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Empowering communities to protect public health

ECA Healthy Homes Program:

Environmental Exposures

Speaker: Julie Becker, MA, PhD, MPH
Senior Public Health Scholar and Climate Change Advisor

Learning Objectives

By the end of this session, you will be able to:

- **Recognize at least 3 environmental exposures**
- **Identify at least 3 ways to reduce exposure**
- **Use AirNow**

Definition

Environmental exposures are any substances that come-in-contact with humans and/or animals.

Points of contact include: eyes, skin, stomach, intestines, or lungs through swallowing (ingestion), breathing (inhalation), or touching (dermal).

https://www.epa.gov/report-environment/exposure-environmental-contaminants

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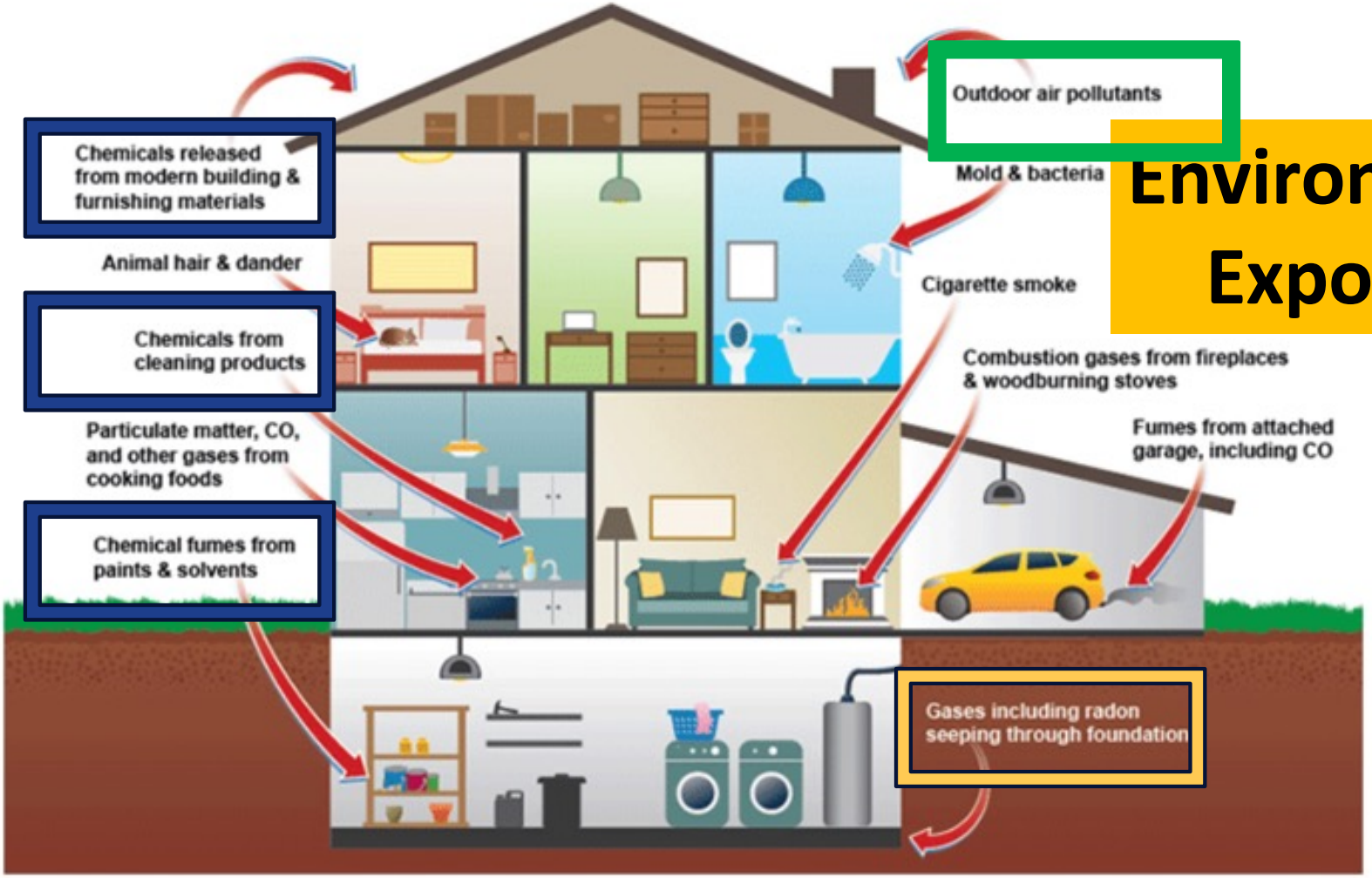
Environmental Exposures



Indoor Sources of Contaminants

Source: U.S. EPA

Occupant Comfort

Temperature, Humidity

Particulate- Lifestyle

Skin cells, dander, smoke, textile/ paper fibers

Radon

CO, CO_2

Particulate- Building

Fiberglass, corrosion, rust, lead

Mold

Spores, Mycotoxins

Allergens

Pet dander, dust mites, vermin

Volatile Organic Compounds

(VOCs)

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Radon

A <u>naturally</u> occurring radioactive gas that can cause lung cancer.

