

SIP 101: Introduction to Air Quality Planning

September 19, 2023

Overview of the Clean Air Act

Anthony Maietta

Environmental Protection Specialist

maietta.anthony@epa.gov

The Clean Air Act (CAA)

- Air Quality and Public Health
- History of the CAA
- Titles I - XI of the CAA
- Focus on Title I of the CAA
 - Part A
 - Part C
 - Part D

London 1952



(TopFoto / The Image Works) <https://www.theverge.com/2017/12/16/16778604/london-great-smog-1952-death-in-the-air-pollution-book-review-john-reginald-christie>

~12,000 deaths

Donora, PA 1948



(AP Photo/Walter Stein) https://www.pennlive.com/news/2017/04/deadly_smog_in_pa_town_paves_w.html

~20 deaths

New York City's air pollution among the world's worst as Canada wildfire smoke shrouds Northeast

By [Derek Van Dam](#) and [Rachel Ramirez](#), CNN
Updated 8:15 AM EDT, Wed June 7, 2023



Spencer Platt/Getty Images

People walk through a Brooklyn Park in New York City on Tuesday morning. Air pollution levels were unhealthy for sensitive groups due to smoke from Canada's wildfires.

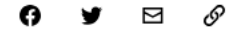
Detroit was listed in IQair's top 10 worst locations for air pollution on Tuesday afternoon. Chicago's air quality was moderate on Tuesday afternoon and is expected to remain moderate for the next couple of days.

Meanwhile, Pittsburgh's air quality was at unhealthy levels, with forecasts showing a slight shift to unhealthy level for sensitive groups, like the elderly, young children and

Latest out of Maui: The recovery, rebuilding begins after deadly wildfires

Residents are anxiously awaiting a return to normal.

By [Kiara Alfonseca](#)
September 5, 2023, 2:12 PM



The rebuilding process has begun across Maui, following the devastating wildfires that killed at least 115 people and displaced thousands more.

This is Canada's worst wildfire season on record, researchers say

The Washington Post
Democracy Dies in Darkness



By [Dan Stillman](#)

September 13, 2023 at 10:00 p.m. EDT

Record-breaking wildfires have occurred all over the Northern Hemisphere during 2023, new report finds

The total wildfire emissions for 2023 is estimated to be almost 410 megatonnes.

By [Julia Jacobo](#) and [Dan Peck](#)
September 13, 2023, 9:07 PM



Boreal forests in regions all over the world have been experiencing the worst wildfires in recorded history in 2023, according to new research.

In Canada, which [broke the record](#) in late June for wildfire smoke emissions released in a single year, wildfires began raging in May, long before the start of the fire season, and are still burning with fervor.

The total wildfire emissions for 2023 is estimated to be almost 410 megatonnes, the highest on record for Canada by a wide margin, according to the Copernicus Atmosphere Monitoring Service dataset, which provides information on the location, intensity, and estimated emission of wildfires around the world. The previous annual record was set in 2014 at 138 megatonnes of carbon.

Wildfire Smoke

Ethylene Oxide

Chicago Tribune

Officials knew ethylene oxide was linked to cancer for decades. Here's why it's still being emitted in Willowbrook and Waukegan.



Grand Rapids manufacturer to stop work that raised air pollution concerns

Updated Mar 5, 2019; Posted Mar 5, 2019



Gallery: DEQ investigates toxic emissions from Viant Medical

Manganese

KARA HOLSOPPLE x NOVEMBER 9, 2017

ENVIRONMENTAL JUSTICE HEALTH YOUR ENVIRONMENT UPDATE



A new study shows kids with higher levels of the metal manganese in their bodies have lower IQ scores. The study, published in the journal **NeuroToxicology**, looked at about 100 children between the ages of 7 to 9 in East Liverpool, Ohio.

ATSDR Agency for Toxic Substances and Disease Registry



The Ohio Environmental Protection Agency (Ohio EPA) found high levels of manganese in the East Liverpool air. Ohio EPA identified the SH Bell Company, a raw products storage and packaging facility, as the major source of airborne metals detected in community air monitors. Ohio EPA asked ATSDR to look at whether the manganese levels could harm peoples' health.

