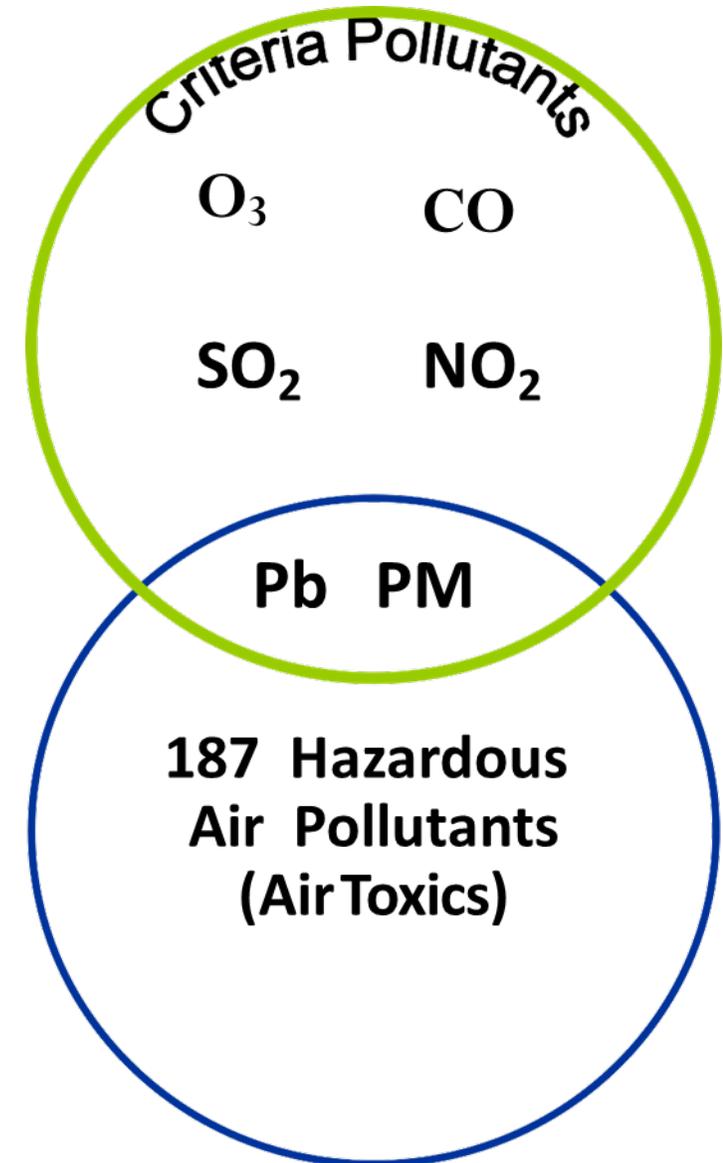


Air Toxics Program

U.S.EPA

What are “Air Toxics”?

- ▶ Also known as Hazardous Air Pollutants (HAPs)
- ▶ 187 substances specified by Congress
- ▶ May cause cancer and other serious health effects
- ▶ Regulated differently than common, widespread pollutants like ozone or particulate matter, which are called “criteria pollutants”
 - ▶ Regulations limit *emissions* from sources





Air Toxics May...

