



September 2012

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Background Brief on ...

Air Quality

Background

In 1955, Congress enacted the first air quality legislation with the passage of the Air Pollution Control Act. Major amendments in 1970, 1977, and 1990 resulted in what is known as the Clean Air Act (CAA). The federal law addresses ambient air quality standards, toxic air pollutants, new source performance standards, and new source review—the latter requiring the best available technology in air pollution control equipment for facilities that are major sources of contaminants.

The United States Environmental Protection Agency (EPA) has delegated implementation of most CAA requirements to the Oregon Department of Environmental Quality (DEQ), except in Lane County where the Lane Regional Air Protection Agency has primary jurisdiction. State air quality laws are codified in ORS Chapter 468A. The EPA retains oversight of the program and regularly audits DEQ's program to ensure that it meets federal requirements. EPA also has the authority to "overfile," or bring action against pollution sources if they believe enforcement at the state or regional level is inadequate. To date, DEQ has been successful in preventing federal overfiles.

Causes of Air Pollution in Oregon

Motor vehicles and woodstoves, fireplaces, and open burning are now the primary sources of manmade air pollution in Oregon. Emissions from cars contribute to ground level ozone pollution (smog) especially on hot summer days. Woodstoves and fireplaces are a primary source of winter time smoke levels. Other major sources of pollution are from individual actions such as using gas-powered lawn mowers, paints, solvents, aerosol products like hairspray and air fresheners, charcoal barbecues and outdoor burning. Forest fires also are a major contributor of smoke. Although industry is a source of some air pollution in Oregon, it accounts for less than 15 percent of most types of pollutants.

The air pollutants of greatest concern in Oregon are:

- Ground-level ozone (commonly known as smog),
- Fine particulate matter (known as PM_{2.5}), and
- Hazardous air pollutants (known as Air Toxics).

National Ambient Air Quality Standards

In 1980, only 30 percent of Oregonians lived in areas where the air met National Ambient Air Quality Standards. Thanks to federal, state and local pollution control programs, until recently all areas in Oregon achieved compliance with these standards. In 2006, EPA tightened the standard for fine particulate. Recent health studies show that fine particulate is more dangerous than previously thought. Fine particles evade the body's natural defenses and travel deep into the lungs.

In 2012, a number of Oregon communities were above levels of concern for fine particulate pollution, and three areas (Klamath Falls, Oakridge, and Lakeview) violate the federal standard. Older, "uncertified" woodstoves are a major source of pollution in the communities with the highest fine particulate levels. These stoves emit up to 70 percent more pollution than newer "certified" woodstoves.

Recently EPA tightened the annual average standard for fine particulate and retained the current daily standard. The three communities noted above remain the only areas that violate the federal fine particulate standards. EPA also set a new measurement known as an urban visibility standard and DEQ is researching its anticipated effect on Oregon communities.

EPA tightened the standard for ozone in 2008. Ozone is formed by photochemical reactions of nitrogen oxides and volatile organic compounds. Thanks to successful implementation of strategies such as vehicle inspection and industrial permitting, all Oregon counties are in compliance with the standard. However EPA is evaluating the latest scientific research which shows that exposure to lower levels of ozone pollution is more harmful than previously

thought. Based on this review, EPA recently announced that it may tighten the health-based federal standard for ground-level ozone in 2013. Some Oregon communities are within the range that research identifies as unhealthy.

Clean Air Strategies

The primary way air pollution is controlled and federal standards are met is through comprehensive airshed planning. These plans, which are developed with help from local advisory committees, include strategies tailored to meet local issues and needs. Strategies to reduce particulate pollution include emission reductions from woodstoves, outdoor burning, and industrial wood-fired boilers. Strategies to reduce smog (ozone) include vehicle inspection, emission reductions from industrial operations, and air quality advisories to reduce emissions on high smog days. For industrial sources, these strategies are implemented through federally required construction and operating permitting programs.