Top Priority: MDEQ investigates dangerous gas in Grand Rapids

POSTED 10:25 PM, MARCH 6, 2019, BY DOUG REARDON, UPDATED AT 10:26PM, MARCH 6, 2019

Toxic Air Pollutants



UNITED STATES
DEPARTMENT OF LABOR

Occupational Safety and Health Administration

Safety and Health Topics / Diesel Exhaust

Diesel Exhaust



<https://www.osha.gov/SLTC/dieselexhaust/>

Diesel Exhaust



United States
Environmental Protection
Agency

Health Assessment Document For Diesel Engine Exhaust

<https://nepis.epa.gov/Exe/ZyPDF.cgi/300055PV.PDF?Dockey=300055PV.PDF>

DIESEL
EXHAUST IN
THE UNITED STATES

- WHAT ARE THE HEALTH EFFECTS?
- WHO IS AT RISK?
- WHAT CAN YOU DO?

EPA
United States
Environmental Protection
Agency

<https://nepis.epa.gov/Exe/ZyPDF.cgi/P1001T82.PDF?Dockey=P1001T82.PDF>

Criteria Air Pollutants

Regional

Ozone
PM2.5

California dreamin' of clean air: 52% of Americans live with unhealthy ozone & particle pollution

Published time: 20 Apr, 2016 19:46

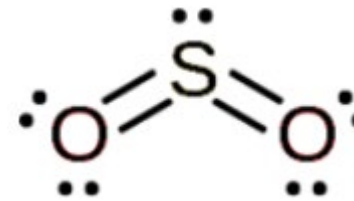
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The skyline of downtown Los Angeles through a layer of smog © Fred Prouser © Reuters

Local

Sulfur Dioxide
(SO₂)



The Clean Air Act (CAA)

- Authorized the development of comprehensive federal and state regulations to limit emissions from both stationary (industrial) sources and mobile sources
- 4 major regulatory programs affecting stationary sources: the NAAQS, SIPs, New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAPs)
- Requires EPA to set NAAQS for criteria air pollutants considered harmful to public health and the environment

The Clean Air Act (CAA)

- Two Types of Ambient Standards:
 - Primary - set limits to protect public health, including sensitive populations (asthmatics, children, elderly)
 - Secondary - limits to protect public welfare, including decreased visibility, damage to animals, crops, vegetation, and buildings

The Clean Air Act (CAA)

- EPA sets limits, for specific pollutants, on how much of a pollutant can be in the air anywhere in the U.S.
- Gives EPA, States, and Tribes enforcement powers
 - Authority is delegated to the States if they show that they have the ability to implement a program
- States do much of the work to carry out the Act
 - Planning, implementation, enforcement
- Allows the public to participate in the process
- Requires EPA or States to take action against violators