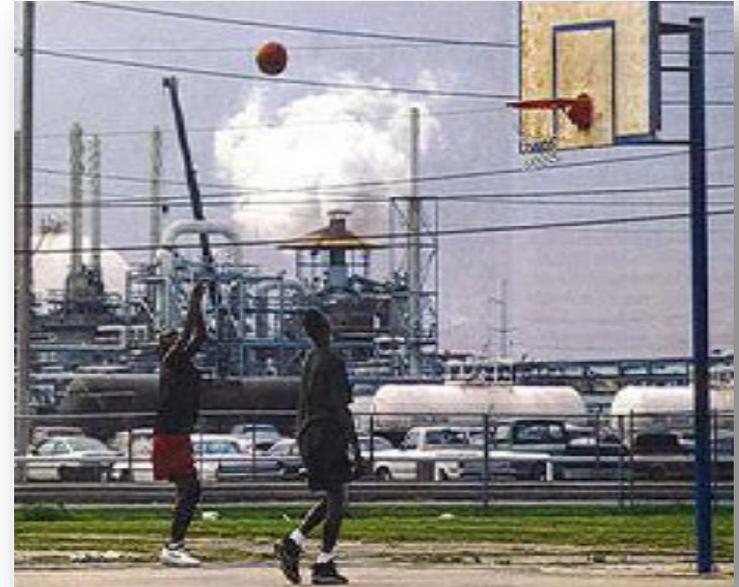
- ▶ Cause cancer or other serious health effects
- ▶ Have potential adverse environmental effects
- ▶ Have diverse physical and chemical characteristics
- ▶ Exposure possible through multiple ways
- ▶ Be transported locally, regionally, nationally or globally
- ▶ Persist in the environment and/or bioaccumulate

Air Quality Standards vs. Emissions Standards: What's the Difference?

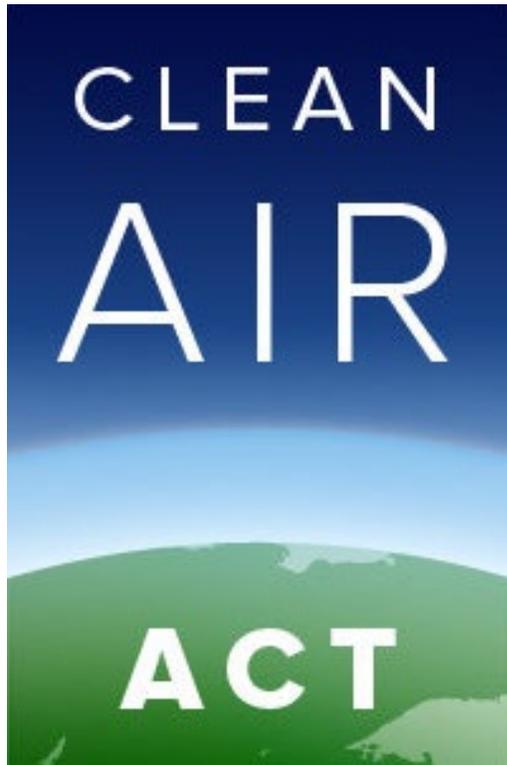
- ▶ ***Air quality standards*** set limits on the amount of a pollutant allowed in the outdoor air
 - ▶ The Clean Air Act directs EPA to set National Ambient Air Quality Standards, called “NAAQS,” for the most common, widespread pollutants to protect public health and the public welfare (including environment)
 - ▶ EPA sets NAAQS for six pollutants: ground-level ozone, particulate matter, carbon monoxide, sulfur dioxide, nitrogen oxides, and lead.
 - ▶ States with areas designated as not meeting a NAAQS must develop plans to attain them.
- ▶ ***Emissions standards*** are limits on the amount of a pollutant that an industrial source, or mobile sources, can *emit* (put into the air).
 - ▶ The Clean Air Act requires EPA to set *emissions standards* for categories of industries that emit air toxics.
 - ▶ These standards are known as “National Emissions Standards for Hazardous Air Pollutants”

1990 Clean Air Act Amendments changed the way we regulate air toxics:

- ▶ Required EPA to regulate air toxics *emissions* from “source categories” based on existing technology
- ▶ Regulations include:
 - ▶ Industrial standards
 - ▶ Motor vehicle and fuels standards



Clean Air Act Section 112: Industrial Source Regulations



- ▶ Two types of National Emissions Standards for Hazardous Air Pollutants (NESHAP)
 - ▶ Technology-based standards
 - ▶ Maximum Achievable Control Technology (MACT) standards
 - ▶ Apply to “major sources” of air toxics
 - ▶ Generally Available Control Technology (GACT) Standards
 - ▶ Apply to sources that are not major sources (known as “area sources”)

What is a Major Source?

