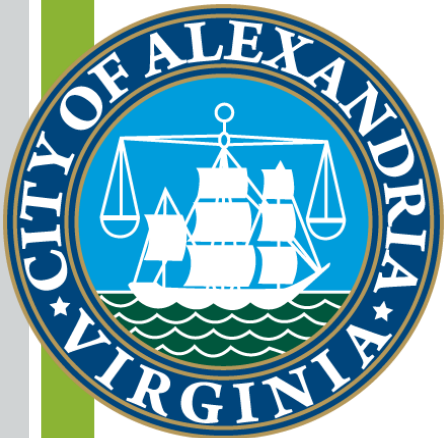


Eco-City Academy

Outdoor Air Quality



Air Pollution Through Time



Deadly SMOG Episode (October 1848)

Town of Donora, PA, when smog overcame the town. 20 people died, more than 7,000 became seriously ill.



Great Smog of London (1952)

Occurred from December 5th – 9th, 1952. Estimated 100,000 people injured & 4,000 people died.

SMOG = Smoke & fog



Clean Air Act

Congress established the basic structure in 1970.

Major revisions in 1977 & 1990.

Types/Categories

Good Air quality is Fundamental to our well-being

Mobile Sources



Stationary Sources



Area Sources



On Average, a person inhales ~500 cubic feet of air every day



The Clean Air Act

- This Act required the EPA to set **National Ambient Air Quality Standards (NAAQS)** for six criteria pollutants and designate as in attainment (meeting requirement) or non-attainment (not meeting requirement).

New Requirements

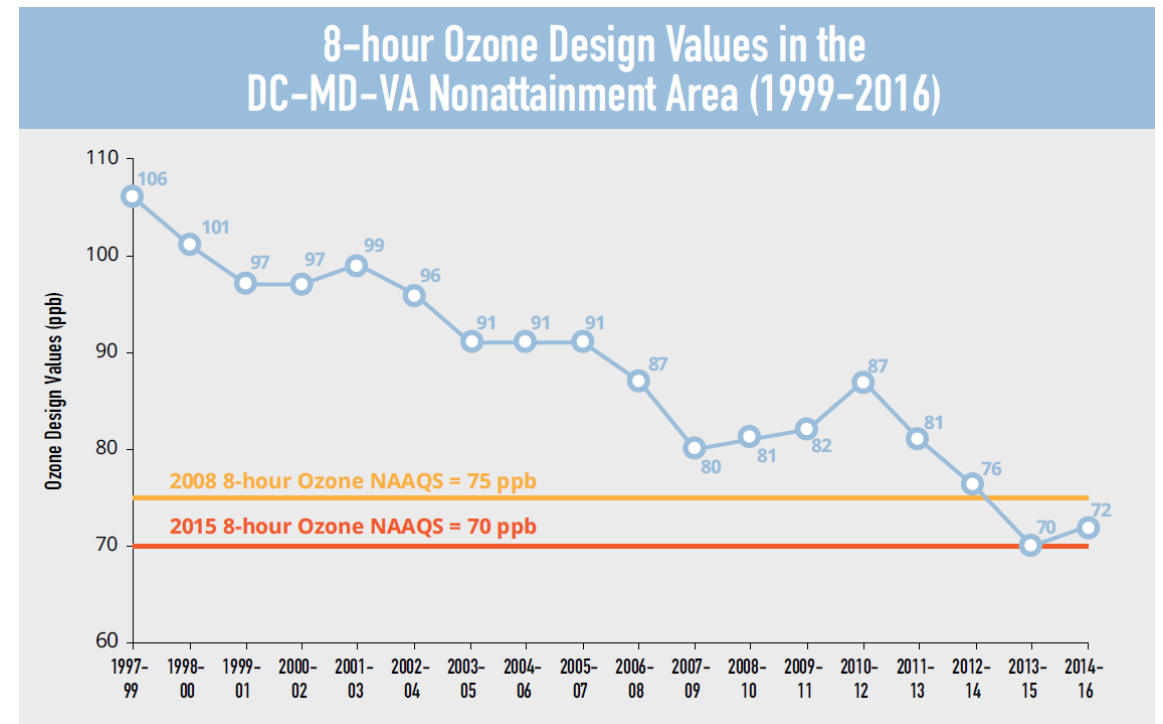
1970 - The **Clean Air Act** was signed into law.

1990 – Underwent major changes.

July 1997 – EPA promulgated standards for **PM_{2.5}**.

May 2024 – PM_{2.5} standard changes from **12 $\mu\text{g}/\text{m}^3$ to 9 $\mu\text{g}/\text{m}^3$** .

