



# Wildfire Smoke & Worker Health

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NIEHS Technical Workshop, May 2022

# Cal/OSHA Protection from Wildfire Smoke Standard

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*CCR Title 8 Section 5141.1*

[Cal/OSHA](#)

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[Worker Protection from Wildfire Smoke](#)

Worker Protection from Wildfire Smoke

## Worker Protection from Wildfire Smoke



# Objectives

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- Identify health effects of wildfire smoke exposure
- Use online tool to determine real time air quality
- Describe Cal/OSHA wildfire smoke protections for workers
- List the benefits and limitations of N95 respirators





# 8 of the 10 largest wildfires on record in California have occurred since 2017

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**August Complex** (*Aug 2020*)

**Dixie** (*July 2021*)

**Mendocino Complex** (*July 2018*)

**SCU Lightning Complex** (*Aug 2020*)

**Creek** (*Sept 2020*)

**LNU Lightning Complex** (*Aug 2020*)

**North Complex** (*Aug 2020*)

**Thomas** (*Dec 2017*)



# Dixie Fire, California, July-Oct 2021

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# Bootleg Fire, Oregon, July-Aug 2021

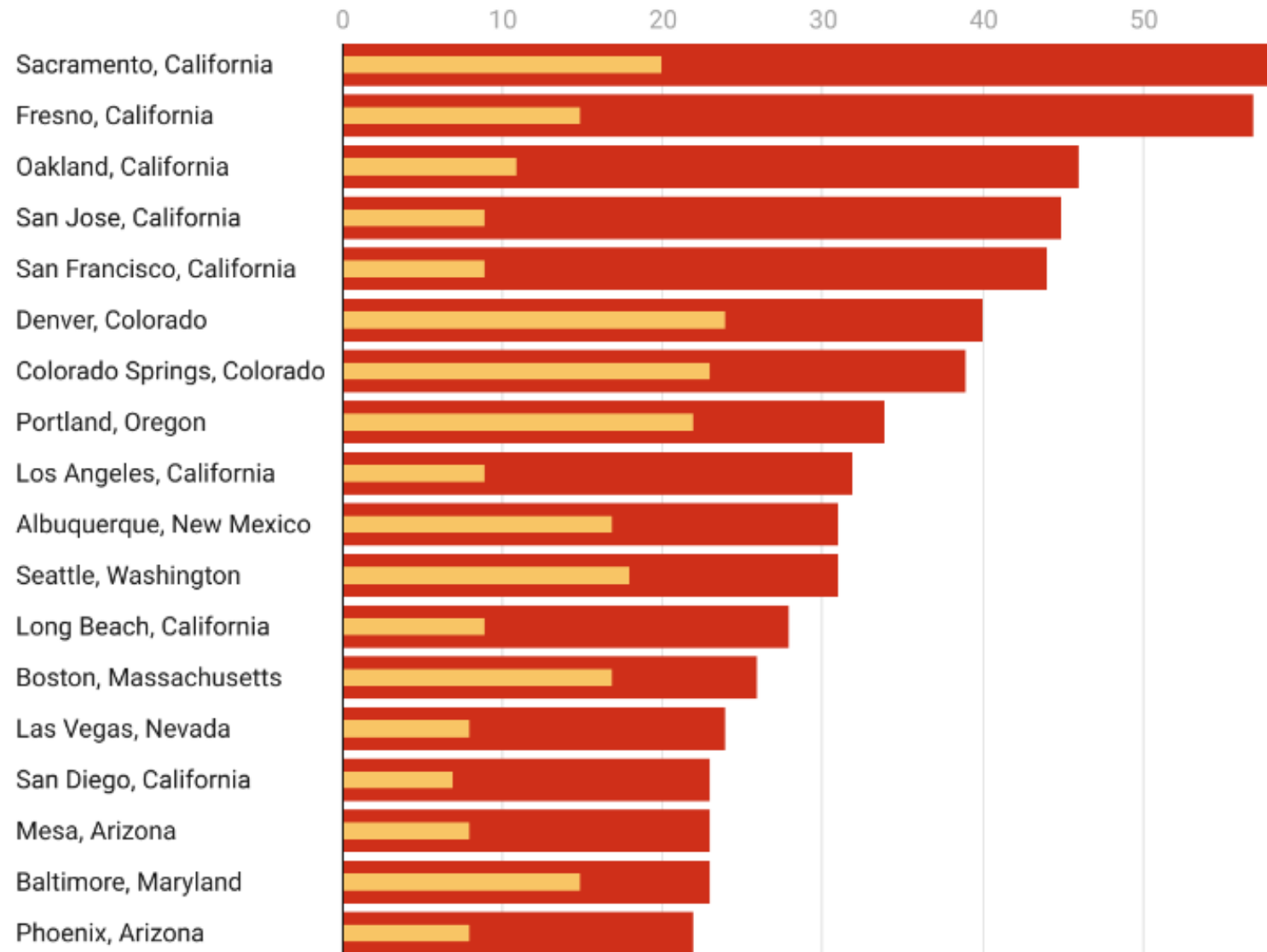
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# Major cities with significant increases in smoke days