You can't see, smell, or taste it

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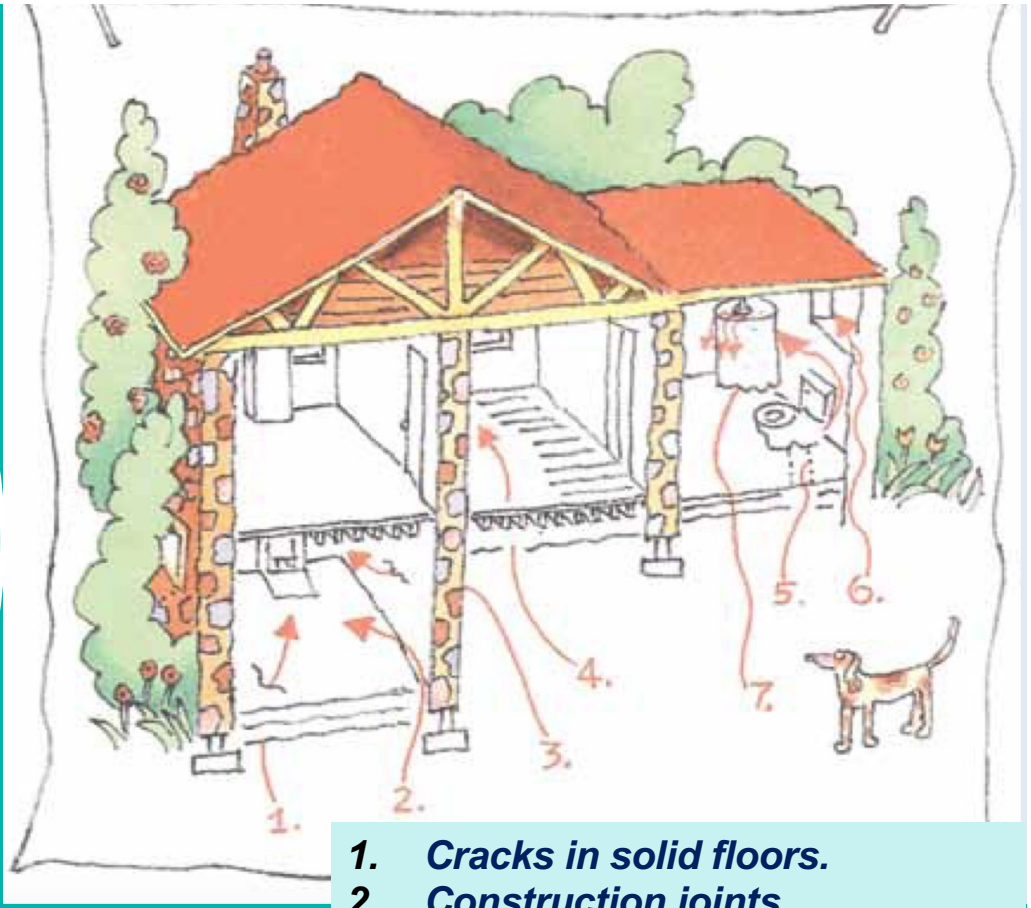

1. *Cracks in solid floors.*
2. *Construction joints.*
3. *Cracks in walls.*
4. *Gaps in suspended floors.*
5. *Gaps around service pipes.*
6. *Cavities inside walls.*
7. *The water supply.*

