

Healthy Soils and Air Quality

Public Briefing for the Farm, Ranch and Rural Communities Committee
(FRRCC)

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Overview

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- ▶ President Obama's Climate Action Plan
- ▶ Other Actions Taken to Address Climate Change
- ▶ Healthy Soils
 - ▶ Background
 - ▶ Key Facts
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Clean Air Act (CAA)

- ▶ The original CAA was passed in 1963
- ▶ There was no comprehensive federal response to address air pollution until Congress passed a much stronger CAA in 1970; that same year, Congress created the EPA and gave it the primary role in carrying out the CAA
- ▶ Since 1970, EPA has been responsible for a variety of CAA programs to reduce air pollution nationwide
- ▶ In 1990, Congress dramatically revised and expanded the CAA, adding more requirements of EPA and providing EPA broader authority to implement and enforce regulations reducing air pollutant emissions; the 1990 Amendments to the CAA also placed an increased emphasis on more cost-effective approaches to reduce air pollution

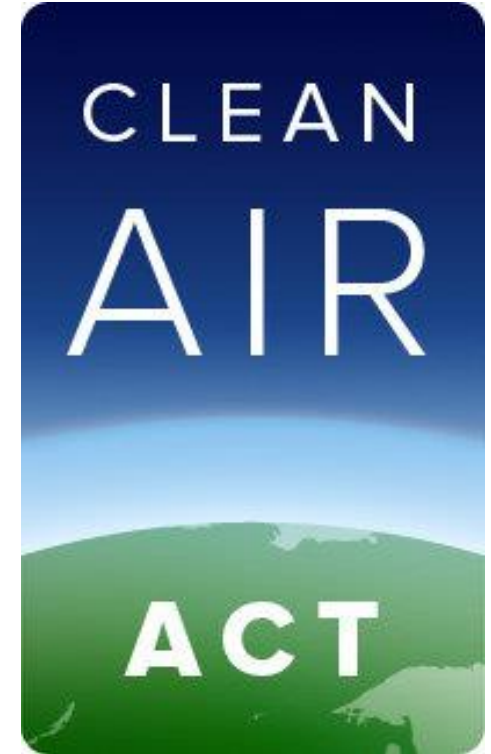
CAA Requirements

▶ **New Source Performance Standards (NSPS)**

- ▶ CAA section 111(b) requires EPA to set and periodically review, emission standards for new sources of criteria air pollutants (CAP), volatile organic compounds (VOC) and other pollutants

▶ **Maximum Achievable Control Technology (MACT)**

- ▶ CAA section 112 requires EPA to:
 - Set emission standards for toxic air pollutants from stationary sources reflecting the maximum achievable control technology (MACT) based on the best performing facilities in an industry
 - Conduct residual risk and technology reviews (RTR) of these MACT standards



CAA Requirements (cont.)

- ▶ Under CAA section 112, EPA is also required to conduct two types of reviews and update the existing standards, if necessary:
 - **Residual Risk Assessment:** To determine whether additional emission reductions are warranted to protect public health or the environment; this is a one-time requirement
 - **Technology Reviews:** To determine if better emission control approaches, practices or processes are now available; required every eight years

CAA Requirements (cont.)

- ▶ Section 109 of the Clean Air Act requires EPA to set National Ambient Air Quality Standards (NAAQS)
- ▶ The NAAQS were designed to regulate six principal pollutants, which are also known as “criteria pollutants”; these pollutants include:
 - ▶ Carbon monoxide
 - ▶ Lead
 - ▶ Nitrogen oxides
 - ▶ Ozone
 - ▶ Particulate matter
 - ▶ Sulfur oxides

Ag & CAA Interface

▶ Establishing NAAQS

▶ PM and Ozone NAAQS

- Health and welfare assessments
- Designations and implementation issues
 - PM: Crop production (harvesting/planting), prescribed burns/fires, animal feeding operations, irrigation pumps, unpaved roads
 - Ozone: Pesticide use, animal feeding operations, fires

▶ Permitting

▶ PSD/NNSR and Title V

- Animal feeding operations
- Fugitive emissions
- Ethanol facility rule
- Stationary engines (irrigation)
- Cotton ginning

Ag & CAA Interface (cont.)

- ▶ Regulatory
 - ▶ Section 110/SIP
 - RACM/BACM
 - RACT/BACT

 - ▶ Section 111/NSPS
 - Grain Elevators
 - Stationary Engines (irrigation)

 - ▶ Section 112/MACT program
 - Reciprocating Combustion Engines
 - Methanol case-by-case MACT determination for dairy operations
 - Hydrogen sulfide petition to list as HAP

 - ▶ Section 129/Solid Waste Rules
 - Solid Waste Definition

President Obama's Climate Action Plan

- ▶ As part of President Obama's 2013 Climate Action Plan:
 - ▶ On August 3, 2015, EPA Administrator McCarthy signed the final Clean Power Plan for existing power plants and the final Carbon Pollution Standards for new, modified, and reconstructed power plants
 - ▶ On August 3, 2015, EPA Administrator McCarthy also signed the proposed Federal Plan and Model Rule for the Clean Power Plan

