

Wildfire Smoke: What to Know, What to Do

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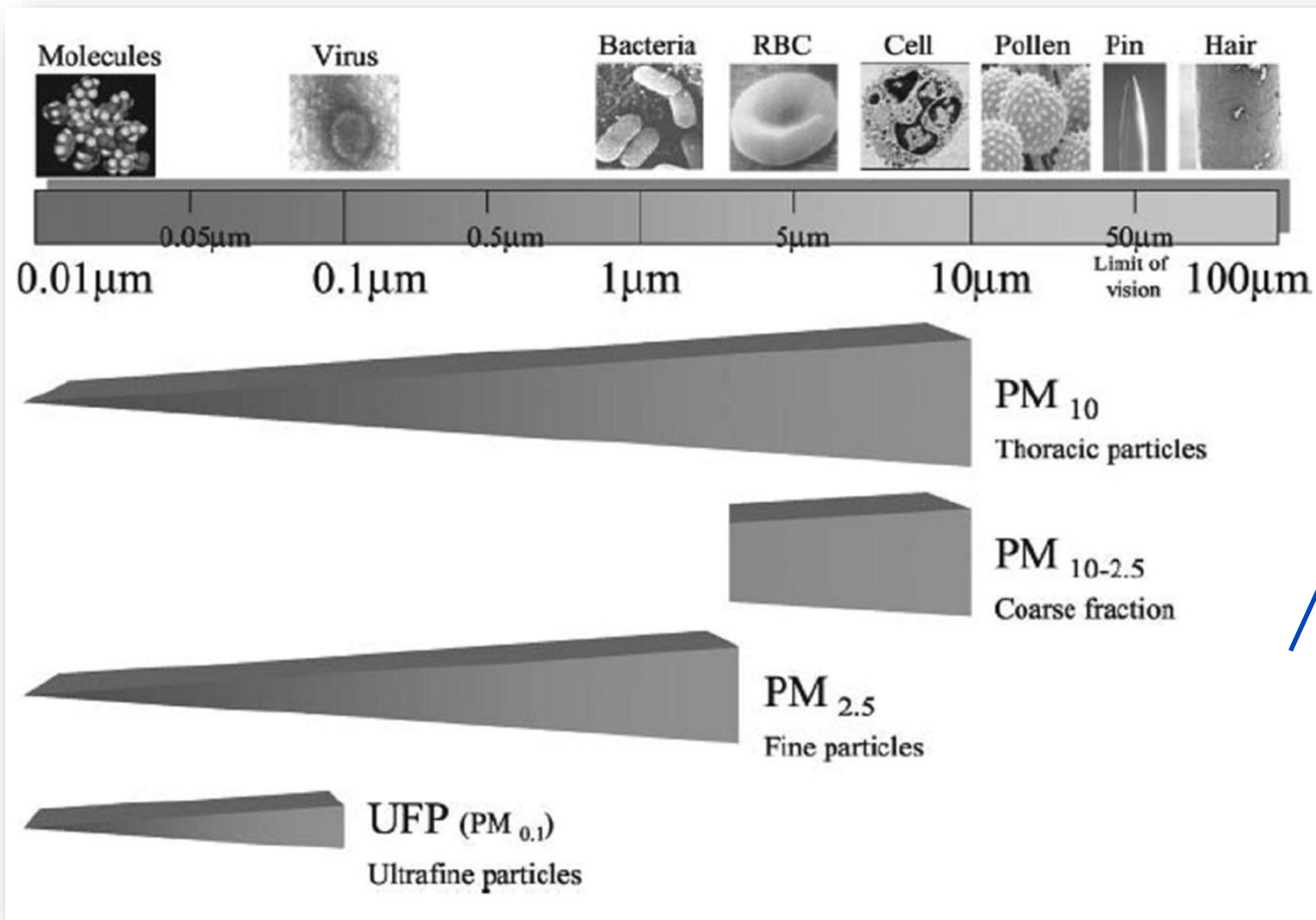


Wildfire Smoke Produces/Contains Pollutants

- Particles: PM 10, PM2.5, ultrafines
- Volatile organic compounds
- Benzpyrines and other toxic compounds
- Carbon monoxide



