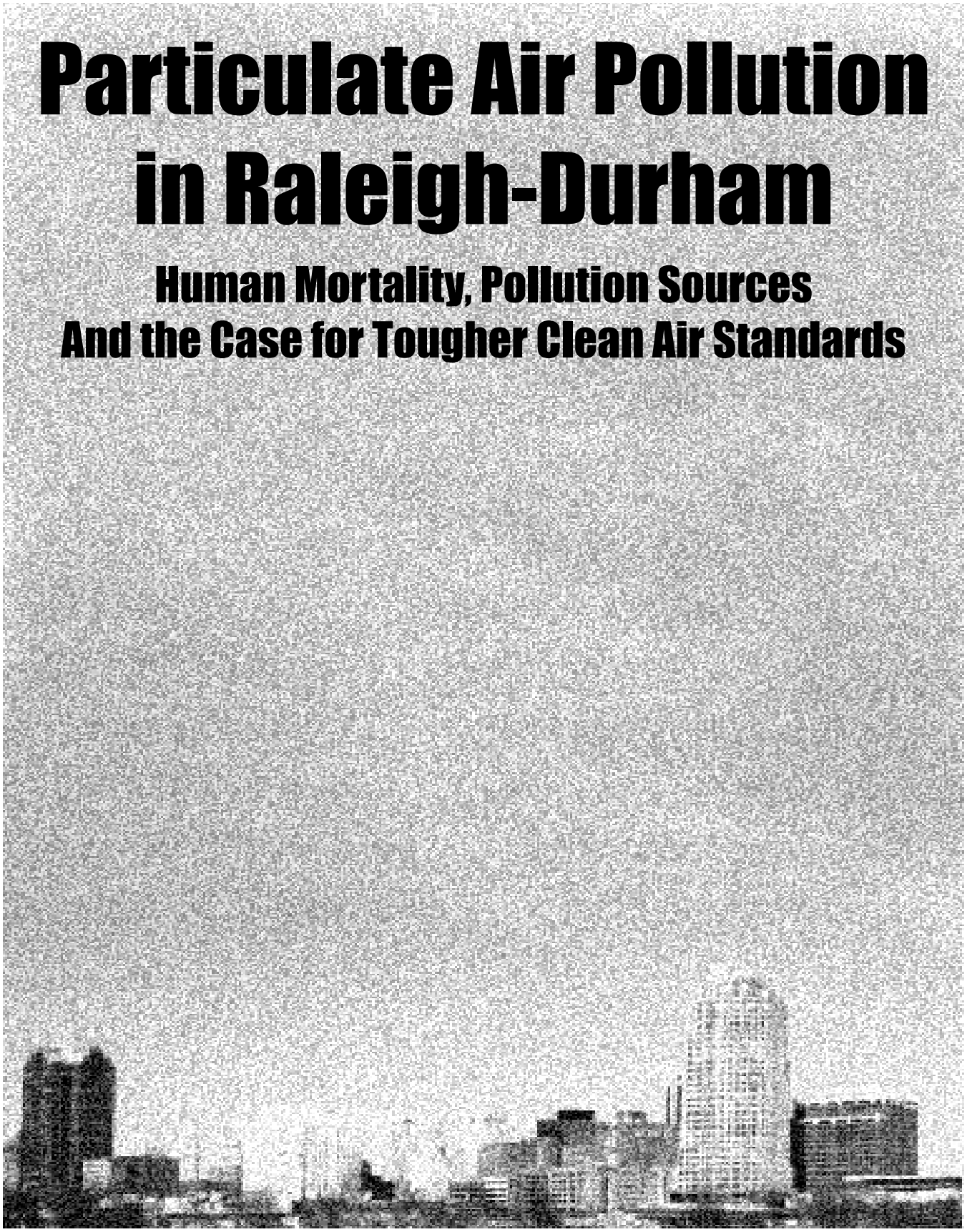
Particulate Air Pollution in Raleigh-Durham

Human Mortality, Pollution Sources And the Case for Tougher Clean Air Standards



ENVIRONMENTAL WORKING GROUP™

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Executive Summary

On Nov. 27, 1996, the Clinton Administration proposed new regulations to clean up an especially deadly form of air pollution—tiny particles that penetrate deep into human lungs, claiming the lives of more than 64,000 Americans every year (EPA 1993, NRDC 1996). The rule also proposes new standards for ground-level ozone, an issue which is not addressed in this study.

