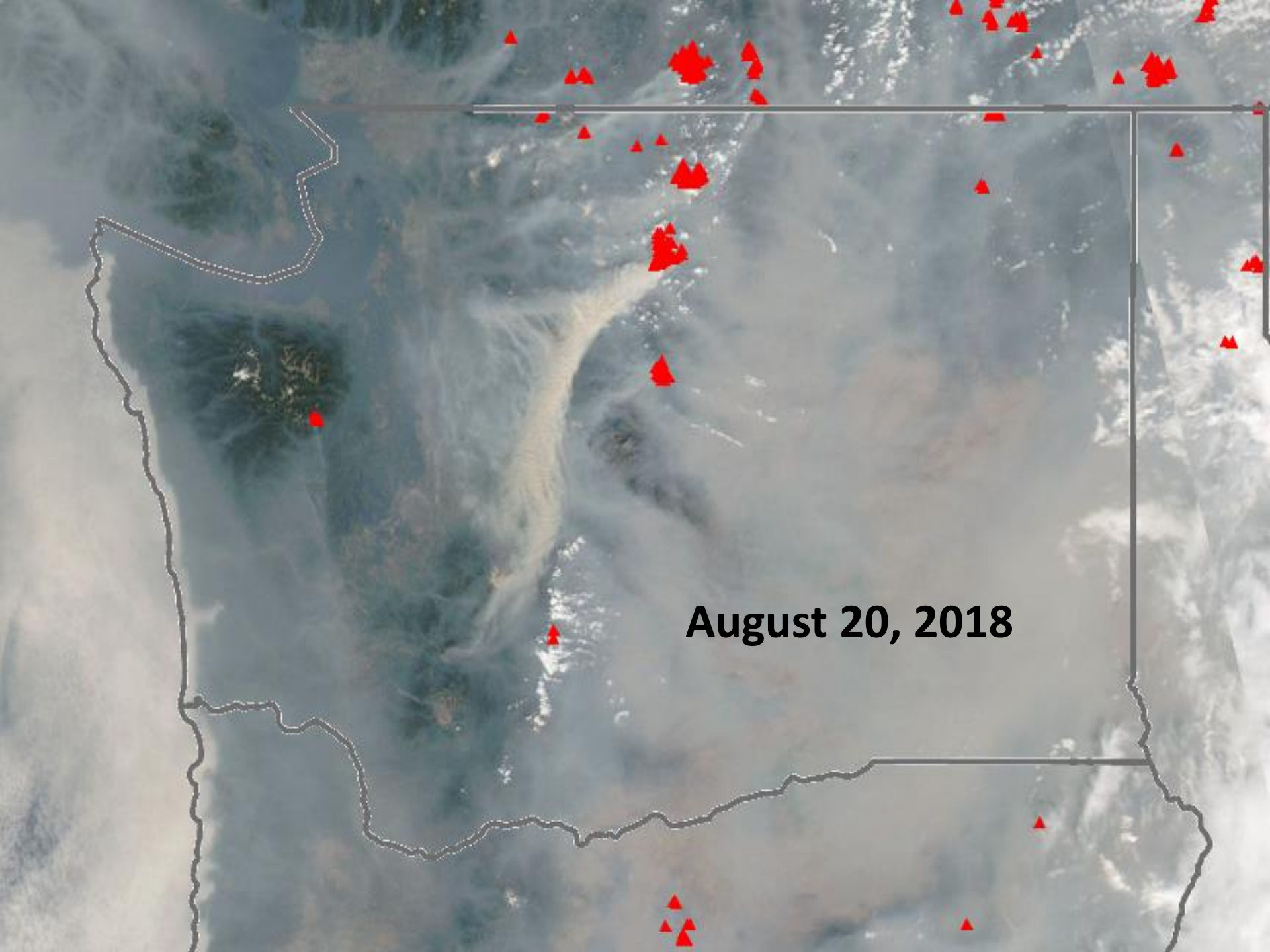
Preparing for the 2020 Wildfire and Smoke Season

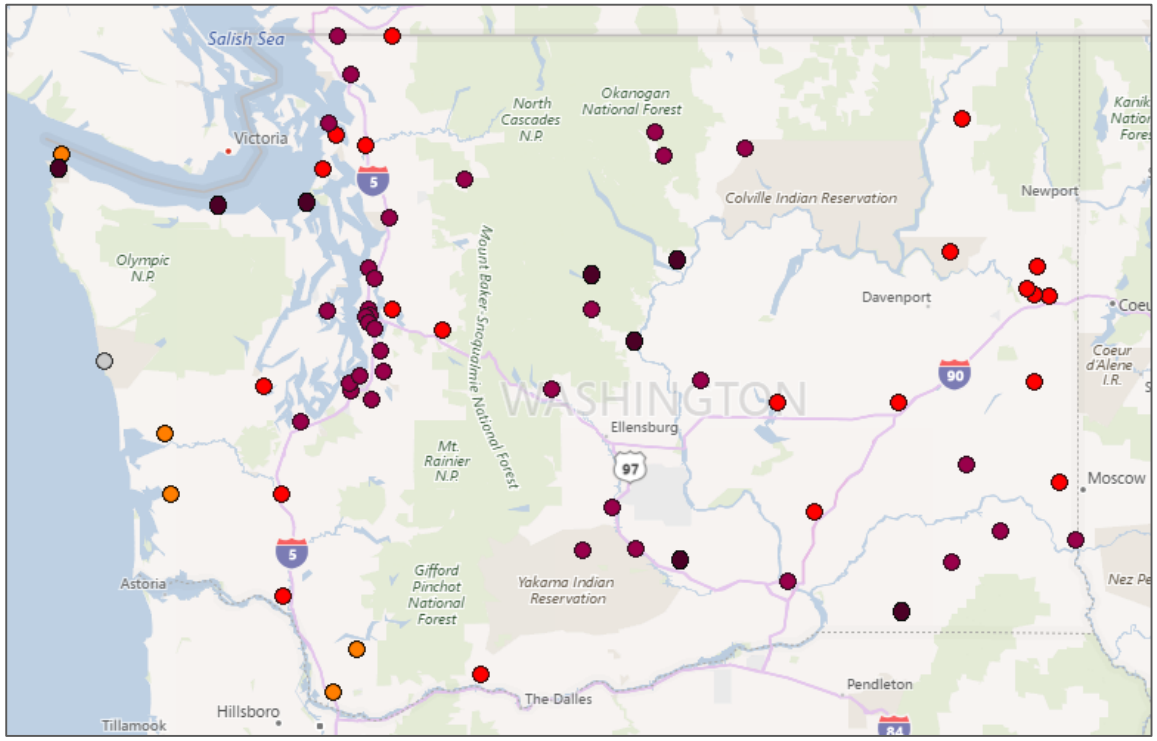
Kaitlyn Kelly

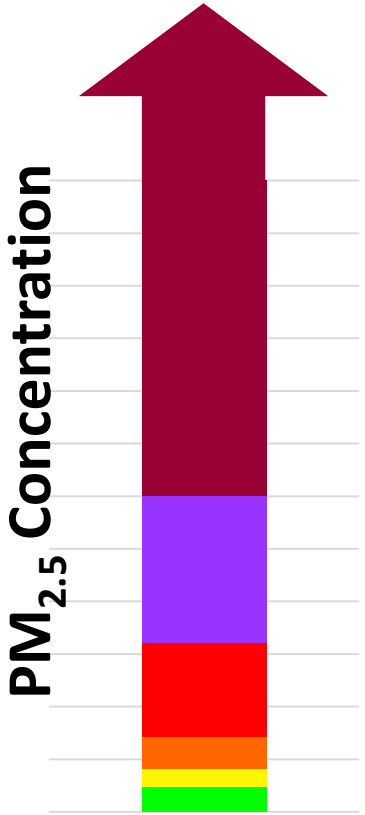
Office of Environmental Public Health Sciences


