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Economic Impact Analyses

SUSAN E. DUDLEY*

I would like to talk today about the National Ambient Air Quality Standards (NAAQS) that EPA has set for ozone. I prepared comments on EPA's November 1996 proposed ozone standard for the Regulatory Analysis Program at George Mason University.[1] The program is dedicated to the advancement of knowledge of regulations and their impacts on society. As part of its mission, it produces careful and independent analyses of agency rulemaking proposals from the perspective of public interest. Our objective is to provide analyses that reflect the concerns of the average citizen.

Before I discuss the ozone standard itself, I would like to add to what the others have said today about the role of economic analysis in setting NAAQS under the Clean Air Act (CAA). EPA's mandate, as you have heard, is to protect public health and welfare with an adequate margin of safety.[2] Many people would argue that this means that one may not consider costs or other economic factors in setting NAAQS.

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Ms. Dudley has worked on environmental and regulatory matters at the Environmental Protection Agency (EPA) and the Office of Management and Budget (OMB).

Ms. Dudley graduated from the Sloan School of Management at M.I.T. She has written extensively on regulatory costs and benefits especially relating to environmental issues.

1. *See generally* Dudley and Gramm, *Risk Analysis*, Vol. 17, No 4, 1997. The program is now called the Regulatory Studies Program of the Mercatus Center at George Mason University. *See also* Comments on the proposed ozone NAAQS of the Regulatory Analysis Program, Center for the Study of Public Choice, George Mason University, March 12, 1997.

2. *See* CAA § 109(b)(1), 42 U.S.C. 7401(b)(1) (1994).

Yet, EPA's science advisors concluded that there is no basis for determining a threshold level of ozone that is protective of public health and welfare. The Clean Air Scientific Advisory Committee (CASAC) emphasized the uncertainties in the risk and exposure information on which the proposal is based and highlighted the small differences in health protection between the current standard and the proposed alternatives. CASAC also noted that the ranges in health effects for the different proposals overlap.[3] While EPA argues that its decision is purely a public health decision, its scientific experts did not find the proposed standard to be significantly more protective of public health than the existing standard.

Once you recognize that science alone cannot determine definitively what the standard should be, then you are faced with policy decisions, and policy decisions involve tradeoffs. We do not have to call those tradeoffs "economics" in order to recognize that a standard that makes public health or welfare worse off is not protective of public health and welfare. That is really what we try to do with cost/benefit analysis. The cost/benefit analysis tries to look at the good and bad effects of rules to ensure that policy decisions make people better off, not worse off. The "costs" do not have to be in dollars. It is convenient to put costs and benefits in dollar terms to facilitate comparisons but, costs can take many forms, including health effects.

I want to talk briefly about the cost of the ozone standard.[4] As you can see from the table below, EPA estimates that the cost for only parts of the nation to meet the standard will be over $1 billion per year. If the whole nation were to comply, EPA estimates costs exceeding $9 billion per year.

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3. Letter from CASAC to Carol Browner, EPA Administrator, re closure on the Primary Standard Position of the Staff Paper for Ozone (on file with speaker). CASAC is a standing committee of EPA's Science Advisory Board.

4. *See* National Ambient Air Quality Standards for Ozone, 62 Fed. Reg. 38,856 (1997) (to be codified at 40 C.F.R. pt. 50); National Ambient Air Quality Standards for Particulate Matter, 62 Fed. Reg. 38,652 (1997) (to be codified at 40 C.F.R. pt. 50); Revised Requirements for Designation of Reference and Equivalent Methods for PM $^{2.5}$ and Ambient Air Quality Surveillance for Particulate Matter, 62 Fed. Reg. 38,764 (1997) (to be codified at 40 C.F.R. pts. 53 and 58).

(Billions of 1990 $)

COMPLIANCE SCENARIO	ANNUAL BENEFITS	ANNUAL COSTS	NET BENEFITS (COSTS)
Partial Compliance Previous Standard	$0.1 - $0.8	$1.2 - $2.3	$(0.4) - $(1.5)
Partial Attainment	$0.4 - $2.1	$1.1	$1.0 - $(0.7)
Full Attainment	$1.5 - $1.8	$9.6	$(1.1) - $(8.1)

Now, the expected cost is large, but cost alone does not tell the whole story. You can see from the table that costs are expected to exceed the benefits under most of the scenarios EPA considered. Also note that EPA believes that by the year 2010, more than ten years in the future, a large part of the country will still not be able to meet the new standard.[5] EPA estimates that between thirty-nine and fifty-seven million people will live in areas that cannot attain the old standard,[6] and an additional fourteen to thirty-two million people will be in non-attainment with the new standard. According to Ron Evans, EPA used a cost of ten thousand per ton to estimate full attainment costs. President Clinton agreed that this is the maximum we should be spending on these standards, but that kind of limit on control costs begs the question of what it means to be non-attainment. There is still going to be a huge population in non-attainment areas, and that in itself imposes costs because non-attainment areas face restrictions on economic growth.