The Clinton Administration proposal represents an important step in protecting public health from particulate air pollution. According to EPA (EPA 1996d), "If finalized as proposed, the new standard would:

- Cut premature deaths linked with particulate air pollution by 50%, or approximately 20,000 deaths; with acid rain controls currently underway, an additional 20,000 deaths will be avoided;
- Reduce aggravated asthma episodes by more than a quarter million cases each year;
- Reduce incidence of acute childhood respiratory problems by more than a quarter million occurrences each year, including aggravated coughing and painful breathing;
- Reduce chronic bronchitis by an estimated 60,000 cases each year;
- Reduce hospital admissions due to respiratory problems by 9,000 each year, as well as reduce emergency room visits and overall childhood illnesses in general;
- Cut haze and visibility problems by as much as 77% in some areas, such as national parks."

Table 1. EPA's proposal will reduce deaths caused by particulate pollution in North Carolina, but the regulations need to be strengthened to save even more lives.

Metropolitan Statistical Area	Estimated Number of Deaths Attributed to Particulate Pollution Per Year	Estimated Number of Premature Deaths Avoided by New EPA Standard Per Year	Estimated Number of Premature Deaths Under New EPA Standard Per Year
Asheville	43	0	43
Charlotte/Gastonia	218	41	177
Fayetteville	44	2	42
Greensboro/Winston-Salem/High Point	263	28	235
Hickory	32	0	32
Jacksonville	9	0	9
Norfolk/Va. Beach/Portsmouth	186	0	186
Raleigh/Durham	104	0	104
Salisbury/Concord	47	0	47
Wilmington	31	0	31
Total	977	71	906

Source: Environmental Working Group, based on PM10 data from 1990-1994 and mortality data provided by Natural Resources Defense Council, 1996. Methods discussed in Chapter One.

Table 2. Electric utilities create more than half of all particulate pollution generated in North Carolina.

Facility Name	City	Annual PM10 Emissions (Tons/Year)	Description
Duke Power Marshall Plant	Terrell	3,024	Electric services
CP&L - Roxboro Units 1 2 3 4	Roxboro	2,959	Electric services
International Paper-Riegelwood	Riegelwood	2,370	Pulp mills
Duke Power Co - Belews Creek Steam Station	Walnut Cove	2,010	Electric services
Duke Power Allen Plant	Belmont	1,657	Electric services
PCS Phosphate Company, Inc.	Aurora	1,448	Phosphatic fertilizers
Weyerhaeuser Company	Plymouth	1,050	Paper mills
Weyerhaeuser Company	Vanceboro	742	Pulp mills
E.I. Dupont Company	Leland	692	Organic fibers, noncellulosic
Hoechst Celanese	Wilmington	643	Industrial organic chemicals, nec

Source: Environmental Working Group. Compiled from the North Carolina Air Quality Emissions Inventory database.

Before the rule was even announced virtually every major oil company, power utility and steel manufacturer in the nation had banded together as the "Air Quality Standards Coalition," with the avowed goal of killing the new clean air rule.

The administration proposal is supported "by an overwhelming majority of independent scientists who reviewed the standard for EPA, based on 86 new health studies that indicate the need for a stronger standard," according to the agency. The polluter coalition has dismissed this EPA review and gone on the attack.

Congressional opponents of the rule may seek to block it, using a new law designed to protect small business, or through a legislative rider. Air quality will also be a major issue in this year's reauthorization of the multi-billion dollar transportation law (the Intermodal Surface Transportation Efficiency Act, ISTEA).

The Need for Public Comment

Release of the proposed rule marked the beginning of a public comment period where "EPA will seek broad public comment on its recommended approach and on the need for any changes to the particulate matter [and ozone] proposal." (EPA 1996d).

The premise of this study is that the public has a right to know, and an obligation to comment on, the public health strengths and shortcomings of the particulate pollution proposal. Questions about how much particulate pollution will be reduced, how much illness will be prevented, and how many lives will be saved, ultimately are moral and political questions that demand broad public awareness and input.

This report supports the Clinton administration's goal of reducing health risks from particulate pollution. Our analysis, however, makes clear that several aspects of the proposal, notably its monitoring provisions, should be strengthened, and we support lower limits on particulate pollution in order to save even more lives.

