



Revising the Ozone Standard

by Alan J. Krupnick and J. W. Anderson

The Environmental Protection Agency may soon tighten the standard for ozone in the air we breathe. Can lower levels actually be achieved? What might compliance mean for everyday living?

As the federal government struggles to revise its standard for ground-level ozone (the “bad” ozone, as opposed to stratospheric ozone that protects people from harmful radiation from the sun), it is on a track that will lead to more frustration, more litigation, and much higher costs. Part of the trouble lies with a law badly designed for the job ahead. Part of it lies with a public that wants complete protection but is reluctant to acknowledge that its habits, particularly on the highway, contribute to air pollution.

The Environmental Protection Agency must soon decide whether to tighten the standard. Current law requires it to be set with a margin of safety below the threshold at which people begin to suffer adverse health effects. The evidence clearly shows that, at the present standard, some people experience respiratory symptoms when exercising outdoors; there is less clarity about more severe and irreversible effects. Moreover, the evidence also indicates that there is no identifiable threshold below which some people may not suffer some symptoms.

Barriers to Ozone Reduction

Actually meeting a tighter ozone standard may well be impossible for some—and perhaps many—cities if a recent American Petroleum Institute study of ozone reduction costs and associated ozone improvements in the Lake Michigan area is representative. Ozone comes from many sources, and the wind can carry it from one city to another, or from one state to another. Beyond such physical limitations lies a political reality that clean air policy has so far largely avoided. Most of the gains to date have been achieved by imposing very

effective—but costly—regulations on big companies—utilities, oil refiners, auto manufacturers, steel producers, and the rest. Achieving further large reductions in emissions there would be both difficult and even more expensive. More promising targets for reductions now involve people’s travel, their recreation, and their lawns. The City of Baltimore has calculated that motorboats and lawnmowers alone currently contribute more ozone to its air than all of its industry put together—a startling example of the distance that industrial controls have gone. Automobiles produce a rising proportion of ozone. But public support for restrictions on what people see as their personal activities has never been great, and environmental policymakers have never done much to educate people about their individual responsibilities.

While ozone is perhaps a lesser threat to public health than particulate concentrations, both of which are controlled under the Clean Air Act, it has acquired vast symbolic importance. Over the years, most of the large metropolitan areas have continued to fall short of the federal ozone standard. An increasingly exasperated Congress, distrusting state and federal administrators, has enacted a hugely complex and detailed regulatory system to enforce it. This mechanism takes no account of a question that ought to be at the center of environmental policy: whether the next dollar spent on this purpose will produce greater benefits than if it were used elsewhere in other ways. To the contrary, the Clean Air Act in its present form seems designed to bypass entirely that kind of question.

The complexity of ozone policy is further increased by its chemistry and the fact that few pollutants, least

of all this one, can be managed in isolation from others. The oxides of nitrogen, one of the precursors of ozone, are themselves major pollutants controlled under the Clean Air Act. Worse, recent research indicates that the precursors of ozone also may give rise to fine particles that, when inhaled, lodge in the lungs. Great controversy surrounds the health effects of ozone and whether, for most people, it threatens more than temporary effects. But there is little doubt at all that fine particles are a serious menace to human health, capable of causing illness and death.

Policy Options

If the ozone standard is now tightened, the country—meaning Congress, state governments, and the EPA—must decide how to achieve it. Historically, the emphasis has been on command-and-control regulation of emissions. In the face of huge costs from this approach, attention is turning increasingly to “cap and trade” programs among industrial sources (like that for SO₂ emissions from utilities implemented under Title IV of the Clean Air Act) and various incentive measures for reducing mobile source emissions. These include pollution and congestion fee programs under consideration by the REACH Task Force (Reducing Emissions and Congestion on Highways) and programs targeting inspection and maintenance efforts to high emitters. Two subcommittees of the Clean Air Act Advisory Committee—the Subcommittee on Ozone, Particulate Matter, and Regional Haze Implementation Programs; and the Mobile Sources Technical Advisory Subcommittee—are looking into innovative approaches for meeting the new standards cost-effectively. Their effort is timely because, with the promulgation of new standards, the highly directive and inflexible requirements of the 1990 Clean Air Act may no longer apply.

Matters of Measurement

Attainment of the ozone standard is related to the way ozone levels are measured. Since ozone is created from other gases by bright sunshine and high temperatures, one concern is to find a method that relates it to actual health protection and welfare, rather than merely reflecting the vagaries of the weather. The present standard is 120 parts per billion of ozone, measured over one hour. Every metropolitan area has a number of monitors scattered over the city and its suburbs. An

exceedance of the standard at any monitor counts as an exceedance for the whole metropolitan area. If that area scores more than three exceedances over three years, it is out of attainment and has to come up with plans to reduce its ozone. Seventy-one metropolitan areas, including nearly all of the most heavily populated, are currently out of attainment.

The EPA seems to be moving toward replacing the one-hour standard with an eight-hour average. Clinical studies seem to show health effects at ozone levels below the present standard if exposure is day-long rather than only during a brief spike in the afternoon. The next question is how many exceedances to allow. One issue is whether to create a new “too close to call” category for areas that registered between, say, two and five exceedances a year. Cities in that category would not fall under the expensive requirements of nonattainment status, but state authorities and EPA would watch them closely for movement toward or away from attainment.