August 20, 2018

Air Quality Hazard Levels

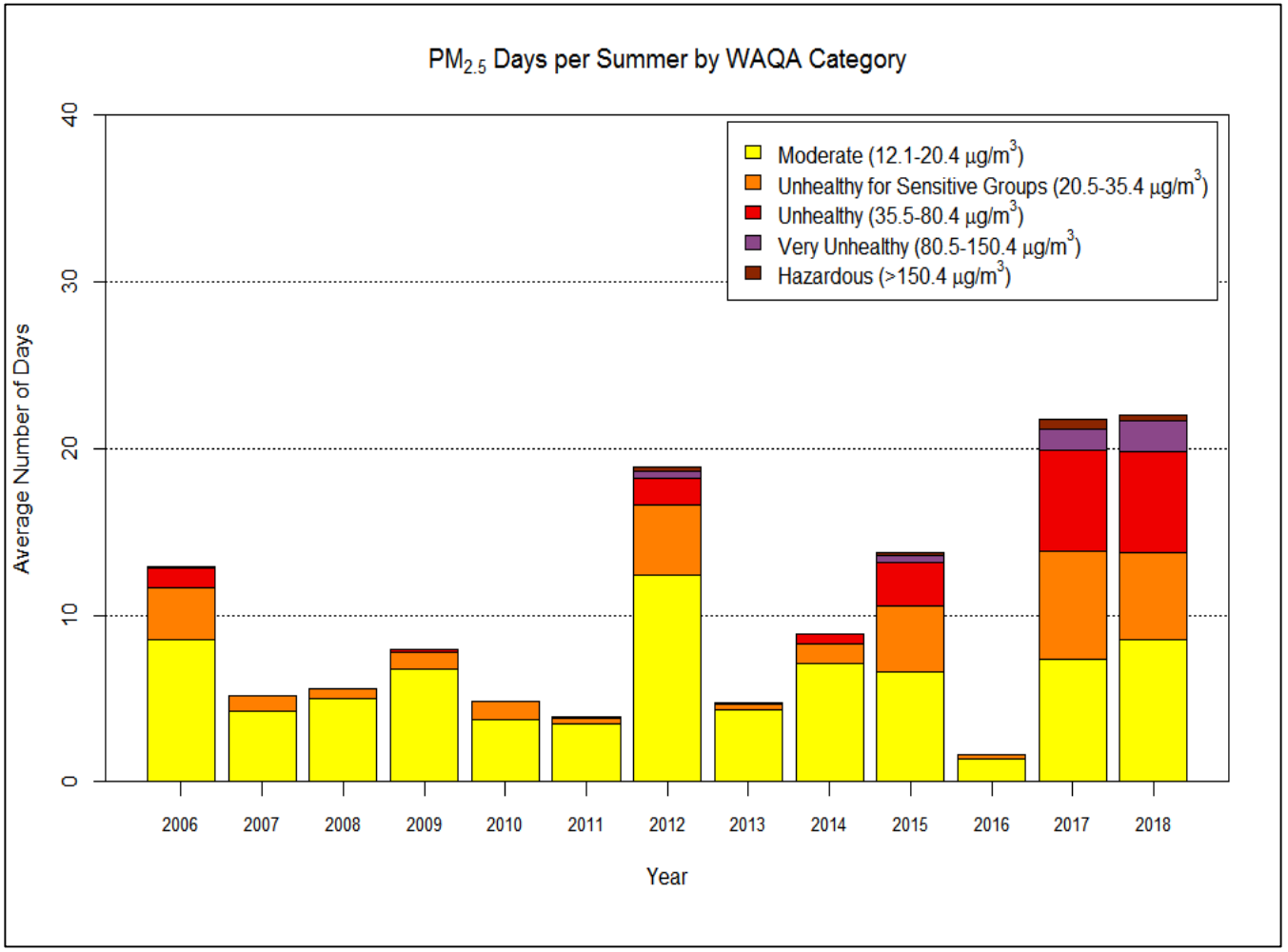
WA $PM_{2.5}$ Air Monitoring Network:





August 20, 2018

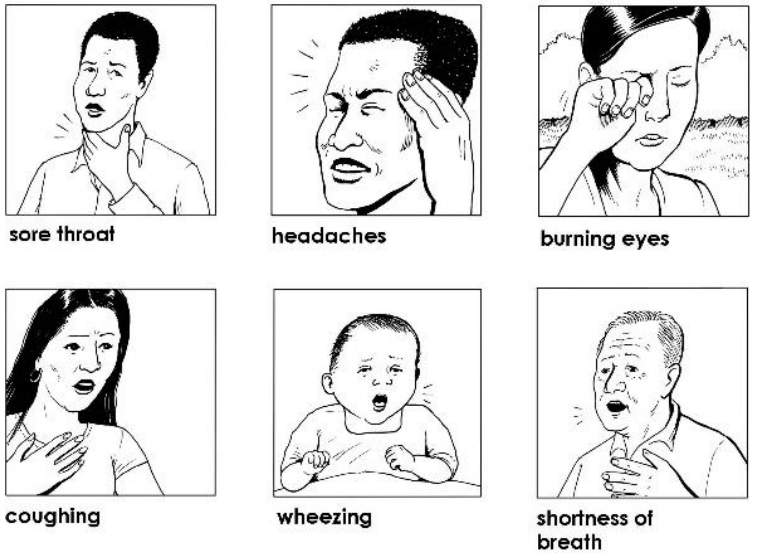
Washington Wildfire Smoke Concentrations



Source: Washington Department of Ecology, Air Quality Program, Jill Schulte, 2018.

Minor to deadly responses

- Eye irritation
- Cough, wheeze
- Cardiovascular morbidities
- Respiratory morbidities
- Overall increased hospitalizations & deaths



Groups vulnerable to smoke from fires

- People with chronic conditions
  - Heart, lung, and circulatory diseases
- Infants and children
- People 65 years and older
- Pregnant women
- People of low socioeconomic status

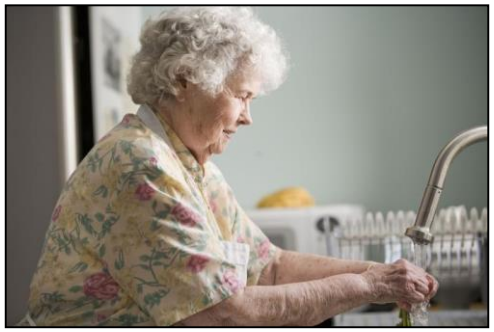
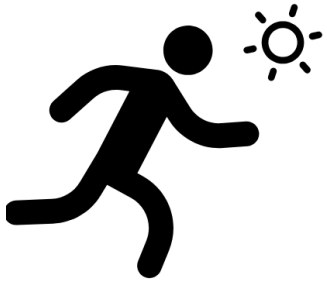




Photo credits: CDC/Dawn Arlotta 2009, www.pixabay.com

These groups make up >40% of Washington's population.

