

SECTION TITLE:

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Attainment and Maintenance of the  
National Ambient Air Quality  
Standards (NAAQS)

## SUCSESSES - ATTAINING/MAINTAINING NAAQS

1. Significant criteria pollutant reductions (emissions, design values)
2. Significant reductions in poor air quality days based on AQI
3. Attainment of NAAQS
  1. Almost all areas of country attaining CO and NO<sub>2</sub> NAAQS
  2. Progress in attaining O<sub>3</sub>, Pb, PM<sub>2.5</sub>, PM<sub>10</sub>, and SO<sub>2</sub> NAAQS
  3. Fewer nonattainment areas
4. Frameworks for addressing interstate and international pollution
5. Pollution controls in nonattainment and maintenance areas
6. Proactive programs to remain in attainment of NAAQS
7. Improved understanding of air pollution

## OPPORTUNITIES - ATTAINING/MAINTAINING NAAQS

1. Mobile source emission reductions and controls
2. Stationary source emission reductions and controls
3. Completion of O<sub>3</sub> and PM NAAQS Reviews together in 2020
4. Lesser-used provisions in the Clean Air Act
  1. Sec. 110 "Infrastructure SIPs"
  2. Sec. 110 "SIP calls"
  3. General nonattainment planning provisions in Sec. 172
  4. Sec. 179B petitions on international transport
5. Improvements in air quality forecasting and public awareness about air quality
6. Sensor Technology

# CHALLENGES - ATTAINING/MAINTAINING NAAQS

1. Many people live in areas violating the NAAQS
2. Disproportionate exposure to criteria pollution in EJ communities
3. Costs of implementing additional controls
4. Ambiguity about "out-of-cycle" nonattainment designations
5. Issues in reviewing and establishing NAAQS
  1. Lack of clear thresholds
  2. Secondary NAAQS distinct from primary NAAQS
  3. 5-year statutory timeframe
  4. Statistical form and averaging time of NAAQS
6. Accounting for international transport and exceptional events
7. Overlapping NAAQS/Anti-Backsliding
8. Challenges with SIPs, especially for O<sub>3</sub>
9. Public communication about attainment/violation of NAAQS v. AQI

# RECOMMENDATIONS - ATTAINING/MAINTAINING NAAQS

1. Improve the NAAQS Review Process
  1. Reduce uncertainty on timing and finality of NAAQS reviews
  2. Synchronize NAAQS reviews with common precursors
  3. Ensure accounting of protection needed for EJ communities in NAAQS reviews
  4. Evaluate forms and averaging times for O<sub>3</sub> and PM NAAQS to account for weather trends
  5. Account for International Transport in Reviewing the NAAQS
2. Make better use of full range of authority in area designation process

## RECOMMENDATIONS - ATTAINING/MAINTAINING NAAQS

3. Consider requiring more interstate air pollution abatement
4. Improve implementation of exceptional events rule and interstate transport provisions
5. Modify approach to SIP requirements and classifications for nonattainment areas
6. Ensure timeliness of actions related to SIPs
7. Consider issuing "early action" SIP calls to address problems maintaining the NAAQS
8. Consider updating transportation conformity policies and practices

SECTION TITLE:

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# Developing and Utilizing High Quality Data

# SUCCESSSES - DEVELOPING AND UTILIZING HIGH QUALITY DATA

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1. National Emissions Inventory
2. Cost of control documentation
3. Ambient monitoring networks
4. Stationary source emissions data
5. Low cost sensor monitoring
6. Remote sensing technology
7. Scientific research
8. Data collection and accessibility



# OPPORTUNITIES - DEVELOPING AND UTILIZING HIGH QUALITY DATA

1. Integrating sensor technology, remote sensing technology, and ambient monitoring data
2. Utilization of sensor data where federal methods of monitoring are not available
3. Utilization of advanced technologies for NAAQS review
4. Utilization of the 5-year network assessment
5. Communication to the public
6. Emission factors

# CHALLENGES - DEVELOPING AND UTILIZING HIGH QUALITY DATA

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1. Adequate funding for monitoring networks
2. Adequate funding for advanced technologies
3. Policies for advanced technologies
4. Outdated emission factors
5. Collection of data for exceptional events demonstrations
6. Monitor performance at lower levels

# RECOMMENDATIONS – DEVELOPING AND UTILIZING HIGH QUALITY DATA

1. Request more funding for monitoring
2. Address NAAQS monitoring requirements
3. Increase funding for community monitoring
4. Maintain and expand expertise in sensor technology
5. Improve understanding of remote sensing measurements
6. Document large-scale exceptional events
7. Improve utility of 5-year monitoring network assessment
8. Conduct a comprehensive review of emission factors
9. Conduct a comprehensive review of EPA databases
10. Expand integration of ambient monitoring data

SECTION TITLE:

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# Voluntary Programs

## SUCSESSES - VOLUNTARY PROGRAMS

1. Small Business Environmental Assistance (SBEA) programs
2. Voluntary programs for attaining the NAAQS/SIP credits
3. Voluntary programs for maintaining the NAAQS (Flex programs, Early Action Compact, Advance Program)
4. Diesel Emission Reduction Act (DERA)/National Clean Diesel Campaign
5. Energy Star
6. SmartWay
7. MANY others!

## OPPORTUNITIES – VOLUNTARY PROGRAMS

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1. Provide opportunities for emission reductions beyond “low-hanging fruit” that may not be available any more in some areas
2. Provide a framework for avoiding a nonattainment designation, enabling EPA and states to focus attention on problem areas, and engaging communities in air quality planning

## CHALLENGES - VOLUNTARY PROGRAMS

1. Small businesses continue to face significant challenges keeping track of all CAA regulatory requirements
2. Large numbers of areas classified as “Marginal” for O3 limits utility of SIP credit guidance in encouraging voluntary measures
3. Lack of certain and tangible regulatory relief/benefit for participation in voluntary programs
4. Lack of clarity on “out-of-cycle” designations
5. Not all programs are equally rigorous
6. Certain statutory provisions discourage early reductions