Smoke days (2016-2020) Smoke days (2009-2013)



SOURCE: Dangerous Air: As California Burns, America Breathes Toxic Smoke, KQED Sept 2021 <https://www.kqed.org/news/11890211/dangerous-air-as-california-burns-america-breathes-toxic-smoke>



**What type of workers may be exposed to wildfire smoke?**





# Wildfire Smoke & Health Impacts





# Wildfire Smoke

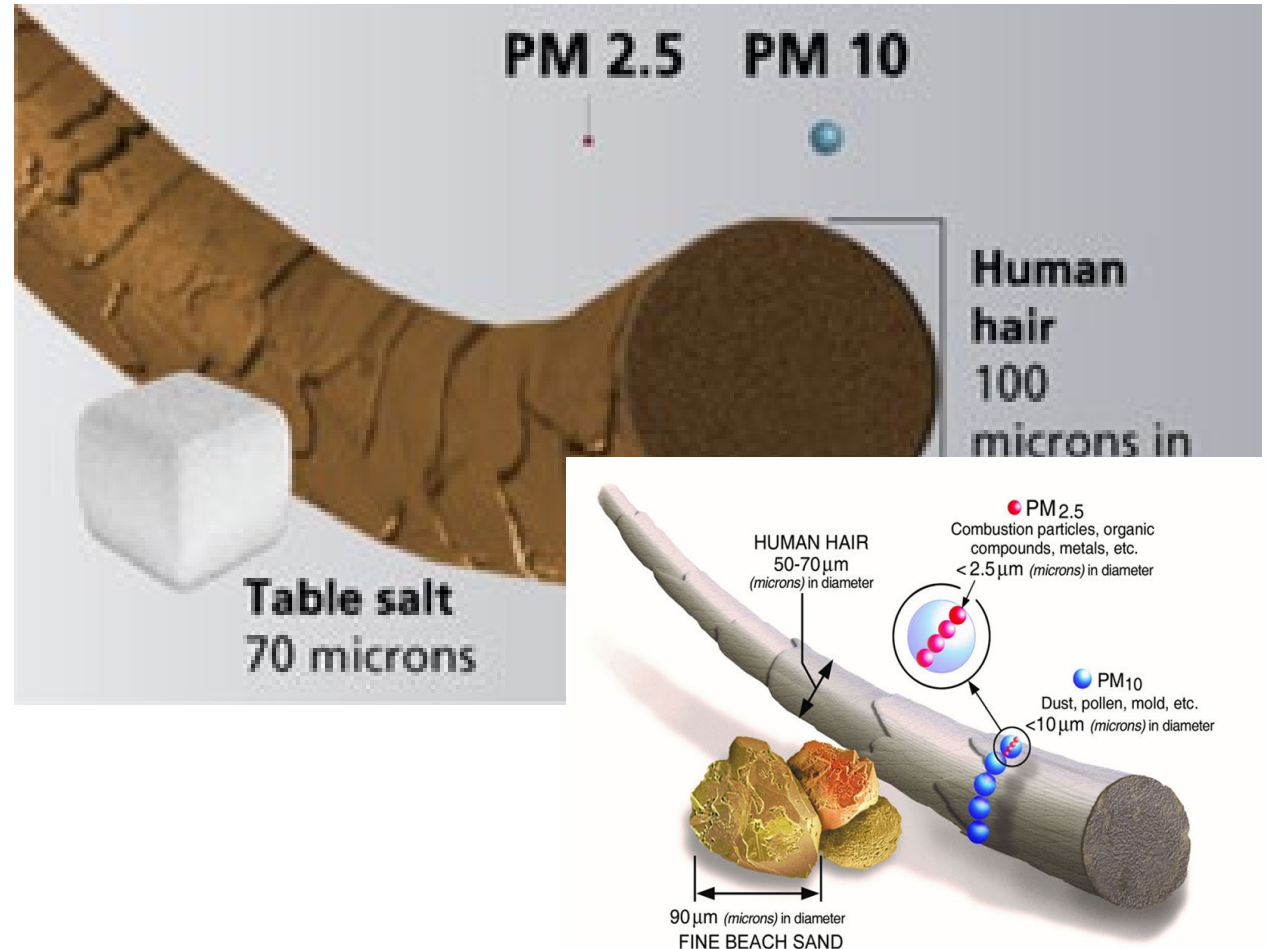
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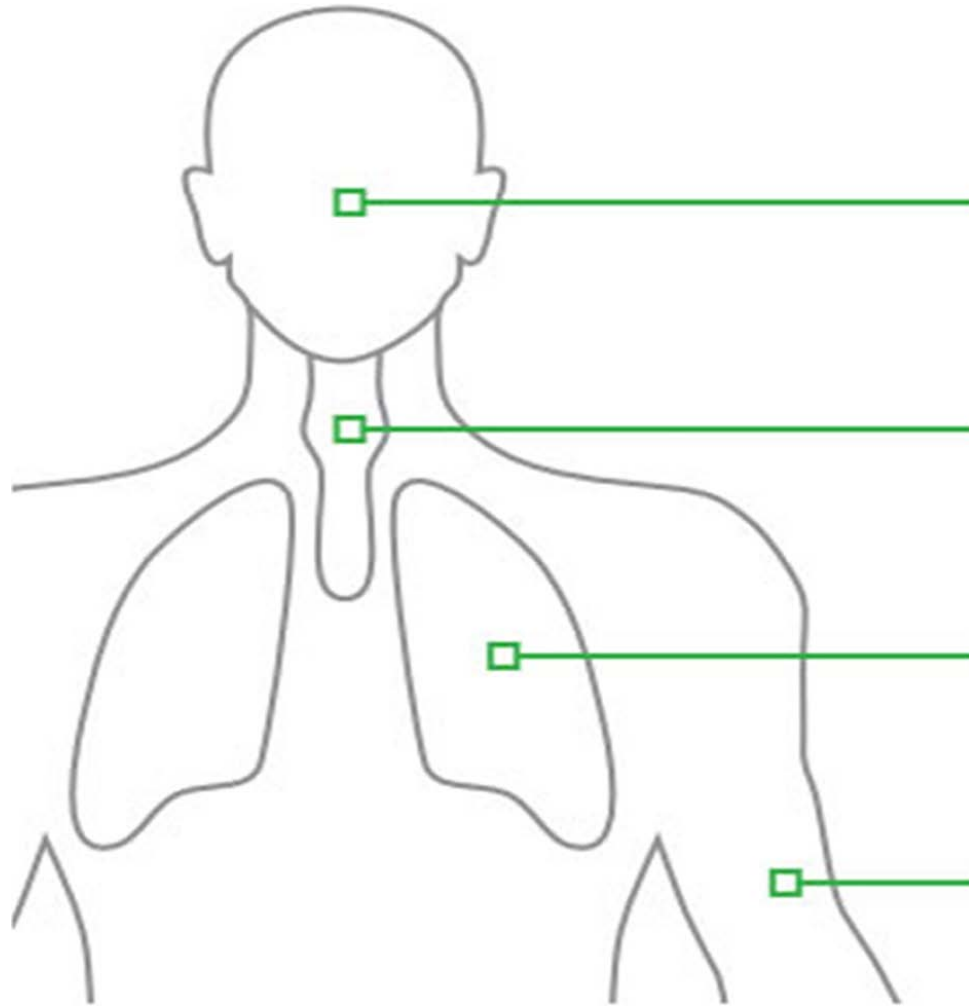