Particulate Matter: Size Distribution



In Oregon:
Wildfires are
major source of
PM_{2.5}



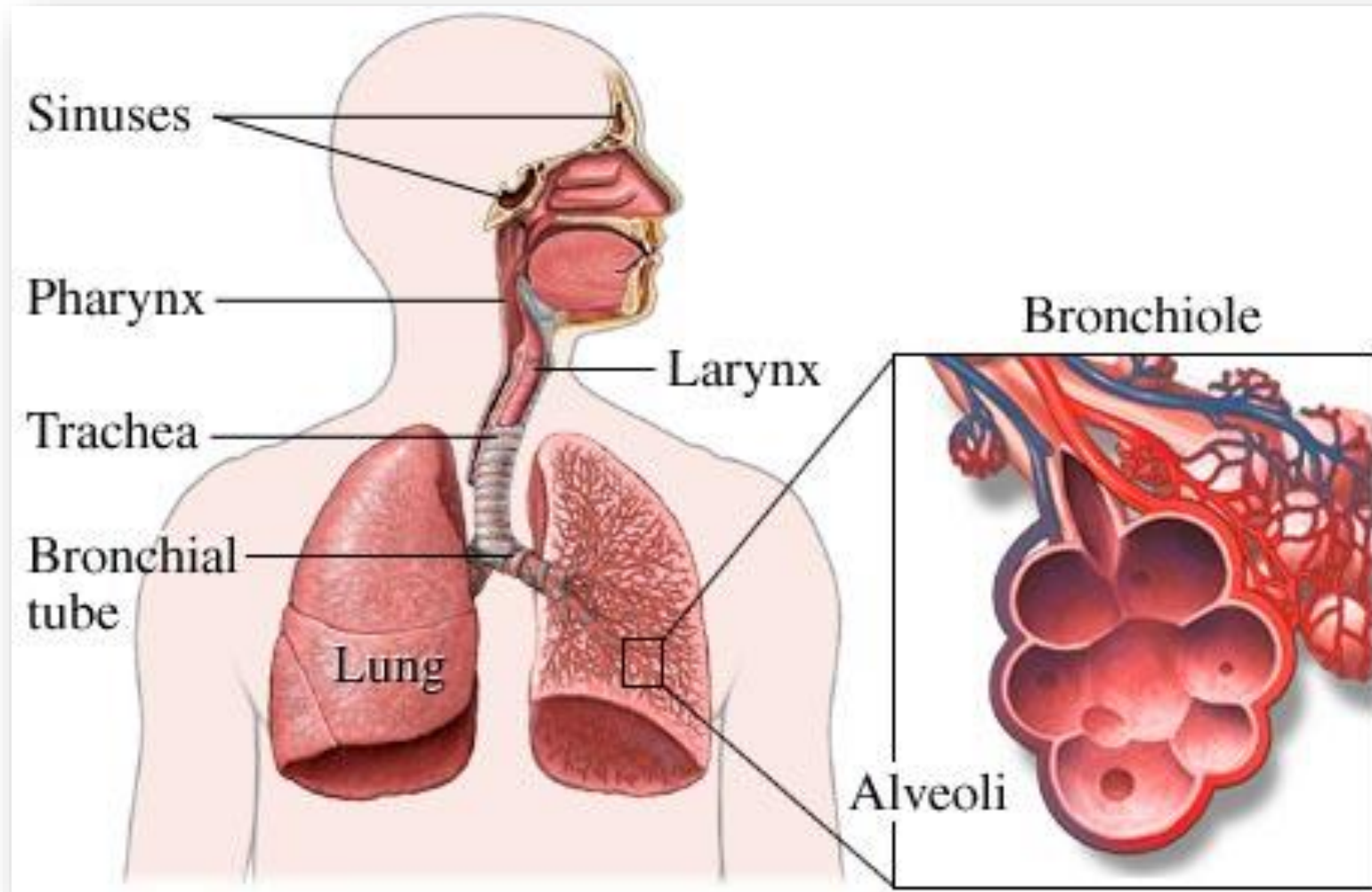
Why We Monitor PM2.5

PM2.5 inhalation exposure can lead to:

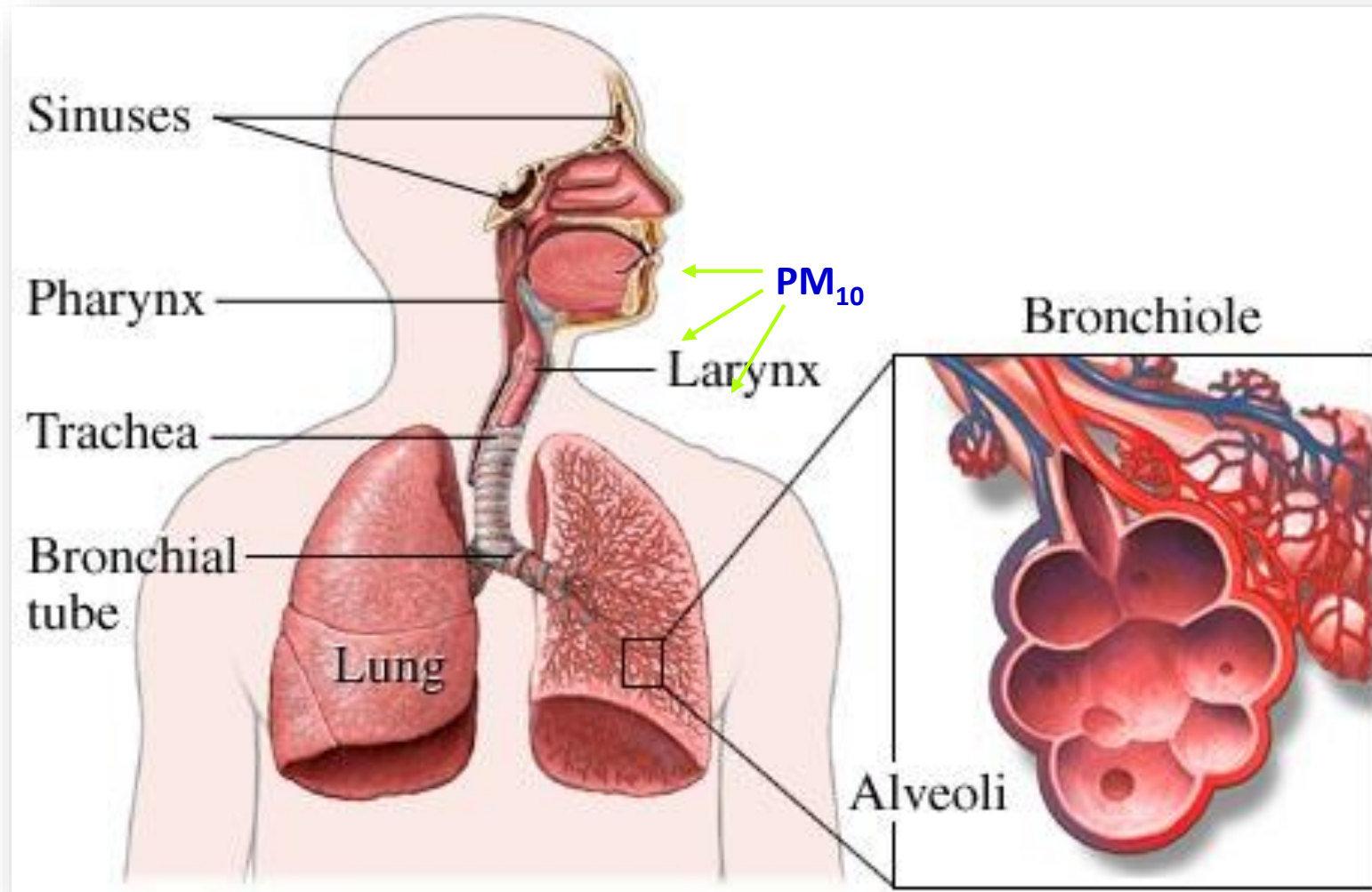
- Premature death
- Heart attacks
- Strokes
- Acute respiratory symptoms (e.g., coughing, inflammation)
- Asthma related effects
- Reduced lung function
- Acute and chronic bronchitis
- Cardiovascular illness
- PM2.5 may also be associated with infant mortality, low birth weight, and cancer
- No evidence of a “threshold” (safe level)