## RECOMMENDATIONS - VOLUNTARY PROGRAMS

1. Grant credit in "Transport SIPs" for implementation of voluntary measures
2. Expand opportunities for SIP credits for voluntary measures
3. Provide tangible benefits to areas voluntarily reducing emissions
4. Continue to support DERA, Energy Star, SmartWay, and other voluntary programs
  1. DERA: request maximum funding authorized, focus funding on sources/areas that would most benefit from *federal* funding (i.e., sources that cross state lines like long-haul trucks, locomotives, and ships, and state/tribal entities that lack capacity to field their own DERA-like program)
  2. Other Programs - continue to support; seek CAAAC input on design and implementation



SECTION TITLE:

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# Visibility and Regional Haze

## SUCSESSES - VISIBILITY AND REGIONAL HAZE

1. Significant improvements in visibility in vast majority of national parks and wilderness areas
2. All of the top 10 most visited parks with visibility monitors have shown major improvements in the past 20 years
3. Tens of millions people from all over the world are able to better enjoy the beauty of these places of special beauty
4. Emission reductions specific to regional haze program have made important contributions to these improvements
5. Regional Haze planning framework ensures that states and key federal agencies regularly devote attention to this issue

## OPPORTUNITIES – VISIBILITY AND REGIONAL HAZE

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1. Framework for visibility-based PM<sub>2.5</sub> secondary NAAQS established in 2012 could be used to address regional haze issues
2. Projected improvements in visibility through 2028 and baseline of existing emission reductions from other programs (mobile source standards, O<sub>3</sub> and PM NAAQS implementation, NSPS, NSR)

## CHALLENGES - VISIBILITY AND REGIONAL HAZE

1. About 11% of all monitoring sites have not seen any improvement, including two that have seen degradation
2. Uncertainty about the advisability of using interstate trading programs like CSAPR to fulfill “Best Available Retrofit Technology” requirements
3. Lack of new emission reduction measures included in Regional Haze SIPs beyond what may already be occurring for nonattainment SIPs calls into question the utility of the planning effort

## RECOMMENDATIONS - VISIBILITY AND REGIONAL HAZE

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1. Regional Haze resource page/clearinghouse
2. Retrospective analysis for degree to which BART reductions v. other programs have contributed to visibility improvements in last 20 years
3. Examine opportunities for non-BART reductions that may be needed to achieve further visibility improvements moving forward

SECTION TITLE:

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Stationary Source Programs: Major &  
Minor NSR, Title V Operating Permits, New  
Source Performance Standards

# SUCCESSSES – MAJOR/MINOR NSR, TITLE V, NSPS

## 1. Title I

- a. **Cooperative federalism:** State and local air quality decisionmaking.
- b. **PSD for GHGs:** Extension to GHGs without overwhelming PSD permitting program (per 2014 Supreme Court decision).
- c. **BACT/LAER:** Promoted control technology advances due to technology-forcing nature.
- d. **Reform:** NSR Improvement Rules of 2002 and adoption by states.
- e. **Plantwide applicability limits.**

## 2. Title V

- a. All states have program approval.
- b. By 2008, 99% of all permits issued.
- c. Although not authorizing new substantive requirements:
  - a. Controls/P2 to avoid program means # of subject facilities ↓ ~50%!
  - b. Procedural benefits (participation, consolidation).
- d. Transition to electronic reporting.

## 3. NSPS

- a. Numerous standards issued.
- b. "Baseline" for technology determinations in other programs.

# CHALLENGES & OPPORTUNITIES - MAJOR/MINOR NSR, TITLE V, NSPS

## 1. Title I

- a. Guidance:** Thousands of guidance documents, conflicting with other guidance and interpretations.
- b. Complex applicability framework.**
- c. Processing time:** Obtaining permits takes too long, potentially hampering economic growth.
- d. Monitoring data:** Lack of available monitoring data for PSD analyses.
- e. Cases re Title V petitions.**
- f. Scarcity of offsets.**

## 1. Title I (cont'd)

- g. NAAQS update challenges:** Ever-increasing stringency of NAAQS challenges states and companies:
  - i. Need to restart permitting process.
  - ii. Ability to model attainment/non-interference showings.
  - iii. Lag between NAAQS revisions and implementation rules.
- h. Cost v. reductions:** High cost for modifications with little emissions benefit.



# CHALLENGES & OPPORTUNITIES - MAJOR/MINOR NSR, TITLE V, NSPS

## 2. Title V

- a. Delays:** Slow processing time for modifications and renewals.
- b. Petition backlog:** Although progress has been made on Title V petition backlog, timing for response still needs reduction.
- c. Fee adequacy:** States struggle on fees, in part due to basis being actual emissions, which is a negative side effect of a positive action (reduced emissions).
- d. Reporting formats:** Inconsistent reporting format at federal and state levels presents challenges as EPA moves to CEDRI.
- e. Unrealized potential for certainty:** Lingering permit objections puts permit terms in limbo; certainty promised by permit shield not realized.

## 3. NSPS

- a. Technology review timing.*
- b. Recognizing evolving technology.*

# RECOMMENDATIONS – MAJOR/MINOR NSR, TITLE V, NSPS

## 1. Title I

- a. Guidance:** Rationalize/reconcile thousands of NSR guidance documents to facilitate understanding which guidance applies; eliminate conflicts.
- b. Processing time:** Help expedite permits and applicability determinations.
- c. PALs:** Continue to encourage use of PALs.
- d. SILs:** Address problems with SILs.
- e. Implementation rule timing:** Adopt NAAQS implementation rules addressing NSR implications at same time as issuing revised NAAQS.
- f. Monitors:** Enhance air quality monitoring networks and explore PPP to support this effort.
- g. Study of relative benefits:** Conduct study to assess relative benefits of NSR permitting compared with costs; recommendations as to whether additional streamlining is possible under current statutory framework.

# CHALLENGES & OPPORTUNITIES – MAJOR/MINOR NSR, TITLE V, NSPS

## 2. Title V

- a. Title V Task Force:** Implement remaining majority Title V Task Force recommendations.
- b. Petition backlog:** Continued focus to reduce time to respond to Title V petitions.
- c. Fees:** States/EPA to ensure appropriate fees are collected for costs of Title V program; ensure fees are spent only on Title V activities.
- d. Cost Analysis:** Determine true cost of Title V permitting; support diversifying fee structure.
- e. Processing time:**
  - i. Improve processing time for Title V modifications.
  - ii. Improve processing rate for Title V renewals.

## 3. NSPS

- a. Streamline reviews:** Efforts to streamline Section 111(b)(1) technology reviews (see 2011 proposed rule never finalized).
- b. AMELs:** Evaluate expanded use of AMELs when issuing or revising NSPS.

