Clean Air Issues in the 112th Congress

James E. McCarthy
Specialist in Environmental Policy

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Summary

Although air quality has improved substantially in the United States in the 40 years of EPA's Clean Air Act regulation, many issues remain unresolved, and, in recent months, members of Congress from both parties have raised questions regarding the cost-effectiveness of, and authority for, EPA actions. This report focuses on three general areas of likely interest to the 112th Congress: greenhouse gas (GHG) regulations, emissions from power plants (including interstate pollution and mercury emissions), and air quality standards.

EPA regulatory actions on GHG emissions using existing Clean Air Act authority have been the main focus of congressional interest in clean air issues in recent months. Although the Obama Administration and EPA spokespersons have consistently said that they would prefer that Congress pass legislation to address climate change, EPA has begun to develop regulations using its existing authority. On December 15, 2009, the agency finalized an "endangerment finding" under Section 202 of the Clean Air Act, which requires it to regulate pollutants for their effect as greenhouse gases for the first time. Relying on this finding, EPA finalized GHG emission standards for cars and light trucks on April 1, 2010. The implementation of these standards will, in turn, trigger permitting requirements and the imposition of Best Available Control Technology for new major stationary sources of GHGs beginning in January 2011.

It is the triggering of standards for stationary sources (power plants, manufacturing facilities, etc.) that has raised the most concern in Congress: legislation was introduced in both the House and Senate in the 111th Congress—but not enacted—aimed at preventing EPA from implementing these requirements, and similar legislation can be expected in the 112th. The legislation has taken several forms, including resolutions of disapproval for EPA regulatory actions under the Congressional Review Act, and stand-alone legislation that would forestall specific EPA regulations. Meanwhile, EPA has itself promulgated regulations and guidance delaying the applicability of requirements for stationary sources and focusing its regulatory efforts on the largest emitters while granting smaller sources at least a six-year reprieve.

EPA's GHG regulatory actions came as the 111th Congress struggled with climate change and energy legislation. The House narrowly passed a bill establishing a comprehensive GHG regulatory program (H.R. 2454), but comparable legislation (S. 1733 and S. 1462) did not reach the Senate floor.

Besides addressing climate change, EPA has taken action on a number of air pollutant regulations, generally in response to the courts. Several Bush Administration regulatory decisions were vacated or remanded to the agency: among them, the Clean Air Interstate Rule (CAIR) and Clean Air Mercury Rule—rules designed to control the long-range transport of sulfur dioxide, nitrogen oxides, and mercury from power plants through cap-and-trade programs. EPA will address these court decisions through new regulations—the agency proposed a replacement for CAIR July 6, 2010, and is expected to propose regulations for power plant emissions of mercury and other hazardous air pollutants in March 2011. Some in Congress have wanted to address these issues through legislation, an approach that might reduce the likelihood of further court challenges. The agency is also in the midst of reviewing ambient air quality standards for the six most widespread air pollutants. These standards serve as EPA's definition of clean air, and drive a wide range of regulatory controls.

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Introduction

EPA regulatory actions to limit greenhouse gas (GHG) emissions[1] using existing Clean Air Act authority have been the major focus of congressional interest in clean air issues in recent months. Some Members, from both sides of the aisle, have expressed concern that EPA is proceeding with regulations that could have major economic impacts without direct congressional authorization, and/or that EPA should delay taking such action until Congress specifically authorizes it.

The Administration counters that it would prefer for Congress to pass new legislation to control greenhouse gas emissions, but the Clean Air Act already requires action: a 2007 Supreme Court decision interpreting EPA's Clean Air Act authority found that the agency must weigh whether GHG emissions endanger public health and welfare and, if it concludes that they do, proceed with regulation.

The 111th Congress struggled to produce its own approach to climate change. In June 2009, the House narrowly passed H.R. 2454, a 1,428-page bill addressing a number of interrelated energy and climate change issues. Among its numerous provisions, the bill would have established cap-and-trade programs for GHG emissions, beginning in 2012. The Senate did not act, however: two Senate committees reported bills,[2] but the prospect of obtaining 60 votes for either bill appeared slim, and neither came to the floor. Toward the end of the second session, there was talk of a slimmed-down bill focusing on energy and perhaps electric utilities, but even this limited approach did not come to the floor.

A bipartisan group of Senators also considered addressing issues related to sulfur dioxide (SO_2), nitrogen oxides (NOx), and mercury emissions from electric power plants. Regulations addressing these emissions were vacated by the D.C. Circuit Court of Appeals in 2008. EPA is developing new regulations to address the court's concerns. It proposed regulations addressing SO_2 and NOx on July 6, 2010; the agency is expected to propose regulations for power plant emissions of mercury and other hazardous air pollutants, under a consent agreement, in March 2011. But legislation might provide a more straightforward solution, resolving ambiguities in current law and reducing the likelihood of further delays from litigation. S. 2995, a bipartisan bill addressing these issues, was introduced in the Senate during the 111th Congress and hearings were held, but no further action was taken. Congress might consider similar legislation in the 112th.

The Obama Administration's EPA has also moved to reconsider or modify several Bush Administration decisions regarding national ambient air quality standards (NAAQS). NAAQS represent EPA's formal judgment regarding how clean the air must be to protect public health and welfare; the standards set in motion monitoring and planning requirements, which in turn lead to designation of "nonattainment areas" and the imposition of emission controls.

- On January 19, 2010, the agency proposed a more stringent NAAQS for ozone, having concluded that a 2008 revision to the standard did not satisfy the

[1] Six greenhouse gases, or groups of gases, are addressed by EPA regulatory actions: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs). Of these, carbon dioxide, produced by combustion of fossil fuels, is by far the most prevalent, accounting for 85% of annual emissions of the combined group when measured as CO_2 equivalents.

[2] The Environment and Public Works Committee reported S. 1733, and the Energy and Natural Resources Committee reported S. 1462.

requirements of the Clean Air Act. The revision could affect as many as 650 counties—virtually every county that currently has an ozone monitor. Final action on this proposal is expected in July 2011.

- On June 22, 2010, the agency promulgated revisions to the NAAQS for SO_2; 59 counties would violate the new SO_2 standard, based on the most recent monitoring data.[3] None violated the old standard.
- The agency is also reviewing or has recently completed reviews of the NAAQS for four other pollutants, notably particulates, which are emitted by a wide range of mobile and stationary sources. A revised particulate standard is to be proposed by February 2011. Early indications are that the agency may propose substantially more stringent standards.[4]

This report provides a brief overview of the climate change, power plant, and air quality standard issues. More detailed information on most of the issues can be found in other CRS reports, which are referenced throughout this report.

EPA's Greenhouse Gas Regulations

EPA's actions to regulate GHG emissions stem from more than a decade of petitions and litigation. Responding to a 1999 petition that it regulate greenhouse gases from new motor vehicles, the agency in 2003 denied that it had such authority, arguing that GHGs did not fall within the Clean Air Act's definition of "air pollutants." The denial was challenged by Massachusetts, 11 other states, and various other petitioners in a case that ultimately reached the Supreme Court. In an April 2, 2007 decision (*Massachusetts v. EPA*), the Court found by 5-4 that EPA does have authority to regulate greenhouse gas emissions, since the emissions are clearly air pollutants under the Clean Air Act's definition of that term.[5] The Court's majority concluded that EPA must, therefore, decide whether emissions of these pollutants from new motor vehicles contribute to air pollution that may reasonably be anticipated to endanger public health or welfare. When it makes such an "endangerment finding," the act requires the agency to establish standards for emissions of the pollutants.