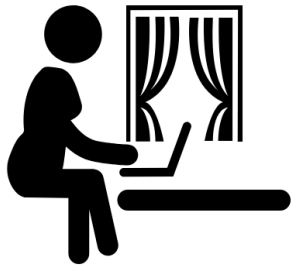
Steps to protect health from smoke

1. **Stay informed about air quality**
   - Check the air quality hazard level



2. **Limit exposure**
   - Avoid strenuous outdoor activity
   - Limit time outdoors
   - Stay indoors

3. **Keep indoor air clean**
   - Filter air through an HVAC system
   - Keep windows and doors closed
   - Don't contribute to indoor air quality
   - Use a portable air cleaner with a HEPA filter or box fan air filter



4. **Pay attention to symptoms**
   - Seek medical help if needed

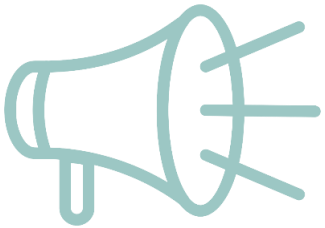
Washington Department of Health
Wildfire Smoke Response

Review evidence & best practices

Work with partners

Develop guidance & materials

Share resources



Wildfire Smoke Impacts Advisory Group

- Formed at the request of local health jurisdictions in Dec 2018
- 34 Members

  Including WA Dept of Health, local health jurisdictions, WA Dept of Ecology, WA Labor & Industries, regional clean air authorities, University of Washington, US Forest Service & EPA, and others
- 3 Sub Workgroups to address 3 Priorities

Communication Workgroup	Closures Workgroup	Sensors Workgroup
Develop custom toolkit for local outreach and communication	Develop guidance for school and outdoor event closures	Develop guidance for low-cost sensors to use for health decisions

Communication Products

Developed Wildfire Response Communication Toolkit

- Catalogue of available resources for key messages
- Consistent health messaging
- Customizable communication templates & resources
- Available on Basecamp
- Ongoing updates and contributions from partners

Target Audiences

- General Public
- Healthcare Providers
- Facility Managers for outdoor camps and athletic activities
- School K-12 Principals, superintendents & administrative staff
- School nurses & school health team
- Child care providers
- Long-term Care and Assisted Living Facilities
- Planners of Public Events

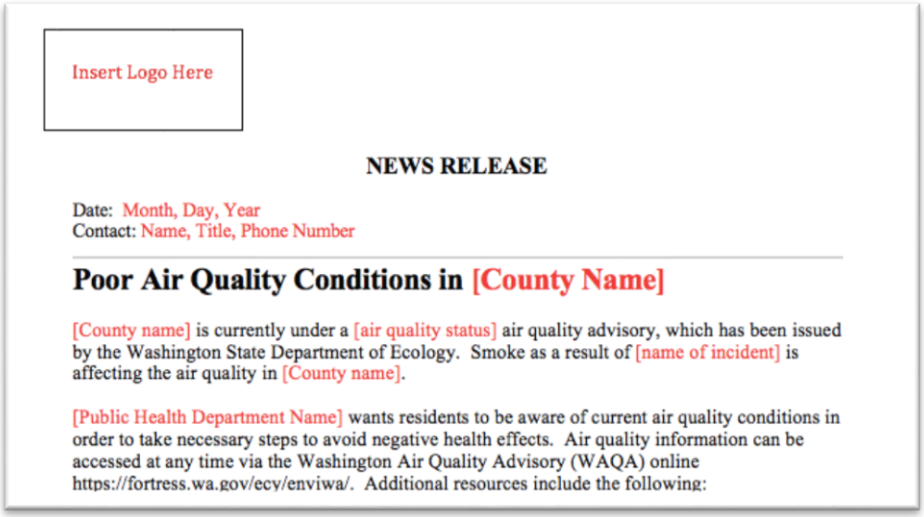
Communication Table

Audience	Key Messages (Includes desired actions) *Group to provide messages*	Appropriate Resources

General Public	• Statement of Risk
	  ○ Wildfire smoke can be harmful to health; prepare ahead of time to minimize exposure to smoke
	  ○ Identify members of family that are sensitive to smoke exposure
	• Know when smoke season occurs
	• Know how to access forecast and real-time air quality information
	• How to prepare yourself/family for wildfire smoke:
	  ○ Create a clean-air room in your home using a HEPA air cleaner
	  ○ Know how to turn AC in home and vehicle to recirculate to avoid outdoor air intake
	  ○ Check your vehicle(s) air filter and make sure it is HEPA equiv.
	  ○ Consider purchasing N95 masks and learn how to properly wear them (make sure it's appropriate for your family members to use)
	  ○ Develop and review/practice your relocation plans
	  ○ Be proactive about medications and managing symptoms especially those with existing heart and lung disease
	• Create a plan for your family activities (alternative activities)
	  ○ Consider indoor exercise options
	  ○ Vacation/Summer camp alternatives identified prior to event
	  ○ Create a medical response plan (i.e. alternate medications)
		3, 12, 25, 28 48, 51, 59, 63, 68, 73, 78, 89

Ready to Use Materials

- Template news releases and letters for local use
  - Customizable for local branding (logos)
  - Format that allows additional local information



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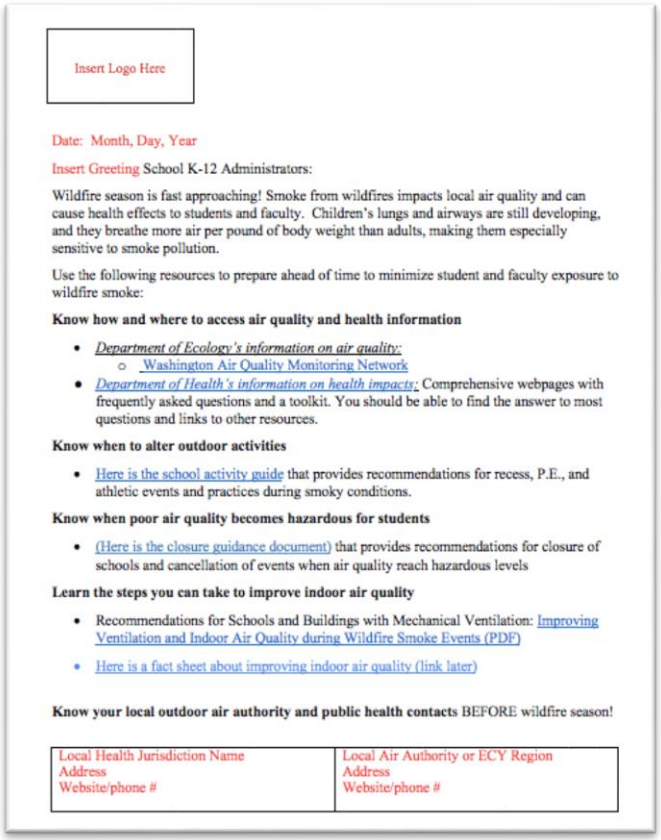
NEWS RELEASE

Date: Month, Day, Year
Contact: Name, Title, Phone Number

Poor Air Quality Conditions in [County Name]

[County name] is currently under a [air quality status] air quality advisory, which has been issued by the Washington State Department of Ecology. Smoke as a result of [name of incident] is affecting the air quality in [County name].

[Public Health Department Name] wants residents to be aware of current air quality conditions in order to take necessary steps to avoid negative health effects. Air quality information can be accessed at any time via the Washington Air Quality Advisory (WAQA) online https://fortress.wa.gov/ecy/enviwa/. Additional resources include the following:



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Date: Month, Day, Year

Insert Greeting School K-12 Administrators:

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

Use the following resources to prepare ahead of time to minimize student and faculty exposure to wildfire smoke:

Know how and where to access air quality and health information

- *Department of Ecology's information on air quality:*
  - Washington Air Quality Monitoring Network
- *Department of Health's information on health impacts:* Comprehensive webpages with frequently asked questions and a toolkit. You should be able to find the answer to most questions and links to other resources.

Know when to alter outdoor activities

- Here is the school activity guide that provides recommendations for recess, P.E., and athletic events and practices during smoky conditions.

