CLEAN AIR STANDARDS - GROUNDLEVEL OZONE

STATUS

On January 6, 2010, the EPA proposed to strengthen the national ambient air quality standards (NAAQS) for ground-level ozone. The EPA is proposing to strengthen the 8-hour "primary" ozone standard, designed to protect public health, to a level within the range of 0.060-0.070 parts per million (ppm). The EPA is also proposing to establish a distinct cumulative, seasonal "secondary" standard, designed to protect sensitive vegetation and ecosystems, including forests, parks, wildlife refuges and wilderness areas. The EPA is proposing to set the level of the secondary standard within the range of 7-15 ppm-hours.

The EPA will take public comment for 60 days following publication of the proposal in the Federal Register. The agency also will hold public hearings on the proposal. The EPA has said it will issue final standards by August 31, 2010.

LAW AND REGULATIONS

The Clean Air Act of 1970 authorized the development of comprehensive federal and state regulations to limit emissions from both stationary (industrial) sources and mobile sources. It requires the EPA to set the NAAQS for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

Under the Clean Air Act, the EPA sets limits on certain air pollutants, including setting limits on how much can be in the air anywhere in the United States. The Clean Air Act also gives the EPA the authority to limit emissions of air pollutants coming from sources like chemical plants, utilities, and steel mills. The EPA must approve state, tribal, and local agency plans for reducing air pollution. If a plan does not meet the necessary requirements (non-attainment), the EPA can issue sanctions against the state and, if necessary, take over enforcing the Clean Air Act in that area. States have to develop State Implementation Plans (SIPs) that outline how each state will control air pollution under the Clean Air Act

Major changes were made to the Clean Air Act in 1990. While it gave the states more time to meet the air quality standard - it also requires states to make constant progress in reducing emissions. It requires the Federal government to reduce emissions from cars, trucks, and buses; from consumer products such as hair spray and window washing compounds; and from ships and barges during loading and unloading of petroleum products. The revisions addressed the air pollution problems of ozone (smog), carbon monoxide (CO), and particulate matter (PM-10). Specifically, it clarified how areas are designated and redesignated "attainment" It also allows EPA to define the boundaries of "nonattainment" areas: geographical areas whose air quality does not meet Federal air quality standards designed to protect public health.

For ozone, the 1990 changes established nonattainment area classifications ranked according to the severity of the area's air pollution problem. These classifications are marginal, moderate, serious, severe and extreme. EPA assigns each nonattainment area one of these categories, thus triggering varying requirements the area must comply with in order to meet the ozone standard.

Nonattainment areas have to implement different control measures, depending upon their classification. Marginal areas, for example, are the closest to meeting the standard. They are required to conduct an inventory of their ozone - causing emissions and institute a permit program. Nonattainment areas with more serious air quality problems must implement various control measures. The worse the air quality, the more controls areas have to be implemented.

The Clean Air Act of 1990 established tighter pollution standards for emissions from automobiles and trucks. These standards have been reducing tailpipe emissions of hydrocarbons, carbon monoxide, and nitrogen oxides on a phased-in basis beginning in model year 1994. Scheduled reductions in gasoline volatility and sulfur content of diesel fuel, for example, were also required by the 1990 amendments.

The EPA Office of Air Quality Planning and Standards (OAQPS) has set National Ambient Air Quality Standards for six principal pollutants, which are called "criteria" pollutants. Units of measure for the standards are parts per million (ppm) by volume, milligrams per cubic meter of air (mg/m3), and micrograms per cubic meter of air (µg/m3. The six are: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter (also known as particle pollution), and sulfur dioxide.

In 1971, the EPA established a 1-hour NAAQS ozone standard of 0.08 ppm. In 1979, the EPA revised the 1-hour standard to 0.12 ppm. The EPA revised the air quality standards for ozone replacing the 1979 standard with an 8-hour standard set at 0.08 ppm. The EPA issued revised ozone standards on March 12, 2008, and set both standards at a level of 0.075 parts per million (ppm). In May 2008, states, environmental groups and industry groups filed petitions with the D.C. Circuit Court of Appeals for review of the 2008 ozone standards. In March 2009, the court granted the EPA’s request to stay the litigation so the new administration could review the standards and determine whether they should be reconsidered.

The EPA has decided to revise the 2008 standards, because “the ozone standards set in 2008 were not as protective as recommended by the EPA’s panel of science advisors, the Clean Air Scientific Advisory Committee (CASAC). The new proposed standards are consistent with CASAC’s recommendations.”