SECTION TITLE:

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# Section 112: Hazardous Air Pollutants

# SUCCESSSES: SECTION 112

## 1. MACT

- a. Listed initial 174 major source categories for regulation under aggressive 10-year MACT schedule.
- b. Issued 97 MACT standards covering *all of the 174 major source categories*.
- c. Performance-based standards to allow achieving standards in most cost-effective manner available.

## 2. GACT: Regulated 68 area source categories, (e.g., dry cleaners, hard chromium plating operations, aluminum foundries).

## 3. Residual Risk

- a. Completed ~90 Risk and Technology Reviews (RTRs) (§112(d)(6), (f)); 8 more by end of 2022.
- b. RTRs determined that virtually every MACT achieved emission levels sufficient to protect public health and environment with ample margin of safety.

## SUCCESSSES: SECTION 112

### 4. **Urban Air Toxics**

- a. Implementation of Urban Air Toxics program made substantial progress to reduce air toxics nationwide, e.g.:
  - i. 66 percent reduction in benzene;
  - ii. ~60 percent reduction in mercury from human-made sources;
  - iii. 84 percent decrease of lead in outdoor air;
  - iv. From 1990-2012, removal of ~1.5 million tpy HAP from stationary sources, and ~3 million tpy of criteria pollutants as co-benefit;
  - v. Removal of ~1.5 million tpy of HAPs from mobile sources, ~50 percent reduction.
- b. Outreach and Education: training, funding, partnerships.

5. **RMP:** RMP implementation by companies.

6. **NATA:** Seven National Air Toxics Assessments as screening tools for states, local, tribal agencies to assess health risks from HAP exposure across the country.

# CHALLENGES & OPPORTUNITIES: SECTION 112

- 1. Meeting Congress's aggressive deadlines:**
  - a. Completion of remaining residual risk reviews (recognizing partially due to large number of source categories).
  - b. Completion of technology reviews on schedule.
- 2. Innovation and P2:** Although written as performance standards, specificity may stifle innovation and P2 opportunities.
- 3. Cost accuracy:** Cost analyses not keyed to actual costs of implementation of requirements, even though EPA is to be commended for undertaking some retrospective reviews to address the issue.
- 4. Clarity:** Section 112 standards are exceedingly difficult to interpret and apply, due to internal and external cross references, incorporation by reference, piecemeal amendments in light of court decisions.

## RECOMMENDATIONS: SECTION 112

- 1. Completing the risk reviews:** Endeavor to complete as expeditiously as practicable remaining risk reviews; communicate to Congress the challenges of completing these reviews in the allotted time frames.
- 2. Timely technology reviews:** Be timely in technology reviews; communicate to Congress the challenges of completing these reviews in the allotted time frames.
- 3. Communicate EPA's views of proper review timing:** Advise Congress of appropriate frequency of updates given resources and pace of technology advancements expected.
- 4. Promote innovation:** Consider ways to ensure innovative compliance approaches can be allowed to reduce costs and potentially provide even greater emissions reductions.
- 5. Complete and apply learning from cost studies:** Apply lessons from retrospective cost analysis comparisons to improve cost/benefit forecasts.
- 6. Simplify regulations:** Attempt to simplify Section 112 standards to facilitate understanding, compliance, enforcement. Continue EPA's "plain language" efforts.



SECTION TITLE:

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# Mobile Sources

## SUCCESSSES

1. With regard to “conventional” pollutants, new vehicles of all types are roughly 99 percent cleaner than similar vehicles manufactured in 1970.
2. Numerous engine, vehicle and fuel programs have been implemented since 1970; EPA has often coordinated engine/vehicle/fuels programs given synergistic effects on emissions:
  - The 1970 Act directed specific reductions for light duty vehicles.
  - Phase out of lead in gasoline started in 1970s and was largely completed by late 1980s.
  - Standards for HDVs were first promulgated in 1974.
  - In 2000, EPA promulgated “Tier 2” emission standards, followed in 2014 by “Tier 3” standards.

## SUCCESSSES

- In 1994, EPA promulgated first nonroad standards; EPA issued additional rules in 1998 and 2004.
- Locomotive standards were promulgated in 1998, updated in 2008.
- Marine diesel engine standards (over 50 hp) were issued in 1999, standards for recreational engines in 2002, and for larger ocean-going vessels in 2003. Additional rules in 2010 harmonized U.S. standards with international "Article VI" standards.
- EPA and FAA have issued series of aircraft engine and implementation standards since the early 1970s, most recently in 2021 to control CO<sub>2</sub>.
- EPA has issued multiple fuel standards, including to control fuel volatility, to implement the reformulated gasoline program, oxygenated gasoline, mobile source air toxics, to control sulfur in gasoline and diesel and to implement the renewable fuel standards program.

# CHALLENGES AND OPPORTUNITIES

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1. Various perspectives regarding how to address mobile source emissions in future years and how to balance concerns over criteria versus GHG emissions.
2. Views also differ with regard to potential regulatory approaches, in terms of mandates versus performance standards and consideration of costs and available technology.
3. Maintaining vehicle emission performance over time is additional challenge, considering both I/M programs and aftermarket.
4. Concerns have also been expressed concerning the access of all socio-economic levels to new technology and any supporting infrastructure.

## OVERARCHING RECOMMENDATIONS:

1. EPA should review its authority (including any lack thereof) to adopt different approaches under the Clean Air Act in order to address vehicle and engine emissions.
2. EPA should also define its' authority under the Clean Air Act, if any, to address related vehicle infrastructure issues associated with greater adoption of electric, hydrogen or other alternative-fueled vehicles.
3. EPA should develop the necessary analytical infrastructure to more precisely assess the relative impact of different vehicle types on generation of criteria and greenhouse gases.
4. EPA should examine how past regulatory mechanisms allowing for compliance flexibility may be utilized in new rulemakings for criteria and GHG standards.
5. EPA should address how it will balance efforts between mobile sources of GHGs and other sources subject to control under the Clean Air Act.