Know when poor air quality becomes hazardous for students

- (Here is the closure guidance document) that provides recommendations for closure of schools and cancellation of events when air quality reach hazardous levels

Learn the steps you can take to improve indoor air quality

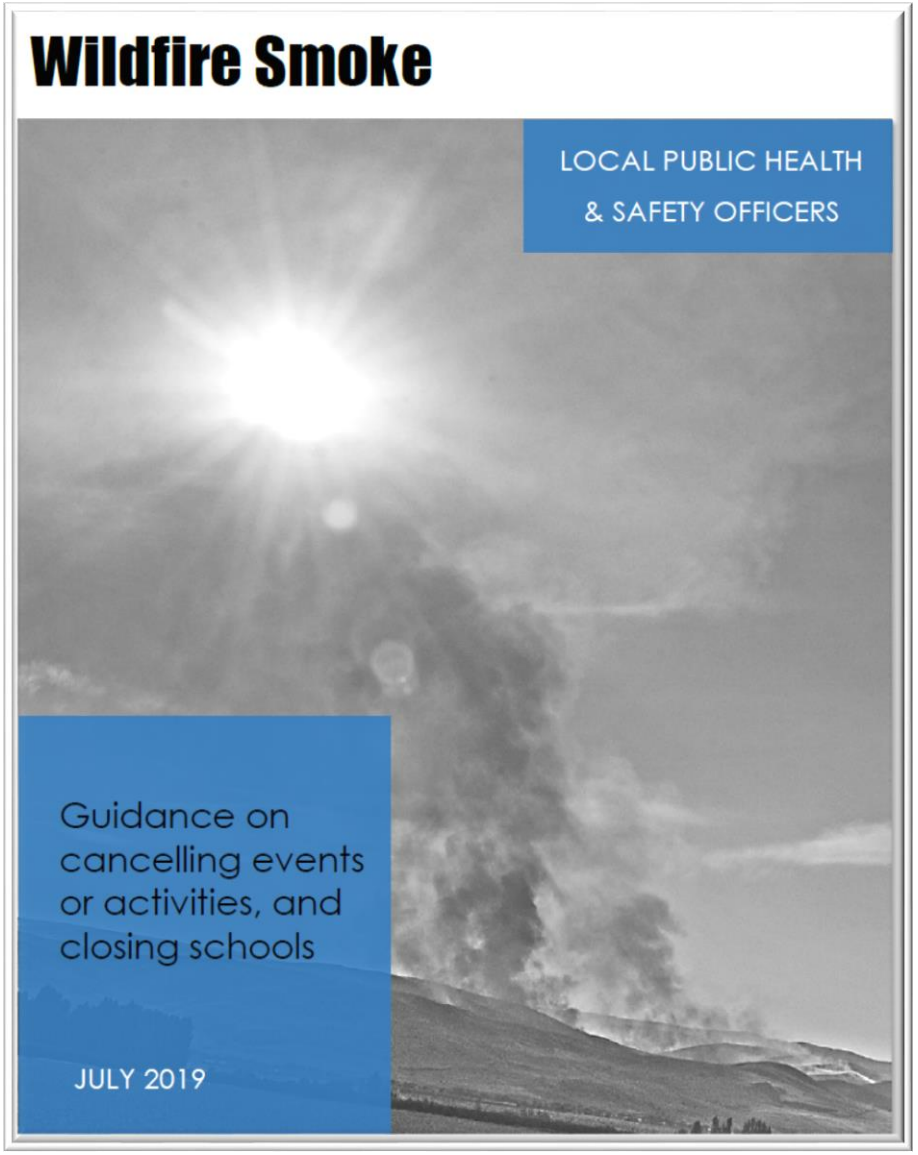
- Recommendations for Schools and Buildings with Mechanical Ventilation: Improving Ventilation and Indoor Air Quality during Wildfire Smoke Events (PDF)
- Here is a fact sheet about improving indoor air quality (link later)

Know your local outdoor air authority and public health contacts BEFORE wildfire season!

Local Health Jurisdiction Name Address Website/phone #	Local Air Authority or ECY Region Address Website/phone #

Closures Guidance

- Health concern & steps to reduce exposures
- Factors to consider in school closures and cancelations of outdoor events
- Measurement of $PM_{2.5}$
  - Outdoors for outdoor events and activities decisions
  - Indoors for school closures decisions
- $PM_{2.5}$ Action levels



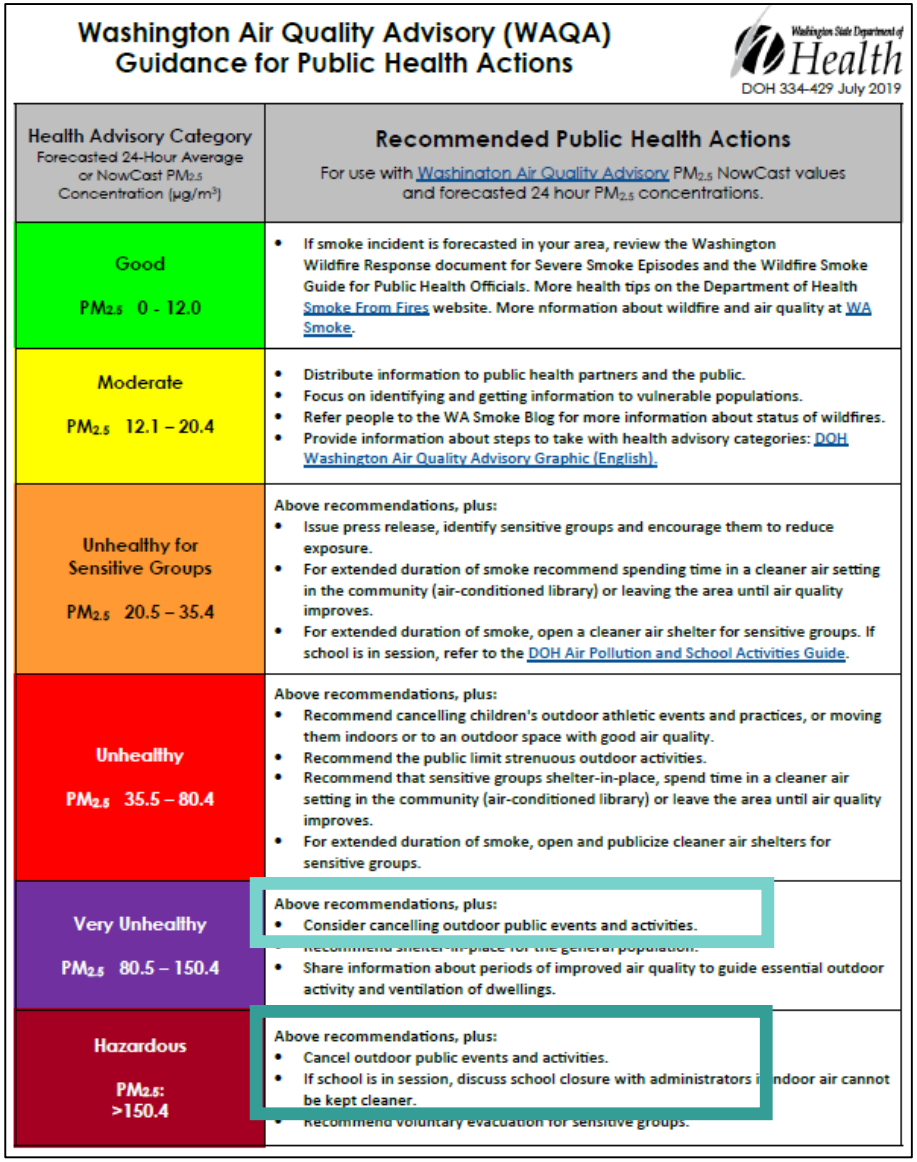
Washington State Department of Health

DEPARTMENT OF ECOLOGY
State of Washington

Recommended PM action levels: wildfire smoke closures and cancellations

When outdoor forecasted 24-hour or NowCast $PM_{2.5}$ concentrations equal or exceed:	
35.5 µg/m^3	Recommend cancelling children's outdoor recess, physical education, athletic practices and games, or moving them indoors or to an area with good air quality.
80.5 µg/m^3	Consider recommending cancelling outdoor public events and activities.
150.5 µg/m^3	Recommend cancelling outdoor public events and activities.
When school is in session and indoor $PM_{2.5}$ concentrations equal or exceed:	
150.5 µg/m^3	Discuss school closure with administrators.