On December 15, 2009, acting in response to the Court's decision, EPA finalized an endangerment finding for greenhouse gas emissions from motor vehicles, under Section 202(a) of

[3] The number of counties that will be formally designated nonattainment is likely to be different from the 59 EPA identified, for two reasons. First, EPA promulgated changes to the monitoring requirements along with the new standard. Second, the actual designations will most likely be made based on 2009-2011 monitoring data, whereas the 59 counties were identified using 2007-2009 data.

[4] On July 2, 2010, EPA released the Second External Review Draft of its Policy Assessment for the Review of the Particulate Matter NAAQS. The draft represented EPA staff's recommendations to the Administrator. It outlined options for revising both the fine and coarse particulate standard, both of which would make the standards more stringent. The draft is available at http://www.epa.gov/ttn/naaqs/standards/pm/s_pm_2007_pa.html. Information on the status of all of the NAAQS revisions can be found below in the section of this report entitled "Air Quality Standards."

[5] Massachusetts v. EPA, 549 U.S. 497 (2007). The majority held: "The Clean Air Act's sweeping definition of 'air pollutant' includes 'any air pollution agent or combination of such agents, including any physical, chemical ... substance or matter which is emitted into or otherwise enters the ambient air.... ' ... Carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons are without a doubt 'physical [and] chemical ... substances[s] which [are] emitted into ... the ambient air.' The statute is unambiguous." For additional discussion, see CRS Report RS22665, *The Supreme Court's Climate Change Decision: Massachusetts v. EPA*, by Robert Meltz.

the act.[6] Relying on this finding, EPA promulgated GHG emission standards for new cars and light trucks, April 1, 2010. The implementation of these standards will, in turn, trigger permitting requirements and the imposition of Best Available Control Technology for new major stationary sources of GHGs beginning in January 2011. (For information on these regulations and permit requirements, see CRS Report R40506, *Cars, Trucks, and Climate: EPA Regulation of Greenhouse Gases from Mobile Sources*, and CRS Report R41212, *EPA Regulation of Greenhouse Gases: Congressional Responses and Options*.)

The prospect of GHG standards for motor vehicles is not particularly controversial. On May 19, 2009, President Obama announced an agreement involving nine U.S. and foreign auto manufacturers; the federal government; the governors of California, Michigan, and Massachusetts; the United Auto Workers; and environmental groups under which EPA and the National Highway Traffic Safety Administration (NHTSA) would proceed with a joint rulemaking in which GHG emissions from new motor vehicles would be reduced under the Clean Air Act, while NHTSA would set corresponding fuel economy standards under the Corporate Average Fuel Economy (CAFE) program.[7] The objective of the new greenhouse gas standards is to reach reduction levels similar to those adopted by the state of California and 13 other states, who will harmonize their standards with those of EPA as part of the agreement. The California standards required about a 30% reduction in GHG emissions from new vehicles by 2016. The auto industry supported the national agreement, in part, to avoid having to meet standards on a state-by-state basis; thus, it has not supported efforts to block EPA's motor vehicle GHG standards.

In addition to the motor vehicle GHG standards, EPA has received petitions asking the agency to regulate GHGs from a variety of other sources, including coal mines, concentrated animal feeding operations (CAFOs), aircraft, ocean-going ships, nonroad engines and equipment (e.g., construction equipment, farm equipment, recreational equipment, forklifts, harbor craft, and lawn and garden equipment), and fuels. Another petition asks the agency to set National Ambient Air Quality Standards for seven specific greenhouse gases. The agency also faces lawsuits seeking to force it to regulate GHGs from stationary sources, including power plants, petroleum refineries, nonroad vehicles and engines, and the Portland cement industry. The decision to move forward on GHG standards for new motor vehicles is seen by many as a precedent for regulation of these other sources.[8] On December 23, 2010, EPA announced that it had reached a settlement agreement with 11 states, the City of New York, the District of Columbia, and 3 environmental groups under which it will propose GHG emission standards for power plants by July 26, 2011,

[6] 74 *Federal Register* 66496. While generally referred to as the "endangerment finding" (singular), the *Federal Register* notice consists of two separate findings: a Finding that Emissions of Greenhouse Gases Endanger Public Health and Welfare, and a Finding that Greenhouse Gases From Motor Vehicles Cause or Contribute to the Endangerment of Public Health and Welfare.

[7] The President's announcement and related documents, including a Notice of Upcoming Joint Rulemaking to Establish Vehicle GHG Emissions and CAFE Standards, which appeared in the May 22, 2009 *Federal Register*, and both the draft and final emission standards can be found at http://www.epa.gov/otaq/climate/regulations.htm. For additional information, see CRS Report R40166, *Automobile and Light Truck Fuel Economy: The CAFE Standards*, by Brent D. Yacobucci and Robert Bamberger or CRS Report R40506, *Cars, Trucks, and Climate: EPA Regulation of Greenhouse Gases from Mobile Sources*, by James E. McCarthy.

[8] For a further discussion of these issues, see CRS Report R40984, *Legal Consequences of EPA's Endangerment Finding for New Motor Vehicle Greenhouse Gas Emissions*, by Robert Meltz, CRS Report R40506, *Cars, Trucks, and Climate: EPA Regulation of Greenhouse Gases from Mobile Sources*, by James E. McCarthy, and CRS Report R40585, *Climate Change: Potential Regulation of Stationary Greenhouse Gas Sources Under the Clean Air Act*, by Larry Parker and James E. McCarthy.

and for refineries by December 10, 2011, with promulgation by May 2012 and November 2012 respectively.

Even without EPA decisions on these petitions or the conclusion of lawsuits, the adoption of GHG standards for motor vehicles has triggered GHG permit requirements for new stationary sources, as a result of language in Section 165 of the act that requires such permits to require best available control technology for all pollutants "subject to regulation" under the act. The permit requirements began to take effect January 2, 2011. It is this triggering of standards for stationary sources (power plants, manufacturing facilities, and others) that appears to have raised the most concern in Congress: in the 111th Congress, legislation was introduced in both the House and Senate aimed at preventing EPA from implementing these requirements. The legislation took several forms, including:

- resolutions of disapproval for the endangerment finding itself under the Congressional Review Act (S.J.Res. 26, H.J.Res. 66, H.J.Res. 76, and H.J.Res. 77);
- bills that would either have:
  - required EPA to reevaluate its endangerment finding (H.Res. 974),
  - amended the Clean Air Act to provide that greenhouse gases are not subject to the act (H.R. 4396),
  - limited EPA's GHG authority to motor vehicle emissions (S. 1622), or
  - suspended EPA actions regulating stationary source emissions of GHGs for two years (S. 3072, H.R. 4753).