## ADDRESSING AIR QUALITY ISSUES:

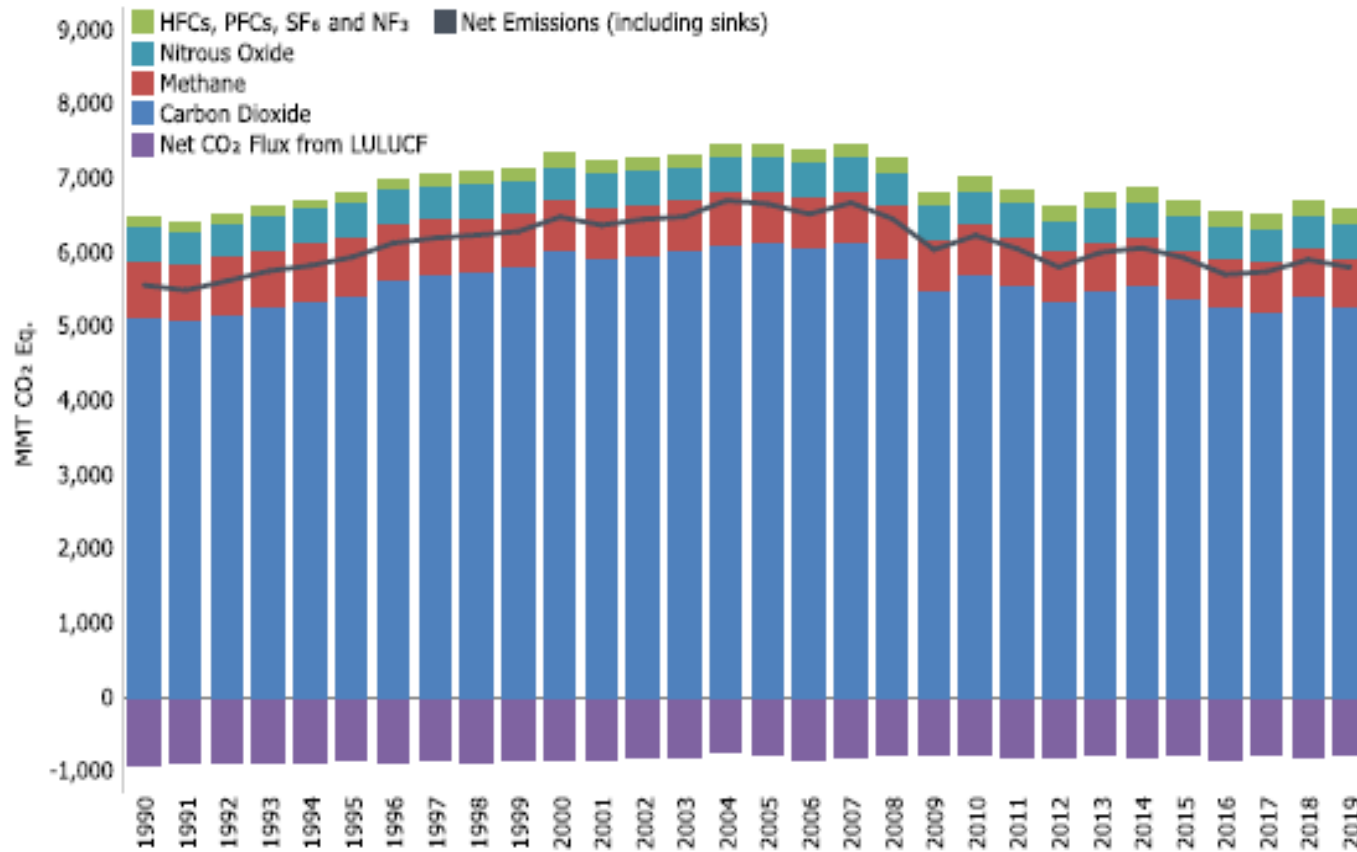
EPA should better define how it will balance the need to attain local and regional air quality goals with global concerns regarding GHG emissions

- To what extent do synergies exist, not exist, or potentially produce contradictory outcomes?
- How should EPA balance both short-term and longer-term health risks?
- How can EPA integrate its programs with other likely investments by private industry and other federal, state and local programs?
- How can EPA best preserve compliance flexibility mechanisms, including staggered implementation deadlines?
- How will incentive programs for advanced and innovative technologies be retained?
  - What will be the ability to utilize “off-cycle” emission reductions for vehicle certification, ABT programs, fleetwide compliance and scaled requirements based on vehicle size, type and utilization (especially in medium- and heavy-duty sectors).

# Greenhouse Gas Emissions and Climate Change

# The Issue

Figure ES-1: U.S. Greenhouse Gas Emissions by Gas





# SUCCESSSES

1. 2008 -- ANPRM issued to review potential Clean Air Act (CAA) authority to address greenhouse gas emissions (GHGs) following U.S. Supreme Court decision in *Massachusetts v. EPA*.
2. 2009 -- Endangerment and Cause or Contribute Findings under CAA section 202(a), new motor vehicles
3. 2010 -- Light Duty Vehicle (LDV) GHG Emission Standards (Model Years 2011-2016)
4. 2011 - Medium- and Heavy-Duty (MD/HD) GHG Emission Standards (MY 2014-2018)
5. 2012 -- 2017 and Later Model Year LDV Standards for Model Years (through MY 2025, dependent on Mid Term Evaluation)
6. 2015 - New Source Performance Standards (NSPS) for Electric Generating Units (EGUs), CAA section 111(b)
7. 2015 - Significant New Alternative Program (SNAP) Rules 20-21 regarding high global warming substances\*
8. 2016/2020 - NSPS for Oil & Natural Gas Facilities\*

\* Rules affected by litigation and Congressional action.

## SUCCESSSES

8. 2016 - Endangerment and Cause or Contribute Finding Regarding Aircraft Under CAA section 231
9. 2016 - NSPS for Municipal Solid Waste Landfills
10. 2016 - Phase 2 GHG Standards for MD/HD Vehicles (MYs 2019-2027)
11. 2021 - GHG Emission Standards and Test Procedures for Aircraft
12. 2006 - present - Renewable Fuel Standards (annual)
13. 2009 - present - EPA rules requiring reporting of GHG emissions covering numerous source categories
14. 2012 - present - NSPS for Fossil Fuel-Fired Generation (Clean Power Plan, Affordable Clean Energy Rule) CAA section 111(d)\*

\* Rules affected by litigation.

