

FACT SHEET
PROPOSED REVISIONS TO THE SECONDARY NATIONAL AMBIENT AIR
QUALITY STANDARDS FOR OXIDES OF NITROGEN AND SULFUR

ACTION

- On July 12, 2011, the U.S. Environmental Protection Agency (EPA) proposed action on the combined review of the secondary National Ambient Air Quality Standards (NAAQS) for oxides of nitrogen (NO_x) and oxides of sulfur (SO_x).
- EPA sets secondary standards to protect against environmental damage caused by certain air pollutants. Consistent with the scientific evidence pointing to the interrelated impacts of NO_x and SO_x on plants, soils, lakes and streams, EPA assessed the environmental effects of these pollutants together.
- NO_x and SO_x in the air can damage the leaves of plants, decrease their ability to produce food – photosynthesis – and decrease their growth.
- EPA is proposing to retain the existing secondary standards for NO_x and SO_x. The Agency has concluded that the existing secondary standards protect plants from the direct effects of exposure to these pollutants in the air (e.g., decreased growth and foliar injury). The existing secondary standards are:
 - For NO₂: 0.053 ppm (parts per million) averaged over a year; and
 - For SO₂: 0.5 ppm averaged over three hours, not to be exceeded more than once per year
- EPA also is proposing to establish an additional set of secondary standards identical to the new health-based primary standards the Agency set in 2010. The new secondary standards would be:
 - For NO₂: 100 ppb (parts per billion) averaged over one hour; and
 - For SO₂: 75 ppb averaged over one hour
- This is the first time EPA has reviewed the environmental impacts separately from the health impacts of these pollutants. It is also the first time the Agency has examined the effects of multiple pollutants in one NAAQS review.
- In addition to directly affecting plants, NO_x and SO_x when deposited on land and in estuaries, lakes and streams, can acidify and over fertilize sensitive ecosystems resulting in a range of harmful indirect effects on plants, soils, water quality, and fish and wildlife (e.g., changes in biodiversity and loss of habitat, reduced tree growth, loss of fish species, and harmful algal blooms).
 - This proposal recognizes that the current secondary standards for NO_x and SO_x do not provide adequate protection from these harmful indirect effects.
- While there is strong scientific support for developing a multi-pollutant standard to address these indirect effects, EPA does not yet have enough information to set a multi-pollutant standard that would adequately protect the diverse ecosystems across the country.

- To aid in considering an appropriate multi pollutant standard, EPA is planning a 5-year field pilot program to collect and analyze data designed to inform the next review of the NAAQS for oxides of nitrogen and sulfur. Data generated by this field program would also support development of an appropriate monitoring network for a multi-pollutant standard.
 - EPA will work with states to address additional implementation-related issues in parallel with the pilot program
- EPA is seeking comment on all aspects of this proposal, including the framework and elements of a multi-pollutant standard; the uncertainties and complexities associated with the development of such a standard at this time; and the field pilot program and related monitoring methods.
- EPA will accept comments for 60 days after the proposed rule is published in the *Federal Register* and will issue a final rule by March 2012.

ADDITIONAL INFORMATION

- Nitrogen and sulfur oxides include:
 - Sulfur dioxide (SO₂) and nitrogen dioxide (NO₂); these pollutants are used as indicators for the current secondary standards.
 - Particulate sulfate (SO₄)
 - NO_y – includes the transformation products from emissions of oxides of nitrogen (e.g., nitric acid and particulate nitrate)
- Other forms of nitrogen (NH_x), including ammonia, contribute to nitrogen deposition. However, these pollutants are not criteria pollutants.
- The Clean Air Scientific Advisory Committee, which provides independent advice to the EPA Administrator on the technical bases for EPA's national ambient air quality standards, provided an extensive review of the relevant science. As part of the review, CASAC:
 - Recommended retaining the current secondary standards to protect against the direct effects on vegetation from NO_x and SO_x.
 - Supported the development of a new, multi-pollutant standard to help protect lakes and streams from acidifying deposition of NO_x and SO_x.
 - Noted important uncertainties should be considered in this review and addressed in future analyses and reviews.
- In this review, EPA explored the possibility of developing a multi-pollutant standard to address deposition-related effects of NO_x and SO_x, including aquatic and terrestrial acidification and nutrient enrichment.
 - The Administrator concluded that there is strong scientific support for developing a standard to limit acidifying deposition of these pollutants to sensitive aquatic ecosystems around the country.

- Because different ecosystems vary in the amount of acid deposition they can tolerate, EPA developed a formula called the “Aquatic Acidification Index” (AAI) that could be used to relate levels of NO_x and SO_x in the air to water quality.
- EPA is not proposing to set a new, multi-pollutant standard for NO_x and SO_x but will complete a field pilot program to aid in considering an appropriate multi pollutant standard.
- EPA will conduct a five-year field pilot program in 3-5 locations in selected acid-sensitive ecoregions.
 - EPA is planning to use its existing Clean Air Status and Trends Network, known as CASTNET, for this pilot program. CASTNET is a national air quality monitoring network designed to provide data to assess trends in air quality, atmospheric deposition, and ecological effects due to changes in air pollutant emissions.
 - The selected ecoregions would account for geographic variability by including regions from across the U.S., including the east, upper midwest and west. Each selected region would have at least two existing CASTNET sites.
 - Each of the pilot CASTNET sites would be used to evaluate the performance of the established methods, data retrieval and reporting procedures used in the AAI equation.