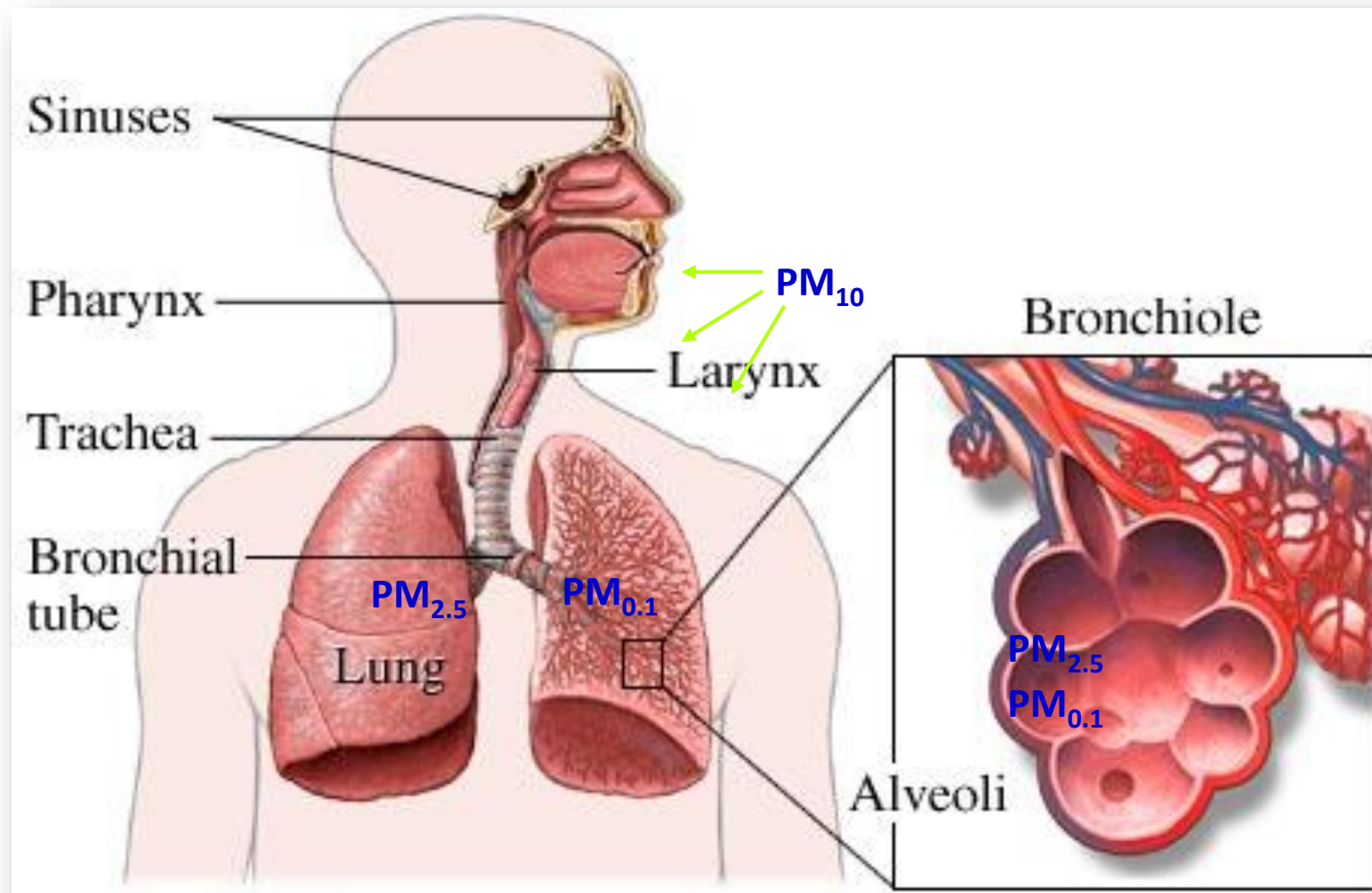
Fate of PM in the Airways



Fate of PM in the Airways



Fate of PM in the Airways



Susceptible Populations

- Children, elderly
- People with:
 - Chronic heart and lung disease
 - Influenza
 - Asthma
- Other factors affecting susceptibility:
 - Diabetes
 - Medication use
 - Gender, race, socioeconomic status