From a home improvement store cost $13-23 / test

Recognize: Radon

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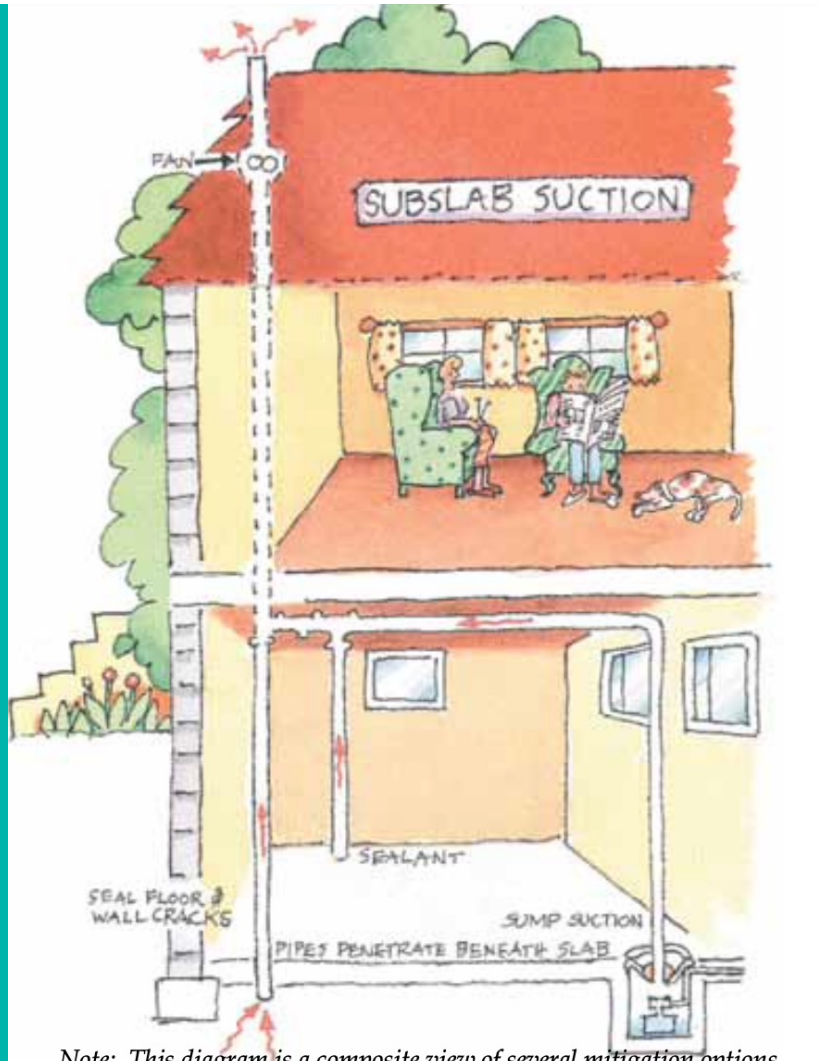
Test!

It's easy and quick

Where to find a radon tester:

- **Home improvement/ hardware stores**
- **Professionals**

https://www.epa.gov/sites/default/files/2016-12/documents/2016_a_citizens_guide_to_radon.pdf



Note: This diagram is a composite view of several mitigation options. The typical mitigation system usually has only one pipe penetration through the basement floor; the pipe may also be installed on the outside ohe house.

Respond: What do I do if I find radon in the home?

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- Hire a radon contractor to assess methods for ventilation
- Install a vent pipe system and fan (soil suction radon reduction system), which pulls radon from beneath the house and vents it to the outside is sufficient
- Seal foundation cracks and other openings.
- Install a vent pipe system and fan for crawl spaces.

Radon contractors can use other methods that may also work in the home, depending upon the design and location.

Recognize: Volatile Organic Compounds (VOCs)

Definition: organic compounds that have a high vapor pressure at room temperature.

Generally, you can smell the compound

Examples include:

- paints and lacquers
- paint strippers
- cleaning supplies
- pesticides
- building materials and furnishings
- office equipment such as copiers and printers, correction fluids
- graphics and craft materials including glues, adhesives, permanent markers,
- photographic solutions

Respond: VOCs

Conduct an inspection of your home for the common sources of VOCs – what's hiding in closets, basements, attics, and under sinks

Steps to reduce your exposure include:

Source Control: ***Remove or reduce the number of products in your home that give off VOCs.***

https://www.health.state.mn.us/communities/environment/air/toxins/voc.htm

Respond: VOCs

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Ventilation and Climate Control:

- **Increase** fresh air (windows/doors) in your home to reduce VOCs indoors.
- **Lower** temperature and relative humidity to reduce off-gassing.
- **Carry out** home renovations when the house is unoccupied or during seasons when you can increase ventilation.

https://www.health.state.mn.us/communities/environment/air/toxins/voc.htm

If you can smell it, it probably contains a VOC

Resources to avoid VOCs

Buy no or low-VOC options of paints and furnishing.

- Floor models that have already off-gassed.
- Solid wood items with low emitting finishes.

Buy only what you need regarding paints, solvents, adhesive, caulks and pesticides to reduce leaks of VOCs into the air.