Now it's time for the people of North Carolina to make their views known to Washington. Will the polluters win? Or will Americans get cleaner air, live longer lives, and cut the nation's annual medical bill by between $50 billion and $100 billion per year?

Table 3. Monitoring hot spots where particulate pollution will likely exceed EPA's proposed health standards.

County	Estimated Three Year Annual PM2.5 Average (Converted from PM10 Monitoring Data)	Street Address
Mitchell	17.20	City Hall, Summit Street
Buncombe	16.98	US70 West, Swannanoa NC 28778
Buncombe	16.61	London Road, Asheville NC 28803
Mecklenberg	16.55	400 Westinghouse Blvd.
Mecklenberg	16.35	Fire Station #11, 620 Moretz Street
Forsyth	16.08	1401 Corporation Parkway
Mecklenberg	15.67	Fire Station #10 2146 Remount Road

Source: Environmental Working Group, compiled from North Carolina Air Quality Emissions Inventory, 1995.

Lives on the Line

The link between air pollution and human disease is extraordinarily well demonstrated in the peer reviewed scientific literature. A series of studies from across the country and around the world have shown repeatedly that polluted air increases premature mortality rates (Schwartz 1993, Pope et al. 1995, Schwartz 1994, Dockery et al. 1993, Schwartz and Dockery 1992, Pope 1991, EPA 1993, EPA 1996c) and it is associated with hundreds of thousands of cases of respiratory diseases and tens of thousands of premature deaths each year (EPA 1996c, NRDC 1996).

Analysis of data from air pollution monitoring stations in North Carolina found that under current rules, nearly 1,000 residents of the state die prematurely every year because of particulate matter in the air. The Clinton Administration's proposal, effectively implemented and enforced, would prolong the lives of an estimated 70 people, but would have to be strengthened significantly to prevent the premature death of an estimated 900 people in North Carolina each year (Table 1). Problems with EPA's proposed monitoring and enforcement provisions may further compromise the potential health benefits of the new rule.

Top Polluters

Nationwide, the traditionally inventoried sources of particulate emissions are industrial processes (46.5%), electric utilities (10%), transportation (27.4%), and other fuel combustion (14%) (EPA 1996e). In North Carolina electric utilities account for more than half of all particulate pollution generated in the state (Table 2). The figures do not include emissions of particulate precursors such as sulfur and nitrogen oxides, which in themselves are a major indirect contributor to ambient $PM_{2.5}$ levels. The top particulate polluters in the state of North Carolina are Duke Power's Marshall plant, Carolina Power & Light—Roxboro, and International Paper in Riegelwood.

Sacrifice Zones

The Clinton Administration proposal recommends a new monitoring initiative called spatial averaging. This new scheme could create "sacrifice zones" where polluted air

in yet undefined spatial averaging zones could be "cleaned up" simply by averaging pollution levels from new monitors placed in adjacent communities with cleaner air. If not modified during the public comment period, spatial averaging will very likely undermine the otherwise significant health protections that the new rule is designed to achieve.

Our analysis of state, local and national air monitoring data identified 40 counties with just one particulate (PM) monitor, where the past three years of pollution would exceed the proposed standard for $PM_{2.5}$ of 15 $\mu g/m^3$ by 2.5 $\mu g/m^3$ or less. Under the Clinton Administration proposal, these counties could easily comply with the new $PM_{2.5}$ standard, simply by adding an additional monitor at an cleaner location in the county. None of these counties would have violated the proposed 24-hour $PM_{2.5}$ standard of 50$\mu g/m^3$.

Hot Spots

As drafted, EPA's proposal has no plan to target pollution reduction efforts toward areas with high particulate pollution levels, or "hot spots". Indeed, the administration plan provides strong incentives for statistical manipulation of monitoring results as opposed to actual reductions of particulate levels in the air.

As a result, it is quite possible that people living in heavily polluted areas may continue to suffer the serious ill effects of particulate pollution, as polluters push for phony pollution reductions based on more monitors placed in cleaner locations.

There are 50 particulate monitors in North Carolina. Estimated three-year average $PM_{2.5}$ levels (1993-1995) at a total of seven monitors in Mecklenberg, Buncombe, Forsyth, and Mitchell counties would likely exceed the EPA proposed level of 15 $\mu g/m^3$ (Table 3). These hot spots need immediate relief from particulate pollution, but may not receive it under the Clinton Administration proposal.