S.J.Res. 26, Senator Murkowski's resolution of disapproval for the endangerment finding, was defeated 53-47, on June 10, 2010. Meanwhile, EPA has itself promulgated regulations and guidance that delayed the applicability of requirements for stationary sources of GHGs until 2011 and focused its initial permitting efforts on the largest emitters, granting smaller sources at least a six-year reprieve.[9]

Although both the resolutions of disapproval and the stand-alone legislation to restrict EPA's authority have received a great deal of attention, the path to enactment of either of these forms of legislation is a steep one. The Obama Administration has made the reduction of GHG emissions one of its major goals; as a result, many conclude that legislation restricting EPA's authority to act, if passed by Congress, would encounter a presidential veto.

Addressing the issue through an amendment to the EPA appropriation, by cutting EPA's appropriation or by restricting its authority to use funds to take specific GHG regulatory actions, might have more chance of enactment. The overall appropriation bill to which it would be attached would presumably contain other elements that would make it more difficult to veto. This approach was discussed at some length in the fall of 2009, when Senator Murkowski introduced

[9] EPA has promulgated two rules that would have these effects: "Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule," final rule, 75 *Federal Register* 31514, June 3, 2010; and "Reconsideration of Interpretation of Regulations that Determine Pollutants Covered by Clean Air Act Permitting Programs," final rule, 75 *Federal Register* 17004, April 2, 2010.

(but ultimately did not offer) S.Amdt. 2530 to the FY2010 Interior, Environment, and Related Agencies Appropriation Act (H.R. 2996).

In short, there are numerous ways that Congress can address EPA's greenhouse gas authority, and opponents of EPA action may continue to exert pressure to delay or limit the agency's actions, as the agency continues on its planned course. (For a more detailed discussion of EPA's regulatory actions and potential congressional responses, see CRS Report R41212, *EPA Regulation of Greenhouse Gases: Congressional Responses and Options*, by James E. McCarthy and Larry Parker.)

Legislation on Climate Change

The 111th Congress also expended considerable time and effort considering comprehensive legislation on energy use and emissions of greenhouse gases. The high water mark of this effort was House passage of H.R. 2454, the American Clean Energy and Security Act of 2009, on June 26, 2009, by a vote of 219-212. The bill, also referred to by its acronym (ACES) or as the Waxman-Markey bill, would have addressed a number of interrelated energy and climate change issues. Among other provisions, it would have amended the Clean Air Act to establish a cap-and-trade program[10] (similar to the act's current program for addressing acid rain) to limit greenhouse gas (GHG) emissions beginning in 2012.[11]

The Senate Energy and Natural Resources Committee and the Senate Environment and Public Works Committee reported Senate counterparts: S. 1462 (Bingaman), equivalent to the energy titles, and S. 1733, the Kerry-Boxer bill, establishing a cap-and-trade system and other measures to address climate change. The Kerry-Boxer bill faced strong opposition, however. The Republican members of the Environment and Public Works Committee boycotted the markup. The bill was reported with no Republican support and less than unanimous support among Democrats: it was clear that the bill would lack the 60 votes necessary to overcome a filibuster and secure passage on the floor. As a result, for about six months, negotiations took place among a trio of Senators (Kerry, Graham, and Lieberman) for a bipartisan (or, more accurately, tripartisan) alternative. This legislation, without Senator Graham's sponsorship, circulated extensively in draft form in 2010, but was not introduced. Ultimately, none of these bills reached the Senate floor.

Legislation similar to the Waxman-Markey bill or the Kerry-Boxer bill is considered a nonstarter in the 112th Congress. Republicans in the House were nearly unanimous in opposition to Waxman-Markey in the 111th Congress, and many of the new Members ran in opposition to cap-and-trade legislation. The slim majority that supported H.R. 2454 has almost certainly disappeared, and the new leadership of the House is unanimous in opposition. Thus, EPA's regulatory actions (assuming they are not blocked by Congress) will be the principal U.S. response to climate issues for now.

[10] A cap-and-trade system sets a declining national cap on emissions and allocates emission allowances that can be bought and sold on open markets. For additional information, CRS Report RL34513, *Climate Change: Current Issues and Policy Tools*, by Jane A. Leggett.

[11] For a discussion of the bill's provisions, see CRS Report R40145, *Clean Air Issues in the 111th Congress*, by James E. McCarthy, pp. 4-12.

Emissions from Power Plants

In addition to climate change, other clean air issues with a shorter time horizon are being addressed by EPA and could be considered by Congress. Many of these have to do with emissions from electric power plants.

Coal-fired power plants are among the largest sources of air pollution in the United States. Under the Clean Air Act, however, they are not necessarily subject to stringent requirements: emissions and the required control equipment can vary depending on the location of the plant, when it was constructed, whether it has undergone major modifications, the specific type of fuel it burns, and, to some extent, the vagaries of EPA enforcement policies. More than half a dozen separate Clean Air Act programs could potentially be used to control emissions, which makes compliance strategy complicated for utilities and difficult for regulators. Because the cost of the most stringent available controls, for the entire industry, could range into the tens of billions of dollars, utilities have fought hard and rather successfully to limit or delay regulations affecting them, particularly with respect to plants constructed before the Clean Air Act of 1970 was passed.

As a result, emissions from power plants have not been reduced as much as those from some other sources. Many plants built in the 1950s and 1960s (generally referred to as "grandfathered" plants) have little emission control equipment.

Collectively, power plants are large sources of pollution. In 2005, they accounted for 10.2 million tons of sulfur dioxide (SO_2) emissions (70% of the U.S. total), 52 tons of mercury emissions (46% of the U.S. total), and 3.6 million tons of nitrogen oxides (19% of the U.S. total). Power plants are also considered major sources of fine particles ($PM_{2.5}$), many of which form in the atmosphere from emissions from a wide range of stationary and mobile sources. In addition, power plants account for about 40% of U.S. anthropogenic emissions of the greenhouse gas carbon dioxide.

With new ambient air quality standards for ozone, fine particles, and SO_2 taking effect, emissions of NOx and SO_2 will necessarily have to be reduced to meet standards.[12] (These standards are discussed below under "Air Quality Standards.") For more than a decade, mercury emissions have also been a focus of concern. Mercury emitted by power plants and other sources is deposited in water bodies and is taken up through the food chain: 48 states have issued fish consumption advisories due to mercury pollution, covering 14 million acres of lakes, 882,000 river miles, and the coastal waters of 13 entire states. The continuing controversy over the interpretation of New Source Review requirements for existing power plants (which require the installation of Best Available Control Technology whenever an existing power plant undergoes major modifications) has exerted pressure for a more predictable regulatory structure, as well.

Thus, some in industry, environmental groups, Congress, and the last two Administrations have said that legislation addressing power plant pollution in a comprehensive (multi-pollutant) fashion would be desirable. Such legislation would address the major pollutants on a coordinated schedule and would rely, to a large extent, on a system such as the one used in the acid rain program, where national or regional caps on emissions are implemented through a system of

[12] NOx contributes to the formation of ozone and fine particles; SO_2, besides being a regulated pollutant in its own right, is among the sources of fine particles.

tradable allowances. The key questions have been how stringent the caps should be and whether carbon dioxide (CO_2), the major gas of concern with regard to climate change, would be among the emissions subject to a cap.