Store unused chemicals in a ventilated garage or shed.

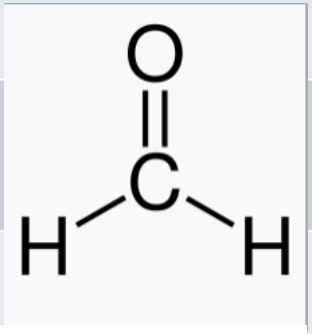
Dispose of unused chemicals **through household hazardous waste collections** in your city/town.

www.phila.gov/services/trash-recycling-city-upkeep/dispose-of-household-hazardous-waste/

https://www.health.state.mn.us/communities/environment/air/toxins/voc.htm

Recognize: Formaldehyde

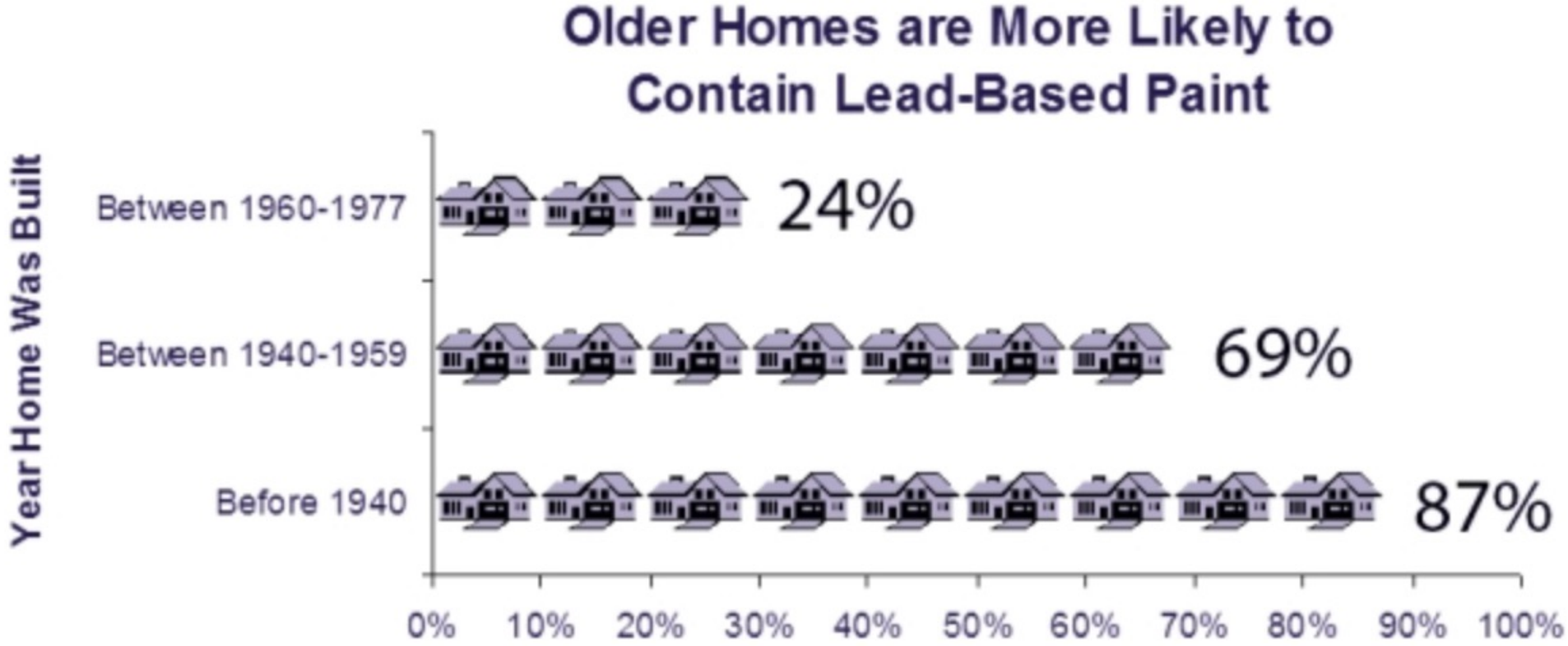
What is it?	Where is it found?	Refer/Resources
Naturally occurring organic compound (aldehyde)	**EVERYWHERE** Home and office	Limit use of plywood, paneling, particleboard, and fiberboard
Produced commercially as a precursor to other materials and chemical compounds	Particle board Coatings (furniture) Pressed wood	Ask if formaldehyde is present in pressed-wood products, including building materials, cabinetry, and furniture
Route of exposure: inhalation and skin irritation	Foam (sofa) Adhesives	Increase fresh air (windows/doors) in your home
Known carcinogen (myeloid leukemia)	Disinfectants	Lower temperature and relative humidity to reduce off-gassing.