BACKGROUND

Ozone (O3) is a gas composed of three oxygen atoms. Ozone has the same chemical structure whether it occurs miles above the earth or at ground-level and is referred to as "good" or "bad," depending on its location in the atmosphere.

In the earth's lower atmosphere, ground-level ozone is considered "bad." It is not usually emitted directly into the air, but at ground-level is created by a chemical reaction between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight. Ground-level

ozone is the primary constituent of smog. Sunlight and hot weather cause ground-level ozone to form in harmful concentrations in the air. When we talk about “bad ozone,” we are talking about the creation of it by that chemical reaction.

"Good" ozone occurs naturally in the stratosphere approximately 10 to 30 miles above the earth's surface and forms a layer that protects life on earth from the sun's harmful rays. When we talk about greenhouse gases and their impact on the climate or global warming, we are talking about the gases, including chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), halons, methyl bromide, carbon tetrachloride, and methyl chloroformm that “erode” the good ozone.

CREATING GROUND LEVEL OZONE

Since ground level ozone is the result a chemical reaction between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight, the first question is where do the two precursors come from. Nitrogen Dioxide (NO2) is the largest category of nitrogen oxides. NO2 forms from emissions from cars, trucks and buses, power plants, and off-road equipment. The following chart is based on 2005 data, which is the most current data available. The amounts are expressed in tons.

Electricity Generation	3,783,659
Fertilizer & Livestock	2,098
Fires	94,372
Fossil Fuel Combustion	2,384,297
Industrial Processes	1,163,635
Miscellaneous	3,644
Non Road Equipment	4,162,872
On Road Vehicles	6,491,821
Residential Wood Combustion	38,324
Solvent Use	6,400
Waste Disposal	155,415

The other precursor is volatile organic compounds that have a high vapor pressure and low water solubility. Many VOCs are human-made chemicals that are used and produced in the manufacture of paints, pharmaceuticals, and refrigerants. VOCs are also industrial solvents, such as trichloroethylene; fuel oxygenates, such as methyl tert-butyl ether (MTBE); or by-products produced by chlorination in water treatment, such as chloroform. VOCs are often components of petroleum fuels, hydraulic fluids, paint thinners, and dry cleaning agents

The following chart is based on 2005 data, which is the most current data available. The amounts are expressed in tons.

Electricity Generation	47,985
Fertilizer & Livestock	42,191
Fires	681,309
Fossil Fuel Combustion	136,785
Industrial Processes	1,645,584
Miscellaneous	1,202,517
Non Road Equipment	2,843,213
On Road Vehicles	4,112,147
Residential Wood Combustion	543,469
Road Dust	1
Solvent Use	4,245,897
Waste Disposal	465,003

ANALYSIS

The $64,000 question is how will the states attain the goals?

The EPA estimates the value of health benefits of reducing ozone to 0.070 ppm would range from about $13 billion to $37 billion per year in 2020. For a standard of 0.060 ppm, the value of benefits would range from about $35 billion to $100 billion per year in 2020. The costs of reducing ozone to 0.070 ppm would range from an estimated $19 billion to $25 billion per year in 2020. For a standard of 0.060 ppm, the costs would range from $52 billion to $90 billion.

In 2007, the EPA conducted a Regulatory Impact Analysis (RIA) that looked at a limited range of attainment strategies. As the RIA stated, "It is also important to recognize that the cost estimates are limited in their scope. Because we are not certain of the specific actions that states will take to design State Implementation Plans to meet the revised standards, we do not present estimated costs that government agencies may incur for managing the requirement and implementation of these control strategies or for offering incentives that may be necessary to encourage or motivate the implementation of the technologies, especially for technologies that are not necessarily market driven. This analysis does not assume specific control measures that would be required in order to implement these technologies on a regional or local level."

Now, the EPA has announced it will release a supplement to the RIA. Said the EPA, 'The supplement to the RIA assumes that the proposed standards can be achieved throughout the U.S. using a mixture of known air pollution control technologies and unknown, future technologies. The annual control technology costs of implementing known controls as part of a strategy to attain a standard in the proposed range of 0.060 ppm or 0.070 ppm in 2020 would be approximately $3.3 billion to $4.5 billion. EPA used several statistical methods to provide a range of likely compliance costs for other, currently unknown technologies that would be needed to attain the proposed primary standards."

OUTLOOK

There is almost no doubt the standard will become final. The hard part comes later as attainment strategies are considered. If the rule moves forward as planned, by December 2013 State Implementation Plans, outlining how states will reduce pollution to meet the standards, are due to EPA. From 2014 to 2031, States are required to meet the primary standard, with deadlines depending on the severity of the problem.

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