Recommended Public Health Actions



Washington Air Quality Advisory (WAQA)
Guidance for Public Health Actions

Washington State Department of Health
DOH 334-429 July 2019

Health Advisory Category Forecasted 24-Hour Average or NowCast $PM_{2.5}$ Concentration ($\mu g/m^3$)	Recommended Public Health Actions For use with Washington Air Quality Advisory $PM_{2.5}$ NowCast values and forecasted 24 hour $PM_{2.5}$ concentrations.
Good $PM_{2.5}$ 0 - 12.0	• If smoke incident is forecasted in your area, review the Washington Wildfire Response document for Severe Smoke Episodes and the Wildfire Smoke Guide for Public Health Officials. More health tips on the Department of Health Smoke From Fires website. More nformation about wildfire and air quality at WA Smoke.
Moderate $PM_{2.5}$ 12.1 – 20.4	• Distribute information to public health partners and the public. • Focus on identifying and getting information to vulnerable populations. • Refer people to the WA Smoke Blog for more information about status of wildfires. • Provide information about steps to take with health advisory categories: DOH Washington Air Quality Advisory Graphic (English).
Unhealthy for Sensitive Groups $PM_{2.5}$ 20.5 – 35.4	Above recommendations, plus: • Issue press release, identify sensitive groups and encourage them to reduce exposure. • For extended duration of smoke recommend spending time in a cleaner air setting in the community (air-conditioned library) or leaving the area until air quality improves. • For extended duration of smoke, open a cleaner air shelter for sensitive groups. If school is in session, refer to the DOH Air Pollution and School Activities Guide.
Unhealthy $PM_{2.5}$ 35.5 – 80.4	Above recommendations, plus: • Recommend cancelling children's outdoor athletic events and practices, or moving them indoors or to an outdoor space with good air quality. • Recommend the public limit strenuous outdoor activities. • Recommend that sensitive groups shelter-in-place, spend time in a cleaner air setting in the community (air-conditioned library) or leave the area until air quality improves. • For extended duration of smoke, open and publicize cleaner air shelters for sensitive groups.
Very Unhealthy $PM_{2.5}$ 80.5 – 150.4	Above recommendations, plus: • Consider cancelling outdoor public events and activities. • Share information about periods of improved air quality to guide essential outdoor activity and ventilation of dwellings.
Hazardous $PM_{2.5}$: >150.4	Above recommendations, plus: • Cancel outdoor public events and activities. • If school is in session, discuss school closure with administrators i ndoor air cannot be kept cleaner. • Recommend voluntary evacuation for sensitive groups.

- Consider cancelling outdoor public events.

- Cancel outdoor public events.
- If school is in session, discuss school closure with school.

Source: WA Dept of Health, https://www.doh.wa.gov/Portals/1/Documents/4300/334-429-WAQAGuidePublicHealthActions.pdf

Washington Air Pollution and School Activities Guide

	Air Quality Conditions* First, check local air conditions at https://fortress.wa.gov/ecy/enviwa/ and then use this chart.				
	Good	**Moderate**	**Unhealthy for Sensitive Groups**	**Unhealthy**	**Very Unhealthy/ Hazardous**
Recess (15 minutes)	No restrictions.	Allow students with asthma, respiratory infection, lung or heart disease to stay indoors.	Keep students with asthma, respiratory infection, and lung or heart disease indoors.	Keep all students indoors and keep activity levels light.	Keep all students indoors and keep activity levels light.
P.E. (1 hour)	No restrictions.	Monitor students with asthma, respiratory infection, lung or heart disease. Increase rest periods or substitutions for these students as needed.	Keep students with asthma, respiratory infection, lung or heart disease, and diabetes indoors. Limit these students to moderate activities. For others, limit to light outdoor activities. Allow any student to stay indoors if they don't want to go outside.	Conduct P.E. indoors. Limit students to light indoor activities.	Keep all students indoors and keep activity levels light.
Athletic Events and Practices (Vigorous activity 2-3 hours)	No restrictions.	Monitor students with asthma, respiratory infection, lung or heart disease. Increase rest periods and substitutions for these students as needed.	Students with asthma, respiratory infection, lung and heart disease, or conditions like diabetes shouldn't play outdoors. Consider moving events indoors. If events are not cancelled, increase rest periods and substitutions to allow for lower breathing rates.	Cancel events. Or move events to an area with "Good" air quality — if this can be done without too much time spent in transit through areas with poor air quality.	Cancel events. Or move events to an area with "Good" air quality — if this can be done without too much time spent in transit through areas with poor air quality.

Cancel events. Or move events to an area with "Good" air quality

Source: WA Dept of Health, www.doh.wa.gov/Portals/1/Documents/Pubs/334-332.pdf

Washington Air Quality Advisory: English / Spanish / Arabic / Chinese / Korean / Punjabi / Russian / Somali / Tagalog / Ukrainian / Vietnamese

Source: WA Dept of Health, https://www.doh.wa.gov/Portals/1/Documents/4300/waqa%20infographic_English.pdf?ver=2018-07-26-131607-693

Factors to consider with closures & cancellations

- What is the forecast for how long wildfire smoke levels will remain high?
- Are smoke conditions getting worse, getting better, or staying about the same?
- Is there an option to relocate to an area with cleaner air?
- If children or others requiring care are involved, will adults be available as caretakers?
- Will there be impacts on economic or job security by cancelling the activity or event?

(see guidance document for more)

Sensors Products

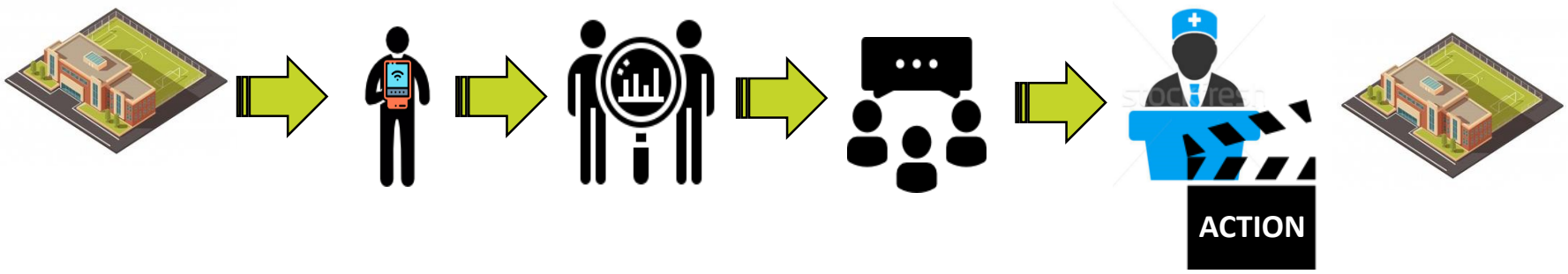
Developing guidance for use of low-cost air sensors to assist in health decisions about indoor and outdoor activities during wildfire smoke episodes

Image Sources: SouthCoast AQMD http://www.aqmd.gov/aq-spec/evaluations/summary-pm, Aeroqual www.aeroqual.com