You can smell it

Recognize: Lead (Pb)

a naturally occurring toxic metal



Lead

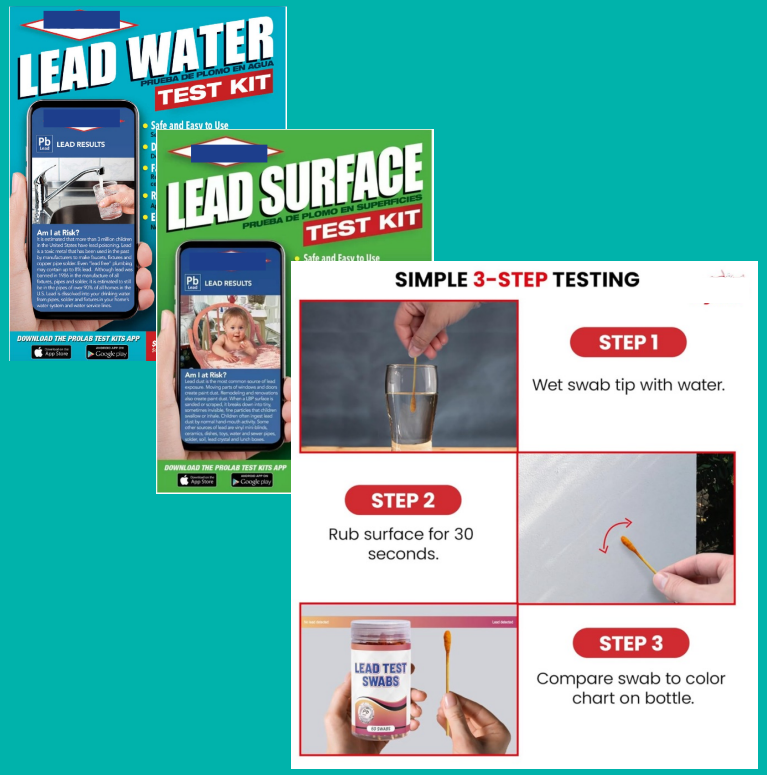
Who does it effect?

EVERYONE. It is especially dangerous for *children and pregnant women*. It is extremely damaging to the body.

There is no safe level of lead.

https://nvclppp.org/parents-and-community/lead-and-your-childs-health/

Lead



When to test:

- Reside in a home built before **1978**.
- Own or operate a childcare facility, including preschools and kindergarten classrooms, built before 1978, or
- Have a child under six years of age who attends a childcare facility built before 1978.

How to test:

In humans - Blood test

Surfaces/pipes: Kits found at home improvement/ hardware stores

Certified Lead Contractor

Protect Your Family From Lead in Your Home

EPA United States Environmental Protection Agency

United States Consumer Product Safety Commission

United States Department of Housing and Urban Development

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https://www.epa.gov/sites/default/files/2020-04/documents/lead-in-your-home-portrait-color-2020-508.pdf

https://www.epa.gov/sites/default/files/documents/renovaterightbrochure.pdf

Need an EPA lead certified contractor

epa.gov/getleadsafe

National Lead Information Center at **1-800-424-LEAD (5323)**.

Recognize	Respond	Refer
Radon: Outside gas seeping into the house through foundation or openings	**Test:** • Kits from home improvement/ hardware stores • Professionals	Professionals can assess ventilation: • Recommend sealing foundation cracks • Need for vent pipes and fans
VOCs: Paints, solvents, pesticides, cleaning supplies, furniture (formaldehyde)	• **Limit** the no. of chemicals kept in the home • **Increase** fresh air circulation • **Lower** temperature • **Perform** renovations when unoccupied or ventilation is possible	• Buy only what you need • Buy no or low-VOC paints and furnishing • Buy UNSCENTED products • Store chemicals outside the home • Dispose of chemicals through hazardous waste collections
Lead: paint, dust from paint, water pipes	**Test:** • Kits from home improvement/ hardware stores • Professionals	Need an EPA lead certified contractor

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What influences IAQ:

Outdoor Air Quality

Extreme Weather

Extreme Temperature

Extreme Events: Wildfires

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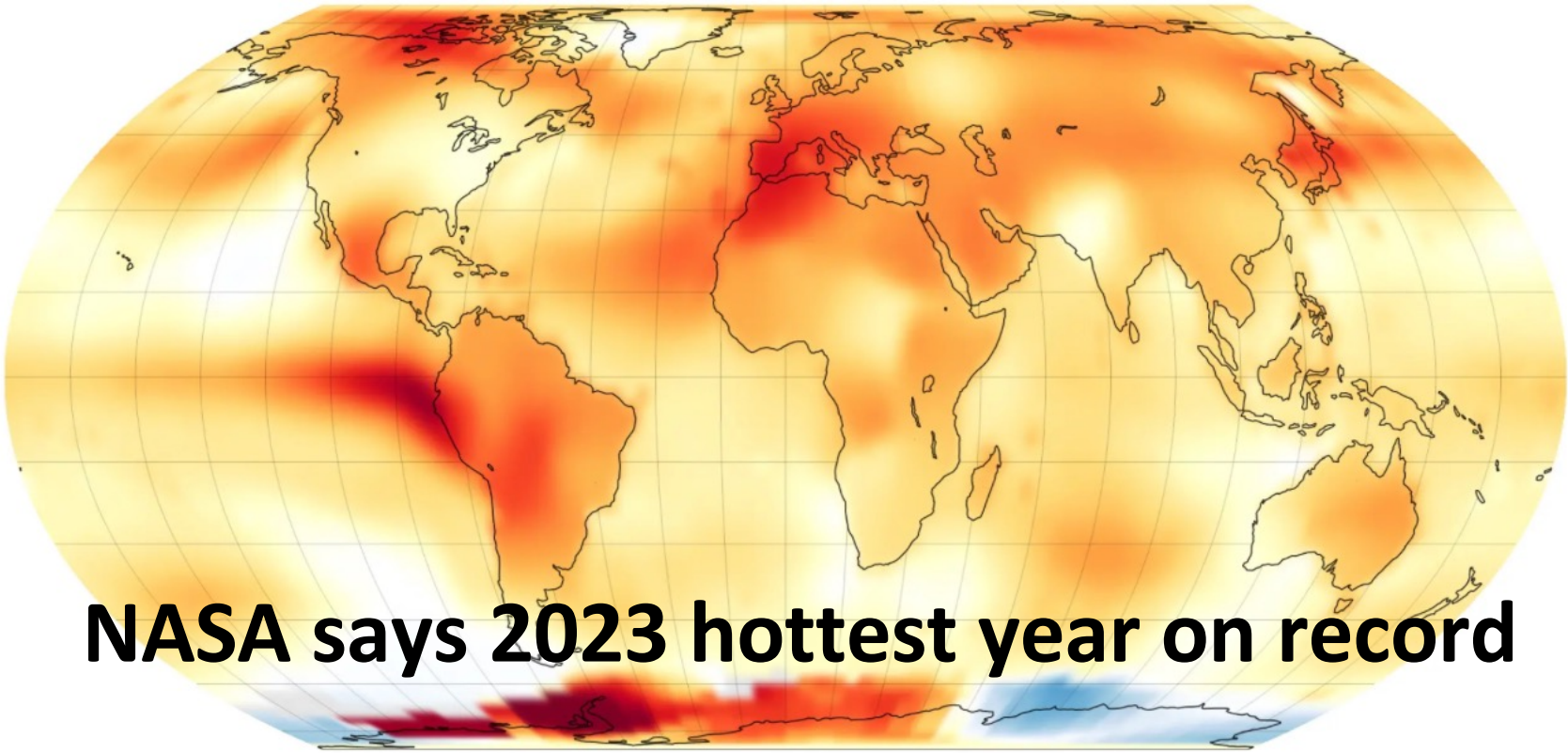
The Philadelphia Inquirer

NASA says 2023 hottest year on record



This map depicts global temperature anomalies for meteorological summer in 2023 (June, July, and August). It shows how much warmer or cooler different regions of Earth were compared to the baseline average from 1951 to 1980. Credit: NASA's Earth Observatory/Lauren Dauphin