Clean Air Interstate Rule (CAIR)

The Senate Environment and Public Works Committee has voted twice on a multi-pollutant bill (in 2002 and 2005), but neither of the bills progressed to the Senate floor. In the House, similar bills have been introduced, but none has progressed to markup. On March 10, 2005, therefore, EPA announced that it would use existing Clean Air Act authority to promulgate final regulations similar to the Bush Administration's multi-pollutant bill (the "Clear Skies" bill[13]) for utility emissions of SO_2 and NOx in 28 eastern states and the District of Columbia.[14]

The Clean Air Interstate Rule (CAIR) established cap-and-trade provisions for SO_2 and NOx.[15] CAIR covered only the eastern half of the country, but since most of the grandfathered generation capacity is located in the East and South, EPA projected that nationwide emissions of SO_2 would decline 53% by 2015 and NOx emissions 56%.[16] The agency also projected that the rule would result in $85-$100 billion in health benefits annually by 2015, including the annual prevention of 17,000 premature deaths. CAIR's health and environmental benefits would be more than 25 times greater than its costs, according to EPA.

North Carolina v. EPA

CAIR was one of the few Bush Administration environmental initiatives that was generally supported by environmentalists. It also had broad support in the regulated community. But a variety of petitioners, including the state of North Carolina, which argued that the rule was not strong enough to address pollution from upwind sources, and some individual utilities that felt they were unfairly treated by the rule's emission budgets, challenged the rule in the D.C. Circuit, and the court vacated it July 11, 2008. A unanimous court found that EPA had established a "significant contribution" made by power plants to nonattainment of standards and failure to maintain standards in downwind states, as required by Section 110 of the Clean Air Act, but the court concluded that the agency's methodology for establishing emission budgets for each state was unrelated to that contribution.[17] The court also found that the choice of 2015 for a second phase compliance deadline, based on technological and economic feasibility, ignored EPA's statutory mandate. It found the fuel adjustment factors in the rule (which set more stringent

[13] President Bush first proposed the Clear Skies Act on February 14, 2002, and the bill was introduced by request in the 107th Congress as H.R. 5266/S. 2815. In the 109th Congress, a somewhat modified Clear Skies bill, introduced as S. 131, was considered by the Environment and Public Works Committee, but failed to advance, on a 9-9 vote. Clear Skies was not introduced in the 110th Congress.

[14] The rule appeared in the *Federal Register* two months later. See U.S. EPA, "Ambient air quality standards, national—Fine particulate matter and ozone; interstate transport control measures," 70 *Federal Register* 25162, May 12, 2005.

[15] A separate regulation, the Clean Air Mercury Rule (CAMR), promulgated at the same time, established a Clear-Skies-like cap-and-trade system for mercury emissions. It is described in a separate section below.

[16] As compared to nationwide emissions from electric generating units in 2001. Some of the projected reduction would be due to pre-existing regulations. See U.S. EPA, Office of Air and Radiation, *Regulatory Impact Analysis for the Final Clean Air Interstate Rule*, March 2005, pp. 3-3 and 3-4, at http://www.epa.gov/cair/pdfs/finaltech08.pdf.

[17] North Carolina v. EPA, 531 F.3d 896 (D.C. Cir. 2008).

requirements for natural gas- and oil-fired plants than for coal-fired ones) to be arbitrary and capricious. It concluded: "CAIR's flaws are deep. No amount of tinkering ... will transform CAIR, as written, into an acceptable rule."[18]

Despite the seemingly high hurdle set by the language the court used, EPA, environmental groups, and the utility and mining industries asked the court to review its decision. On December 23, 2008, the court modified its decision, allowing CAIR to remain in effect until a new rule is promulgated by EPA. [19] The court was not specific about how long this process would be allowed to take, but stated:

> Though we do not impose a particular schedule by which EPA must alter CAIR, we remind EPA that we do not intend to grant an indefinite stay of the effectiveness of this court's decision. Our opinion revealed CAIR's fundamental flaws, which EPA must still remedy.[20]

Effects of the Decision

There is general agreement among the states, electric utilities, and environmental groups that something like CAIR should be salvaged.

- Without CAIR, most eastern states would have huge gaps in their emission control programs, which would have to be filled by other regulatory measures if the states are to attain the NAAQS by the statutory deadlines. The states could be subject to Clean Air Act sanctions, including a suspension of federal highway funding for new projects, if they fail to adopt such measures.
- For the utilities, CAIR was designed to build on the existing regulatory framework of cap-and-trade programs under the acid rain program and the "NOx SIP Call."[21] Anticipating the ability to bank and trade emission allowances under CAIR, numerous utilities have already invested in equipment to meet or exceed CAIR's requirements, the first phase of which are now being implemented.
- For environmental groups, which found little to their liking in the Bush Administration, CAIR was the major exception. They argued for a stronger version of CAIR—particularly its second phase, to be implemented in 2015—but they generally supported the basic approach.

EPA's CAIR Replacement: The Clean Air Transport Rule

On July 6, 2010, EPA proposed a replacement for CAIR, the Clean Air Transport Rule.[22] The transport rule would leave the CAIR Phase 1 limits in place and would set new limits replacing CAIR's second phase in 2012 and 2014, up to three years earlier than CAIR would have.

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[18] Id. at 930.

[19] North Carolina v. EPA, 550 F.3d 1176 (D.C. Cir. 2008).

[20] Ibid.

[21] The acid rain program, established by the Clean Air Act Amendments of 1990, established a cap-and-trade program for sulfur dioxide emissions from electric generating units. Implementation began in 1995. The NOx SIP Call, implemented in 2004, is a cap-and-trade program for control of nitrogen oxide emissions in the eastern half of the country.

[22] The proposal appeared in the *Federal Register* August 2, 2010. The rule, a Fact Sheet, a Regulatory Impact Analysis, (continued...)

The CAIR Phase 1 rules already appear to be having substantial effects. On August 11, 2010, EPA reported that emissions of SO_2 had declined sharply in both 2008 and 2009: in the latter year, emissions from fossil-fueled power plants in the lower 48 states (at 5.7 million tons) were 44% below 2005 levels. NOx emissions from the same sources declined to 1.8 million tons in 2009, a decline of 45% compared to 2005.[23] Further reductions of both SO_2 and NOx can be expected as Phase 1 takes effect.

The proposed transport rule would build on these reductions. It would establish a second and third phase of reductions in 2012 and 2014, with particular emphasis on SO_2—emissions of which would decline to 3.8 million tons (62% below 2005 levels) in 2014. The proposed rule would cover 31 Eastern, Midwestern, and Southern states and the District of Columbia, adding three new states (Oklahoma, Kansas, and Nebraska) to the 28 covered by CAIR. The rule would allow unlimited trading of allowances within individual states, but it would limit interstate trading in order to comply with the D.C. Circuit's ruling. In order to insure that the rule is implemented quickly, EPA proposed a Federal Implementation Plan (FIP) for each of the states: the FIP specifies emission budgets for each state based on controlling emissions from electric power plants. States may develop their own State Implementation Plans and choose to control other types of sources if they wish, but the federal plan will take effect until the state acts to replace it.