# CHALLENGES AND OPPORTUNITIES

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1. Extent and Limits of CAA Authority
  - 1.1. CAA sections 108-110, GHG NAAQS
  - 1.2. CAA section 112, GHG MACT
  - 1.3. CAA section 115, International Air Pollution
  - 1.4. CAA section 615, Title VI
2. Technical and Analytical Requirements
  - 2.1. Role of Federal/State/Local Programs
  - 2.2. Lifecycle Accounting for GHG Emissions
  - 2.3. Embedded Carbon in Products
  - 2.4. Creditable Offsets
  - 2.5. Fuel Switching

# RECOMMENDATIONS

- 1. EPA Should Reassess and Further Define its CAA Authority to Address GHGs and Climate Change**
  - EPA Should Issue New ANPRM or Similar Public Document Analyzing Available CAA Authority to Address GHGs Under the CAA, Soliciting Public Comment
  - EPA Should Clearly Articulate What Implementation Methodologies May Be Available to Include Cap-and-Trade, Financial Mechanisms and Incentive Programs
- 2. EPA Should Continue to Focus on Major Sources of GHGs**
- 3. EPA Should Define How Implementation of CAA GHG Programs Can Occur in Connection With State and Local Programs Designed to Address GHG Emissions, Including Potential Conflicts**
- 4. EPA Should Consider Regulatory Mechanisms Which Can Incentivize Behavior**

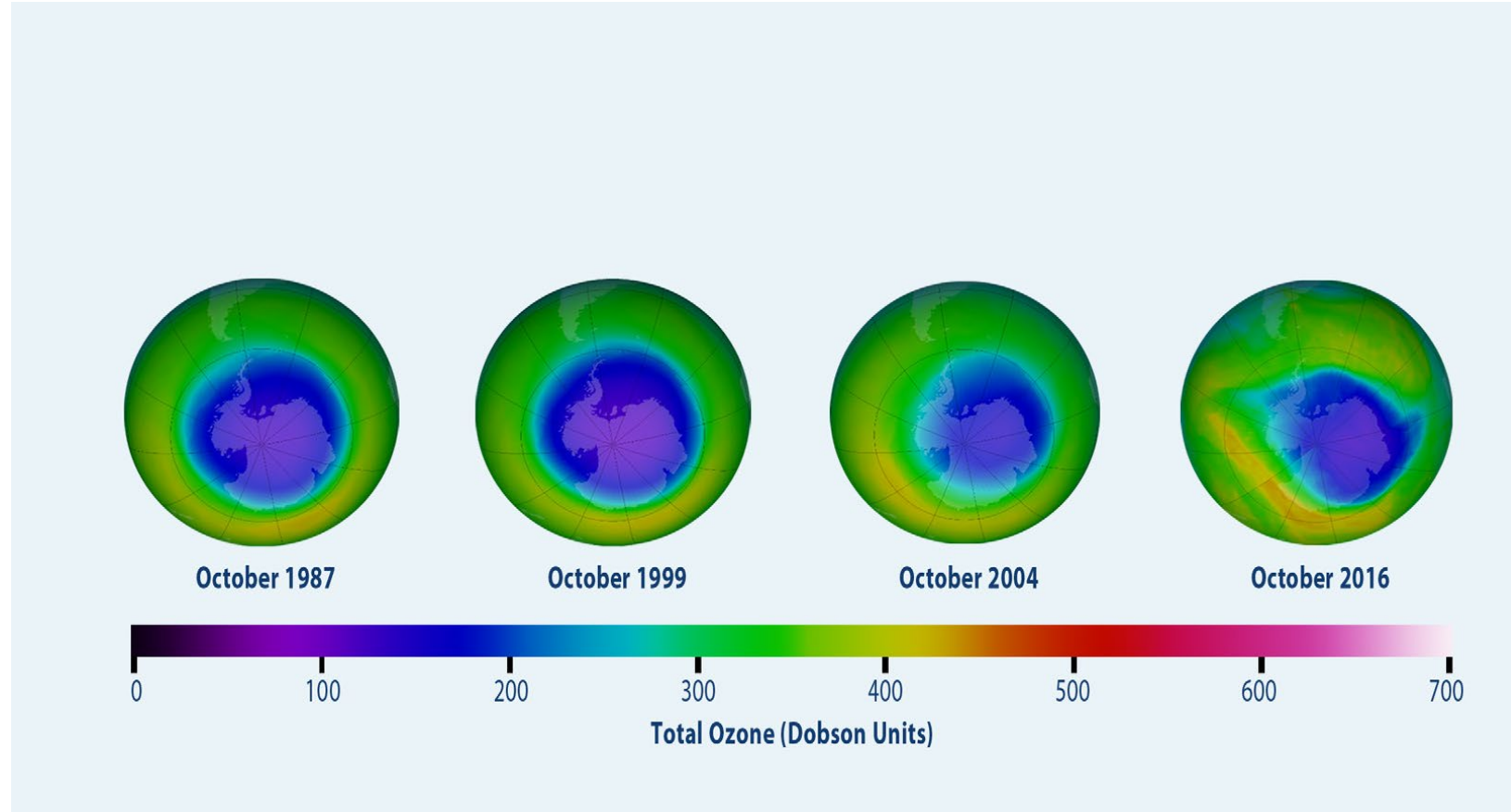
## RECOMMENDATIONS

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- 5. EPA Should Issue A NODA Regarding Measurement and Accounting Methods for GHG Emissions, Including Lifecycle Emissions and Embodied Carbon**
- 6. EPA Should More Explicitly Address Expected Co-Benefits from Controlling Criteria and Other Non-GHG Air Pollutants**
- 7. EPA Should Proactively Address Potential GHG Issues with Respect to Imported Products**
- 8. EPA Should Enhance Web-Based Information on GHG Standards to Include Full Regulatory History and Supporting Documents**

# Title VI – Stratospheric Ozone Protection

# SUCCESSSES



## SUCCESSSES

1. Production phaseouts for Class I substances (CFCs, halons, etc.) met statutory schedules, subject to limited exemptions.
2. Production phaseout for Class II substances (HCFCs) met, exceeded or are currently on-track to meet statutory schedules.
3. Outside of polar regions, upper atmospheric stratospheric ozone has increased by 1-3% per decade; Antarctic ozone hole expected to gradually close, reach 1980 values by 2060.
4. Since many ozone depleting substances have high GWP, implementation of Title VI and Montreal Protocol has reduced warming over Arctic regions.
5. Implementation has fostered development of alternative refrigerants, solvents and other “safer” chemicals.