It is difficult to get a good estimate of what the true social costs of nonattainment are, but I did a very rough estimate based on manufacturing establishments moving overseas. My analysis suggests that the decline in Gross Domestic Product for achieving even partial compliance is above eighty billion dollars each year. So, even for the partial compliance scenario, there is a hidden cost associated with being out of

5. *See* National Ambient Air Quality Standards for Ozone, 62 Fed. Reg. at 38,856.

6. In 1979, EPA relaxed the standard from 0.08 parts per million (ppm) to 0.12 ppm. *See* 40 C.F.R. § 50.9 (1984).

compliance. Finally, my evaluation concluded that because EPA (1) buried some costs in its "baseline"; (2) used artificially low estimates for incremental compliance; and (3) assigned no costs for areas that could get within sixty-four percent of the standard, its cost estimates are severely understated. My calculations suggest that the costs of full compliance will be closer to eighty billion dollars each year (almost ten times greater than EPA's estimate).

What are we buying for eighty billion dollars per year? I think it is safe to say that what we are buying is small changes in health for a small population of sensitive individuals. Even scientists who are strong proponents of the rule agree that the vast majority of the population "will observe no effect on their health or well-being as a result of this rule."[7] It may sound callous to say, "What? Eighty billion dollars for a few cases of asthma?" Well, let us look a little further at specifically what those health effects are. EPA focused and defended its rule based largely on the benefit it provides to children and other individuals with asthma and respiratory problems.[8] I agree that asthma is a distressing health problem. It is most prevalent among urban poor, one third of its victims are children, and it has been increasing dramatically over the last decade.

Yet, air quality has been improving over the last decade; ozone levels in particular declined six percent between 1986 and 1995.[9] Recently, scientists at the National Institute of Allergy and Infectious Diseases funded a study to solve the paradox of why reported cases of asthma are growing when the factors believed to be causing it, such as air pollution, are declining. The study revealed that, "the leading cause of asthma by far was . . . . proteins in the droppings and carcasses of the German cockroach." The American Thoracic

7. See Dr. Lippman's response to questions by Senator Allard on February 5, 1997. In its comments on Dec. 13, 1996, the President's Council of Economic Advisors concluded: "reductions in adverse health effects, even for 'sensitive' populations, are small."

8. *See* National Ambient Air Quality Standards for Ozone, 62 Fed. Reg. at 38,856.

9. *See* EPA, Off. of Air Quality, Nat'l Air Quality and Emission Trends Rpt. (1995).

Society concluded "poverty may be the number one risk factor for asthma."

Thus, even focusing narrowly on asthma, the rule is not likely to produce significant health benefits. If we step back from asthma, and evaluate public health more broadly, the proposal is not an effective policy. Due to ozone's screening effect on harmful ultraviolet-B (UV-B) radiation, the revised ozone standard will increase malignant and non-melanoma skin cancers and cataracts, as well as other UV-B related health risks. However, rather than presenting these important tradeoffs, EPA explicitly ignored information on the offsetting health effects caused by the effect of ozone on ultraviolet radiation.

Ron Evans discussed these UV-B effects and said that EPA recognized this "dis-benefit" but found the effect too difficult to quantify. But, in fact, quantification of these effects is well documented and well established. It is the basis for the stratospheric ozone rules.[10] Many have argued that these health effects are a lot more certain than the health benefits that EPA predicted.

Based on studies EPA conducted to support its stratospheric ozone rules, it appears that these UV-B effects could dwarf the positive benefits EPA attributes to the ozone NAAQS standard. A Department of Energy analysis indicates that the ten parts per billion (ppb) change in the ozone standard could result in 25-50 new melanoma-caused fatalities, 130 to 260 incidences of cutaneous melanoma, 2,000 to 11,000 new cases of non-melanoma skin cancer, and 13,000 to 28,000 new incidences of cataracts *each year*.[11] That suggests the rule will induce 25 to 50 more fatalities each year (since EPA's best estimate of the health benefits of the proposal do not include any reduced fatalities). To compare the mortality effects, we used EPA's approach to convert health effects to dollars. We estimate that the negative health impacts from this proposal will exceed EPA's best

10. *See* CAA § 601, 42 U.S.C. § 7671.

11. Presented at a March 21, 1995 meeting of CASAC.

estimate of the positive health effects by over $300 million per year.

In conclusion, EPA has a responsibility for setting ozone NAAQS that protect public health and welfare, yet it has interpreted its charge so narrowly that it has ignored important effects of its standard. There are far more effective ways to achieve the goal of protecting public health and welfare. First, EPA's CASAC recommended that targeted approaches are better and more effective ways of reducing people's exposure. Second, if our concern is asthma, there are much more effective ways to spend money to reduce childhood asthma and other respiratory problems.

The current ozone standard will not improve public health. At best, the benefits will be small; the offsetting health dis-benefits will be much greater and will result in net harm to the public health. Finally, this rule will impose costs on every aspect of our lives. Considering that poverty may be a more significant factor for asthma than air quality, the rule may be harming the very diseases that it is purportedly designed to help.