EPA estimates that the rule will cost the power sector $2.8 billion annually in 2014, but it expects the benefits to be 40 to 100 times as great—an estimated $120 billion to $290 billion annually. The most important benefit would be 14,000 to 36,000 fewer premature deaths annually. Avoided deaths and other benefits occur throughout the East, Midwest, and South, according to EPA, with Ohio, Pennsylvania, and New York benefitting the most.[24]

Because the agency is near finalizing more stringent ambient air quality standards for ozone (as discussed below in the Air Quality Standards section of this report), it stated its intention to propose another transport rule in the summer of 2011 to address any additional emission reductions needed to meet those new standards. It also stated an "ongoing commitment" to consider upwind contributions of pollution to nonattainment when implementing any future NAAQS revisions. With revisions of the fine particulate ($PM_{2.5}$) standard expected by fall 2011, additional transport rules might be expected.

State air pollution control agencies, through the National Association of Clean Air Agencies (NACAA), have argued that substantial further reductions will be necessary if the states are to attain the new ozone standards. Ozone forms through chemical reactions in the atmosphere between volatile organic compounds and NOx; after decades of focus on VOC reductions, NOx reductions are key to attaining a more stringent ozone standard. For NOx, the Phase 1 cap is 45% below baseline, with Phase 2 providing an additional 7%. The control technology is clearly available to do more: EPA modeling projects 34% of coal-fired electric generating units in the transport region to be without the best available NOx control in 2014.[25] Assuming that modeling

(...continued)

and an overview presentation can be found on EPA's website at http://www.epa.gov/airtransport/actions.html#jul10.

[23] Data are from EPA's "2009 Acid Rain Program Emission and Compliance Data Report," August 11, 2010, at http://www.epa.gov/airmarkets/progress/ARP09.html.

[24] U.S. EPA, Office of Air and Radiation, "Proposed Air Pollution Transport Rule," Overview Presentation, July 26, 2010, pp. 13-15, at http://www.epa.gov/airtransport/pdfs/TRPresentationfinal_7-26_webversion.pdf.

[25] U.S. EPA, Office of Air and Radiation, *Regulatory Impact Analysis for the Proposed Federal Transport Rule*, June 2010, Table 7-11, p. 259, http://www.epa.gov/ttn/ecas/regdata/RIAs/proposaltrria_final.pdf. The technology referred to (continued...)

shows that more reductions are needed for the states to attain the new ozone NAAQS, the pressure will be on EPA to strengthen the regulations further.

Judicial and Legislative Options

The courts might be the venue for further consideration of the issues if any of the parties find themselves unhappy with the pace or substance of EPA's regulatory decisions.

Congress might also act. In order to shorten the regulatory process and avoid further litigation, some have argued that Congress needs to resolve the issues posed by the D.C. Circuit's 2008 CAIR decision. Over the past decade, several dozen multi-pollutant bills would have addressed SO_2 and NOx emissions from power plants through a cap-and-trade system, most of them in conjunction with controls on mercury and CO_2. If legislation were to be considered now, the issues might, therefore, include not only the stringency and timing of SO_2 and NOx controls, but also whether to include mercury and CO_2 controls in the bill.

In the 111th Congress, on February 4, 2010, Senators Carper and Alexander, with a bipartisan group of cosponsors, introduced S. 2995 to address the issues posed by the CAIR decision and to set standards for power plant mercury emissions. The bill would have established cap-and-trade systems for SO_2 and NOx with more stringent caps than those of the CAIR rule or EPA's proposed replacement. The SO_2 cap would be 78% below the 2001 baseline in 2015, and 83% below in 2018. The EPA Administrator would have been authorized to reduce the cap further for 2021 and later years. The NOx cap would also have been more stringent than provided by CAIR or the proposed transport rule and it would cover 32 states (seven more than CAIR, four more than the proposed EPA rule). In 2012, its cap would be 24% below CAIR's emissions level (in addition to covering more states within that cap). In 2015, its cap would be identical to CAIR's, but because it would cover seven more states, would still be more stringent on a state-by-state basis. The bill would also have established a NOx cap in the rest of the lower 48 states for the first time, which would decline 37% by 2020.

At a Senate hearing, March 4, 2010, there was general support for S. 2995, although some concern was expressed that the reductions would still not be sufficient to bring Eastern states into attainment of the ozone NAAQS.[26]

Clean Air Mercury Rule (CAMR)

Background

Mercury is a potent neurotoxin that can cause adverse health effects (principally delayed development, neurological defects, and lower IQ in fetuses and children) at very low concentrations.[27] The principal route of exposure to mercury is through consumption of fish.

(...continued)

is selective catalytic reduction (SCR).

[26] "Legislative Hearing: S. 2995, The Clean Air Act Amendments of 2010," U.S. Senate Committee on Environment and Public Works, March 4, 2010. See especially the testimony of Colin P. O'Mara, Secretary, Delaware Department of Natural Resources and Environmental Control.

[27] For a discussion of mercury's health effects, see CRS Report RL32420, *Mercury in the Environment: Sources and* (continued...)

Mercury enters water bodies, often through air emissions, and is taken up through the food chain, ultimately affecting humans as a result of fish consumption. As noted earlier, 48 states have issued fish consumption advisories due to mercury pollution, covering 14 million acres of lakes, 882,000 river miles, and the coastal waters of 13 entire states. Electric generating units account for about half of U.S. mercury emissions.

Regulation of mercury emissions from coal-fired power plants has a complicated legislative and regulatory history, dating back to the 1990 Clean Air Act Amendments. EPA was required by that legislation and a 1998 consent agreement to determine whether regulation of mercury from power plants under Section 112 of the Clean Air Act was appropriate and necessary. Section 112 is the section that regulates emissions of hazardous air pollutants. In general, it requires EPA to set standards based on the Maximum Achievable Control Technology (a term defined with great precision in the act), and to impose the MACT standards at each individual emissions source. In a December 2000 regulatory finding, EPA concluded that regulation of mercury from power plants under Section 112 was appropriate and necessary. The finding added coal- and oil-fired electric generating units to the list of sources of hazardous air pollutants, and triggered other provisions of the 1998 consent agreement: the agency was to propose MACT standards for them by December 15, 2003, and finalize the standards by March 15, 2005.

Rather than promulgate MACT standards, however, EPA reversed its December 2000 finding in March 2005, and established through regulations a national cap-and-trade system for power plant emissions of mercury, the Clean Air Mercury Rule (CAMR). Under CAMR, the final cap would have been 15 tons of emissions nationwide in 2018 (about a 70% reduction from 1999 levels, when achieved). There would also have been an intermediate cap of 38 tons in 2010, well above EPA's projection of emissions in that year.[28]

Under the cap-and-trade system, utilities could either control the pollutant directly or purchase excess allowances from other plants that instituted controls more stringently or sooner than required. As with the acid rain and CAIR cap-and-trade programs, early reductions under CAMR could have been banked for later use, which the agency itself said would result in utilities delaying compliance with the full 70% reduction until well beyond 2018, as they used up banked allowances rather than installing further controls. The agency's analysis projected actual emissions to be 24.3 tons (less than a 50% reduction) as late as 2020. Full compliance with the 70% reduction would have been delayed until after 2025.[29] (For additional information on the mercury rule, see CRS Report RL32868, *Mercury Emissions from Electric Power Plants: An Analysis of EPA's Cap-and-Trade Regulations*, by James E. McCarthy.)