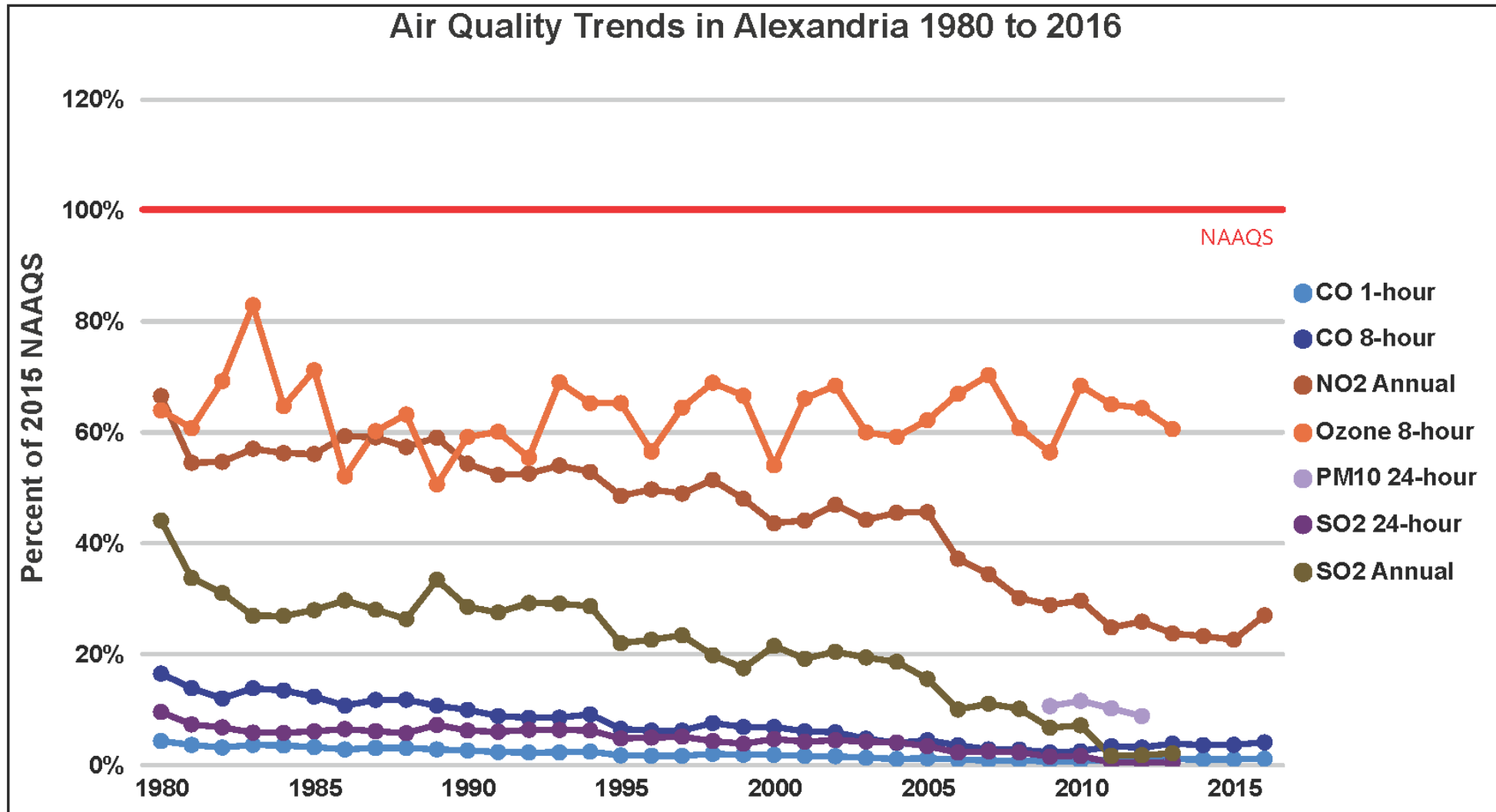
Lower Requirements



Common Air Pollutants

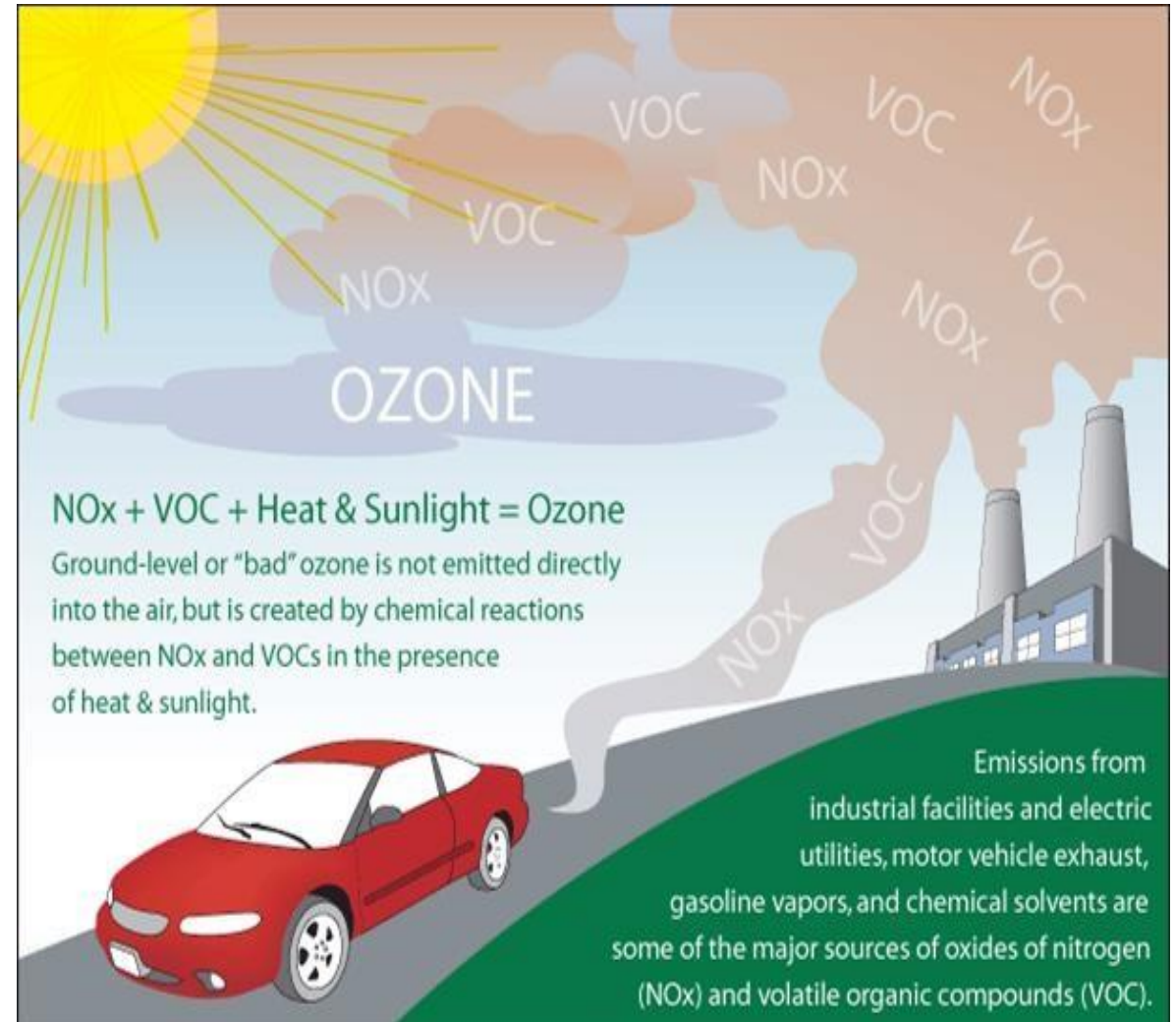
Pollutant	Sources	Environmental Impacts
Nitrogen Dioxide	Burning fuel (vehicle emissions, power plants, off-road equipment)	Harms sensitive ecosystems, like lakes and forests.
Sulfur Dioxide	Fossil fuel combustion at power plants and other industrial facilities	Harm trees and plants
Carbon Monoxide	(Outdoors) vehicles and machinery that burn fossil fuels	
Lead	Lead smelters	Decreased growth and reproduction in plants/animals, and neurological effects in vertebrates.
Ground Level Ozone		
Particle Pollution		

Air Quality Trends in Alexandria



Unseen Air Pollution - Ozone

- You won't always see bad air quality.
- Increases throughout the day. Higher temperatures heat or "cook" pollutants that react and form ozone.