BACKGROUND

- Nitrogen oxides come from an array of sources, including emissions from cars, trucks and buses, power plants, off-road equipment, and agricultural sources.
- Sulfur oxides come from fossil fuel combustion by power plants, large industries, and mobile sources, and from some industrial processes.
- In addition to their ecological effects, both NO_x and SO_x contribute to adverse health effects and to the formation of ground-level ozone and fine particle pollution.
 - NO₂ and SO₂ are both linked with a number of adverse effects on the respiratory system.
 - In addition, NO_x and SO_x contribute to an array of adverse respiratory and cardiovascular effects associated with exposure to ozone and fine particles.
- The Clean Air Act requires EPA to set national ambient air quality standards for “criteria pollutants.” Currently, six major pollutants are criteria pollutants. In addition to sulfur oxides and nitrogen oxides, there are ozone, lead, carbon monoxide, and particulate matter. The law also requires EPA to review the standards periodically and revise them if appropriate to ensure that they provide the requisite amount of health and environmental protection and to update those standards as necessary.
- EPA first established standards for NO₂ in 1971, setting both a primary standard and a secondary standard at 0.053 ppm, averaged annually.

- The last review of the NO₂ primary standard was completed in 2010. At that time, EPA established a new *1-hour* NO₂ standard at the level of 100 ppb and retained the *annual average* NO₂ standard of 0.053 ppm.
- EPA first set NAAQS for SO₂ in 1971, establishing a *24-hour* primary standard at 140 ppb and an *annual* average standard at 30 ppb (to protect health). EPA also set a 3-hour average secondary standard at 0.5 ppm (to protect public welfare).
 - In 2010, EPA revised the primary SO₂ standard by establishing a new *1-hour* standard at a level of 75 ppb. At that time, EPA also revoked the two existing primary standards (the 24-hour and annual) because they will not add additional public health protection.
- Currently, there are no areas designated as nonattainment for either the secondary NO₂ or SO₂ standards.
- The Clean Air Act Acid Rain Program (Title IV) has reduced emissions of SO₂ and NO_x from utilities, but was not designed to fully address aquatic acidification in sensitive ecosystems across the country. Despite observed improvement in many lakes and streams, studies have found evidence of continuing adverse effects in many acid-sensitive areas.
 - The new NO₂ and SO₂ primary 1-hour standards set in 2010, while not specifically designed to protect ecosystems, will result in reductions in NO_x and SO_x that will benefit the environment by reducing acidic deposition to sensitive lakes and streams.
 - In addition, other federal rules, such as the final Cross-State Air Pollution Rule and the proposed Mercury and Air Toxics Rule, will substantially reduce emissions of SO_x and NO_x from utilities in the United States.

HOW TO COMMENT

- EPA will accept comment on the proposal for 60 days after publication in the Federal Register. Comments, identified by Docket ID number EPA-HQ-OAR-2007-1145, may be submitted by one of the following methods:
 - www.regulations.gov: follow the on-line instructions for submitting comments.
 - E-mail: Comments may be sent by electronic mail (e-mail) to a-and-r-Docket@epa.gov, Attention Docket ID No. EPA-HQ-OAR-2007-1145.
 - Fax: Fax your comments to: 202-566-1741, Attention Docket ID. No EPA-HQ-OAR-2007-1145.
 - Mail: Send your comments to: Air and Radiation Docket and Information Center, Environmental Protection Agency, Mail Code: 6102T, 1200 Pennsylvania Ave., NW, Washington, DC, 20460, Attention Docket ID No. EPA-HQ-OAR-2007-1145.
 - Hand Delivery or Courier: Deliver your comments to: EPA Docket Center, 1301 Constitution Ave., NW, Room 3334, Washington, D.C. Such deliveries are only accepted during the Docket's normal hours of operation, and special arrangements should be made for deliveries of boxed information

FOR MORE INFORMATION

- To download a copy of the final rules, go to EPA's Web site at:
<http://www.epa.gov/air/nitrogenoxides/actions.html> or
<http://www.epa.gov/air/sulfurdioxide/actions.html>
- Today's proposed rule and other background information are also available either electronically at <http://www.regulations.gov>, EPA's electronic public docket and comment system, or in hardcopy at the EPA Docket Center's Public Reading Room.
- The Public Reading Room is located in the EPA Headquarters, Room Number 3334 in the EPA West Building, located at 1301 Constitution Avenue, NW, Washington, DC. Hours of operation are 8:30 a.m. to 4:30 p.m. eastern standard time, Monday through Friday, excluding Federal holidays.
- Visitors are required to show photographic identification, pass through a metal detector, and sign the EPA visitor log. All visitor materials will be processed through an X-ray machine as well. Visitors will be provided a badge that must be visible at all times. Materials for this proposed action can be accessed using Docket ID No. EPA-HQ-OAR-2007-1145.