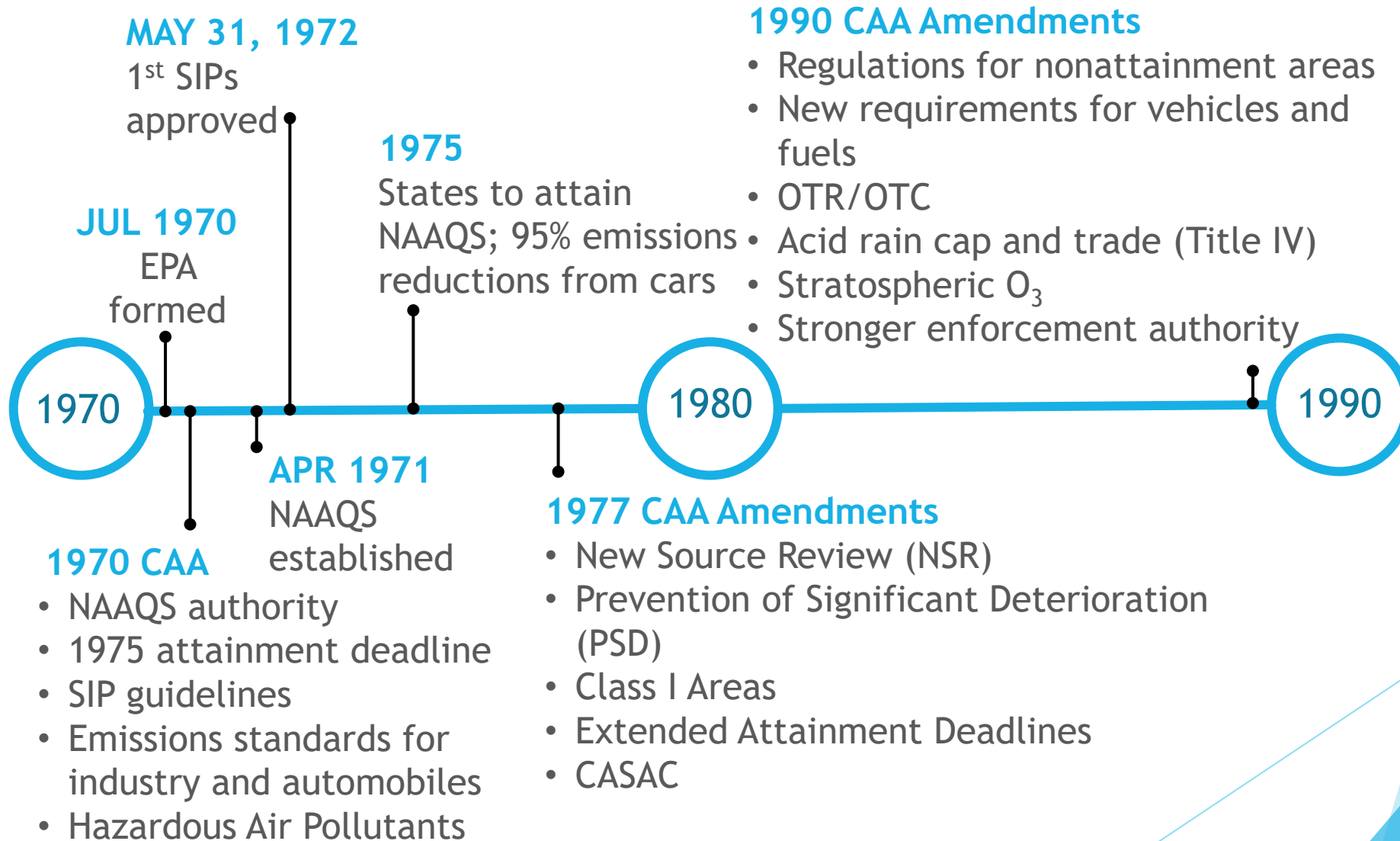
The Clean Air Act (CAA)

- Tribal Authority Rule (TAR) identifies those provisions of the CAA for which it is appropriate to treat eligible Tribes in the same manner as States
 - See *Oklahoma Dept. of Env. Quality v EPA*, 740 F.3d 185 (D.C. Cir. 2014)
 - Identifies that tribes can be found eligible for most provisions of the CAA

The Clean Air Act (CAA)

- CAA allows EPA to find federally recognized tribes eligible to be “treated in a manner similar to a State” so tribes can implement provisions of the CAA that are appropriate for their areas
- EPA will implement the CAA and provisions of the CAA in Indian country that the federally recognized tribes do not implement
- States are responsible for CAA implementation in all other tribal areas and working with other state-recognized tribes

The Clean Air Act (CAA)



1990 CAA Amendments

- **Title I: Air pollution prevention and control**
- Title II: Provisions relating to mobile sources
- Title III: General provisions including Tribal authority, emergency authority, and citizen suit provisions
- Title IV: Acid deposition
- Title V: Operating permits
- Title VI: Stratospheric O₃
- Title VII: Enforcement provisions
- Title VIII: Miscellaneous provisions
- Title IV: Clean air research
- Title X: Disadvantaged business concerns
- Title XI: Clean air employment transition assistance