Locally operationalize low-cost air sensors use

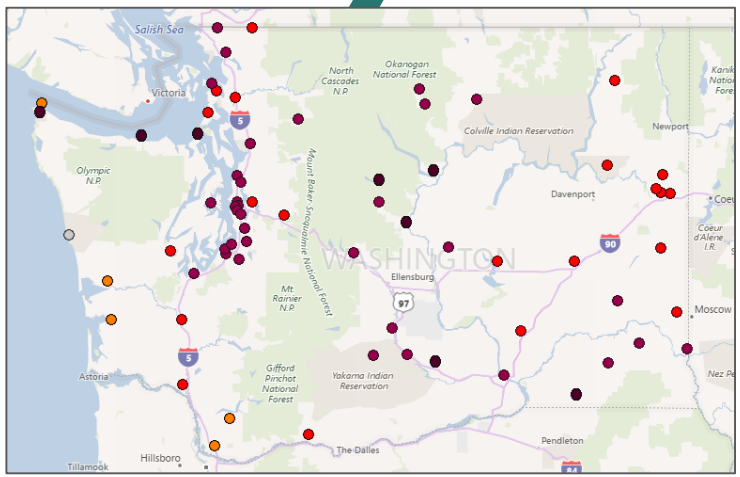
Requires a local plan:

- How to obtain a sensor and how to use it
- Who will be technically prepared to use sensor
- Who will interpret collected sensor data
- How results will get to decision maker for public health action

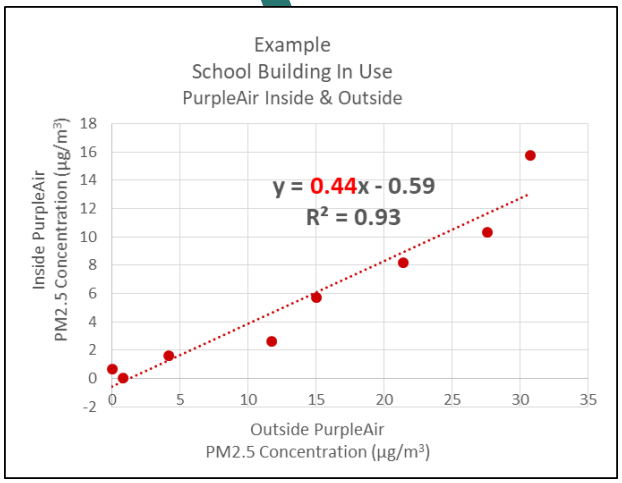


Estimated Indoor PM2.5 =

$$\text{Nowcast or Forecast PM2.5} * \frac{\text{Indoor sensor PM2.5}}{\text{Outdoor Sensor PM2.5}}$$

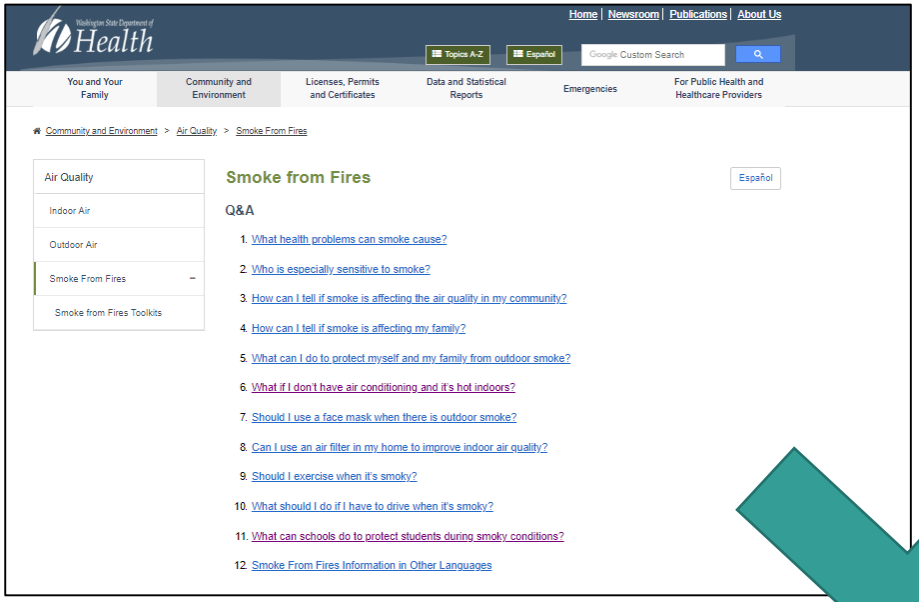


Nearest Nowcast Regulatory Monitor or Forecasted Outdoor PM2.5 Concentration



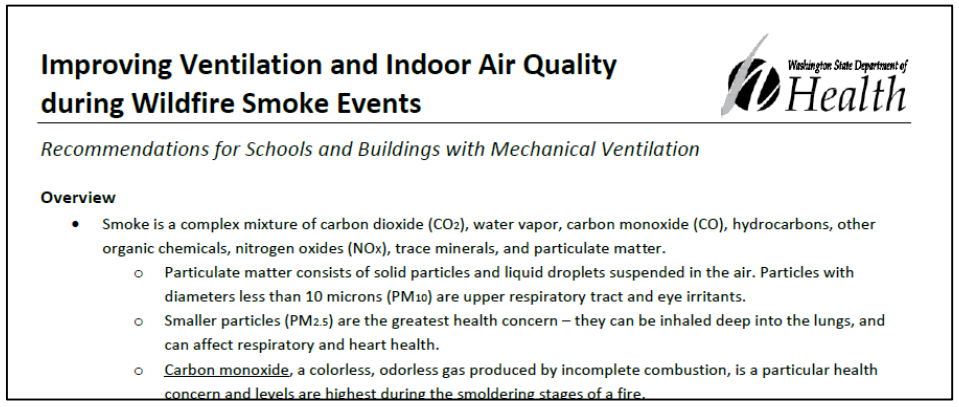
School's Indoor to Outdoor Sensor Comparison