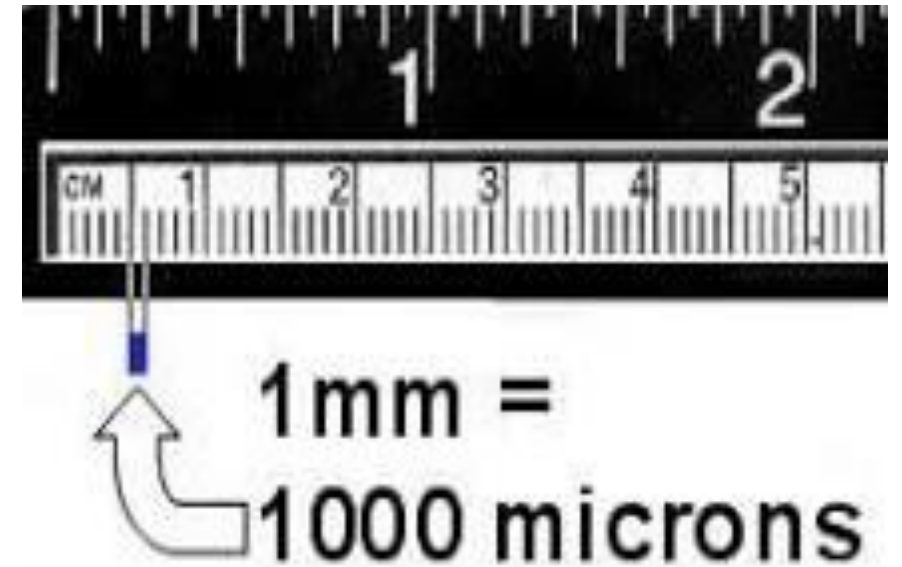
Fine Particulate

You can only **see** as small as **40 microns** with your naked eye.

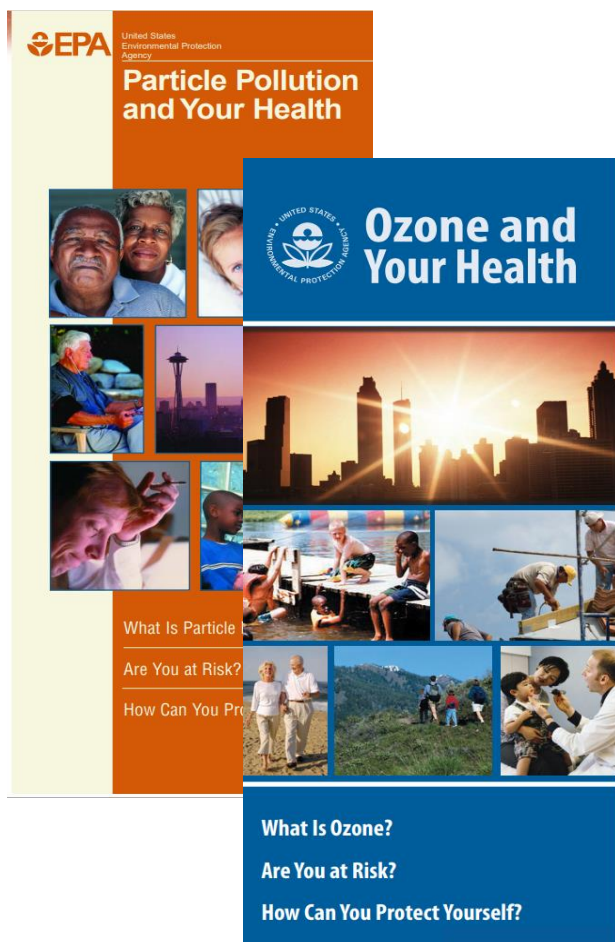
Fine particulate is anything less than **2.5 microns**

What is Smaller than 40 microns?

- Household dust 40 microns
- Wind-blown dust 10 microns
- Red Blood Cells 8 microns
- Wildfire smoke 2.5 microns



OZONE AND PARTICULATE MATTER REMAIN PROBLEMATIC



Health Effects of Ground-Level Ozone

- Irritate your respiratory system
- Reduce lung function
- Inflammation and damage cells that line your lungs
- Make your lungs more susceptible to infection
- Aggravate asthma

Health Effects of Particulate Matter

- Reduce lung function
- Increase respiratory symptoms, cardiac arrhythmias, heart attacks, and hospital admissions or emergency room visits for heart or lung disease

AQI Color Coding

Using color coding to communicate makes it easier to understand

AIR QUALITY INDEX		
Index Values	Descriptor	Color
0 - 50	Good	Green
51 - 100	Moderate	Yellow
101 - 150	Unhealthy for Sensitive Groups	Orange
151 - 200	Unhealthy	Red
201 - 300	Very Unhealthy	Purple



Air Quality Notifications

Forecast for Metropolitan Washington, DC
Tomorrow's Forecast

Tuesday, Oct 17: 21 AQI Good **Green** Particle Pollution (2.5 microns)

Extended Forecast

Wednesday, Oct 18: 29 AQI Good **Green** Particle Pollution (2.5 microns)

Thursday, Oct 19: 33 AQI Good **Green** Particle Pollution (2.5 microns)

AQI Color Coding

Code Green

Good

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

It's a great day to be outside!



