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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 man-made 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 barbeques, 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.

Three communities (Klamath Falls, Oakridge, and Lakeview) violate the federal standard for fine particulate while several others are very close to violating. 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.

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. 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.

Comprehensive plans to bring Klamath Falls and Oakridge into compliance with federal standards for fine particulates have been developed and submitted to EPA. While Lakeview is also violating the standard, it is not an official fine particulate non-attainment area; however, DEQ has been working with the city to reduce emissions, restore healthy air quality, and avoid the official non-attainment status and its economic development restrictions.

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.

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 and 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.

DEQ and the advisory committee identified five high-priority emission categories for follow up action, along with potential emission reduction recommendations for each category. DEQ is incorporating the recommended air toxics reduction strategies into ongoing ozone, particulate, clean diesel, and greenhouse gas reduction work. DEQ is also coordinating with local government partners to bring current air toxics considerations into the transportation and land use planning process.

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 NO_x and SO₂ consistent with the reduced life of the plant. DEQ will prepare and submit a regional haze plan update in 2015.

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, transportation sources, and power plants.

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

A recent United States Supreme Court ruling may result in some changes to the current greenhouse gas permitting requirements. However, a source that already triggers permitting due to emissions of non-greenhouse gas pollutants will still have to meet the current permitting requirements for its greenhouse gas emissions.

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

Reduce the number of miles traveled – In response to Senate Bill 1059 (2009), 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 emissions of conventional cars and light trucks plus increase the use of zero-emission vehicles. – Oregon's Low and Zero Emission Vehicle program requires manufacturers to reduce average greenhouse gas emissions from new vehicles to the equivalent of 50+ miles per gallon by 2025. It also requires that zero-emission vehicle sales to increase to approximately 13 percent of new vehicle sales by 2025. The standards mirror California's landmark emission standards for light-duty vehicles.

Reduce the greenhouse gas emissions per unit of fuel used through the Clean Fuel Program - The clean fuels standards, authorized by the Oregon Legislature in 2009 as part of House Bill 2186, are intended to reduce greenhouse gas emissions from the transportation sector. The aim of Oregon's clean fuels standards 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.

Governor Kitzhaber directed DEQ to adopt the Clean Fuels program in a two-phased approach. The first phase is a reporting-only phase, which was adopted by the Environmental Quality Commission in December 2012. This phase entails collection of fuel quantity and carbon intensity data from fuel importers and producers.

In both the 2013 and 2014 legislative sessions, DEQ proposed legislation to remove the December 31, 2015 program sunset, but this legislation was not adopted. In February 2014, Governor Kitzhaber directed DEQ to draft rules for the second phase of the program, which includes the requirement to reduce the carbon content of Oregon's transportation fuels. The new rulemaking will build on the existing rules designed by DEQ and its Low Carbon Fuel Standards Advisory Committee in 2010 and 2011. It will establish key requirements for implementing the next phase of the Clean Fuels Program, including:

- Setting carbon reduction standards and compliance options;
- Defining obligations for fuel importers and producers;
- Establishing metrics for monitoring fuel supplies and prices; and
- Establishing periodic program reviews.

In June 2014, EPA proposed draft rules under section 111d of the Clean Air Act to cut carbon pollution from existing power plants by 30 percent below 2005 levels. The proposal provides guidelines for states to develop plans to meet state-specific goals and provides flexibility to design a program that makes the most sense for each state's unique situation. States can choose the right mix of generation using diverse fuels, energy efficiency, and demand-side management. It allows states to work alone to develop individual plans or to work together with other states to develop multi-state plans. DEQ will be studying the draft rules and determining the best path forward for Oregon when the final rules are adopted in June 2015.

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