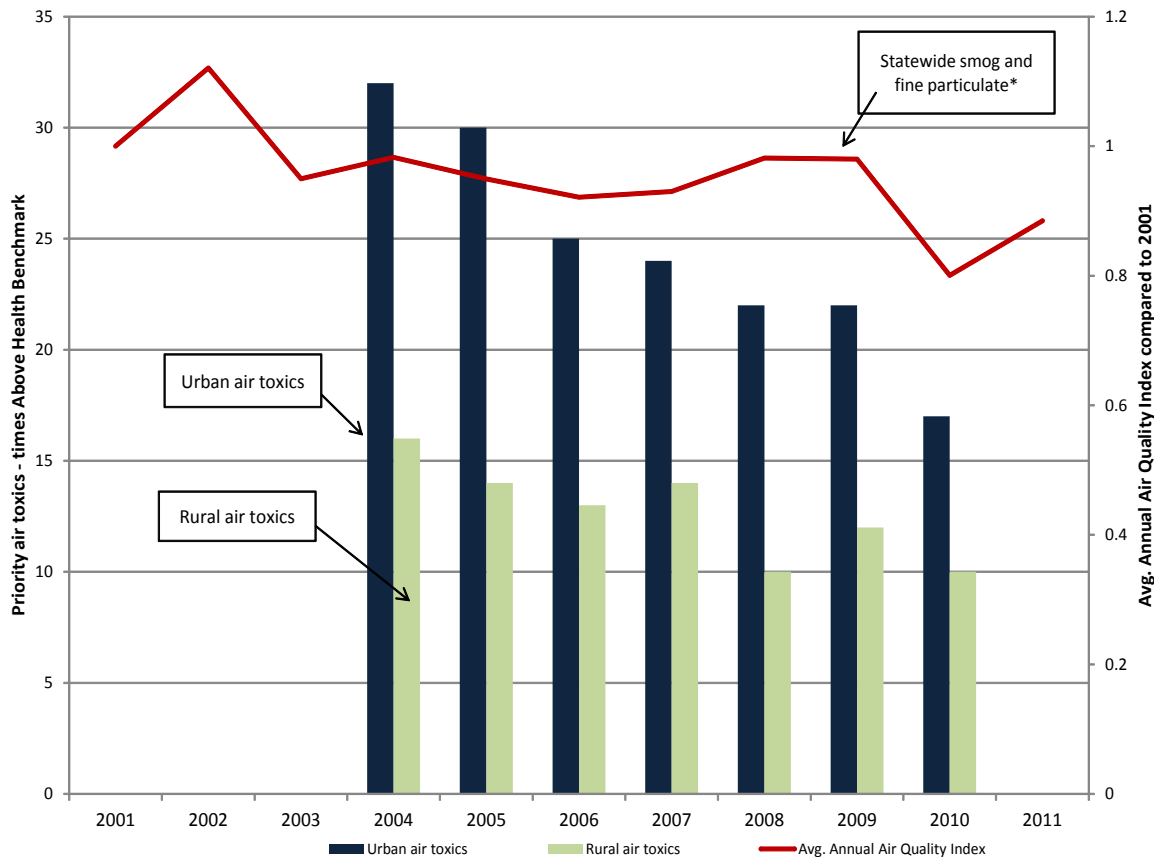
Toxic Air Pollutants/Portland Air Toxics Solutions

Toxic air pollutants can cause serious health risks, including cancer, immune system damage, nerve damage, birth defects, respiratory diseases, and other health problems. Air toxics come from a variety of sources, including cars and trucks, all types of burning, businesses, and consumer products such as paints.

In the past, EPA focused primarily on reducing toxic air pollution from large industrial facilities. They adopted emission limits for these facilities, and DEQ ensured compliance with these limits through air quality permits. More recently, EPA has begun adopting emission limits for smaller businesses, such as auto body refinishers, which brought many new businesses into Oregon's air permit program.

In 2006, Oregon's Environmental Quality Commission adopted ambient benchmark concentrations that serve as clean air goals for 52 air toxics known to be present in the state.

Air Pollution Trends



Each air toxic of concern has a benchmark set based on its non-cancer or cancer causing effects. These benchmarks allow DEQ to assess public health risks from air toxics, and to identify high priority geographic areas and source categories for emission reduction work.

In 2009, DEQ convened the Portland Air Toxics Solutions Advisory Committee to develop the state's first plan to reduce air toxics risk comprehensively in a geographic area. The largest sources of air toxics in Portland are gasoline and diesel engines that produce 1, 3 butadiene, benzene, diesel particulate, arsenic and chromium 6. Another large source of air toxics is residential wood burning that produces 15 PAH (polycyclic aromatic hydrocarbons which are tar-like by-products) and naphthalene. The study also showed emissions of metals including manganese, nickel and cadmium that are concentrated in or near some industrial areas.