DOH Smoke from Fires Website



www.doh.wa.gov/smokefromfires

Available in 9 languages



Improving Ventilation and Indoor Air Quality during Wildfire Smoke Events

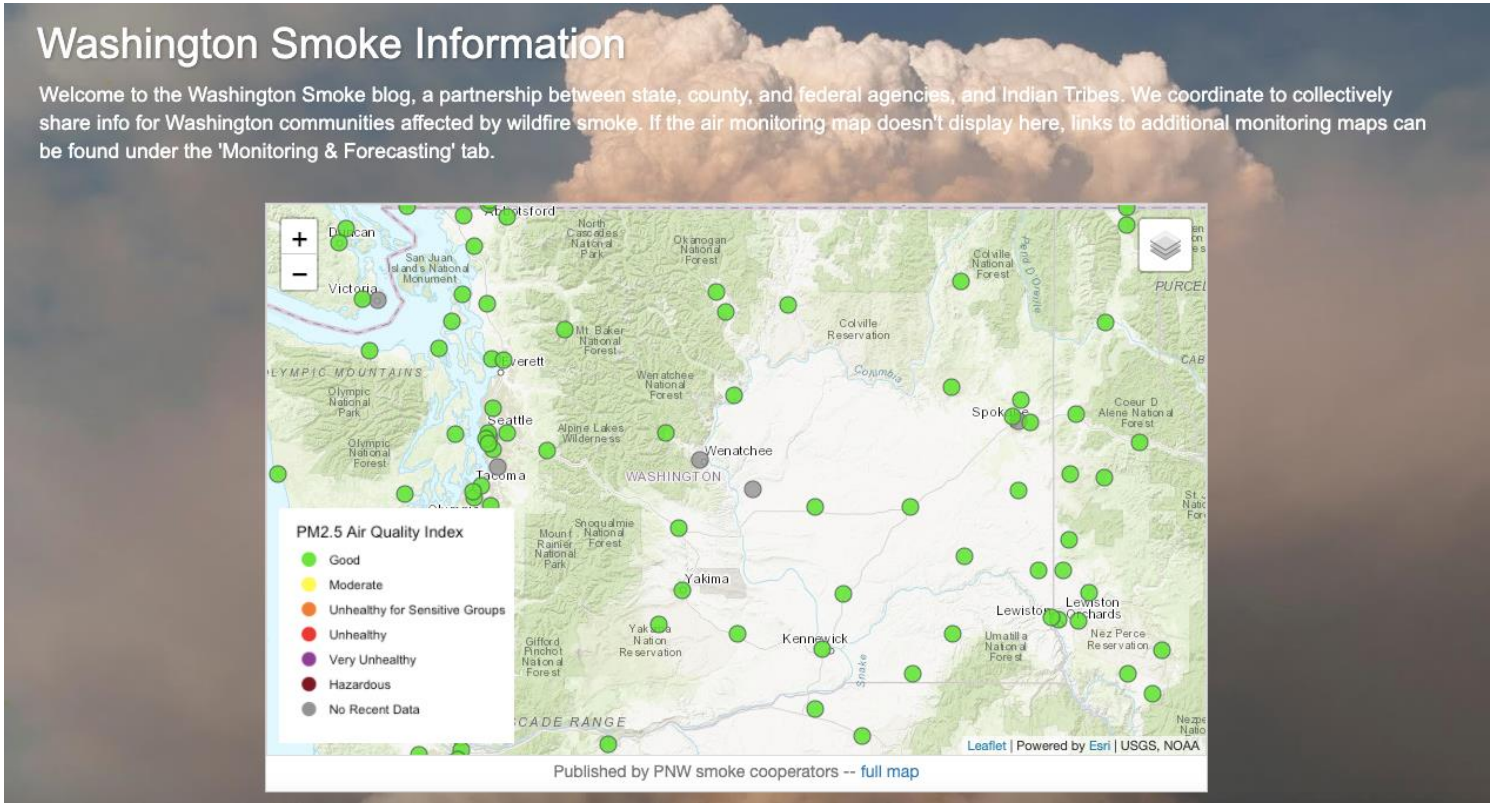
Washington State Department of Health

Recommendations for Schools and Buildings with Mechanical Ventilation

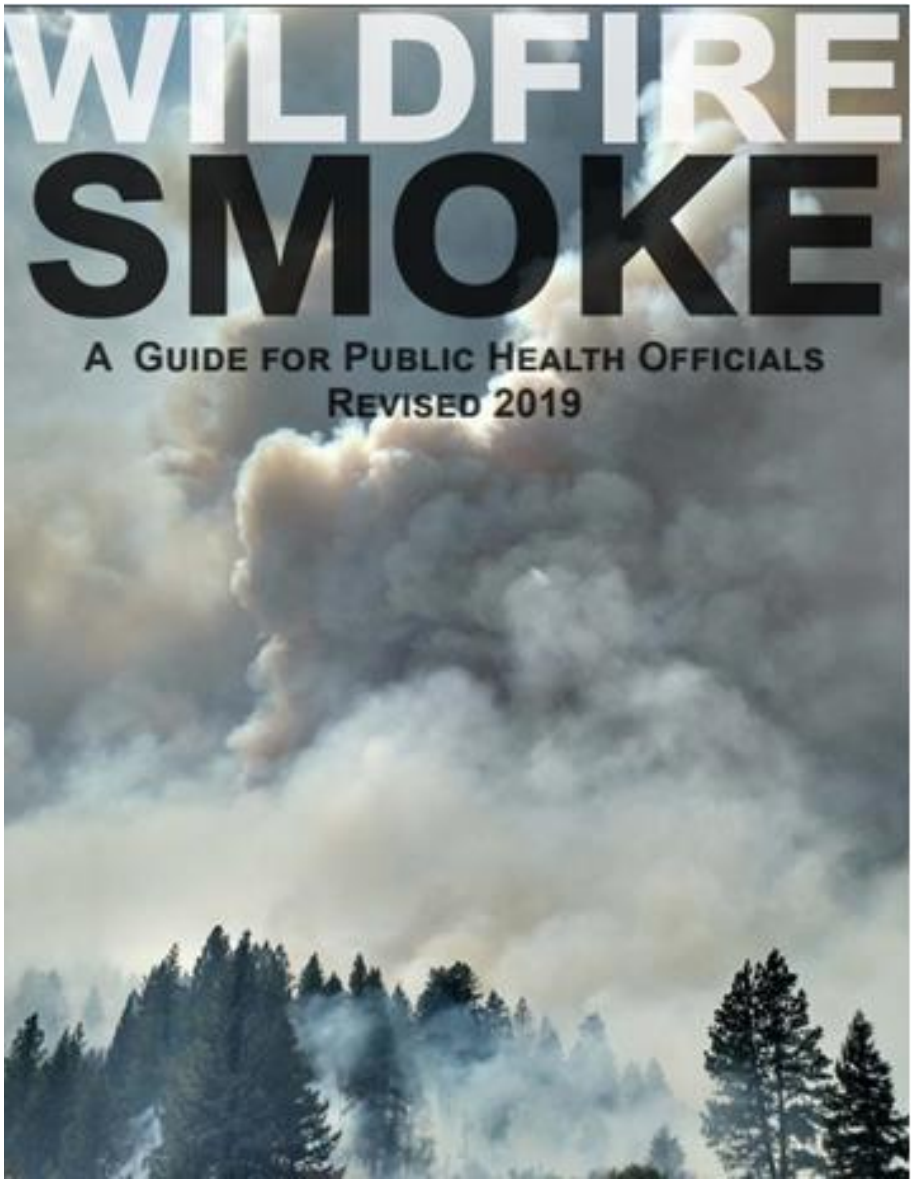
Overview

- Smoke is a complex mixture of carbon dioxide (CO_2), water vapor, carbon monoxide (CO), hydrocarbons, other organic chemicals, nitrogen oxides (NO_X), trace minerals, and particulate matter.
  - Particulate matter consists of solid particles and liquid droplets suspended in the air. Particles with diameters less than 10 microns (PM_{10}) are upper respiratory tract and eye irritants.
  - Smaller particles ($PM_{2.5}$) are the greatest health concern – they can be inhaled deep into the lungs, and can affect respiratory and heart health.
  - Carbon monoxide, a colorless, odorless gas produced by incomplete combustion, is a particular health concern and levels are highest during the smoldering stages of a fire.

Washington Smoke Blog



wasmoke.blogspot.com



EPA's Smoke-Ready Toolbox:

https://www.epa.gov/smoke-ready-toolbox-wildfires

US EPA: https://www3.epa.gov/airnow/wildfire-smoke/wildfire-smoke-guide-revised-2019.pdf

2020 Season: COVID-19 and Wildfire Smoke

COVID-19 and Wildfire Smoke

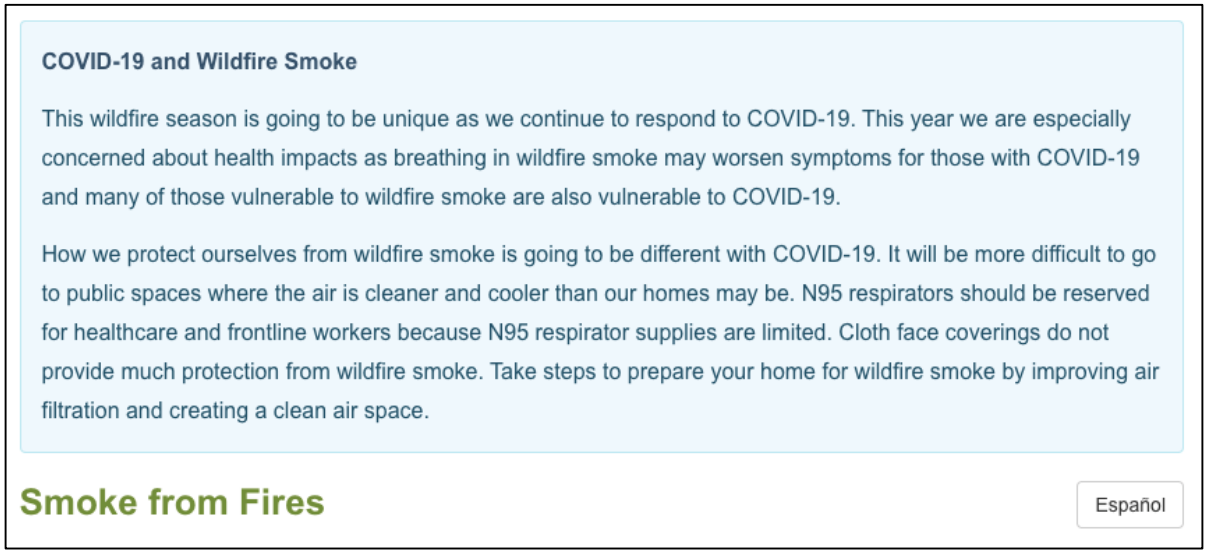
- Elevated concern about health impacts of wildfire smoke while we are still responding to the pandemic
- Early evidence indicates increased health risks with WFS and COVID-19
  - Both impact the lungs
  - Exposure to smoke may worsen the symptoms in those with COVID-19 and may make people more susceptible to developing respiratory infections, such as COVID-19
  - Many of those vulnerable to smoke are also most vulnerable to COVID-19