CAA Title I

Air Pollution Prevention and Control

- **Part A - Air Quality and Emissions Limitations**
- Part B - Stratospheric Ozone (repealed for CAA Title VI)
- Part C - Prevention of Significant Deterioration (PSD)
- Part D - Nonattainment Area (NAA) Plan Requirements

CAA Title I - Part A Sections 108 & 109

National Ambient Air Quality Standards (NAAQS)

CAA Section 108

- Mandates the EPA Administrator to identify and set national standards for pollutants with adverse human and ecological effects
- EPA reviews each standard at least once every 5 years
- EPA to recommend pollution control techniques

CAA Section 109

- Promulgation (40 CFR)
- Primary and secondary standards
- NAAQS review process (CASAC, peer, and public)

CAA Title I - Part A Sections 108 & 109

National Ambient Air Quality Standards (NAAQS)

- Primary, health-based standards “requisite” to protect public health with an adequate margin of safety
 - Public health policy judgments required to protect sensitive *groups*, not most sensitive *individual*, from adverse effects
 - Standards are not “risk free” and not based on cost

CAA Title I - Part A Sections 108 & 109

National Ambient Air Quality Standards (NAAQS)

- Secondary, welfare-based standards required to protect agricultural crops and ecosystems from adverse effects
 - Includes visibility impairment, damage to animals, crops, vegetation, and buildings

CAA Title I Part A Section 110

The Infrastructure SIP

- Demonstrate that the State has the infrastructure to determine air quality, identify NAAQS violations, and carry out enforcement of regulations
- Provides states authority for implementation, maintenance and enforcement of primary and secondary NAAQS
- Includes “Good Neighbor” provisions
- Due to EPA within 3 years of new or revised NAAQS, following reasonable notice (usually 30 days) for public comment and opportunity for public hearing

CAA Title I

Air Pollution Prevention and Control

- Part A - Air Quality and Emissions Limitations
- Part B - Stratospheric Ozone (repealed for CAA Title VI)
- **Part C - Prevention of Significant Deterioration (PSD)**
- Part D - Nonattainment Area (NAA) Plan Requirements

CAA Title I Part C

Prevention of Significant Deterioration (PSD)

- PSD for new sources in attainment/unclassifiable areas

Subpart 1: Clean Air
Subpart 2: Visibility

- Objectives

- Preserve and enhance the air quality in Class I areas of special natural, recreational, scenic, or historic value
- Provide for public participation and consultation with Federal Land Managers prior to permitting major new sources or major modifications that would increase air pollution in Class I areas
- Ensure that the emissions sources from one State don't interfere with attainment of areas in other States

CAA Title I

Air Pollution Prevention and Control

- Part A - Air Quality and Emissions Limitations
- Part B - Stratospheric Ozone
- Part C - Prevention of Significant Deterioration (PSD)
- **Part D - Nonattainment Area (NAA) Plan Requirements**

CAA Title I Part D

Nonattainment Area Requirements

- Attain NAAQS within a specified period
- Submit a SIP with:
 - Emissions inventory
 - Permits
 - Control measures and plans to reach standards (attainment demonstration)
 - Reasonable further progress (RFP)
 - Contingency measures
 - Maintenance plan to meet NAAQS for 10 years after redesignation to attainment

CAA Title I **Part D**

The Nonattainment Area (NAA) SIPs

- Subpart 1 (Section 172): General provisions
- Subpart 2 (Section 182): Ozone
- Subpart 3 (Section 187): Carbon Monoxide
- Subpart 4 (Section 189): Particulate Matter

CAA Title I Part D

The Nonattainment Area (NAA) SIPs

- Subpart 5 (Section 191): SO_x/NO_x/Pb SIP
- Subpart 6 (Section 193): General Savings
 - Rules or controls promulgated for NAAs before November 15, 1990 shall remain in effect
 - New rules or modifications must ensure equivalent or greater emissions reductions

Thanks!

Feel free to reach out to Tony with any questions:

maietta.anthony@epa.gov