Recommendations

More Protective Health Standards

The Clinton Administration's proposed $PM_{2.5}$ standard for particulates represents a significant improvement in the status quo. But in order to fully protect the public health, and particularly the health of the most vulnerable individuals in the population, it must be strengthened substantially. By the EPA's own calculations, the proposed rule would reduce premature mortality from airborne particulates by 50 percent, while tens of thousands of premature deaths will continue even after the proposed health standards are met (EPA 1996d).

To better protect public health, the Environmental Working Group supports the annual average $PM_{2.5}$ standard of 10$\mu g/m^3$ as recommended by the American Lung Association and the Natural Resources Defense Council. This goal will provide dramatic health benefits when achieved, and puts the agency more squarely in compliance with the basic requirements and intent of the law. To guard against the adverse health effects of peak particulate exposures, we recommend a 24-hour $PM_{2.5}$ standard of 20$\mu g/m^3$.

Better Monitoring

The current network of state, local, and national PM monitors does not provide a scientifically representative picture of particulate levels in the air in most major U.S.

cities. In spite of this major flaw in the current system, there is no requirement in the proposed rule that additional monitoring be statistically reliable, or that additional monitoring increase the ability of the EPA to target pollution reduction efforts toward highly polluted areas.

To the contrary, the agency's proposed spatial averaging scheme could easily skew monitoring in a manner that creates sacrifice zones, where unsafe air is not cleaned up, but instead is averaged together with cleaner air from somewhere else to create the statistical illusion of clean air within an arbitrary spatial averaging zone. We strongly oppose the used of statistical techniques to hide pollution and avoid cleaning up unsafe air breathed by millions of Americans. Instead, EWG recommends tough health standards that are backed up by a scientifically valid system of airborne particulate monitoring. In most major U.S. cities many more monitoring sites are needed to achieve this goal.

To ensure that representative monitoring occurs, all major particulate polluters, as currently defined by EPA, should be required to contribute to a fund, administered by local air quality officials, that is dedicated to statistically valid particulate monitoring in all metropolitan statistical areas in the United States. Spatial averaging techniques must not be used in any metropolitan region that does not have a representative particulate monitoring network in place.

In addition, we oppose any plan that achieves compliance with the new health standard by:

- moving existing monitors to cleaner locations,
- adding monitors only at cleaner locations, and
- dispersing the pollution source (for example, a bus transfer station) and thus increasing pollution in cleaner areas.

Cleaning Up Hot Spots

The current monitoring system, while not fully representative of local and regional pollution levels, does identify specific locations, or hot spots, where airborne particulates are at unsafe levels. There is no reason to delay pollution reduction measures at these sites yet EPA's proposed changes to monitoring criteria could easily have that effect. Until such time as a representative monitoring system is in place, EWG recommends that the EPA maintain the current rules for monitoring and enforcement where exceeding the standard in one location triggers a violation.

Right to Know

The public has a fundamental right to know about pollution in the air they breathe. EWG's experience in gathering the particulate emissions and monitoring data used in this report shows that the public, and to a significant degree, federal regulators, have no practical way to find out about levels of deadly particulate pollution released in their communities.

We recommend, therefore, that the EPA maintain an up-to-date national database of particulate emissions and ambient concentrations, and that these data be available to the public in a manner consistent with data already widely available in the Toxic Release Inventory.

We further recommend that citizens in polluted communities be given the right to petition for and receive in their communities the monitoring equipment needed to detect particulate and other air pollution, and a timely public notification of monitoring results.

Chapter One

Particulate Pollution Kills

Particulate matter is the generic name for a broad class of toxic air pollution made up of substances that exist as discrete particles, suspended in the air in either liquid or solid form. This can include various metals such as lead, copper, and cadmium, sulfate and nitrate particles, and particle forming organic compounds such as PCBs and aromatic compounds.

The current EPA particulate standard, referred to as the PM_{10} standard, regulates particles smaller than 10 microns in diameter. A micron is one millionth of a meter. Particles less than 10 microns in diameter are targeted because these small particles can easily penetrate into the deepest regions of the lungs (Bascom et al. 1996). More recent studies, however, strongly indicate that the smallest particles, those less than 2.5 microns in diameter, present the greatest risk to human health and particularly to children's health (EPA 1996c). More than 20 epidemiological studies from around the world confirm the high hazards of breathing fine particles at concentrations typically found in ambient air in U.S. cities (EPA 1996c).