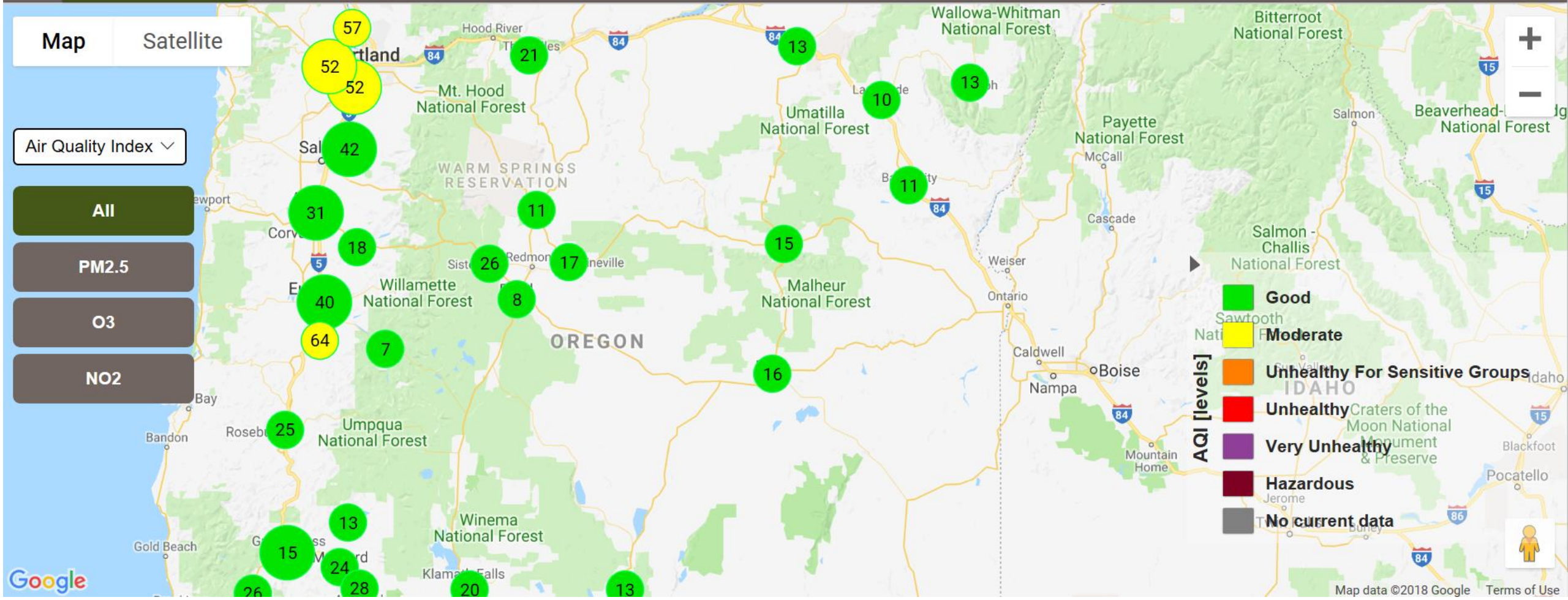
Protect Yourself & Community from Smoke

- Check the AQI frequently
- Check AQI (or wind speed and direction) predictions if available
- Visual inspection of visibility if AQI not available
- Avoid bad air by:
 - Limiting time outside
 - Sheltering in place
 - Indoor exercise options
- Take advantage of good air by going outside, exercising



Oregon Department of Environmental Quality - Air Quality Monitoring Data

- Current Air Quality
- Interactive Reports
- Reports Library
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- Resources
- Contact Us
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Oregon Department of Environmental Quality - Air Quality Monitoring Data

Station - Sisters Forest Service, Last Update - 10/30/2018 14:00 , Hourly - Average