**Includes ash and tiny particles**  
(which are made up of whatever is being burned, not only plants and vegetation)

# Tiny Particles (PM 2.5)

- Particles (or “particulate matter”) with a diameter of 2.5 micrometers or less
- About 3% the thickness of a strand of human hair





**100 PM**

Trapped in the nose

**10 PM**

Trapped in the throat

**2.5 PM**

Reaches deep into the  
lungs

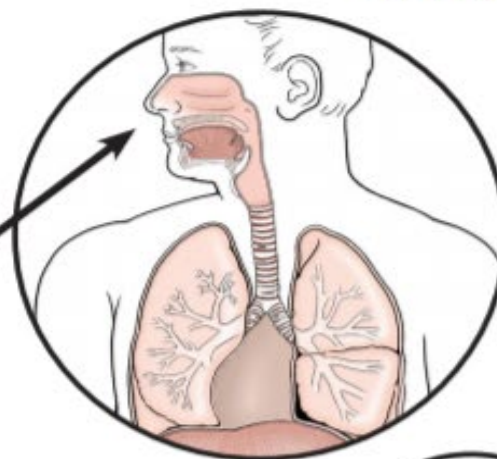
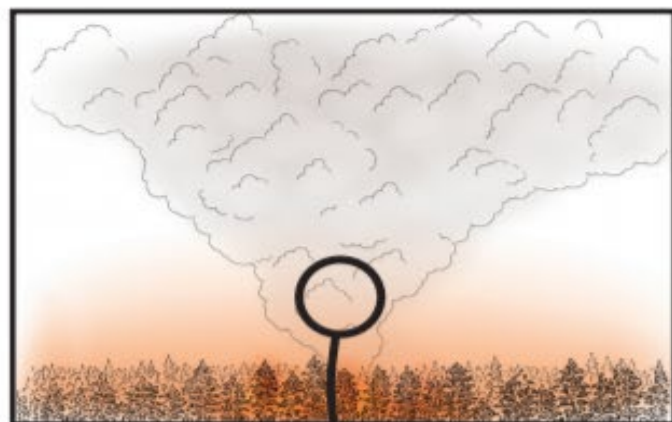
**1 PM**

Enters the bloodstream





# Health Effects of Wildfires



human  
hair

small  
particles



burning eyes



runny nose



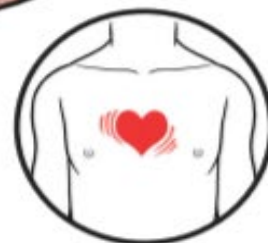
chest pain



fatigue



coughing



rapid heartbeat



difficulty breathing

# Measuring Air Quality

# AQI: Air Quality Index

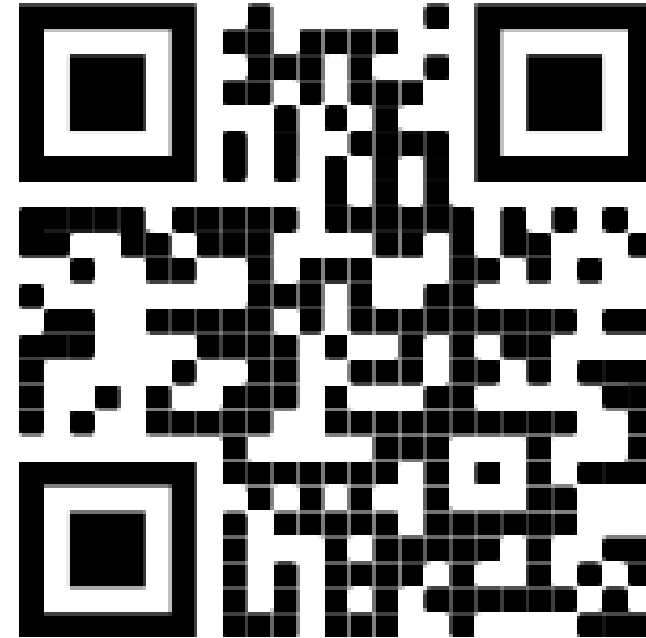
- Shows air pollution and health concerns
- AQI for several pollutants, including PM<sub>2.5</sub>