The current PM_{10} standard does little to control fine particles because it is enforced based on the total weight of the particles per cubic meter, expressed as micrograms of PM_{10} per cubic meter of air. This enforcement mechanism creates an inherent bias in favor of measures that control larger particles because reducing larger particles in the air provides a far greater reduction in the overall weight of the PM_{10} per cubic meter of air. Reducing the amount of smaller particles, in contrast, has a more negligible effect on the total mass of PM_{10}, but contributes to a greater reduction in health risks from particulate pollution.

Recognizing this limitation with the current regulations, and the distinct health benefit of regulating fine particles, the EPA has proposed that the new standard be designed to measure "fine" particles, or $PM_{2.5}$, rather than PM_{10}. This simple change in the way particulate levels are monitored could provide the basis for much more effective and targeted regulation of particulate sources in the future. Combustion of fossil fuels in power generation, manufacturing, and transportation are the primary sources of fine particle pollution (Dockery et al., 1993).

The Clear Health Threat From Particulates

The Clean Air Act (CAA) directs the EPA to set air quality standards that protect the public's health, including sensitive individuals within the population. Congress further instructed EPA to ensure that health standards sufficiently protect these populations by including an adequate of margin of safety (42 U.S.C.A. §7409 (b)(1)). In other words, the law requires that air pollution be reduced enough so that breathing polluted air does not directly kill people or contribute to the incidence of disease, even for those that are susceptible to these diseases.

There is a broad scientific consensus that the current particulate standard fails this test — that it does not protect the public health, that it does not provide any margin of safety for susceptible populations, and that it should be changed (Wolff 1996, EPA 1996a).

The science supporting the hazards of breathing particulate pollution is exceptionally powerful and consistent. According to the U.S. EPA, more than 60 peer-reviewed community epidemiological studies have found positive, statistically significant associations between short and long term concentrations of various PM indicators (total particulates, PM_{10}, $PM_{2.5}$) and death and morbidity (EPA 1996c). Indeed, although scientists have not yet identified a precise mechanism by which particulate levels increase death rates, scientists also have not identified a level of airborne particulate pollution that does not cause at least some increase in premature death, asthma, and other human health problems.

Several factors within these studies and others (Ostro 1993, Schwartz 1992) strengthen the conclusion that particulates, not other pollutants, are causing the premature death and increased illness found in these studies. First, regardless of the type or level of co-pollutants involved, mortality rates consistently correlate with fluctuations of particulate levels in the air. Second, the actual kind of health effect linked to particulate exposure is consistent between mortality and morbidity data: particulate levels in the air are closely linked with increases in respiratory and cardiovascular related hospital admissions, as well as death rates from lung and heart disease (EPA 1996c).

Both short and long term exposure to particulate levels are strongly associated with increases in mortality and morbidity rates. This concordance strengthens the conclusion that particulates shorten lives by several years for the average affected individuals (EPA 1996a).

Based on the wealth of research linking particulate pollution to premature mortality in cities across the United States and around the world, various institutions and independent experts have calculated the impact of current PM levels on death rates in metropolitan areas in the United States (Schwartz 1993, Pope et al. 1995, Schwartz 1994, Dockery et al. 1993, Schwartz and Dockery 1992, Pope 1991). These calculations typically relate the fluctuations in cardiopulmonary death rates in specific cities to airborne PM levels.

In 1993, the U.S. EPA estimated that 70,000 premature deaths are caused each year by particulate pollution in the air (EPA 1993). This prediction is based on a series of studies, over several decades, using different statistical techniques, in different U.S. cities that have all confirmed a direct link between PM_{10} pollution and elevated incidence of death. These studies all show a direct relationship between rising PM_{10} levels in the air and deaths from cardiopulmonary disease.

In perhaps the most unique study, in the Utah Valley, medical researchers were able to track cardiopulmonary death rates as a direct function of the operations of the lone particulate polluter in the region, Geneva Steel. When the plant stopped operations, death rates in the valley dropped dramatically. When the plant started up again, death rates increased in direct proportion to particulate levels in the air. In the Utah Valley, a 16 percent increase in total deaths occurred for every 100 $\mu g/m^3$ increase in PM_{10} (Pope et al. 1992).