Impacts on Health Guidance

- Guidance to go to malls, libraries, community centers, etc. for cleaner indoor air will be difficult with COVID-19 restrictions
  - CDC Interim Guidance: https://www.cdc.gov/coronavirus/2019-ncov/php/cleaner-air-shelters.html
- Emphasize creating cleaner air at home through filtration
  - HVAC systems
  - Portable air cleaners w/ HEPA filters
  - Box fan air filters
- Face Masks
  - Reserve N95's and other NIOSH approved respirators for those required to wear them for their job
  - Cloth face coverings do not provide much protection from wildfire smoke (PM2.5)

Updating Recommendations

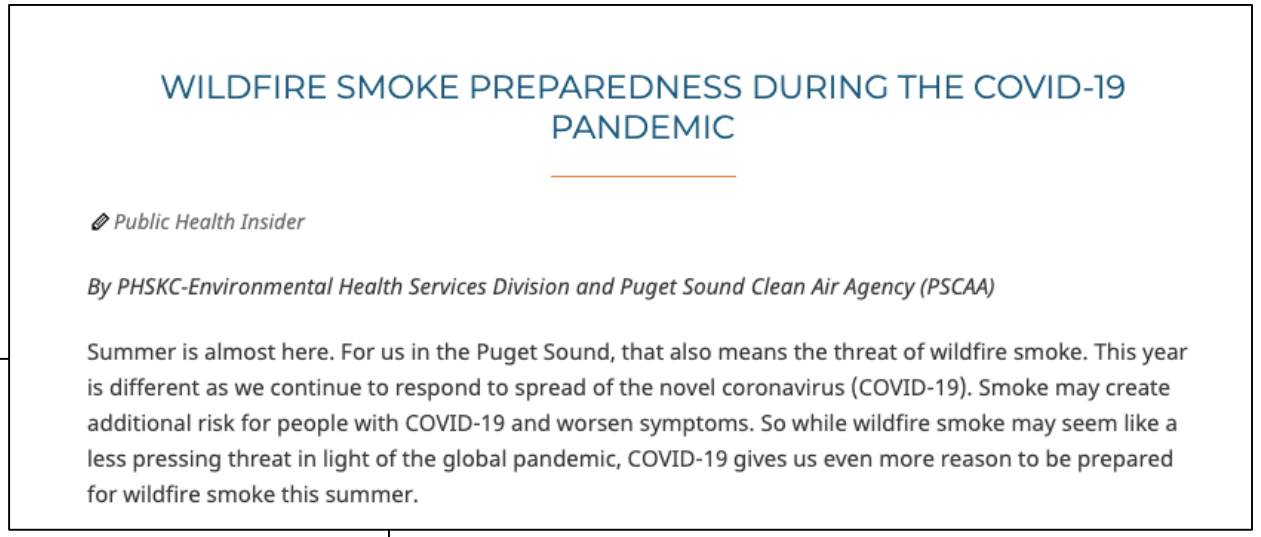
- Updates to the guidance are being finalized and reviewed by partners
- Update DOH Smoke from Fires webpages
- Update communication products



DOH's Smoke from Fires Webpage

Be Prepared

- With COVID-19, it is especially important to prepare before the start of the season.



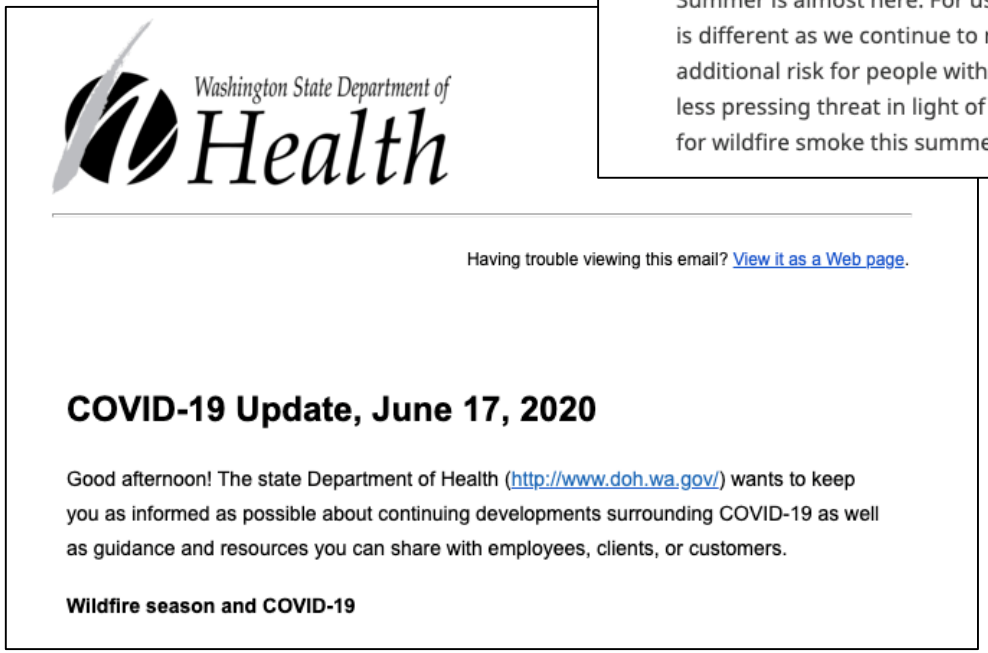
WILDFIRE SMOKE PREPAREDNESS DURING THE COVID-19 PANDEMIC

Public Health Insider

By PHSKC-Environmental Health Services Division and Puget Sound Clean Air Agency (PSCAA)

Summer is almost here. For us in the Puget Sound, that also means the threat of wildfire smoke. This year is different as we continue to respond to spread of the novel coronavirus (COVID-19). Smoke may create additional risk for people with COVID-19 and worsen symptoms. So while wildfire smoke may seem like a less pressing threat in light of the global pandemic, COVID-19 gives us even more reason to be prepared for wildfire smoke this summer.

PHSKC & PSCAA's Blog Post



Washington State Department of Health

Having trouble viewing this email? View it as a Web page.

COVID-19 Update, June 17, 2020

Good afternoon! The state Department of Health (http://www.doh.wa.gov/) wants to keep you as informed as possible about continuing developments surrounding COVID-19 as well as guidance and resources you can share with employees, clients, or customers.

Wildfire season and COVID-19

DOH's Daily COVID-19 Update

Kaitlyn Kelly
Air Quality and Harmful Algal Bloom Policy Specialist
Kaitlyn.Kelly@doh.wa.gov

Washington State Department of Health