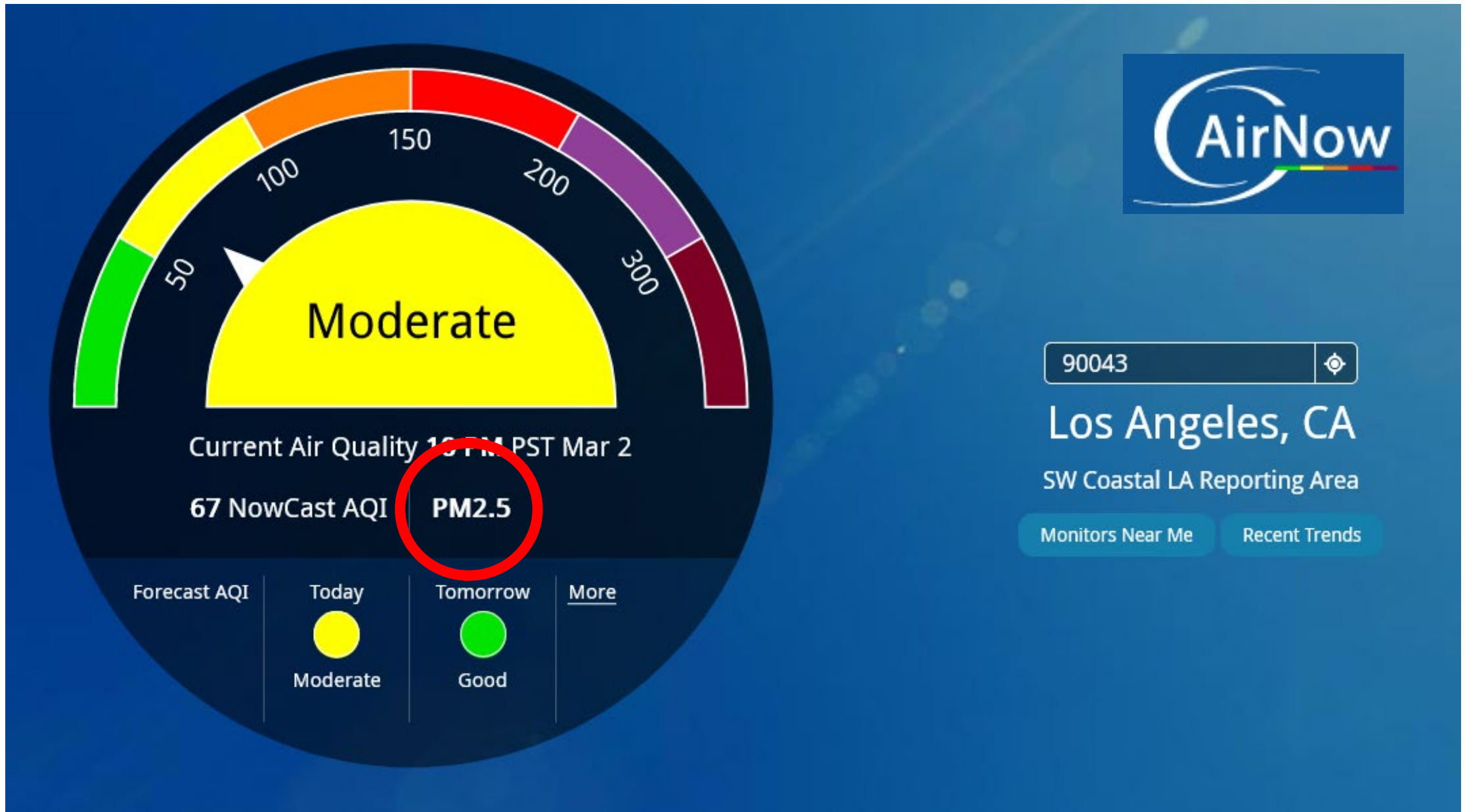
Air Quality Index - Particulate Matter	
301 – 500	Hazardous
201 – 300	Very Unhealthy
151 – 200	Unhealthy
101 – 150	Unhealthy for Sensitive Groups
51 – 100	Moderate
0 – 50	Good





- Real-time AQI for any location in the U.S is available at:  
[www.airnow.gov](http://www.airnow.gov)