Supporting this finding, in Birmingham, Alabama, between 1985 and 1988, an 11% increase in the death rate was seen for every 100 $\mu g/m^3$ of "inhalable particles," (Schwartz 1993). In Cincinnati, the death rate increased by 6 percent for every 100$\mu g/m^3$ increase in total particulates (Schwartz 1994).

A major study in Philadelphia showed that deaths between 1973 and 1980, increased by 7 percent for every increase in total particulate levels of 100 μg per cubic meter (Schwartz and Dockery 1992). In that study, particulate pollution caused a 19% increase in mortality due to chronic obstructive pulmonary disease even though PM_{10} levels were below current standards for all but one day during the study (Dickey 1996).

The Harvard Six City Study, published in 1993 in the New England Journal of Medicine, followed 8,000 adults in six small to medium sized cities over a fourteen year period beginning in 1979. Consistent with the findings from other peer-reviewed studies analyzing particulates and mortality over shorter periods of time, differences in particulate levels in the air from city to city almost directly tracked death rates over the entire period of the study. After controlling for sex, age, smoking status, educational level, and occupational exposure to dust, gases, and fumes, the authors concluded that the average person in the most polluted city studied, Steubenville, Ohio, had a 26% greater chance of premature death than the average person in Portage, Wisconsin, the least polluted city in the study (Dockery, et al. 1993).

A major 1995 study of particulate pollution analyzed the relationship between $PM_{2.5}$ levels in the air, and the health of 295,000 people tracked by the American Cancer Society (ACS) from 1982 through 1989. This study, which because of its size has substantial statistical power, added further weight to the finding that death rates from heart and lung disease rise and fall in direct correlation with particulate levels in the air (Pope et al. 1995). As with the Six City Study, the study authors concluded that particulate air pollution increases the risk of premature death by about 17%.

Building on this unusually consistent and statistically powerful data, in 1996 the Natural Resources Defense Council (NRDC) estimated the number of lives that would be prolonged under various particulate standards likely to be proposed by the EPA (NRDC 1996).

The NRDC analysis, which was extremely cautious in its use of existing data, is based on PM_{10} monitoring data maintained by the U.S. EPA, and data on adult cardiopulmonary deaths from the National Center for Health Statistics (NCHS 1992). These mortality data were corrected to eliminate individuals under 25 years of age. Deaths from lung cancer, though exacerbated by airborne particulates, also are not included in the analysis. PM_{10} levels in a given metropolitan region were averaged over a five year period, *and* over entire metropolitan statistical areas (MSAs). This averaging technique, while valid and illustrative, can mask large areas within MSA's where death rates from especially serious particulate pollution are significantly elevated.

PM_{10} figures were then converted in the NRDC study to a $PM_{2.5}$ level using a nationwide conversion factor of 60 percent (i.e., NRDC assumed that $PM_{2.5}$ concentrations equalled approximately 60 percent of the PM_{10} concentrations). The authors then applied risk factors based on the ACS studies to these particulate levels. The risk factors used are the lowest of the two long-term studies in the peer-reviewed literature (e.g. Pope et al. 1995). The NRDC report showed that a strong standard of $10\mu g/m^3$ for fine particulate matter ($PM_{2.5}$) could prevent over 56,000 premature deaths every year (NRDC 1996).

Chapter Two

Clinton Administration Proposal

Health Standards

The first standard for particulates in air was established in 1971. This standard, which measured total particulates in the air, was set at 260 micrograms (μg) of particles per cubic meter of air (μg/m^3) over a 24 hour period, and 75 μg/m^3 annual average. In 1987, under the Clean Air Act, EPA replaced the original standard with a new standard for PM_{10} at 150 μg/m^3 over a 24 hour period, and an annual average of 50 μg/m^3. California has established stricter PM_{10} standards: a 24 hour standard of 50 μg/m^3, and an annual average of 30 μg/m^3. Under the 1990 Clean Air Act amendments, EPA was required to review the adequacy of major health standards, including the particulate standard, every five years. The EPA failed to meet the statutory deadline, and was sued by the American Lung Association (ALA). ALA won the suit, and the court established a deadline of November 29, 1996 for EPA to set the new standard.