- ▶ **Major source** “means any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, **10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants**”

Clean Air Act Section 112: Rules for Major Sources

- ▶ Section 112(d): “The Administrator shall promulgate regulations establishing emission standards for each category or subcategory of major sources and area sources of hazardous air pollutants listed for regulation...”
- ▶ Emission standards “require the maximum degree of reduction in emissions of the hazardous air pollutants...the maximum degree of reduction in emissions that is deemed achievable for new sources in a category or subcategory shall not be less stringent than the emission control that is achieved in practice by the best controlled similar source”
 - ▶ These are referred to as “Maximum Achievable Control Technology” or “MACT” standards. Listed categories of major sources must be covered by MACT standards

Clean Air Act Requirements for Setting MACT Standards for Major Sources

▶ **New Sources:**

- ▶ Emissions limits for *new* sources must be based on the performance of the best-controlled similar source

Clean Air Act Requirements for Setting MACT Standards for Major Sources, cont.

▶ Existing Sources

- ▶ Must be at least as stringent as the **best performing 12 percent** of existing sources in a category or subcategory, for which we have data
 - ▶ This is known as the “MACT floor”
 - ▶ If there are fewer than 30 sources, MACT is based on the average performance of the **best - performing 5 sources**
 - ▶ EPA must also evaluate options that are more stringent than the MACT floor

Clean Air Act Requirements for Setting *Area Source* Standards

- ▶ **Area source** “means any stationary source of hazardous air pollutants that is not a major source”
- ▶ Listed categories of area sources must be covered by Generally Available Control Technology (GACT) standards
 - ▶ Are based on *typical* performance in the source category
 - ▶ Are usually less stringent than MACT standards

MACT Standards: Required Reviews

- ▶ Clean Air Act Section 112(f)(2) requires EPA to conduct two types of reviews of MACT standards
 - ▶ A review to determine whether the MACT standard protects public health with an “ample margin of safety” (known as a “residual risk review”)
 - ▶ Required within eight years after a MACT standard is issued
 - ▶ A “technology review”
 - ▶ Required within eight years after a MACT standard is issued, and every eight years afterward.
 - ▶ Revise standards if necessary to improve emission reductions

Clean Air Act Required Reviews: What's Considered

- ▶ Technology review takes into account new developments in practices, processes and control technologies, considering cost and feasibility
- ▶ EPA also considers previously unregulated processes and air toxics, and makes technical corrections
- ▶ Residual risk review includes inhalation risk assessment (cancer and non-cancer). It also includes:
 - ▶ screens to assess different ways you might be exposed like eating something contaminated
 - ▶ whole facility, acute and environmental risks
 - ▶ can perform refined assessments in limited cases

Questions EPA asks when assessing risk

Toxicity Assessment

- **Is a chemical toxic?**
 - Known as *hazard identification*
- **What is the relationship between the dose of a chemical and the response that results?**
 - Known as a *dose-response relationship*

These questions yield numbers that are used as part of risk assessments; these numbers are not air quality standards

Exposure Assessment

Who is exposed?

Risk Characterization

What is the likelihood that the exposure will result in an adverse health effect?

How sure are we that our answers are correct?

Resources

- ▶ List of the 187 hazardous air pollutants: <https://www.epa.gov/haps/initial-list-hazardous-air-pollutants-modifications#mods>
- ▶ Overview of Clean Air Act Section 112: <https://www3.epa.gov/ttn/atw/overview.html>
- ▶ For further explanation of major and area sources and a list of source categories please visit: <https://www.epa.gov/ttn/atw/pollsour.html>
- ▶ For a listing of all of the NESHAP/MACT final rules please visit: <https://www.epa.gov/stationary-sources-air-pollution/list-national-emission-standards-hazardous-air-pollutants-neshap>
- ▶ For an overview of the risk and technology review program please visit: <https://www3.epa.gov/ttn/atw/rrisk/rtrpg.html>
- ▶ Plain English guide to Clean Air Act: <https://www.epa.gov/clean-air-act-overview/plain-english-guide-clean-air-act>
- ▶ State, local, tribal and federal partnerships: <https://www.epa.gov/haps>