New Jersey v. EPA

The CAMR rule was challenged in petitions for review filed by New Jersey and 16 other states as well as other petitioners.[30] The D.C. Circuit, in a 3-0 decision handed down February 8, 2008,[31]

(...continued)

Health Risks, by Linda-Jo Schierow.

[28] The agency projected emissions at 31 tons in 2010 even if 99% of the generating units installed no mercury control equipment.

[29] U.S. EPA, Mercury RIA, previously cited, Table 7-3, p. 7-5.

[30] Seven other states joined EPA in defending the rule.

[31] New Jersey v. EPA, 517 F.3d 574 (D.C. Cir. 2008).

vacated the rule. The court found that once the agency had listed electric generating units (EGUs) as a source of hazardous air pollutants, it had to proceed with MACT regulations under Section 112 of the act unless it "delisted" the source category, under procedures the act sets forth in Section 112(c)(9). Delisting would have required the agency to find that no EGU's emissions exceeded a level adequate to protect public health with an ample margin of safety, and that no adverse environmental effect would result from any source—a difficult test to meet, given the agency's estimate that EGUs are responsible for 46% of mercury emissions from all U.S. sources. Rather than delist the EGU source category, the agency had maintained that it could simply reverse its December 2000 "appropriate and necessary" finding, a decision that was much simpler because there were no statutory criteria to meet. The court found this approach unlawful. "This explanation deploys the logic of the Queen of Hearts, substituting EPA's desires for the plain text of Section 112(c)(9)," the court said in its opinion.[32]

Other Mercury Issues

Besides the question of whether EPA complied with the law's requirements, critics found other reasons to oppose EPA's cap-and-trade approach to controlling mercury. One of the main criticisms has been that it would not address "hot spots," areas where mercury emissions and/or concentrations in water bodies are greater than elsewhere. In fact, under a cap-and-trade system, nothing would prevent emissions from increasing at hot spots. Many also argued that the mercury regulations should have been more stringent or implemented more quickly than the cap-and-trade regulations would have required. These arguments found a receptive audience in the states: about 20 states have promulgated requirements stricter than the federal program, with several requiring 80% to 90% mercury reductions before 2010. (For additional information, see archived CRS Report RL33535, *Mercury Emissions from Electric Power Plants: States Are Setting Stricter Limits*, by James E. McCarthy.)

Next Steps

Under the D.C. Circuit's ruling, unless EPA delists the power plant category, it does not have the legislative authority to establish a cap-and-trade program for their mercury emissions: it must impose MACT standards on each individual plant once it has listed the category. The agency could have appealed the court's ruling: under the Bush Administration, on October 17, 2008, it petitioned for certiorari to the Supreme Court.[33] But the Obama Administration withdrew the petition in early February 2009 and announced that it will proceed with the development of MACT standards.[34] Proposed standards are expected, under a consent agreement, by March 2011, with final standards to be promulgated in November 2011.

While the agency develops new regulations in response to the court's remand, new coal-fired electric generating units and modifications of existing units are required to obtain permits under a provision of the law known as the "MACT hammer" (Section 112(g)(2)). Under this provision, if no applicable emission limits have been established, no person may construct a new major source or modify an existing major source in the category unless the Administrator or the state

[32] Id. at 582.

[33] 77 U.S.LW 3253 (No. 08-512).

[34] Withdrawal of EPA's petition for certiorari left a separate petition filed by the Utility Air Regulatory Group before the Court. The Court denied that petition, February 23, 2009.

determines on a case-by-case basis that they meet MACT emission limits. On February 28, 2008, the Natural Resources Defense Council (NRDC) released a list of 32 new coal-fired power plants in 13 states that it believed must adopt MACT mercury controls under this provision.[35]

Air Quality Standards

Background

Air quality has improved substantially since the passage of the Clean Air Act in 1970: annual emissions of the six most widespread ("criteria") air pollutants[36] have declined nearly 180 million tons (59%), despite major increases in population, motor vehicle miles traveled, and economic activity.[37] Nevertheless, the goal of clean air continues to elude many areas, in part because scientific understanding of the health effects of air pollution has caused EPA to tighten standards for most of the criteria pollutants. Congress anticipated that the understanding of air pollution's effects on public health and welfare would change with time, and it required, in Section 109(d) of the act, that EPA review the standards at five-year intervals and revise them, as appropriate.

The most widespread problems involve ozone and fine particles. As of September 2010, 119 million people lived in areas classified "nonattainment" for the ozone National Ambient Air Quality Standard (NAAQS);[38] 70 million lived in areas that were nonattainment for the fine particle ($PM_{2.5}$) NAAQS.[39] EPA attributes at least 33,000 premature deaths and millions of lost work days annually to exceedances of the $PM_{2.5}$ standard. Recent research has tied ozone pollution to premature mortality as well.

Violations of the ambient air quality standards for the other four criteria pollutants are not as widespread, but EPA is engaged in (or has recently completed) reviews indicating that health effects of most of these pollutants are more serious than previously thought. At present, for example, no areas exceed the NAAQS for sulfur dioxide (SO_2), but in a recent review, EPA determined that between 2,300 and 5,900 premature deaths can be avoided annually by strengthening that standard. Thus, the agency has promulgated a new SO_2 standard under which

[35] NRDC, "32 Coal-Fired Power Plants in 13 States Now Up in the Air After Major Court Ruling on Mercury," Press Release, February 28, 2008, at http://www.nrdc.org/media/2008/080228.asp.

[36] The six criteria air pollutants are ozone, particulate matter, sulfur dioxide, carbon monoxide, nitrogen dioxide, and lead. Criteria pollutants, identified by the EPA Administrator, are pollutants that (a) cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, and (b) the presence of which in the ambient air results from numerous or diverse mobile or stationary sources (Section 108(a)(1) of the Clean Air Act).

[37] See U.S. EPA, "Air Emissions Summary Through 2005," at http://www.epa.gov/air/airtrends/2006/emissions_summary_2005.html, updated with data from 2008 in U.S. EPA, "Air Quality Trends," at http://www.epa.gov/airtrends/aqtrends.html#comparison. The six criteria pollutants are ozone, particulate matter, carbon monoxide, sulfur dioxide, nitrogen oxides, and lead.

[38] Data for ozone nonattainment areas are from the U.S. EPA "Green Book," at http://www.epa.gov/oar/oaqps/greenbk/gntc.html.