Code Yellow

Moderate

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



Code Orange

Unhealthy for Sensitive Groups

People with lung or heart disease, older adults, children and teens:

Choose less strenuous activities, or shorten the amount of time you are outdoors

Everyone else:

Those who are not sensitive to air pollutants are less likely to be affected



Code Red

Unhealthy

People with lung or heart disease, older adults, children and teens:

Avoid outdoor activities that are strenuous, Keep outdoor activities short, Consider moving outside activities to indoors or rescheduling

Everyone else:

Choose less strenuous activities, or shorten the amount of time you are outdoors



Code Purple

Very Unhealthy

People with lung or heart disease, older adults, children and teens:

Avoid physical activities outdoors

Everyone else:

Avoid outdoor activities that are strenuous, Keep outdoor activities short, Consider moving outside activities to indoors or rescheduling



Code Maroon

Hazardous

Everyone should stay indoors and avoid outdoor activities

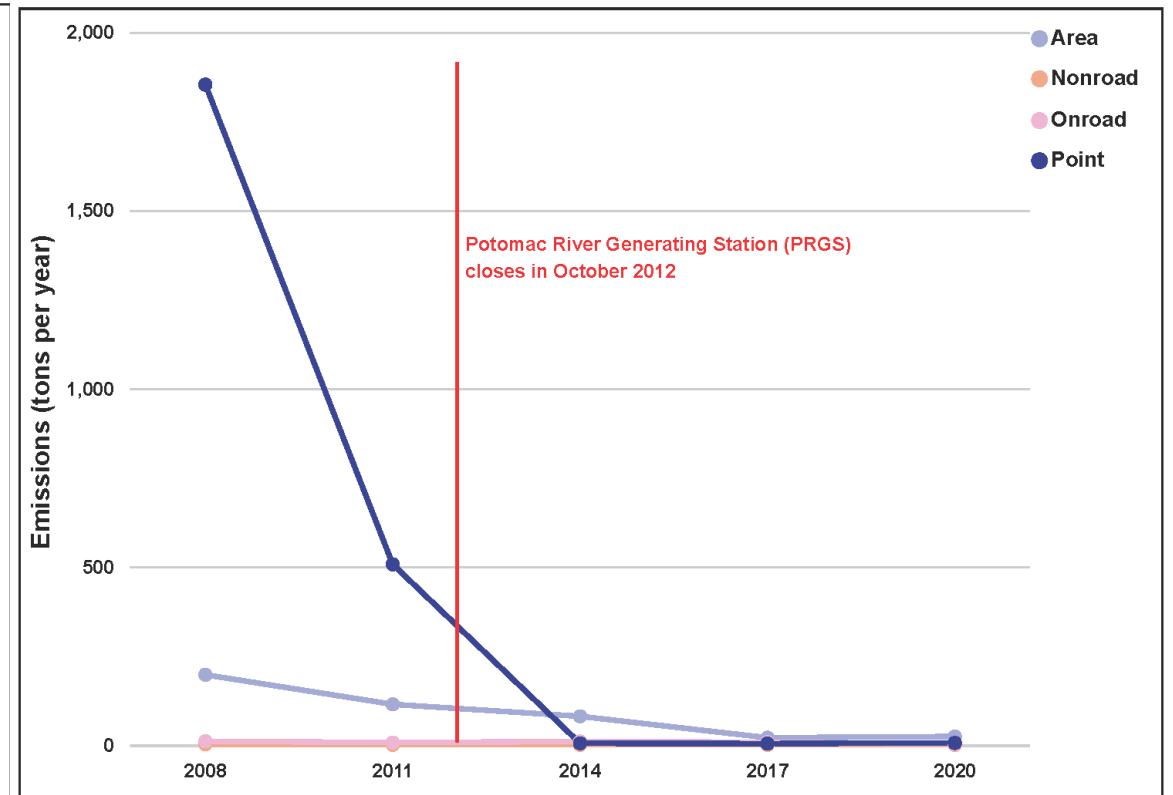
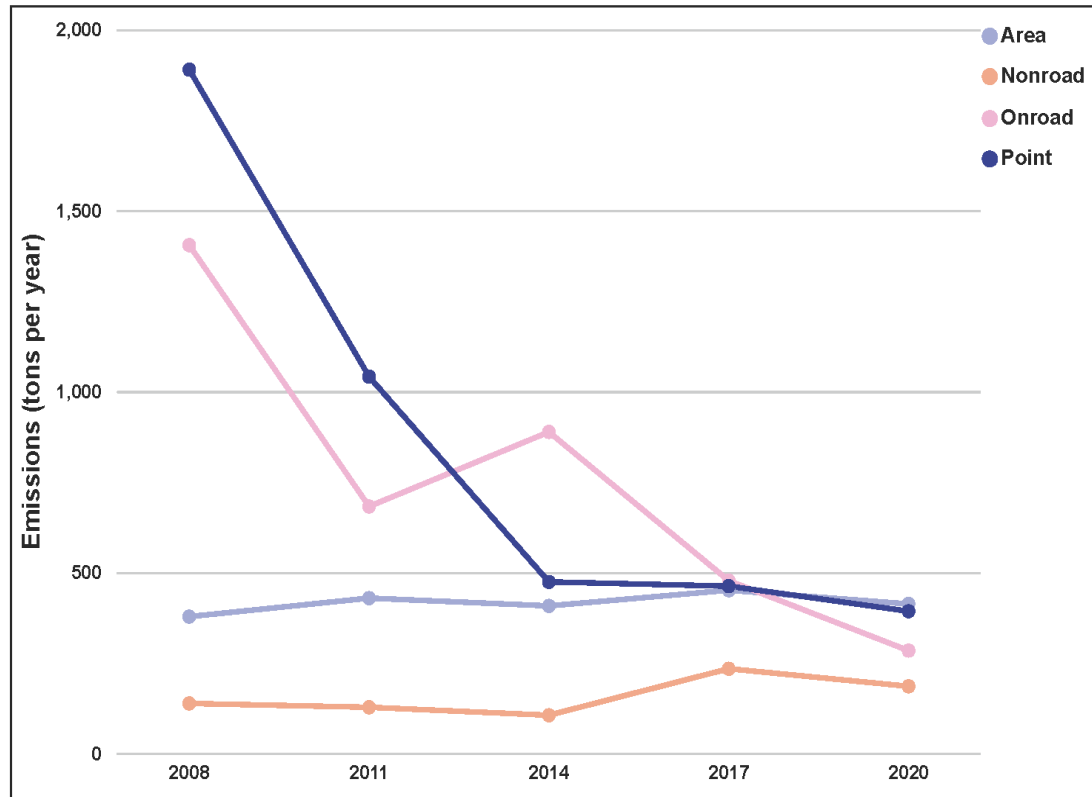