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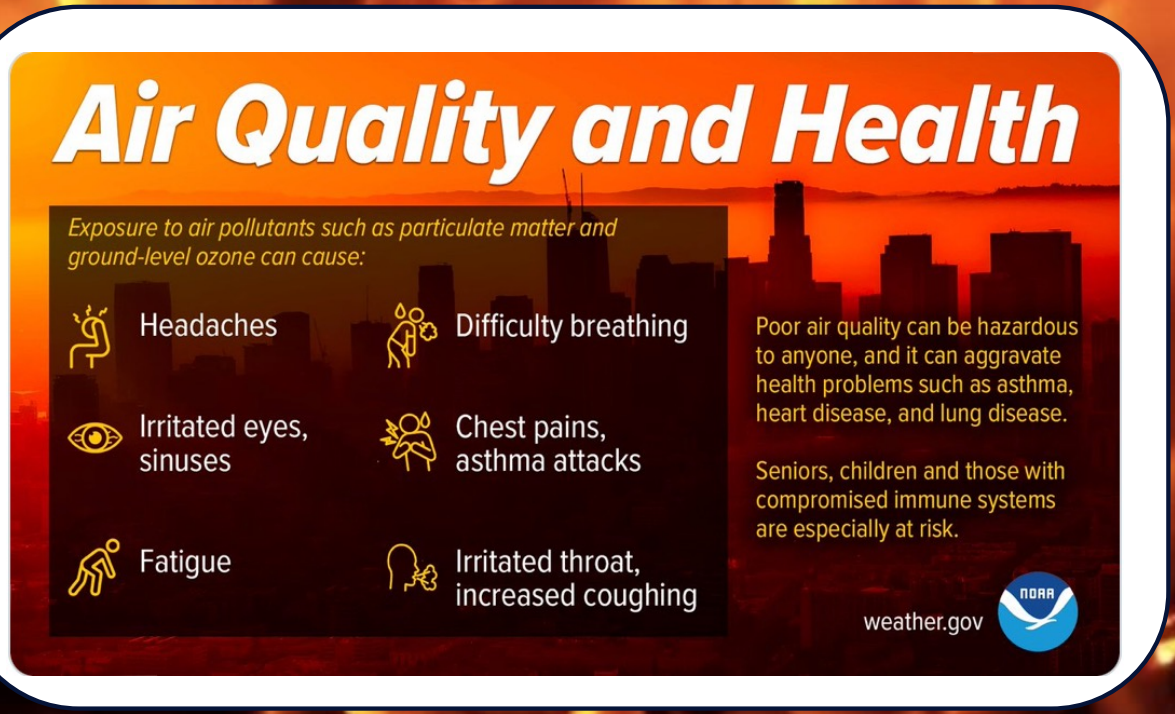
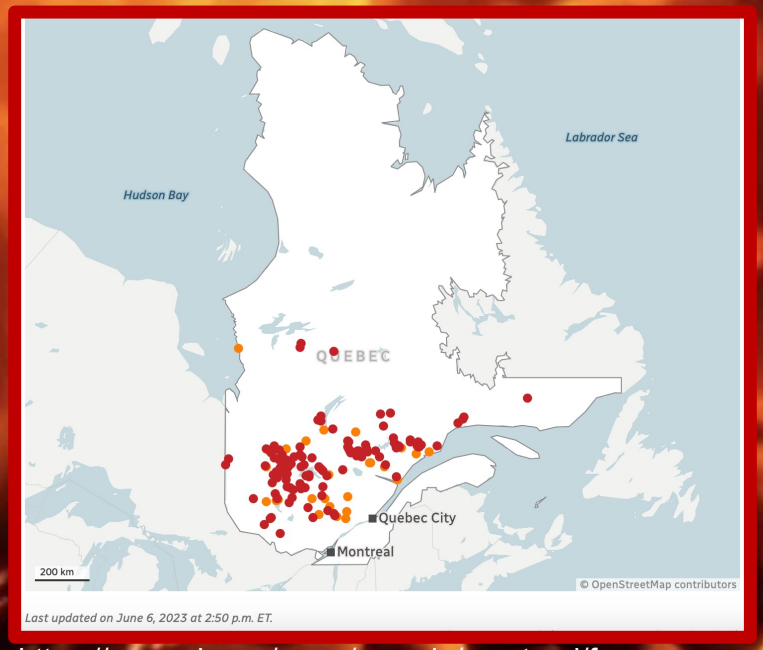
Extreme Events: Wildfires





https://www.cbc.ca/news/canada/montreal/forest-fires-quebec-sept-îles-1.6865576

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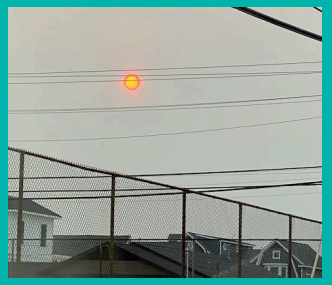