[39] Fine particles, as defined by EPA, consist of particulate matter 2.5 micrometers or less in diameter, abbreviated as $PM_{2.5}$. Data for $PM_{2.5}$ nonattainment areas are also from the U.S. EPA "Green Book," at http://www.epa.gov/oar/oaqps/greenbk/qntc.html.

as many as 59 counties could be designated nonattainment, based on the most recent monitoring data.[40]

Table 1 summarizes EPA's recent efforts to review the NAAQS and implement revisions, including the next steps for each of the six criteria pollutants. Revisions for five of the six pollutants (ozone, PM, lead, NO_2, and SO_2) have been completed since 2006, with the standards being made more stringent in each case (three of the five were subsequently challenged in court and two of these three were remanded to the agency for further revisions). Reviews of the NAAQS for carbon monoxide and the two remanded standards (ozone and PM) are to be completed in 2010 or 2011.[41]

Judicial Reviews

As the table indicates, court challenges have played a key role in bringing about the NAAQS reviews, and in causing further review after the NAAQS have been promulgated. Reviews of most of the standards were stimulated at least in part by court cases: EPA is statutorily required to review the NAAQS every five years, and its failure to do so can be addressed by citizen suits.

At the other end of the process, once the agency's review of a NAAQS is completed, the standards are almost invariably challenged in court. In the case of both particulate matter and ozone, judicial review has led to a remand of the standards that EPA promulgated in 2006 and 2008 respectively. The agency has now agreed to promulgate further revisions to these standards in 2011.

CASAC's Role

In making his decisions regarding the 2008 ozone and 2006 particulate standards, then-EPA Administrator Stephen Johnson did not follow the advice of the agency's independent science advisors, the Clean Air Scientific Advisory Committee (CASAC). The Administrator is not required by statute to follow CASAC's recommendations; the act requires only that he set forth in the *Federal Register* notice in which he (or she) proposes a NAAQS any pertinent findings, recommendations, and comments made by CASAC and, if the proposal differs in an important respect from any of the recommendations, provide an explanation of the reasons for such differences.[42] But the failure to follow CASAC recommendations almost inevitably raises the question of whether the Administrator's decision will be judged arbitrary and capricious in a judicial review.

In the recent revisions of both the ozone and PM standards, CASAC made detailed objections to the Administrator's final decisions. The committee's description of the process as having failed to meet statutory and procedural requirements could play an important role during judicial review.

[40] http://www.epa.gov/air/sulfurdioxide/pdfs/20100602map0709.pdf. The 59 potential nonattainment counties were identified using the most recent available monitoring data (2007-2009). EPA is likely to use 2009-2011 or later data when it comes time to actually designate the areas. Additional monitors will also be sited.

[41] There are CRS reports on three of the NAAQS revisions: CRS Report R41062, *Ozone Air Quality Standards: EPA's Proposed Revisions*, CRS Report RL34762, *The National Ambient Air Quality Standards (NAAQS) for Particulate Matter (PM): EPA's 2006 Revisions and Associated Issues*, and CRS Report RL34479, *Revising the National Ambient Air Quality Standard for Lead*.

[42] The requirement is found in Section 307(d)(3) of the act.

This raises the question of whether Congress might reconsider CASAC's statutory role in the review process, or further specify the conditions under which the Administrator may reject CASAC's advice.

Table 1. Status of NAAQS Reviews

Pollutant	Last Revision	Court Action?	Next Steps	Monitoring Issues?	Comments
ozone (for additional information, see CRS Report R41062, *Ozone Air Quality Standards: EPA's Proposed Revisions*, by James E. McCarthy)	March 27, 2008; revised standards were proposed January 19, 2010.	In response to suits filed by 15 states (*Mississippi v. EPA*), EPA agreed to reconsider the March 2008 standards.	Final standards are expected to be promulgated by the end of July, 2011. Implementation of the 2008 NAAQS is stayed pending review.	Only 675 of the nation's 3,000 counties have ozone monitors: Between 515 and 650 of these counties exceeded the proposed standard based on the most recent monitoring data. Ozone is increasingly seen as a regional pollutant that affects rural as well as urban areas, so more counties may need monitors. On July 14, 2009, EPA proposed to require that states monitor ozone concentrations in rural as well as urban areas.	March 2008 primary (health-based) standards were set at a level less stringent than recommended by EPA's science advisers. The revision also did not act on proposed changes to the form of the secondary (welfare) standard that would have more accurately addressed impacts on crops and forests. The January 2010 proposal addresses both of these issues.
particulate matter ($PM_{2.5}$ and PM_{10}) (for additional information, see CRS Report RL34762, *The National Ambient Air Quality Standards (NAAQS) for Particulate Matter (PM): EPA's 2006 Revisions and Associated Issues*, by Robert Esworthy and James E. McCarthy)	October 17, 2006	The D.C. Circuit remanded the 2006 $PM_{2.5}$ standards to EPA in February 2009 (*American Farm Bureau Federation v. EPA*).	EPA expects to propose a $PM_{2.5}$ NAAQS by February 2011, with promulgation of final standards by October 2011. In an agency document released July 2, 2010, staff recommended substantially more stringent standards.	Environmental groups would like to see additional monitoring in areas with expected high concentrations (e.g., along highways, near ports, etc.).	October 2006 primary standards for $PM_{2.5}$ were set at levels less stringent than recommended by EPA's science advisers.

Pollutant	Last Revision	Court Action?	Next Steps	Monitoring Issues?	Comments
sulfur dioxide (SO_2)	On June 22,2010, EPA revised the NAAQS, focusing on shorter-term (1-hour) exposures. The prior standards (for 24-hour and annual concentrations), which were revoked as part of the revision, were set in 1971. The new short-term standard is substantially more stringent, replacing a 24-hour standard of 140 parts per billion (ppb) with a 1-hour maximum of 75 ppb.	The D.C. Circuit remanded the SO_2 standard to EPA in 1998, following an agency review that left the standard unchanged. The court found the Administrator had failed adequately to explain her conclusion that no public health threat existed from short term exposures to SO_2. (*American Lung Association v. EPA*)	EPA intends to designate nonattainment areas by June 2012.	The current SO_2 monitoring network is not primarily configured to monitor locations of maximum short-term concentrations. The network needs 41 new monitoring sites, according to EPA. In a change from the agency's December 2009 proposal, EPA will rely primarily on dispersion modeling to assess compliance with the standard.	Since 1971, EPA had conducted three reviews of the SO_2 standard without changing it.
carbon monoxide (CO)	Current primary standard was set in 1971. EPA revoked a secondary standard in 1985.	The U.S. District Court for the Northern District of California has ordered EPA to review the CO NAAQS by May 13, 2011. (*Communities for a Better Environment v. EPA)*	EPA must propose any revision to the CO NAAQS by January 28, 2011, with final action by August 12, 2011.	Uncertain.	Emissions of CO, largely from motor vehicles, have declined 56% since 1980, and few areas violate the existing CO NAAQS.
nitrogen dioxide (NO_2)	EPA completed a review and promulgated a new 1-hour standard February 9, 2010. The new standard is in addition to the previous annual average standard, which was set in 1971.	A suit filed in 2005 charged that EPA had failed to review the NO_2 standard in the last 5 years, as required by the Clean Air Act (*Center for Biological Diversity v. Johnson*). Under a 2007 consent decree, EPA proposed	EPA expects to identify nonattainment areas by January 2012. However, the agency believes most areas will be "unclassifiable," due to the lack of adequate monitoring. Once an expanded network of NO_2	Under EPA's new monitoring network, a monitor will be required near a major road in any urban area with a population of 350,000 or more. (The majority of NO_2 emissions come from motor vehicles.)	There are no nonattainment areas for the annual standard, and only Cook County, IL (Chicago) violates the new 1-hour standard using current monitoring data. NO_2 emissions have been more stringently controlled even

