

Next step for EPA's new air quality regs: Monitoring

Although EPA has finalized a plan to regulate fine particulates (PM-2.5), a great deal of uncertainty surrounds the new Clean Air Act standard announced July 16. Indeed, a paucity of data is the first challenge facing state regulators as they attempt to answer a basic question: How extensive is the PM-2.5 problem?

"We have an awful lot to learn," said George Murray, head of North Carolina's air quality monitoring program. Although states have long monitored for larger PM-10 particulates, only a handful—including California, Texas, Arizona, Utah, and Alaska—have ever done any PM-2.5 sampling. All told, only about 200 PM-2.5 monitors exist nationwide. Seventy are on remote federal land, and EPA estimates that as many as 1500 sampling locations will be needed to assess the public health risk from PM-2.5. By extrapolating PM-10 data, EPA has estimated that as many as 150 counties nationwide may have unhealthful levels of PM-2.5. EPA said the reduction in PM-2.5 levels could prevent up to 15,000 premature deaths annually.

Although most states will be starting from scratch, even agencies with existing PM-2.5 baseline data will have to modify and expand their monitoring networks to meet the requirements outlined in the new federal regulations. EPA will give the states a year to design a monitoring network and another three years to put the monitors in place.

The cost could be as high as \$100 million, and EPA is seeking an appropriation to help states pay for the monitoring hardware. Each sampler is expected to cost between \$6000 and \$20,000. Once the sampling network is in place, the first data are expected by 2002 and the remainder by 2004. States with PM-2.5 nonattainment areas would not begin to

As expected, EPA toughens air quality standards

EPA's revised plan to regulate fine particulates and tighten existing limits on ground-level ozone generally confirmed the agency's 1996 proposal with slight modifications. The new limits (*Federal Register* 1997, 62(138), 38762–38896) replace the existing primary standard for ozone with a new eight-hour, 0.08 parts-per-million (ppm) limit. The standard will be met when the three-year average of the fourth highest daily maximum concentration is below 0.08 ppm. EPA said 280 counties—up from 106 for the old limit—will not meet the new ozone standard. EPA's November 1996 proposal had used a three-year average of the third highest daily reading. The current standard limits ozone to a maximum of 0.12 ppm over one hour. EPA said total implementation costs for both standards will be \$8.5 billion.

The agency's new annual standard sets a maximum annual limit of 15 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) for fine particulates (PM-2.5) and a 24-hour average limit of 65 $\mu\text{g}/\text{m}^3$. Although most states will have to launch an extensive monitoring effort to assess the levels of PM-2.5 (see accompanying story), EPA estimates that about 150 counties nationwide will be unable to meet the new standard. The existing limits for PM-10 remain unchanged.

Opponents of the new standards took to the offensive within hours of the July 16 announcement by Vice-President Al Gore and EPA Administrator Carol Browner. A coalition led by the American Trucking Associations and the U.S. Chamber of Commerce announced plans to file suit to block implementation of the new standards. Meanwhile, other opponents were working with sympathetic members of Congress to overturn the regulations. —R.T.

develop a mitigation strategy until some time after 2004.

EPA has established an average daily maximum of 65 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) and an annual average limit of 15 $\mu\text{g}/\text{m}^3$ for PM-2.5. The annual average will be determined from three years of data. The agency said it established the daily and annual limits to detect acute and chronic effects of particulate exposure.

Neil Frank, an air monitoring expert in EPA's air quality branch, said states will be required to establish monitors first in populated areas "with the highest expected concentrations" of PM-2.5. This "core" monitoring program must be done on a daily or continuous basis. In addition, monitors must be placed in any community that is now considered a serious, extreme, or severe nonattainment area for ozone.

States also will be asked to set up monitors in remote areas to

identify background levels and assess the impact of regional air transport of fine particulates. Given that fine particles and ground-level ozone have many similarities—both pollutants can remain in the air for days—EPA suspects that regional transport could be an issue for PM-2.5 just as it has for ozone. Scientists say the PM-2.5 monitoring network will help them better understand the relationship between ozone and fine particulates.

The EPA monitoring requirements also place greater emphasis on quality control to reduce the chance that erroneous measurements "would potentially cause unjustified health risk" or unnecessary control requirements if "true concentrations are overestimated." In part, EPA will impose stricter controls by requiring "audit" measurements at least six times a year using monitors that have been certified for accuracy.