## CHALLENGES AND OPPORTUNITIES

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1. Remaining implementation and maintenance of class I and class II phaseout; international compliance with same.
2. Implementation of Significant New Alternative Program.
3. Enforcement and differentiated global phaseout schedules.
4. Addressing HFCs pursuant to non-Clean Air Act authority.

## RECOMMENDATIONS

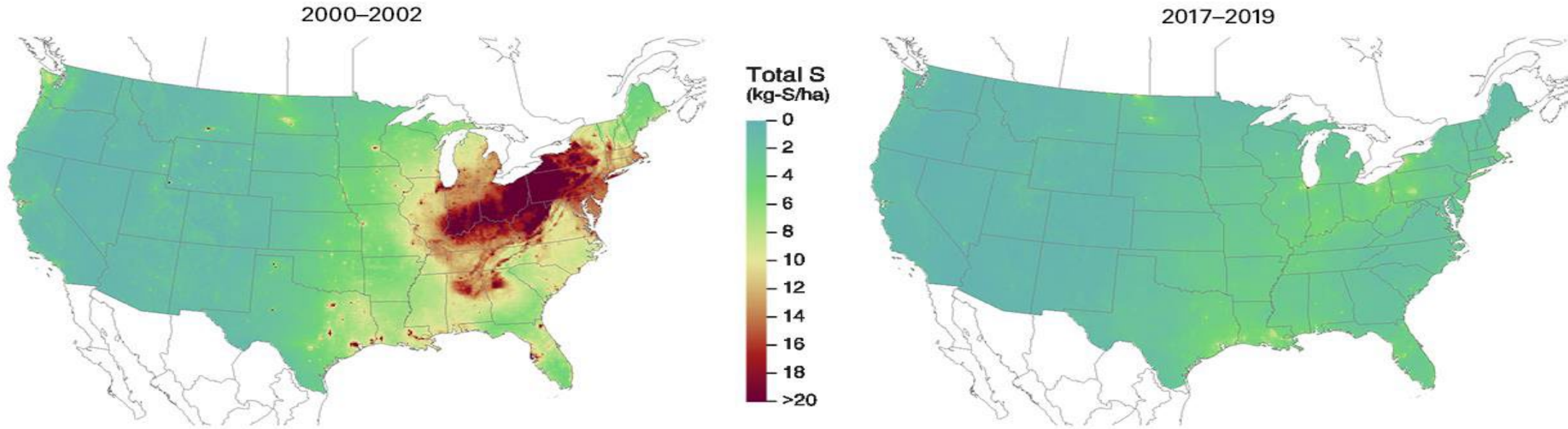
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- 1. EPA should conduct a formal “lessons learned” exercise from implementation of Title VI of the CAA utilizing an allowance-based system.**
- 2. EPA should define how implementation of Title VI programs affecting HFCs will interact with implementation of the AIM Act.**
- 3. EPA should articulate how Title VI programs and other CAA authorities addressing GHGs interact.**

# Title IV, Acid Rain Program

# SUCCESSSES

Three-Year Average of Total Sulfur Deposition



Source: CASTNET/CMAQ/NADP  
USEPA, 2020

## SUCCESS, CHALLENGES AND OPPORTUNITIES

1. Near 100% compliance with acid rain program (very limited enforcement actions) resulting in the reduction of sulfur dioxide from covered sources of 95% compared to emissions in late 1970s.
2. Costs of emission cap & trade program authorized by Title IV proved to be far less than early EPA and industry projections.
3. Acid rain program, to some extent, became a victim of its own success. Subsequent interstate transport programs affecting the same air pollutants and sources have resulted in greater reductions in deposition of sulfates and nitrates than original program within covered states in East.
4. Reductions in SO<sub>2</sub> and NO<sub>x</sub> from fossil fuel-fired powerplants have also occurred in other areas of the United States driven by other CAA requirements, e.g., Mercury Air Toxics Standards Rule and broader economic forces.

# RECOMMENDATIONS

- 1. Future Amendments to the Clean Air Act Should Strive for Precision**
  - Precise legislative language on amount of reductions, schedule, regulatory structure and allowance program avoided uncertainty in implementation.
- 2. Science Serves a Vital Role in Program Development and Implementation**
  - Studies prior to program helped to define problem and dedicated monitoring and testing allowed near-concurrent measurement of efficacy.
- 3. EPA Should Further Assess What Elements of the Acid Rain Program Were Not Needed**
  - Title IV provides a “test case” and examples of allowance program structure and implementation over time.

SECTION TITLE:

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# Environmental Justice

# ENVIRONMENTAL JUSTICE OVERVIEW & SUCCESSES

- **Higher risk of premature death from fine particle air pollution** among low-income communities (ISA - “consistent evidence across multiple studies demonstrating an increase in risk for nonwhite populations.” )
- Mean ambient **concentrations of lead (Pb) have continuously and measurably declined**
- **Mercury emissions declined by nearly 80 percent** between 1990 and 2014, due in large part to EPA’s regulation of major mercury sources, including municipal waste combustion and medical waste incineration. Mercury deposition from atmospheric emissions is a well-established route to contamination of fish and shellfish
- Development of **EJSCREEN**, EPA’s EJ mapping and screening tool
- **Improvements in air emissions inventories and modeling techniques** - National Air Toxics Assessment (NATA), which has provided multiple indicators that are used in EJSCREEN
- **Citizen suit and judicial review provisions of** the CAA provide legal mechanisms for addressing issues in EJ communities.
- **Office of Environmental Justice** in 1992 through an Executive Order



## ENVIRONMENTAL JUSTICE CHALLENGES & OPPORTUNITIES

- Concentrations of PM<sub>2.5</sub> vary spatially. Colmer et al., 2020 reviewed 36 yrs data across ~65,000 U.S. census tracts: “differences in PM<sub>2.5</sub> between more and less polluted areas declined substantially between 1981 and 2016. However, the **most polluted census tracts in 1981 remained the most polluted in 2016.**” “The **most exposed subpopulations in 1981 remained the most exposed in 2016.**”
- Opportunity to address EJ hotspots.... New **data techniques, such as dispersion modeling, enable researchers to understand emission sources and exposure patterns at finer spatial resolutions.**
- **Sensor data, strategically collected in EJ hotspots, can help evaluate changes in exposure to criteria and other air pollutants.** Sensor data may also help the agency with future federal reference methods (FRM) monitor siting, and can also be used for non-regulatory purposes, as example, for public health risk communication.
- High quality data will become even more critical **for issuing accurate and timely public health advisories** as climate change impacts air quality in EJ communities.
- **Statutory pollutant-by-pollutant approach of some CAA programs** does not always adequately address the situations in which a community may be exposed to *elevated levels of multiple pollutants.*

