nor the wildfire blog for some time.
## A.1 Oregon Protocol Contact List

<table>
<thead>
<tr>
<th>AGENCY OR ORGANIZATION</th>
<th>STAFF CONTACT</th>
</tr>
</thead>
</table>
| **1. U.S. Forest Service** | **Rick Graw**, Pacific Northwest Region, Air Quality Program Manager. 503-808-2918 rgraw@fs.fed.us  
**James Miller**, Pacific Northwest Region, Air Quality Program 503-808-2908 jamesmiller2@fs.fed.us  
Vacant, BLM  
**Janice Peterson**, Pacific Northwest Region, Forestry Sciences Lab 206-732-7845 jlpeterson@fs.fed.us |
| **2. Air Resource Advisor National Coordinator** | n/a (if assigned to major wildfire event)  
**Pete Lahm**, Wildland Fire Air Quality Response Program (USFS) 202-205-1084 Mobile: 602-432-2614 plahm@fs.fed.us Pete.lahm@gmail.com |
| **3. National Weather Service** | **Ryan Sandler**, Warning Coordination Meteorologist 4003 Cirrus Drive, Medford, OR 97504 541-776-4303 ext. 223 ryansandler@noaa.gov www.weather.gov/Medford  
Please send all Air Quality Alerts to mfr.operations@noaa.gov or call 541-776-4326 or 541-773-1067.  
**Tyree Wilde**, Warning Coordination Meteorologist NOAA’s National Weather Service 5241 NE 122nd Ave., Portland, Oregon 97230 503-326-2340 ext. 223 503-853-4121 cell tyree.wilde@noaa.gov  
Please send all Air Quality Alerts to pqr.ops@noaa.gov or call 503-326-2356.  
**Marcus Austin**, Fire Weather Program Leader National Weather Service, Pendleton, Oregon 541-276-7832 ext 223 marcus.austin@noaa.gov  
To post air quality alerts, please call or send e-mail to: pdt.operations@noaa.gov |
| **4. Red Cross** | **Amelia Holmes**, Regional Communications Director 503-440-3701  
To request Red Cross response assistance, contact the Red Cross Duty Officer: 1-888-680-1455 (duty officer) amelia.holmes2@redcross.org |
## Appendix A
### Oregon Contact List

| 5. DEQ | Peter Brewer, DEQ Air Quality Attainment and Wildfire Smoke Coordinator  
541-633-2004, cell 503-752-9374  
peter.brewer@state.or.us  

Katherine Benenati, DEQ Public Affairs, Eugene Office  
541-686-7997 cell 541-600-6119  
Benenati.katherine@deq.state.or.us  

Evan Bing, Meteorologist, DEQ Laboratory  
503-693-5741 cell 503-270-9162  
bing.evan@deq.state.or.us  

Jennifer Flynt, DEQ Public Affairs, Portland Office  
503-229-6585 cell 503-730-5924 cell  
flynt.jennifer@deq.state.or.us  

Laura Gleim, DEQ Public Affairs, Bend Office  
541-633-2008 cell 541-647-4194  
gleim.laura@deq.state.or.us  

Susan Mills, DEQ Public Affairs, Headquarters  
503-229-5579 cell 503-956-9648  
susan.mills@state.or.us  

Meghan Fagundes, DEQ Western Region, Medford Office  
541-776-6089 fagundes.meghan@deq.state.or.us  |
|-----------------|  |
| 6. Oregon Health Authority | Kattaryna Stiles, Public Health Emergency Preparedness Liaison  
541-410-0291  
kattaryna.l.stiles@state.or.us  

Jamie Bash, Risk Communications Analyst  
971-673-1394 cell 503-754-3190  
jamie.p.bash@state.or.us  

Richard Leman, Chief Medical Officer, Health Security Preparedness and Response  
971-673-1089  
richard.f.leman@state.or.us  |
|-----------------|  |
| 7. Tribal Government | Confederated Tribes of the Umatilla Indian Reservation  
Eli Harris, Natural Resources  
541-429-7421 naturalresources@ctuir.org or eliharris@ctuir.org  

Confederated Tribes of Warm Springs  
Tim Outman, Air Quality Specialist  
541-553-2016 cell 541-460-0305 tim.outman@ctwsbnr.org  

------------------  
Matthew Ellis, US Public Health Service, Emergency Management Coord, Indian Health Services  
Matthew.Ellis@ihs.gov  

Cow Creek Band of Umpqua Tribe of Indians  
Tracy DePew, Director of Emergency Services  
541-677-5575 cell 541-731-7557 tdepew@cowcreek.com  