The Clean Air Act – The Wins

- The **removal of lead** from motor vehicle gasoline, levels of lead in the air decreased by 98 percent between 1980 and 2014.
- **Sulfur** in gasoline has been reduced by 90 percent, and sulfur in diesel fuel has been reduced by 99 percent, from pre-regulation levels.*
- Dramatically cut power plant emissions of sulfur dioxide, **reducing acid rain** as well as secondary formation of fine particle pollution*
- Phasing out chlorofluorocarbons and other substances that deplete the stratospheric **ozone** layer (good ozone)
- Reduces the amount of **NOx and phosphorus** that gets added to waterways with rain, polluting the bay.
- Compared to 1970 vehicle models, new cars, SUVs and pickup trucks are roughly 99 percent cleaner for common pollutants (hydrocarbons, **carbon monoxide, nitrogen oxides and particle emissions**), while Annual Vehicle Miles Traveled has dramatically increased.
- New commercial marine vessels (non-ocean-going) are 90 percent cleaner for particle emissions than in 1970.

Alexandria Air Quality Success

- Closure of PRGS led to significant decreases in NO_x and SO₂.



Other City Successes

➤ **Industrial Businesses:**

- VA Paving operational improvements & emissions controls
- ReWorld operational improvements & emissions controls

➤ **Alternative Modes of Environmentally Friendly Transportation Options**

- Expanded number of hybrid and electric vehicles in City and DASH fleet
- Implemented strategies in the Alexandria Mobility Plan
- Expanded the Capital Bikeshare Network & e-bike fleet
- Launched free rides for DASH and paratransit trips
- Go Alex continues to support employers and residents with non-single occupancy vehicle options.

What Can YOU Do?

To Protect Our Environment

- Use alternate modes of Transportation.
- Use battery powered lawn and garden equipment.
- Plant Trees.
- Reduce energy use.
 - Use energy efficient appliances (washer, frig)
 - Turn off lights
 - Use LED lights
- Refuel cars after 7:00 pm and do not idle unnecessarily.

To Protect Your Health

- Avoid exercising or working outside for long periods of time.
- Choose less strenuous outdoor activities
- Work and exercise away from busy roads.
- Reschedule outdoor recreational activities.
- Avoid burning things that generates smoke

[Air Quality Index \(AQI\) \(epa.gov\)](http://epa.gov)

Thank you!

Melissa Atwood

Senior Environmental Specialist

Environmental Quality

Department of Transportation &

Environmental Services

City of Alexandria

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Urban Forestry

City of Alexandria

Improving the lives of Alexandrian's and visitors through sustainable forestry management



What does a City Forester do?

*Care for trees from the beginning of their lifecycle to their end
and strategically plan where our urban forest should be in 20
years.*





Planning for the Future

Our Decisions Today Impact Where We Go Tomorrow

Exotic Tree
Pests &
Diseases

Changing
Climate

Community
Demographics

Tree Age and
Biodiversity

Primary Objectives

Public Safety:

Trees in urban settings often have conflicts with people and property. Regular monitoring is necessary to reduce property damage and reduce personal injury.