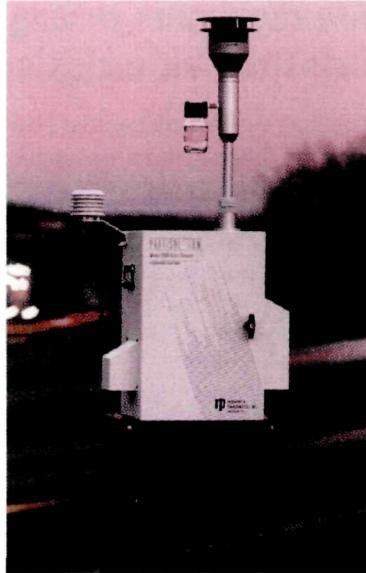
According to EPA, fine particulates generally are emitted during activities such as industrial and residential combustion (commonly woodstoves and fireplaces), although the precise sources vary from region to region. Fine particulates also are formed in the atmosphere from gases such as sulfur dioxide, nitrogen oxides, and volatile organic compounds. In urban Washington, D.C., for example, EPA data show that petroleum combustion is the major source of PM-2.5, whereas in populated regions of Alaska, wood burning may be the most significant source, according to Gerry Guay of Alaska's Division of Air Quality. In addition to populated areas in North Carolina, officials plan to sample in counties with significant mining activity, "although at this point we don't know if mining dust is PM-10 or PM-2.5. I guess we are going to find out," said Murray.

As EPA finalizes monitoring and analysis protocols this month for its new PM-2.5 requirements,

the handful of companies producing the monitoring equipment are bracing for an onslaught. Rupprecht & Patashnick (R&P) Co. of Albany, N.Y., is one of the few companies producing a PM-2.5 monitor that is likely to receive EPA certification by late September. In addition to the standard single-filter monitor already on the market, R&P makes a sequential monitor, a device that is sure to be in high demand because it is less labor intensive. With sequential monitors, filters automatically change every 24 hours, eliminating the need for daily maintenance.

"As soon as EPA tells the states how the money will be distributed, we are expecting a lot of excitement," said Michael Meyer, an R&P research scientist.

By contrast, little scientific excitement has been generated by the tougher ozone standard. "While the monitoring network for PM-2.5 is virtually nonexistent, the monitoring network for ozone is already fairly well in



A fine-particulate monitor from Rupprecht & Patashnick Co. of Albany, N.Y., is one of several types that states will be using to meet new federal air quality standards. (Courtesy Rupprecht & Patashnick)

place," said William Becker, director of the State and Territorial Air Pollution Program Administrators.

—RAE TYSOON

States fail to set Great Lakes water quality implementation plans

Citing a need for greater health protection in the Great Lakes basin, an environmental group sued EPA to urge the eight states bordering the lakes to finalize their plans to implement the Great Lakes Initiative (GLI).

Environmentalists considered the GLI a "golden opportunity" for the states to protect water quality by controlling diffuse pollution sources from the air and land, said Tim Eder, water quality program manager with the National Wildlife Federation (NWF). But the states did not take up the challenge, he said. NWF filed the suit on July 1 in U.S. District Court in Washington, D.C.

All of the states participating in the GLI missed the implementation deadline of March 23, 1997. By July, only Wisconsin, Michigan, and Indiana had approved their plans, although EPA hadn't given them the green light. The remaining states—Illinois, Minnesota, New York, Ohio, and Pennsylvania—plan to submit their GLI packages to EPA by December.

The GLI sets water quality criteria based on ecosystem health

and promotes consistency in water quality standards across the Great Lakes basin. Approved by Congress in 1990, it was initially hailed as a cutting-edge experiment in an ecosystem-based approach to environmental protection. Once implemented, the plans will for the first time provide consistent standards among states for shared water bodies while setting water quality criteria to protect aquatic life, wildlife, and human health. Among other pollutants, the initiative sets limits for 22 bioaccumulative chemicals of concern, including polychlorinated biphenyls, mercury, and dioxin.

NWF attorney Cameron Davis noted that the deadline for promulgation of the new rules was missed, in part, because "some states spent more time fighting the GLI rather than moving ahead to protect citizens." Innovative approaches were blocked in favor of traditional pollution control approaches whereby air, water, and land problems are handled separately. Lack of political leadership on the state level also kept

states from going beyond the minimum required by the federal guidance, Eder said.

"The environmentalists make more out of the GLI than it was intended to be," countered Jim Grant, environmental manager with the Michigan Department of Environmental Quality. Grant added that the states were hampered by the two-year schedule for moving their plans through the state approval process. Because of the size, complexity, and controversial nature of the GLI, "there was no way we were going to put out a rule package in a short time," Grant said.

Despite the delays, Eder emphasized that the GLI provides an essential foundation for pollution control integration by setting criteria for the water itself, regardless of the source. States can update their plans later to include more creative control strategies.

EPA's Jim Hanlon noted that states might now accelerate their process because "the filing sends a message that there isn't an unlimited amount of time." —JANET PELLEY