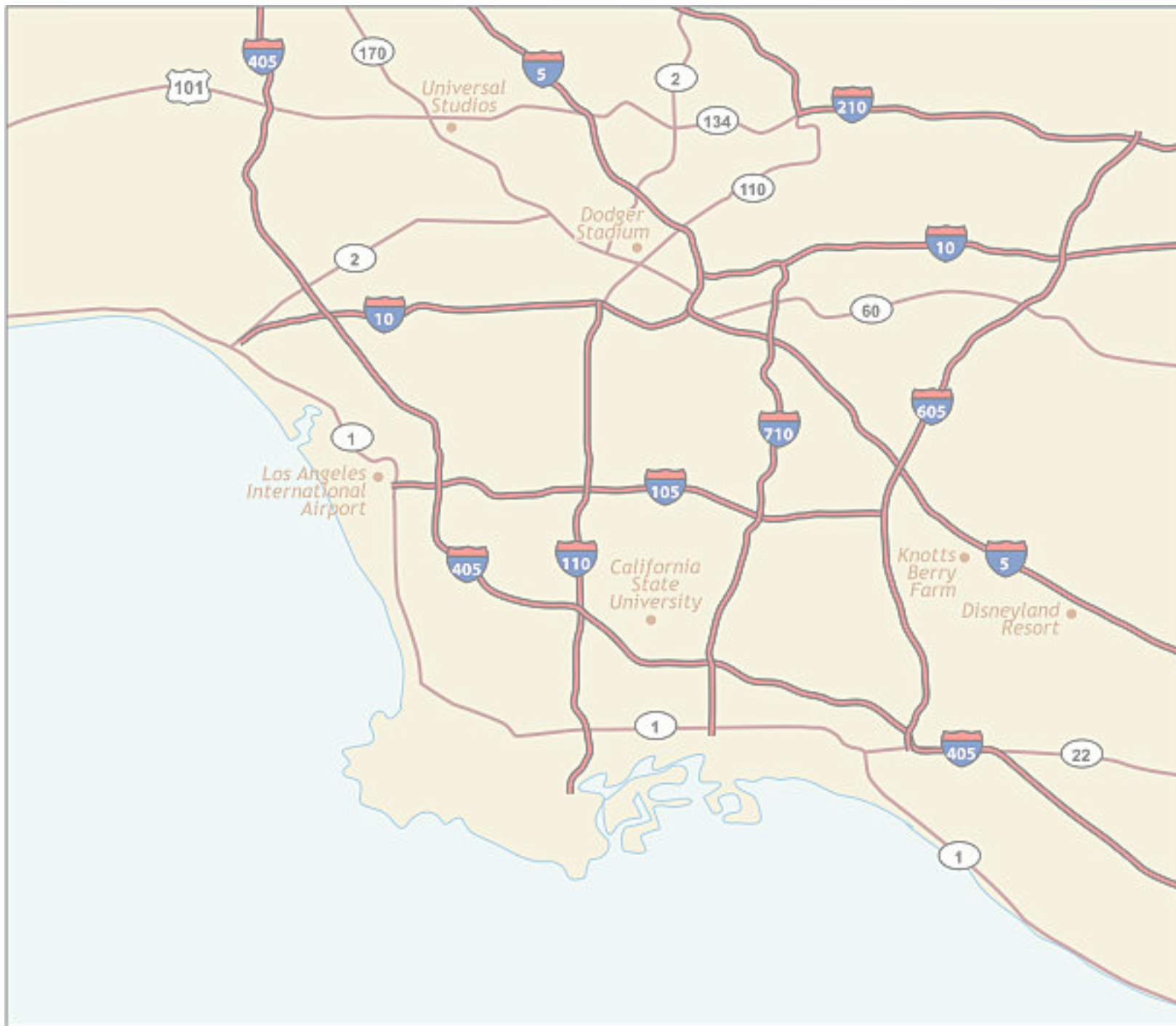




U.S. EPA: [AirNow.gov](https://airnow.gov)

**What is the AQI for PM2.5  
where you are located?**







# Worker Protections from Wildfire Smoke



# Who does this standard apply to?

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- Outdoor and indoor workers exposed to wildfire smoke for more than 1 hour a day, even if they are not directly impacted by fires
- Does *not* apply to wildland firefighters or indoor workers with filtered air



# When are employers required to act?

- The standard applies when **AQI for PM2.5 is 151 or higher**
- Employers are responsible for monitoring air quality at the worksite