Tree Maintenance:

Urban Forestry strives to prune trees on a reoccurring basis and remove hazardous trees in a timely fashion.

Tree Preservation:

Use latest scientific techniques to extend life of a tree in adverse urban environments. In addition, before a tree is removed, there is an assessment and evaluation process performed by at least 2 Certified Arborists on City Staff.

Secondary Objectives

Strategic Planning:

*Design and implement the objectives of the **Urban Forest Master Plan**; and influence positive outcomes in the development process through the **City Landscape Guidelines***

Support other Departments:

Work with regional agencies on strategic goals for canopy expansion and provide guidance to other city departments regarding the care and preservation of trees

Community Awareness:

Partner with individual residents and groups to foster a shared sense of tree stewardship

Achieving Success



Plant more Trees than We Remove

Urban Forests do not regenerate themselves; they need People!



Operational Efficiency

Always strive to improve the output of our maintenance benchmarks



Improving Safety

Ensure Alexandria is a walkable city and manage proactively

How Can You Help

Saving Our Shade is a Community Effort

Alex311
Tree Inspections

Volunteer
Tree Planting

Arborist
Private Tree
Evaluations

Planting Donations

Living Landscape Fund donations goes toward city reforestation efforts.

To learn more about other donation or PARKnership opportunities please contact:

Lucresha.Murphy@alexandriava.gov

<https://www.alexandriava.gov/PARKnerships>



Contact

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Urban Forest Manager

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General Inquiries

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Our Environment, Health Impacts, and What You Can Do

Natalie Talis, MPH
Population Health Manager
Alexandria Health Department

February 2025



The Conversation Today

- Big picture about public health and the environment
- Focus on indoor air quality
- Healthy homes
- How to get involved

AHD At-a-Glance



Clinical services*, including:

- Routine vaccines
- WIC food & nutrition services
- Sexual & reproductive health
- Narcan distribution
- Newcomer/refugee health
- Tuberculosis (TB) support