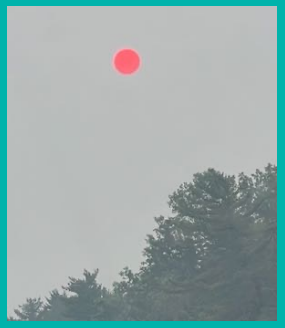

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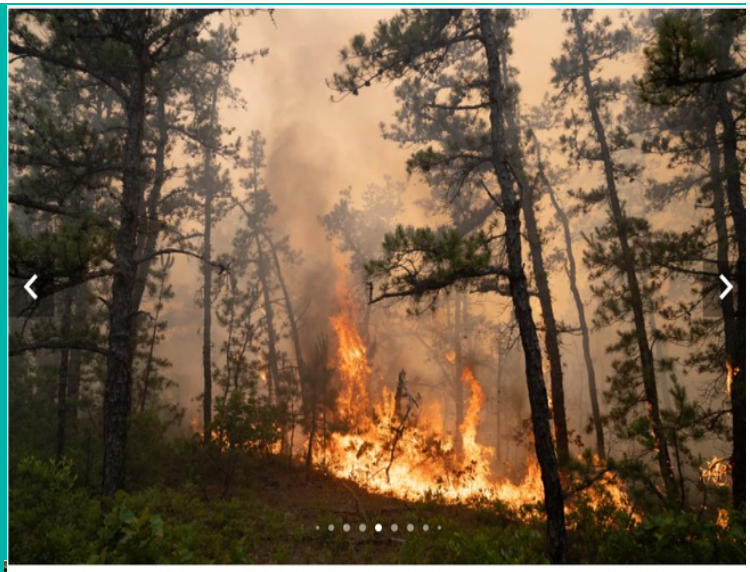
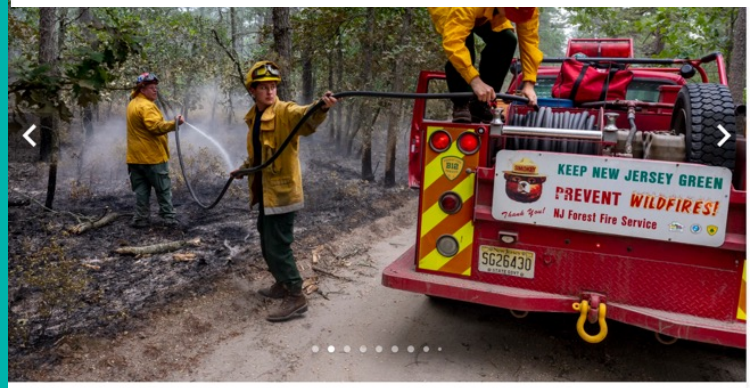
https://www.airnow.gov

Wharton Fire
Pine Barrens, NJ

The wildfire in Wharton State Park near Hammonton, N.J.
CHARLES FOX / Staff Photographer



A view of the Mullica River Fire in New Jersey's Wharton State Forest on June 20, 2022.
Courtesy of N.J. Department of Environmental Protection



Firefighters Rosenberg (from left), William Zazenski, 19; and Robbi 18, near Batsto June 21, 2022, are from nearby New Gretna and on work wildfires for the state forest service.
TOM GRALISH / Staff Photographer

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Climate Change and Your Health:
Outdoor Air Quality

What is changing in our climate?	What is the impact on the environment?	How does that harm our health?
Heat-trapping pollution is causing warmer weather, more intense heat waves, and more droughts and wildfires.	Warmer weather leads to longer and worse allergy seasons; hotter temperatures create more smog (ground-level ozone); and wildfire causes dangerous air pollution.	Increases in airborne allergens, smog and smoke make asthma and allergies worse, and put those with lung and heart diseases at higher risk.

Source: https://medsocietiesforclimatehealth.org/educate/patients/

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Summary of Air Quality Index (AQI) :

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If healthy and AQI is red or above, restrict time outdoors and limit outside ventilation. If you have a health condition and AQI is orange, restrict outdoors and limit outside ventilation.

Unhealthy for Sensitive Groups – 101 to 150 ORANGE

Members of sensitive groups may experience health effects. The general public is less likely to be affected.

Moderate – 51 to 100 YELLOW

Air quality is acceptable. However, there may be a risk for some people, particularly those who are unusually sensitive to air pollution.

Good – 0 to 50 GREEN

Air quality is satisfactory, and air pollution poses little or no risk.

RED **Unhealthy – 150 to 200**

Some members of the general public may experience health effects. Members of sensitive groups may experience more serious health effects.

PURPLE **Very Unhealthy – 201 to 300**

Health alert: The risk of health effects is increased for everyone.

MAROON **Hazardous – 300 and higher**

Health warning of emergency conditions: everyone is more likely to be affected.

https://www.phila.gov/media/20220712150708/2021_AirQualityReport_Final.pdf