In the coming years, DEQ will seek public input on its plan to implement the Portland study recommendations. DEQ expects to use a multi-pollutant approach to achieve air toxics co-benefits from efforts to reduce emissions of fine particulate, ozone precursors and greenhouse gasses. DEQ is also coordinating with local government partners to bring current air toxics considerations into the transportation and land use planning process.

The graph above shows the progress made in reducing traditional pollution such as fine particulate and ozone and toxic air pollution such as benzene and formaldehyde from 2004 through 2010. The chart excludes diesel particulate that cannot be monitored separately.

Air Quality is influenced by many factors including land use, weather and forest fires. Overall, Oregon's air continues to improve due to the following DEQ programs:

- Vehicle inspection programs in the Portland

and Medford areas.

- Permitting industrial sources.
- Providing assistance to small businesses to adopt best management practices.
- Adopting vehicle standards to increase mileage and reduce emissions.
- Implementing Heat Smart legislation that requires the removal of uncertified stoves upon sale of home.
- Providing federal grant programs to retrofit diesel engines with particulate filters to reduce emissions and remove and replace old woodstoves with cleaner heating options.

Regional Haze

EPA regulations require states to adopt and update plans to reduce haze in the nation's national parks and wilderness areas. The goal of the federal regional haze program is to reach natural background conditions in these scenic areas by the year 2064 through gradual improvements adopted every five years. The first plans were required to include regulations, known as Best Available Retrofit Technology (**BART**), for certain large industrial sources that were built before modern pollution control laws were adopted.

In Oregon, the most significant BART source is Portland General Electric's coal-fired power plant in Boardman. In 2009, the Environmental Quality Commission adopted BART rules for this facility. At the request of PGE, the commission revised the BART rules in December 2010 to require permanent closure of the coal-fired boilers at the Boardman plant by 2020 with interim controls for NOx and SO2 consistent with the reduced life of the plant. DEQ will prepare and submit a region haze plan update in 2013.

Climate Change

Greenhouse gases contribute to climate change, which is expected to have serious impacts in Oregon including coastal and river flooding, snow pack declines, lower summer river flows, reduction of farm and forest productivity, energy cost increases, public health effects, and

increased pressures on many fish and wildlife species. DEQ's greenhouse gas reduction efforts focus on reductions from industrial sources and transportation sources.

During 2010, DEQ revised its permitting rules to incorporate new federal greenhouse gas permitting requirements. The revised rules incorporate greenhouse gases into Oregon's New Source Review/Prevention of Significant Deterioration and Title V permitting programs.

DEQ leads or participates in three efforts to reduce greenhouse gas emissions from transportation:

Reduce the number of miles traveled – In response to SB 1059, DEQ along with other state agencies and local governments developed state goals for greenhouse gas reduction from motor vehicles for each of Oregon's metropolitan planning organizations.

Reduce vehicle tailpipe emissions through improved technology and other efficiencies – DEQ's Oregon Low Emission Vehicle program requires manufacturers to reduce their overall fleet emissions. The standards mirror California's landmark emission standards for light-duty vehicles and will reduce greenhouse gas emissions from cars and trucks 30 percent by 2016.

Reduce the greenhouse gas emissions per unit of fuel used through the Clean Fuel Program - The low carbon fuel standard, authorized by the Oregon Legislature in 2009 as part of House Bill 2186 is intended to reduce greenhouse gas emissions from the transportation sector. The aim of Oregon's low carbon fuel standard will be to reduce the average carbon intensity of the mix of transportation fuels used in Oregon by 10 percent over a 10-year period.

DEQ convened a 29-member advisory committee whose objective was to help DEQ design a program that reflects the best approach for Oregon and is consistent with House Bill 2186, effective in reducing greenhouse gas emissions, flexible for regulated parties, and realistic to implement. DEQ used the committee's final report as well as input from an

additional stakeholder outreach process to draft rules for the program.

DEQ is proposing a two-phased approach for the program. It begins with a two-year reporting-only period to gather data and refine the program. During the first phase, fuel producers and importers would report the "lifecycle" greenhouse gas emissions from each fuel they supply in Oregon. DEQ is proposing a legislative concept to remove the 2015 program sunset and establish fee authority and a policy package to provide staffing for phase-one.

During the second phase, which would require an additional approval by the Environmental Quality Commission to take effect, fuel producers and importers would gradually lower fuels' greenhouse gas emissions 10 percent by 2025.

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