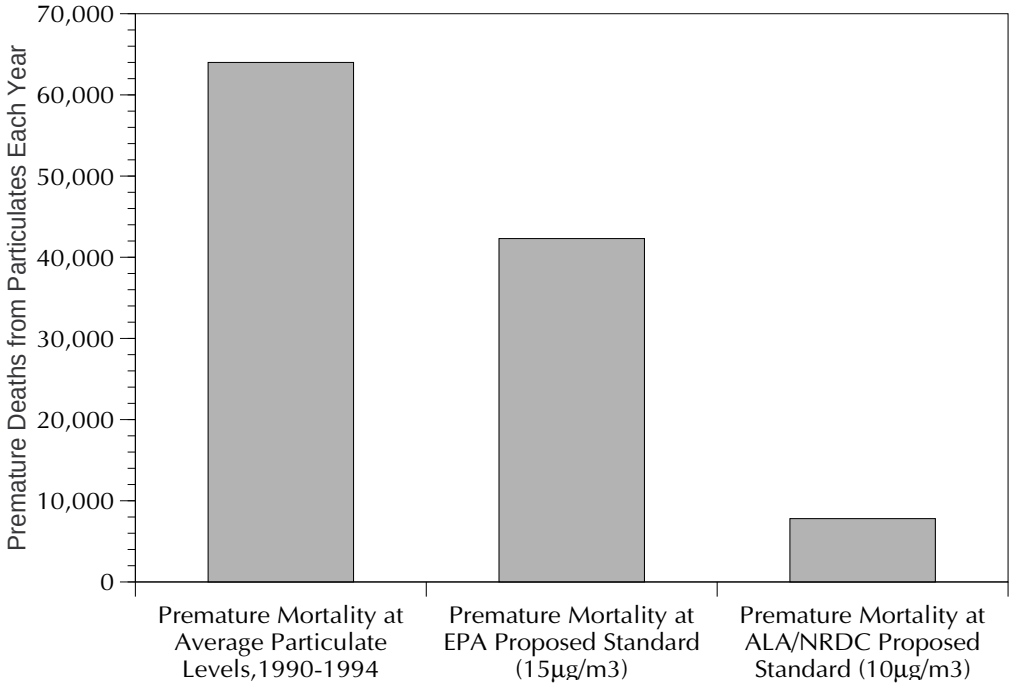
The Clinton Administration's proposed rule, released on November 27, 1996 establishes new, tougher health standards for $PM_{2.5}$. These standards represent a significant improvement over the current public health goals. The draft rules recommend a three year average $PM_{2.5}$ limit of 15 μg/m^3, and propose retaining the annual PM_{10} standard of 50 μg/m^3. According to EPA (EPA 1996d), "If finalized as proposed, the new standard would:

- Cut premature deaths linked with particulate air pollution by 50%, or approximately 20,000 deaths; with acid rain controls currently underway, an additional 20,000 deaths will be avoided;
- Reduce aggravated asthma episodes by more than a quarter million cases each year;
- Reduce incidence of acute childhood respiratory problems by more than a quarter million occurrences each year, including aggravated coughing and painful breathing;
- Reduce chronic bronchitis by an estimated 60,000 cases each year;
- Reduce hospital admissions due to respiratory problems by 9,000 each year, as well as reduce emergency room visits and overall childhood illnesses in general;
- Cut haze and visibility problems by as much as 77% in some areas, such as national parks."

In addition, however, the proposal would weaken the 24-hour PM_{10} standard in favor of a daily $PM_{2.5}$ limit of 50 μg/m^3 (not counting the top 2 percent of concentrations).

Release of the proposed rule marked the beginning of a public comment period, where "EPA will seek broad public comment on its recommended approach and on the need for any changes to the particulate matter [and ozone] proposal." (EPA 1996d).

Figure 1. The $PM_{2.5}$ standard proposed by the EPA will substantially reduce premature deaths, but stronger protection is needed.



Source: Environmental Working Group, compiled from Natural Resources Defense Council data.

The administration proposal was supported "by an overwhelming majority of independent scientists who reviewed the standard for EPA, based on 86 new health studies that indicate the need for a stronger standard," according to the agency. The polluter coalition has dismissed this EPA review and gone on the attack.