Air Quality Index - Particulate Matter	
301 – 500	Hazardous
201 – 300	Very Unhealthy
151 – 200	Unhealthy
101 – 150	Unhealthy for Sensitive Groups
51 – 100	Moderate
0 – 50	Good

# Employers are required to:

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- 1. Provide training** on wildfire smoke health risks and protections available to them
- 2. Communicate with workers** about current AQI for PM<sub>2.5</sub> at the worksite



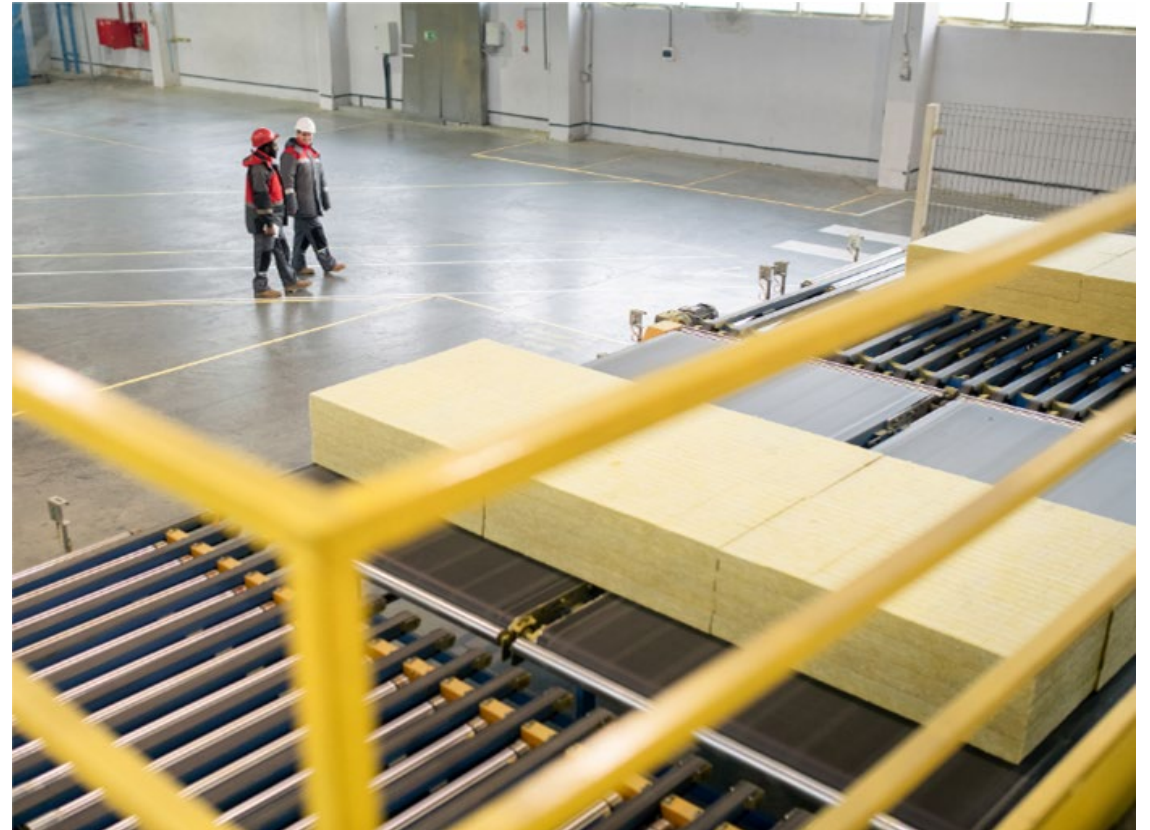


# Employers are required to:

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## 3. Reduce workers' exposure to wildfire smoke:

- Relocate work
- Change work schedules
- Reduce intensity of work
- Give longer rest breaks



# Employers are required to:

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**4. Provide respirators** (NIOSH-approved N95 filtering facepiece respirators) and encourage their use

**If AQI for PM<sub>2.5</sub> is greater than 500**, workers are required to wear respirators

Air Quality Index - Particulate Matter	
301 – 500	Hazardous
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101 – 150	Unhealthy for Sensitive Groups
51 – 100	Moderate
0 – 50	Good



# THANK YOU

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