Confederated Tribes of Coos, Lower Umpqua, & Siuslaw Indians  
Margret Corvi, Environmental Monitoring Specialist  
541-888-1304 MCorvi@ctclusi.org  

Klamath Tribes  
Will Hatcher, Director of Natural Resources will.hatcher@klamathtribes.com  
For other tribal contacts 1: Legislative Commission on Indian Services - Natural Resources Cluster – Tribal Contacts  |

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| Appendix A  
|Oregon Contact List |
|---|---|
503-378-3252  
Erik.rau@mil.state.or.us  

**Cory E. Grogan**, Public Information Officer  
503-383-6608  
Cory.grogan@state.or.us  

**Paula Negele**, Public Information Officer  
503-378-2127  
paula.negele@state.or.us  

**OEM Duty Officer**  
Oregon Emergency Response System (OERS)  
1-800-452-0311 Or 503-378-6377 |
503-229-5910 cell 971-707-0867  
Penny.l.wolf-mcmormick@oregon.gov  

**Aaron Corvin**, Public Information Officer  
503-947-7428 cell 971-718-6973  
Aaron.corvin@oregon.gov  

**Trena VanDeHey**, Standards and Appeals Manager  
503-378-3272  
Trena.VanDeHey@oregon.gov |
| 10. Oregon Department of Forestry | **Nick Yonker**, Meteorology Manager  
503-945-7451 Cell: 971-208-8059  
nick.j.yonker@oregon.gov  

**Jim Gersbach**, Public Information Officer  
503-945-7425  
Jim.Gersbach@Oregon.gov |
| 11. Governor’s Office Regional Solutions Centers | [http://www.oregon.gov/gov/admin/regional-solutions/Pages/default.aspx](http://www.oregon.gov/gov/admin/regional-solutions/Pages/default.aspx) |
| 12. Oregon Department of Transportation | **Christina LeClerc**, ODOT Emergency Operations Coordinator  
503-986-4488, Christina.LECLERC@odot.state.or.us  

**Greg Ek-Collins**, State Emergency Operations Manager  
503-986-3020  
Greg.ek-collins@odot.state.or.us |
503-934-8238 mariana.ruiz-temple@state.or.us |
| 14. Lane Regional Air Protection Agency | **Jo Niehaus**, Public Affairs  
541-736-1056 ext. 217 cell 503-575-6319  
jniehaus@lrapa.org |
| 15. Local Public Health Authorities | Each Oregon County has points of contact listed  
[http://public.health.oregon.gov/ProviderPartnerResources/LocalHealthDepartmentResources/Pages/lhd.aspx](http://public.health.oregon.gov/ProviderPartnerResources/LocalHealthDepartmentResources/Pages/lhd.aspx) |
| 16. 211info | **Ciara Doyle**, MSW, CIRS, Director of Contract Center and Programs  
503-416-2704 cell: 919-434-5458  
ciara.doyle@211info.org  
www.211info.org/ |
## Appendix A
### Oregon Contact List

<table>
<thead>
<tr>
<th>17. EPA Region 10</th>
<th>Mike McGown, Smoke Management Coordinator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>208-378-5764</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:Mcgown.michael@epa.gov">Mcgown.michael@epa.gov</a></td>
</tr>
</tbody>
</table>

*Oregon Tribal Contact List - may not be the actual contact for wildfire smoke and air quality issues.
## A.2 Out-of-State Contact List

<table>
<thead>
<tr>
<th>AGENCY OR ORGANIZATION</th>
<th>STAFF CONTACT</th>
</tr>
</thead>
</table>
| **18. Idaho Department of Environmental Quality** | Boise, ID  
Mark Boyle, Smoke Management Program Coordinator, Air Quality Division, 208-666-4607  
Mark.Boyle@deq.idaho.gov |
| **19. Washington Department of Ecology**      | Yakima, WA  
Sean Hopkins, Smoke Management Team Lead, Central Regional Office  
509-575-2804  
seho461@ecy.wa.gov |
| **20. Nevada Division of Environmental Protection** | Carson City, NV  
Sig Jaunarajs, Supervisor Environ. Scientist IV, Bureau of Air Quality Planning  
775-687-9392  
sjaunara@ndep.nv.gov  
Sheryl Fontaine, Air Quality Scientist  
sfontaine@ndep.nv.gov  
Daren Winkelman, Air Monitoring Supervisor  
775-687-9342  
dwinkelman@ndep.nv.gov |
| **21. California Air Resources Board**       | Sacramento, CA  
Charles Pearson, Monitoring and Laboratory Division, Office of Emergency Response  
916-322-7054; cell 916-322-7054  
cpearson@arb.ca.gov |
| **22. U.S. Forest Service, California Region 5** | Porterville, CA  
Trent Procter, Regional Air Program Manager, Southwest Region  
559-784-1500 ext. 1114  
559-783-3308 cell  
tprocter@fs.fed.us |
B.1 Example 1 Wildfire Smoke Public Announcement
News Release

For release: date
Contacts: names, phone numbers

[Agency name] Urges Oregonians to Protect Themselves from Wildfire Smoke

It’s wildfire season in Oregon and smoke could be on the way. [Agency name] advises people to take precautions to protect themselves from unhealthy smoke levels.