Another possibility is to vary the number of allowed exceedances in proportion to the difficulty of achieving the standard. In some cities, the standard

Ozone Nonattainment Areas in the Extreme and Severe Ranges

Extreme

Los Angeles South Coast Air Basin, CA

Severe

Baltimore, MD

Chicago-Gary-Lake County, IL-IN

Houston-Galveston, TX

Milwaukee-Racine, WI

New York-N. New Jersey-Long Island, NY-NJ-CT

Philadelphia-Wilmington-Trenton, PA-DE-MD-NJ

Sacramento Metro, CA

Southeast Desert Modified AOMA, CA

Ventura Co., CA

The Clean Air Act Amendments of 1990 define a “nonattainment area” as a locality where air pollution levels persistently exceed National Air Ambient Quality Standards. Designating an area as “nonattainment” is a formal rulemaking process. EPA normally takes this action only after an area has exceeded the standard four times in three years. The legal status of a region may differ from its actual status while EPA reviews the region's data and implementation plans. Effective date of this modified list: July 1996. For the latest complete list, see <http://www.epa.gov/oar/oaqps/greenbk/onc.html>

cannot even be approached without a major impact on the economy. In other places, the standard can be met relatively easily. Under this rule some cities' inhabitants would be exposed to slightly more ozone than others', just as in some cities—like mile-high Denver, for example—the inhabitants are exposed to slightly more ultraviolet radiation than in others.

Ozone Nonattainment Areas in the Serious and Moderate Ranges

Serious

Atlanta, GA
 Baton Rouge, LA
 Boston-Lawrence-Worcester, (E. MA), MA-NH
 El Paso, TX
 Greater Connecticut
 Portsmouth-Dover-Rochester, NH
 Providence (all RI), RI
 San Diego, CA
 San Joaquin Valley, CA
 Springfield (W. MA), MA
 Washington, DC-MD-VA

Moderate

Atlantic City, NJ
 Beaumont-Port Arthur, TX
 Cincinnati-Hamilton, OH-KY
 Dallas-Fort Worth, TX
 Kewaunee Co., WI
 Knox and Lincoln Cos., ME
 Lewiston-Auburn, ME
 Louisville, KY-IN
 Manitowoc Co., WI
 Monterey Bay, CA
 Muskegon, MI
 Nashville, TN
 Phoenix, AZ
 Pittsburgh-Beaver Valley, PA
 Portland, ME
 Poughkeepsie, NY
 Reading, PA
 Richmond, VA
 Salt Lake City, UT
 Santa Barbara-Santa Maria-Lompoc, CA
 Sheboygan, WI
 St. Louis, MO-IL

Local Conditions and Economic Competition

There are two crucial points here. The first is that the economic costs of regulation are an inescapable reality, and it is bad policy to pretend, as the present Clean Air Act does, that these costs can be ignored. What's more, additional health risks will be tiny, as even a small variation in exceedances can mean the difference between attainment and nonattainment in many cities. The second is that local conditions vary greatly in this large country, and the balance that is, on average, right for the country as a whole may be very wrong for cities with unusual climate conditions. A single national rule leaves some cities incapable of meeting the standard despite enormous regulatory efforts, with costs far beyond any corresponding benefits. Other cities would be able to go beyond the standard to provide still cleaner air with little additional cost, and the system ought to encourage them to do so.

For many cities, meeting any ozone standard will require more than reducing their own emissions. Ozone blows from one jurisdiction to another. An organization called OTAG—the Ozone Transport Assessment Group—has undertaken a huge project to model the chemistry and meteorology of ozone throughout all of the United States east of Colorado and come up with policies—such as a cap and trade program—to allocate emission reduction activities cost-effectively. Formally, OTAG is a partnership of the EPA, the Environmental Council of the States, the governments of thirty-seven states and the District of Columbia, and as many industries and environmental organizations as want to join its work. It is scheduled to present its findings and recommendations early in 1997.

OTAG represents, in political terms, a highly interesting test of the states' ability to resolve disputes among themselves in an area rich in implications for the economic competition among them. Both Congress and the EPA are understandably anxious to avoid becoming the referees in these conflicts. In a period with a strong current running in favor of federal decentralization and returning authority to the states, the OTAG experiment may have an importance that reaches well beyond ozone policy. But it is clear that ozone enforcement will become much more difficult nationwide if OTAG does not succeed. In any event the outcome of OTAG's work will not be known

COURTESY SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT



Traffic in Los Angeles. A tighter federal ozone standard may be impossible to meet any time soon in an area that exceeds national air quality standards about 100 days a year. LA stands alone at the top of the nonattainment list with an "extreme" rating. (Rated "serious," Washington, DC exceeds the standards fewer than 10 days a year.)

until well after EPA's deadline, in late November, for its decision on the new ozone standard.

Voluntary Participation

Because ozone is entirely contingent on the weather, unlike most pollutants it offers one means of compliance that national policy has largely ignored and even discouraged. Public campaigns to limit ozone-producing activities on the hottest afternoons combat pollution directly with little cost and economic disruption. A number of cities have, at least on paper, programs like the Washington-Baltimore area's Endzone that signals alerts on the days forecast to have ozone-producing weather. On those days, the public is asked to hold down the use of cars, fuel them after dusk, defer using gasoline-powered garden equipment, postpone painting with oil-based paints, and not use lighter fluid to start the charcoal grill. The incentive for these voluntary programs is strong, particularly in areas that are close to violating the ozone standard.

But the present federal rules give no encouragement to voluntary programs, no credit for mandatory versions of them to reduce emissions, and no encour-

agement for using them to meet standards. That's a mistake. Not only are these programs inexpensive, but they provide a valuable opportunity to draw the public into the campaign against air pollution. It's a chance to educate people in the realities of ozone chemistry, and remind them that their own behavior is a major variable in the equation. Voluntary programs, in particular, are promising because they run into none of the political backlash that, for example, has met the increased requirements for automobile inspection.

The Clean Air Act has brought great benefits to this country over many years. It has drastically reduced the presence of many harmful pollutants. But ozone has proved more stubborn, with progress modest and uneven. It's time to reconsider fundamentally how standards are set and how they are implemented. 🏠

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