Current Air

Map

Air Quality Index

All

PM2.5

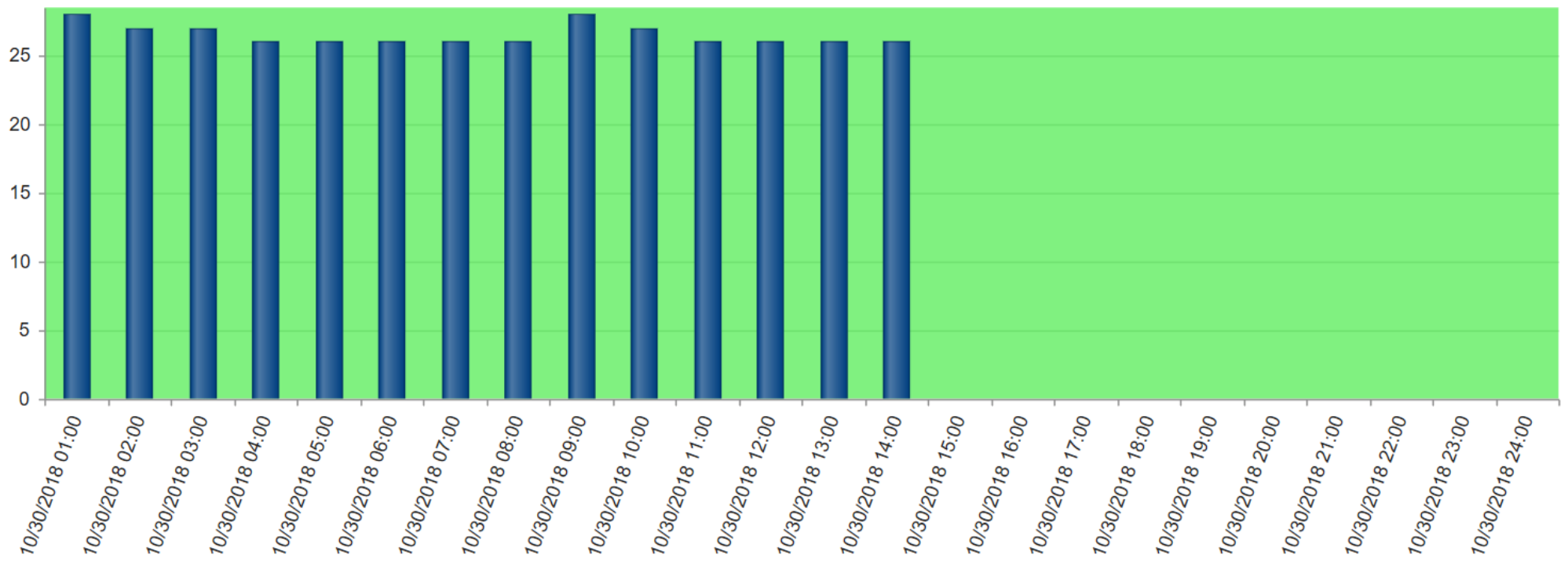
O3

NO2

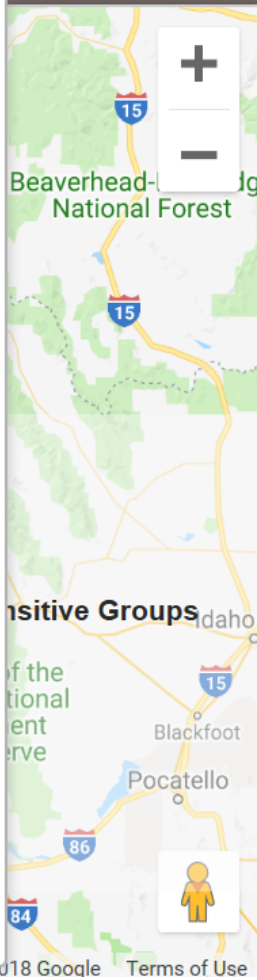


10/30/2018

Go To Station Info



PM2.5 Est - Air Quality Index



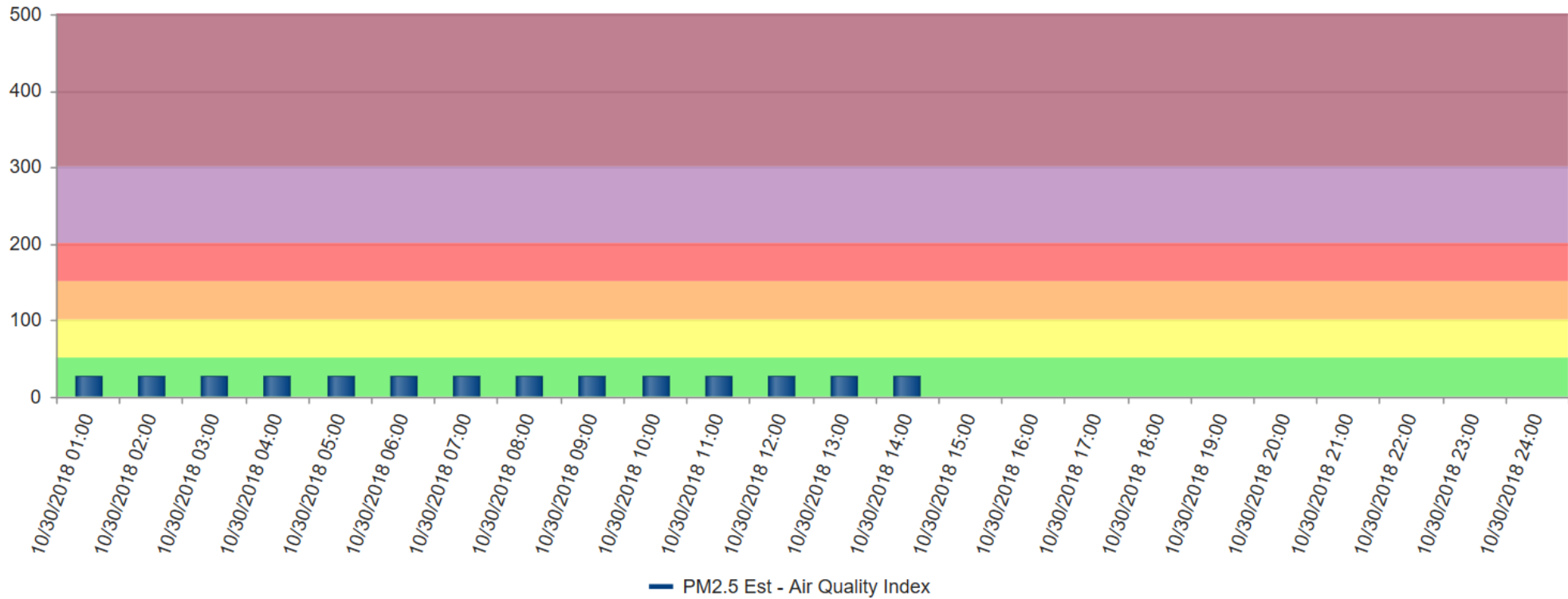
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PM2.5 Est - Air Quality Index



Air Quality Guide for Particle Pollution

Harmful particle pollution is one of our nation's most common air pollutants. Use the chart below to help reduce your exposure and protect your health. For your local air quality forecast, visit www.airnow.gov

Air Quality Index	Who Needs to be Concerned?	What Should I Do?
Good (0-50)		It's a great day to be active outside.
Moderate (51-100)	Some people who may be unusually sensitive to particle pollution.	Unusually sensitive people: Consider reducing prolonged or heavy exertion. Watch for symptoms such as coughing or shortness of breath. These are signs to take it easier. Everyone else: It's a good day to be active outside.
Unhealthy for Sensitive Groups (101-150)	Sensitive groups include people with heart or lung disease, older adults, children and teenagers.	Sensitive groups: Reduce prolonged or heavy exertion. It's OK to be active outside, but take more breaks and do less intense activities. Watch for symptoms such as coughing or shortness of breath. People with asthma should follow their asthma action plans and keep quick relief medicine handy. If you have heart disease: Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your health care provider.
Unhealthy (151-200)	Everyone	Sensitive groups: Avoid prolonged or heavy exertion. Consider moving activities indoors or rescheduling. Everyone else: Reduce prolonged or heavy exertion. Take more breaks during outdoor activities.
Very Unhealthy (201-300)	Everyone	Sensitive groups: Avoid all physical activity outdoors. Move activities indoors or reschedule to a time when air quality is better. Everyone else: Avoid prolonged or heavy exertion. Consider moving activities indoors or rescheduling to a time when air quality is better.
Hazardous (301-500)	Everyone	Everyone: Avoid all physical activity outdoors. Sensitive groups: Remain indoors and keep activity levels low. Follow tips for keeping particle levels low indoors.