Epidemiology



Population Health



Environmental
Health Services

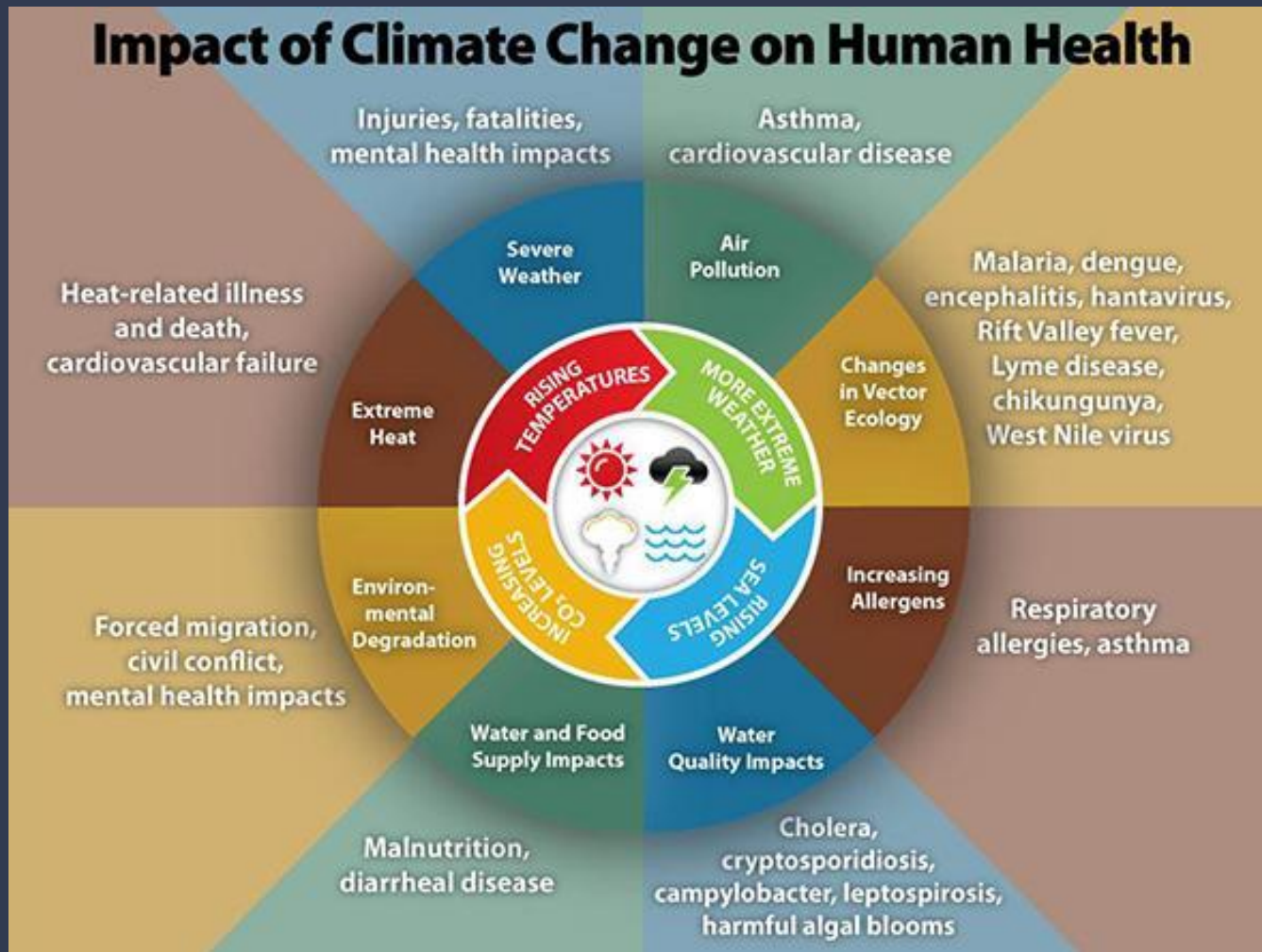


Vital Records



Public Health Emergency
Management & Medical
Reserve Corps

Public Health + Climate Change



Source: [Centers for Disease Control and Prevention](#)

Page/s that contain this image: [Health](#)

Last modified: 16 November 2016 - 1:31pm

What's in Your Indoor Air?



Mold



**Chemical reactions
in the air**



**Cooking-related
emissions**



Outdoor sources



**Emissions from candles,
incense or wood burning**



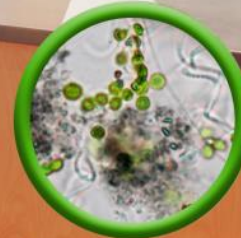
Printers



Cleaning activities



**Airborne allergens
and bacteria**



Particulate matter (PM) is a complex mix of solid and/or liquid particles suspended in air. These particles can vary in size, shape and composition. Exposure to these inhalable particles can affect your health and pollute your indoor environment.

To learn more, visit www.epa.gov/iaq.



What are the Health Impacts?

Research

- Respiratory, cardiovascular, stress/anxiety, child development, mobility challenges, falls, infectious disease

Residents

- Breathing issues, bug bites, stress, toxins, unsafe, scared, headaches, kids missing school and activities, hard to get around, adults missing work, “I feel sick”

Beyond the Home—Indoor Air Impact



February 2025

What is the City of Alexandria Doing?

- Healthy Homes Network and Action Plan
- Significant community engagement around home issues and solutions
- Developing new ways to share data between agencies
- Investing in proactive/preventive work

THE LONG-TERM GOAL

Every Alexandrian lives in a safe, healthy home where they can thrive.



Healthy Homes Action Plan 2.0 Priorities

- Comprehensive pest-control policies that include resident voice
- Working with property managers on smokefree policies
- Increasing access to legal supports around mold
- Centering mental health when addressing clutter/hoarding
- Partnering with 311 on improving resident experience reporting issues

How Did We Get to These Priorities?

How would you describe your current living situation?

Home Conditions	# Responses	% Responses*
Has pests, like bugs, mice, or rats	278	35%
Smells like tobacco or marijuana smoke	172	21%
Signs of mold or moisture	170	21%
Needs major repairs	131	16%
Cluttered	94	12%
Crowded, not enough space for everyone	86	11%
Air conditioning and/or heating not working	67	8%
Broken plumbing and/or unsafe drinking water	60	7%

*out of 805 responses

What does a healthy home mean to you?

Home Conditions	# Responses	% Responses*
Clean	203	30%
Safe and secure	151	22%
Support physical and emotional well-being (health, comfort)	143	21%
Ventilated and good air quality	140	21%
Free of pests	125	18%
Well maintained, timely repairs	106	16%
Free of environmental hazards (mold, harmful substances)	96	14%
Access to basic amenities, working utilities	88	13%

*out of 678 responses

What you can do

- Take care of your whole self.
- Focus on a Healthy Home
 - Check on/upgrade your air filter efficiency
 - Use portable air filters
 - Use green cleaning products and techniques (like wet dusting!)
 - Address common household issues like mold or pests at the root of the problem
 - Turn on fans and open windows when cooking or bathing
 - Close windows when outdoor air quality is bad
- Have a Voice:
 - Community Health Assessment and Improvement Plan
 - City Commissions. Apply for a seat!
- Join us:
 - Partnership for a Healthier Alexandria
 - Medical Reserve Corps

Contact Us

www.alexandriava.gov/Health

703.746.4988

Visit us at 4850 Mark Center Drive

Subscribe to “Health Dept. News” in eNews