Wildfire season is underway with [xx wildfires] currently burning in the state. Under certain weather conditions smoke from these fires can drift into communities and quickly cause unhealthy air quality. Should smoke events occur, [agency name] and health officials urge local residents to take the following precautions to avoid breathing problems or other symptoms from smoke:

- Be aware of smoke concentrations in your area and avoid the places with highest concentrations.
- Avoid smoke either by leaving the area or protecting yourself by staying indoors, closing all windows and doors and using a filter in your heating/cooling system that removes very fine particulate matter.
- Avoid strenuous outdoor activity in smoky conditions.
- People suffering from asthma or other respiratory problems should follow their breathing management plans or contact their healthcare providers.

Remember, local smoke levels can rise and fall rapidly, depending on weather factors including wind direction. People can conduct a visual assessment of smoke levels to quickly get a sense of air quality levels and take precautions. If people have additional concerns, they should contact the nearest regional or local public health agency for the latest in health conditions from smoke.

For more information about local conditions:

- Visit the Oregon Smoke Blog for more information regarding active fires and air quality,
- Along with tools to help people assess smoke levels in their area.
- Tune to local radio and TV stations and the Weather Channel in affected areas that may include the very latest fire information in news programming and weather reports.
- Obtain a dedicated NOAA Weather Radio receiver, which will alert you 24 hours a day to hazards in your area.
B.2 Example 2  Wildfire Smoke Public Announcement
News Release

For release: date
Contacts: names, phone numbers

Smoke From [wildfire name] Creates Hazardous Air Quality

Calm winds and a temperature inversion caused smoke concentrations to reach hazardous levels between 4 a.m. and 8 a.m. today. Conditions improved as daytime temperatures increased, but very smoky conditions could return early Wednesday morning.

The [wildfire], xx miles from [location/city] sent dense smoke into the town in the early morning hours today. Calm conditions and a temperature inversion caused smoke from the fire to settle in at ground level between 3 a.m. and 9 a.m. Smoke concentrations at the air quality monitor in [city] reached hazardous levels during this time.

[Agency name] urges everyone to avoid outdoor exertion during such conditions. People with respiratory or heart disease, the elderly and children should remain indoors.

The National Weather Service predicts that calm conditions, a high pressure system and nighttime temperature inversions could cause very smoky mornings through Saturday. Conditions are expected to improve as daytime temperatures rise and the smoke lifts away from ground level.

However, under certain weather conditions wildfire smoke can drift into communities and quickly cause unhealthy air quality. Should additional smoke events occur, [agency name] and health officials urge local residents to take the following precautions to avoid breathing problems or other symptoms from smoke:

- Be aware of smoke concentrations in your area.
- Avoid smoke by staying indoors, closing all windows and doors and using a filter in a heating/cooling system that removes very fine particulate matter. If possible, avoid smoky areas.
- Avoid strenuous outdoor activity including sports practice, work and recreation.
- People with concerns about health issues, including those suffering from asthma or other respiratory problems should follow their breathing management plans or contact their healthcare providers.
Remember, local smoke levels can rise and fall rapidly, depending on weather factors including wind direction. People can conduct a visual assessment of smoke levels to quickly get a sense of air quality levels and take precautions. If people have additional concerns, they should contact the nearest regional or local public health agency for the latest in health conditions from smoke.

For more information about local conditions:

- Visit the Oregon Smoke Blog for more information regarding active fires and air quality, along with tools to help people assess smoke levels in their area.
- Tune to local radio and TV stations and the Weather Channel in affected areas that may include the very latest fire information in news programming and weather reports.
- Obtain a dedicated NOAA Weather Radio receiver, which will alert you 24 hours a day to hazards in your area.
Appendix C  Oregon 2019 Stationary Monitor Network Summer and Fire Season

2019 Oregon Air Quality Monitoring Network

[Map showing various monitoring sites across Oregon, including Annual monitoring sites, Summer monitoring sites, and Future PM2.5 sites, Future air toxics sites, and Annual air toxics sites.]