# ENVIRONMENTAL JUSTICE RECOMMENDATIONS

**Recommendation 1: Incorporate EJ more extensively and transparently into key risk assessment analyses.** Broadly, EPA should be incorporating EJ considerations into the design and reporting of all of its key air quality risk assessments, based on our knowledge that failing to do results in mischaracterization of risk of both EJ communities and non-EJ communities. Specifically:

- EPA should **strengthen its understanding of multi-pollutant exposures**.
- EPA should make it a priority to **improve emissions inventories** for sources that would significantly impact EJ risk characterization.
- Incorporate **EJ-specific risk assessment and analysis into the NATA**.
- Continue to **incorporate EJ considerations into NAAQS reviews** and should include more neighborhood-scale analyses in order to ensure consideration of these factors in setting appropriate NAAQS.
- EPA should **support methods for mapping community vulnerability** to climate-related air quality events.
- EPA should **use EJSCREEN and other analytical tools to incorporate EJ considerations** into other agency air quality analyses to the extent possible.

# ENVIRONMENTAL JUSTICE RECOMMENDATIONS

**Recommendation 2: Expand and Enhance Air Pollution Monitoring in EJ Communities.** Despite decades of meaningful investment in a national monitoring network, there are still gaps in EPA's monitoring data in EJ communities.

- EPA should **conduct an analysis of the current regulatory monitoring network to adequately characterize air pollution exposure in EJ communities.**
- EPA should **explicitly account for EJ considerations in approval of monitoring network plans and reviews.** EPA has the authority to set standards for the approval of state/local/tribal monitoring network plans and should consider using this authority to ensure that adequate resources are being allocated to monitor air pollution in EJ communities. For example, EPA could consider 40 CFR §58.10 as a potential area for revisions to address these issues.

**Recommendation 3: EPA should work to expand the capacity of EJ organizations.** It is important to ensure that the communities themselves have the ability to work on air quality issues and remain engaged in their communities.

- EPA should **increase Clean Air Act funding for community-based programs through grants and cooperative agreements.** This will help build capacity to engage as stakeholders in air quality regulation, monitoring and policy, as well as to advise on air quality matters that they have prioritized.

SECTION TITLE:

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# Tribal Air Issues

# TRIBAL OVERVIEW & SUCCESSES

## 1. Emissions Reductions with Positive Impacts on Tribal Natural Resources and Health

1. Sulfur dioxide emissions have dropped – **reducing acid rain deposition and harms to fish and wildlife.**
2. Mercury reductions - **methylmercury bioaccumulates in the tissues of finfish and shellfish** – reductions reduce **health risks.**
3. Reductions in criteria pollutants and HAPs - reduced Tribal exposures to carcinogenic and mutagenic chemicals detected in flora, fauna, fish and wildlife

## 2. Expansion of Tribal Capacity in Air Quality Management

1. Tribes with regulatory Treatment-as-a-State (TAS)- **7 Tribes in 2012 to 11 Tribes in 2020. Tribes with non-regulatory TAS - from 34 in 2012 to 60 in 2020. 7 Tribes have Tribal Implementation Plans, 5 Tribes have Class I Redesignation under the PSD Program, and 2 Tribes Implement Title V Programs.**
2. Office of Air Quality Planning and Standards adopted the guidance document “Consulting with Indian Tribal Governments”
3. Review of New Sources and Modifications in Indian Country
4. Tribal Air Monitoring Support (TAMS) Center established
5. Tribal Authority Rule (TAR)
6. EPA delegations - Title V Operating Permit Program, Tribal participation in Regional Planning Organizations (RPOs) to address visibility and haze, Tribal NSR, and establishment of a Tribal set-aside within the Diesel Emissions Reductions Act (DERA).

# TRIBAL FUTURE CHALLENGES & OPPORTUNITIES

## Future Challenges and Opportunities

### 1. Air Quality Management Resources

- Insufficient and inconsistent **funding for compliance and enforcement**
- **Stagnant funding** for Tribal air programs

### 2. Climate Change

- The **impacts of wildland fires and intrastate, interstate, and international air pollution transport on the attainment status of Tribal lands**
- **Exceptional events** - impacting air quality designations.
- **Ambient and indoor air quality may be impacted** by increases in smoke, mold spores, pollens and other pollutants and allergens.

### 3. Government to Government Consultation

### 4. Air Quality Monitoring Infrastructure

1. Aging monitors
2. Low-cost sensors

# TRIBAL RECOMMENDATIONS

- **Recommendation 1: Tribal Capacity**
  1. Invest in Tribal Air Quality Management capacity through adequate and consistent funding.
  2. Provide **timely approval of applications for Treatment as a State from Tribes**.
  3. Provide resources for additional Tribes to have their own air quality management programs.
  4. Encourage Tribes to apply for Tribal authorities, including Class I redesignation.
  5. **Avoid directing Tribes towards “informational monitoring” with low-cost sensors, versus investing in Tribal use of Federal Reference Methods. Tribes should have the prerogative to decide the level of monitoring and data collection in their jurisdictions.** This should be observed at both the national and regional level.
  6. Invest in Tribal regulatory monitoring equipment so that Tribes operate as partners with local, regional, and state air quality agencies.
  7. Continue to strengthen Tribal ability to set air quality standards for Indian Country, as authorized by the Tribal Authority Rule.
  8. Provide **new funding to Tribes to keep pace with the increased amount of work in permitting new stationary sources and to review permits** issued by states and EPA.
  9. Assist Tribes with wildland fire response.
- **Recommendation 2: Improve Government-to-Government Consultation with Tribes**
  1. EPA should work to ensure **meaningful of Government-to-Government Consultation**, especially when considering delegating authority to states.
  2. Tribes are sovereigns and should be provided opportunities for direct consultation with EPA rather than EPA relying only on consultation with the National Tribal Air Association.
  3. Develop and implement training of new and existing EPA Air staff on the 1984 Indian Policy, the Government-to-Government relationship, and the intent and procedures of Tribal consultation.