Pollutant	Last Revision	Court Action?	Next Steps	Monitoring Issues?	Comments
		revisions to the primary standard July 15, 2009, and promulgated the revisions in February 2010.	monitors is fully deployed and three years of air quality data have been collected, the agency will redesignate areas (in 2016 or 2017) based on air quality data from the new monitoring network.	Community-wide concentrations would also be monitored in urban areas with populations of 1,000,000 or more.	though there have not been recent violations of the NO_2 standard, because nitrogen oxides contribute to the formation of ozone, the standard for which has been reviewed and strengthened several times.
lead (for additional information, see archived CRS Report RL34479, *Revising the National Ambient Air Quality Standard for Lead*, by James E. McCarthy)	November 12, 2008	Both environmental groups (which challenged the adequacy of the monitoring requirements) and industry (which challenged the standard itself) have petitioned for review (*Missouri Coalition for the Environment v. EPA* and *Coalition of Battery Recyclers Association v. EPA*). EPA granted a petition for reconsideration of the monitoring requirements in July 2009.	Revised monitoring rules were proposed December 23, 2009. The lawsuit challenging the standard itself is proceeding. Sixteen nonattainment areas were designated in November 2010.	In July 2009, EPA agreed to review the monitoring portions of its November 2008 NAAQS. At least 24 of the 50 states, including some with major sources of lead emissions, had no lead monitors at all. Under the 2008 regulations, 101 metro areas (those with populations greater than 500,000) would be required to have monitors as would an estimated 135 areas that have sources of lead emissions greater than or equal to one ton per year. Proposed regulations would lower the source threshold to 0.5 tons.	EPA's November 2008 action reduced the standard by 90%, from 1.5 micrograms per cubic meter ($\mu g/m^3$) to 0.15 $\mu g/m^3$. Environmental groups, while generally pleased with the NAAQS itself, petitioned for reconsideration of the monitoring requirements, arguing that EPA should require more locations near emission sources to have monitors. Industry groups believe the standard itself is too stringent.

Adequacy of Monitoring

A feature common to many of the recent NAAQS reviews has been EPA's finding that the current monitoring network is inadequate to determine whether or not many areas of the country are in attainment of the standards. In several cases, such as for lead and sulfur dioxide, more extensive monitoring networks had been partly dismantled by the time the standards were reviewed, after years of indicating compliance with older, less stringent standards.[43] In other cases, such as PM and NO_2, the monitoring network was not designed to measure the kinds of exposure that current research identifies as a cause of concern (e.g., exposure to fine particles near highways). As a result, EPA and the states will need to devote resources in the next few years to expanding and refocusing the monitoring networks in order to identify areas where air quality does not meet new standards.

NAAQS Implementation

Although most of the NAAQS standards are likely to have been revised by the end of 2011—ultimately stimulating billions of dollars in expenditures on pollution control—the impact of the new standards will be gradual. A NAAQS does not directly limit emissions; rather, a primary NAAQS represents the Administrator's formal judgment regarding the level of ambient pollution below which public health will be protected with an adequate margin of safety; a secondary standard reflects her judgment as to the level of ambient pollution necessary to protect public welfare, including protection of the environment, water quality, building materials, etc.

Promulgation of a NAAQS sets in motion a lengthy process under which states and the EPA first identify nonattainment areas. Those areas then undertake a complicated implementation process. The first step, designation of nonattainment areas, generally takes at least two years after a standard is promulgated, and in many cases longer, if a new monitoring network needs to be established. After nonattainment areas are formally designated, the states generally have three years to submit State Implementation Plans (SIPs) that identify the specific regulations and emission control requirements that will bring the area into attainment.

Whether more stringent NAAQS will lead to stronger *federal* emission controls for the sources of pollution—in addition to the controls contemplated by individual states or metropolitan areas—is likely to be an important issue. Several of the criteria pollutants have impacts across state lines, far from the source of emissions; others (notably ozone) form in the atmosphere as the result of chemical reactions involving precursors that may have been emitted many miles upwind. Thus, measures taken by individual states and nonattainment areas to control emissions within their borders may be inadequate for the areas to attain a NAAQS. Federal standards for cars, trucks, power plants, and other major pollution sources could need strengthening for many areas to be able to attain the NAAQS.

Congress has given EPA the authority to strengthen such emission standards; but Congress may still act to review the implementation of that authority.

[43] Also, reductions in EPA grants to the states in some years may have resulted in the elimination of some monitoring stations. EPA has concluded in some cases that modeling using data from remaining monitors could fill in data gaps.

Other Issues

Over the past two years, EPA has proposed and promulgated numerous regulations implementing the Clean Air Act (and other pollution control statutes that it administers). Critics of the Administration, both within Congress and outside of it, have accused the agency of reaching beyond the authority given it by Congress and ignoring or underestimating the costs and economic impacts of these rules. House Republican leaders have promised vigorous oversight of the agency in the 112th Congress, and attempts to overturn specific regulations or limit the agency's authority are widely expected. Particular attention may be paid to the Clean Air Act, under which (as noted in "EPA's Greenhouse Gas Regulations" above) EPA has moved forward with the first federal controls on emissions of greenhouse gases. But attention has also been directed at regulations addressing criteria or hazardous air pollutants from a number of industries and at the revisions of the National Ambient Air Quality Standards discussed in the previous section of this report.

One of the regulations that has attracted the most attention is the Maximum Achievable Control Technology standards for boilers (the "Boiler MACT") proposed June 4, 2010. Boilers are used as power sources throughout industry and for power or heat by large commercial establishments and institutions. EPA estimates that the rule, as proposed, would provide $17 billion to $41 billion in benefits annually, including the avoidance of 1,900 to 4,800 premature deaths; but it would also impose annualized costs of $2.9 billion, according to the agency. As a result, there is widespread interest in the proposed rule's requirements and their potential effects. (For a detailed discussion, see CRS Report R41459, *EPA's Boiler MACT: Controlling Emissions of Hazardous Air Pollutants*, by James E. McCarthy.) Other Clean Air Act rules (for the Portland cement industry and for emissions from stationary engines, among others) have also attracted discussion.

Environmental groups disagree that the agency has overreached, and EPA itself maintains that its pace of regulation under the Clean Air Act is actually slower than the pace during the first years of the Clinton and George W. Bush Administrations. The agency states that critics' focus on the cost of controls obscures the benefits of new regulations, which, it estimates, far exceed the costs; and it maintains that pollution control is an important source of economic activity, exports, and American jobs.

For a discussion of EPA's regulatory actions, both under the Clean Air Act and under other statutes, see CRS Report R41561, *EPA Regulations: Too Much, Too Little, or On Track?*

Author Contact Information

James E. McCarthy
Specialist in Environmental Policy
jmccarthy@crs.loc.gov, 7-7225