5-3-1 Visibility Index

Table 5

Using the 5-3-1 Visibility Index

Using the 5-3-1 Visibility Index			
Distance you can see*	And you are:		Or you have:
	<ul style="list-style-type: none">• An Adult• A Teenager• An older child	<ul style="list-style-type: none">• Age 65 & over• Pregnant• A young child	<ul style="list-style-type: none">• Asthma• Repertory Illness• Lung or Heart
5 miles	Check visibility	Minimize outdoor activity	
3 miles	Minimize outdoor activity	Stay Inside	
1 mile	Stay Inside	Stay Inside	
<i>No matter how far you can see, if you feel like you are having health effects from smoke exposure, take extra care to stay inside or get to an area with better air quality. You should also see your doctor or other health professional as needed.</i>			
<i>* less reliable when humidity is high</i>			



Keep Indoor Air Cleaner

- Check for gaps & seal them
 - Windows
 - Doors
 - Negative pressure testing with door insert, if available
- Reduce indoor pollutants by:
 - Not smoking
 - Using gas stoves sparingly
 - Reduce VOCs (cleaning compounds, scented candles)
- Prevent mold and mildew
 - Making your dwelling too tight without replacement air may cause this
 - Reduce moisture production (e.g., by timing laundry)
 - Air home on good air days



Keep Indoor Air Cleaner – HEPA Filters

- Home and office air cleaners - wide variety available
 - High-end – lower noise with Charcoal/VOC filtration (e.g., IQ Air)
 - Mid-price with HEPA and (typically) electrostatic precipitation (e.g., Blue Air and many others).
 - Caveat: electrostatic activity increases ozone
 - Homemade (HEPA filter + fan) – Multiple proven designs available open source
 - Performance dependent on fan speed/ air volume
- Vehicle HEPA-grade cabin air filters – available in many modern vehicles



Protect Yourself – When to use N95 mask

- Masks/respirators if you must be outside when the air is bad
 - Buy minimum N-95 (US) Standard
 - Shop for comfort and good seal against skin
 - Fit test essential if work-related or for endurance sports training
 - Self “seal test” if fit testing not available and your exposure will be less
 - May require more effort for the same task without a mask
 - Generally not recommended for children (as may reduce airflow and respiratory tidal volume) or medically frail
 - As much as possible, the young and frail should be sheltered in place in clean air on bad air days



Typical N95 Mask



What Commissioners & Counties Can Do

- Communicate about smoke precautions before wildfire season
- Have an up-to-date emergency preparedness plan
- Support partnerships, e.g., your county Public Health Dept with OHA, DEQ, USFS, and BLM “fire partners”
- Include health messaging in notifications about controlled burns and fires
- Establish and promote cleaner air spaces (e.g., libraries)
- Proactive risk communication – use Public Health messages and materials



Resources

OHA's Wildfire Smoke Risk Communication Toolkit:

(<https://www.oregon.gov/oha/ph/Preparedness/Partners/Pages/riskcommunicationtools.aspx> you have to click on "Wildfire Smoke"): premade social media messages, press releases, and talking points.

Link to Deschutes County Wildfire Smoke Tips :

<https://www.deschutes.org/health/page/health-tips-wildfire-smoke>

Link to the EPA's how-to sheet for N95 masks (OHA-endorsed) :

<https://www.oregon.gov/oha/PH/PREPAREDNESS/PARTNERS/Documents/cerc/EPA-How-to-Wear-A-Mask-Palm-Card-PRINT.PDF>

**All of these links are available at:
www.deschutes.org/smoke**





Deschutes County Health Services

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Like Page

It's wildfire season in Deschutes County. Learn how to minimize the impacts of smoke on yourself and your family and find out how to check the air quality.



DESCHUTES.ORG

Smoke | Deschutes County Oregon

Deschutes County Health Services advises residents to be aware of...

Thank You

Acknowledgment: Morgan Feld, MPH – title photo and content

Thanks! George.Conway@Deschutes.org