# TRIBAL RECOMMENDATIONS

- **Recommendation 3: Special Consideration of Tribal Concerns and Recommendations.** Given their status as sovereign entities, EPA should give special consideration to Tribal concerns and policy recommendations on implementation of the Clean Air Act. Tribal governments that provided input to this report made broader recommendations on implementation of the Clean Air Act. These included support for measures to controlling greenhouse gases, reconsideration of the 2020 PM and O<sub>3</sub> NAAQS reviews, review of the cost/benefit and transparency in science rules promulgated in recent years, building the agency's EJ program, and reducing emissions from oil and gas. Many CAAAC members support some or all of these recommendations, while others may not support any of them. Regardless of our own views on these issues, we recognize the special consideration that EPA and other stakeholders owe to Tribal perspectives on overall national air quality policies.
- **Other Recommendations:**
  1. Continue to **support diesel emissions reduction grants to Tribes** and in support of improvement of air quality in Tribal areas, such as the successful Tribal set-aside in the Diesel Emissions Reduction Act (DERA) program.
  2. If a **Wood Heat Emissions Reduction Act (WHERA)** is approved by Congress, the agency should establish a Tribal set-aside in the WHERA program as well, considering the extensive use of wood heat throughout Tribal lands.



SECTION TITLE:

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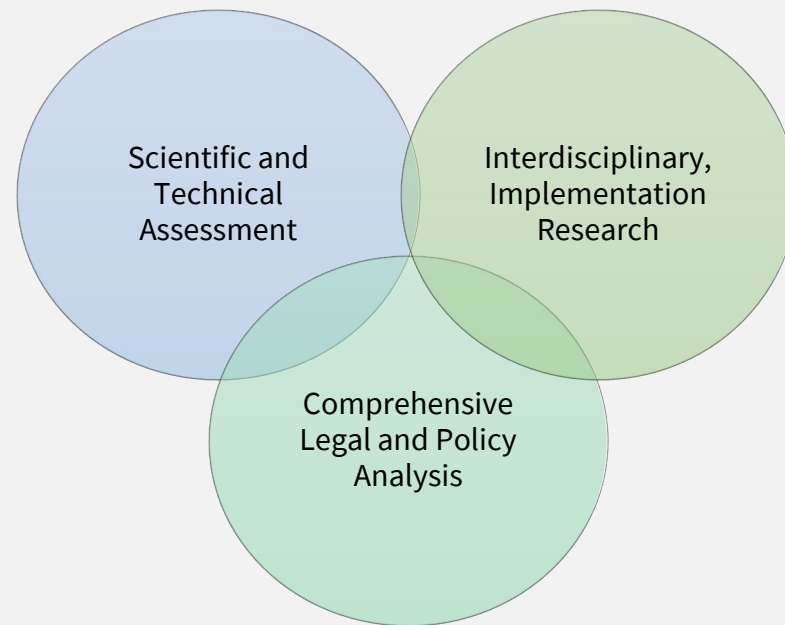
Indoor Air

## INDOOR AIR - OVERVIEW

- In the US, through the CAA and OSHA, the public is protected from hazardous levels of *outdoor* air pollution and industrial workers are protected from hazardous levels of *indoor* air pollution. **However comprehensive public health standards for *indoor* air quality, in residences, schools, community buildings or commercial spaces, do not yet exist at the federal level.**
- Through epidemiological, toxicological and exposure science research, it is well-established that these **indoor air pollutants produce significant (and often inequitable) economic, medical, and public health costs to society.** As with the World Health Organization, **European Union countries recognize indoor air pollution as an important harm, and many have adopted indoor air quality standards and legislation.**
- **As with OSHA, EU and other countries, EPA should address indoor air quality regulation through a blend of source controls, engineering controls and administrative controls. This 50<sup>th</sup> Anniversary report recommends that EPA build on the success of the CAA by exploring the viability of the federal government establishing national *indoor* air quality guidelines and/or standards.**

# INDOOR AIR RECOMMENDATIONS

- Recommendation 1: EPA should consider a **multi-pronged framework to guide their research and analysis**. In Figure 13, recommended branches of research include: 1) Scientific and Technical Assessment, 2) Interdisciplinary Implementation Research, and 3) Comprehensive Legal and Policy Analysis.



# INDOOR AIR RECOMMENDATIONS

- **Recommendation 2:** EPA should **study the extent to which high concentrations of criteria or hazardous air pollutions outdoors lead to increased concentrations of these pollutants indoors and assess whether existing integrated science assessments and risk assessments, respectively, do or do not account for indoor air pollution exposure.** EPA should also seek to understand the extent to which total exposure to criteria and hazardous air pollutants occurs outdoors versus indoors and the respective source of each.
- **Recommendation 3:** The agency should **evaluate those methodologies and quantitative standards used by other countries who have adopted reference values, air quality limits and exposure guidelines.** Many countries have established long-term and short-term exposure limits, screening values, or “Indoor Air Reference Levels” that can be regulatory, voluntary, or employed when conducting assessments.
- **Recommendation 4:** The agency should **review and assess the impact and potential adaption of other non-EPA federal regulatory measures on indoor air quality.** For example, the Department of Energy is required to consider the impact of energy efficiency on habitability and on persons, and HUD is required to promulgate standards for the construction and safety of manufactured housing, including indoor air.
- **Recommendation 5:** The agency should perform **a policy analysis of state and local “clean indoor air” laws** (e.g., ordinances that prohibit smoking in public spaces) to assess the results of such efforts, exploring the efficacy and impact of these laws, including issues related to enforcement and implementation.
- **Recommendation 6:** The agency should consider approaches for **coordinating current non-CAA EPA authority applicable to indoor environments, which are generally pollutant-specific** (e.g., lead, radon, asbestos) and scattered across a variety of statutes, including TSCA, FIFRA, CERCLA, and consumer product laws.
- **Recommendation 7:** The agency should continue to **collaborate with ventilation and building industries, and other federal agencies (e.g., CDC, DHHS, HUD) to review standards for ventilation in residential buildings** (e.g., ASHRAE Standard 62.1 and 62.2), with the aim of determining the type and concentration of indoor air pollutants and pathogens that can be removed through ventilation and filtration.