Methane Strategy

- ▶ On August 1, 2014, USDA, DOE and EPA, in conjunction with the American Biogas Council & Innovation Center for US Dairy, jointly released the *Biogas Opportunities Roadmap*, which outlines voluntary actions that can be taken to reduce methane emissions through the use of biogas systems and strategies to overcome barriers limiting development of a robust biogas industry
 - ▶ *Progress Report* to be issued this Fall - highlights actions taken, outlines challenges and opportunities, and identifies next steps to the growth of biogas industry
- ▶ On August 14, 2015, EPA Administrator McCarthy signed the 1996 Emission Guidelines for existing municipal solid waste (MSW) landfills to further reduce emissions of methane-rich landfill gas; in a separate action, the agency issued a supplemental proposed rule for the 1996 New Source Performance Standards (NSPS) to further reduce emissions from new and modified landfills
- ▶ On August 18, 2015, EPA Administrator McCarthy signed a suite of proposals for the oil and gas industry that include:
 - ▶ Updates to the 2012 NSPS
 - ▶ Draft Control Technique Guidelines (VOCs for existing sources in ozone transport regions and in ozone nonattainment areas classified as “moderate” and above)
 - ▶ Air Permitting Rules
 - Source Determination Rule
 - Federal Implementation Plan for Minor NSR in Indian Country

Other Actions Taken to Address Climate Change

▶ Final Greenhouse Gas Tailoring Rule

- ▶ On May 13, 2010, EPA set greenhouse gas emission thresholds to define when permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities; this final rule “tailors” the requirements of these Clean Air Act permitting programs to limit covered facilities to the nation’s largest greenhouse gas (GHG) emitters: power plants, refineries and cement production facilities

▶ Reconsideration of December 18, 2008 Memorandum

- ▶ On March 29, 2010, EPA completed its reconsideration of the 2008 memorandum "EPA's Interpretation of Regulations that Determine Pollutants Covered by Federal Prevention of Significant Deterioration (PSD) Permit Program
- ▶ The final action confirmed that any new pollutant that EPA may regulate becomes covered under the PSD program on the date when the EPA rule regulating that new pollutant takes effect; the final action then clarified that, for greenhouse gases, the effective date would be January 2, 2011, when the cars rule took effect

▶ Renewable Fuel Standard Program

- ▶ EPA is also responsible for developing and implementing regulations to ensure that transportation fuel sold in the United States contains a minimum volume of renewable fuel; by 2022, the Renewable Fuel Standard (RFS) program will reduce GHG emissions by 138 million metric tons, about the annual emissions of 27 million passenger vehicles, replacing about seven percent of expected annual diesel consumption and decreasing oil imports by \$41.5 billion

Healthy Soils – Background

- ▶ Soil health, also referred to as soil quality, is defined as the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans. (*from:*
<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>)
- ▶ Healthy soils have many positive benefits, including:
 - ▶ Aggregate stability and the formation of soil clods that reduce erosion
 - ▶ Supplying, storing, and retaining such nutrients as nitrogen and phosphorus and sulfur
 - ▶ Retaining carbon from the atmosphere and other sources
 - ▶ Reducing the negative environmental effects of pesticides, heavy metals and other pollutants
 - ▶ Increased water retention to help ameliorate the effects of drought and increase water use efficiency
 - ▶ Increasing water infiltration rates
 - ▶ Reducing water runoff
 - ▶ Reducing soil erosion
 - ▶ Reducing GHG and other reactive nitrogen emissions

Healthy Soils – Background (cont.)

- ▶ Properly managed healthy soils help prevent nutrient loss and erosion and the subsequent impact on air quality, lakes, rivers and groundwater supplies
- ▶ Nutrient losses occur through:
 - ▶ Runoff: Loss of dissolved nutrients (e.g., reactive nitrogen) in water moving across the soil surface
 - ▶ Erosion: Loss of nutrients in or attached to soil particles that are removed from fields by wind or water movement
 - ▶ Leaching: Loss of dissolved nutrients in water that moves down through the soil to groundwater or out of the field through drain lines
 - ▶ Gas losses to the atmosphere: Primary losses of different forms of nitrogen through volatilization and denitrification
 - ▶ Crop removal: Plant uptake and removal of nutrients from the field in harvested products

Healthy Soils – Key Facts

- ▶ 10% of all GHG emissions are from land-use conversions and drainage of organic soils for cultivation
- ▶ Soils can sequester approximately 10 % of anthropogenic emissions
- ▶ Emissions generated during synthetic fertilizer application accounted for 14 % of agricultural emissions in 2012

Healthy Soils – Best Management Practices

- ▶ Improved agriculture and soil management practices that increase soil organic carbon and nutrient retention include:
 - ▶ Manage more by disturbing less
 - ▶ Keep it covered
 - ▶ Maintain a living root
 - ▶ Plant diversity

Healthy Soils – BMP Outcomes

- ▶ Using a best management practice can result in:
 - ▶ Fertile soils rich in organic matter
 - ▶ Lower cost of inputs - water, fertilizer, pesticides, etc.
 - ▶ Promotion of biodiversity
 - ▶ Soils less susceptible to erosion and desertification
 - ▶ Maintaining hydrological and nutrient cycles
 - ▶ Better productivity
 - ▶ Better bottom line
 - ▶ Reduced GHG and other reactive nitrogen emissions

BMPs with Air Quality benefits

- ▶ USDA/EPA issued Reference Guide identifying conservation measures with air quality benefits for cropping systems and general land management – October 2012
 - ▶ <http://www3.epa.gov/airquality/agriculture/docs/agaqconsmeasures.pdf>
- ▶ USDA and EPA currently working on a similar document for livestock operations

Contact info

- ▶ For more information on agriculture and air quality
 - ▶ <http://www3.epa.gov/airquality/agriculture/>

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