This report supports the Clinton administration's goal of reducing health risks from particulate pollution. Our analysis makes clear that several aspects of the proposal, notably its monitoring provisions, should be strengthened, and we support a lower limit on particulate pollution in order to save even more lives.

The premise of this study is that the public has a right to know, and an obligation to comment on, the public health strengths and shortcomings of the particulate pollution proposal. Questions about how much particulate pollution will be reduced, how much illness will be prevented, and how many lives will be saved, ultimately are moral and political questions that demand broad public awareness and input.

In fairness, it must be noted that even when these new goals are ultimately met, they will still allow tens of thousands of premature deaths each year from airborne particulates (Figure 1). Of even greater concern, however, are EPA's proposed changes to current monitoring and enforcement procedures which could seriously undermine the advances in public health protection that the standards are designed to achieve.

Table 4. EPA's proposed spatial averaging technique could allow to unsafe levels of particulate pollution to continue unchecked.

Annual Mean (% data completeness)

Year	Site 1	Site 2	Site 3	Site 4	Spatial Mean
1	12.7 (80%)	No data	No Data	No Data	12.70
2	13.3 (90%)	**17.4** (63%)	9.8 (40%)	No Data	**15.35**
3	12.9 (90%)	**16.7** (80%)	12.3 (85%)	**20.1** (50%)	**15.50**
				3-Year Mean	14.52

Bold = Levels above proposed standard.
Source: Environmental Protection Agency 1996a.

Monitoring and Enforcement

Several features of the Clinton Administration's proposed $PM_{2.5}$ monitoring and enforcement provisions severely compromise the potential health protections that the new rule is designed to achieve.

Under the EPA's current enforcement scheme, when particulate levels exceed the PM_{10} standard in one monitoring location, action is required to reduce pollution and bring that area into compliance with the standard. The November 1996 EPA proposal dramatically changes this approach by proposing health standard enforcement based on a method of averaging together pollution monitoring results from different locations. This new monitoring and enforcement scheme is strongly supported by major polluters because it would dramatically reduce the need for many of the nation's worst polluters to control their toxic emissions.

This method, called spatial averaging, will allow polluted areas to comply with health standards for particulates, not by actually reducing pollution levels, but by averaging high levels of pollution in one community with lower levels of pollution in an adjacent community. In this fashion, the unhealthy air in a city center, for example, could comply with clean air regulations if pollution levels from cleaner air in the suburbs are averaged with the monitoring from the polluted area. This statistical technique creates *a number* that complies with the new standard. It does nothing, however, to prevent the public from breathing polluted air that would otherwise be deemed unsafe under the new standard.

EPA's proposed PM rule provides two examples of how heavily-polluted communities are permitted to live with air that exceeds health standards under the new regulations.

In order to violate the proposed $PM_{2.5}$ standard the three year *average* of all monitoring sites in a spatial averaging zone must exceed 15 $\mu g/m^3$. In EPA's example (Table 4), the three year mean (or average) over the four sites is 14.52 $\mu g/m^3$. Within the spatial averaging zone, however, the three-year average $PM_{2.5}$ levels exceed the new standard at two of the four monitoring locations (Site 2 and Site 4), indicating that the air in communities near the monitor would not meet federal safety standards. According to the EPA, in spite of this poor air quality, no pollution reduction would be

Table 5. EPA's proposed monitoring plan should be improved to prevent continued, high levels of particulate pollution.

Etowah County, Alabama	Richland County, Ohio
Washington County, Georgia	Carter County, Oklahoma
Canyon County, Idaho	Comanche County, Oklahoma
Macon County, Illinois	Kay County, Oklahoma
Johnson County, Kansas	Mayes County, Oklahoma
Sherman County, Kansas	Blair County, Pennsylvania
Floyd County, Kentucky	Bucks County, Pennsylvania
Madison County, Kentucky	Cambria County, Pennsylvania
Marshall County, Kentucky	Delaware County, Pennsylvania
Whitley County, Kentucky	Lackawanna County, Pennsylvania
Garrett County, Maryland	Lycoming County, Pennsylvania
Washington County, Maryland	Montgomery County, Pennsylvania
Calhoun County, Michigan	Grand County, Utah
Lancaster County, Nebraska	Bristol City, Virginia
Otoe County, Nebraska	Covington City, Virginia
Mercer County, New Jersey	Fayette County, West Virginia
Warren County, New Jersey	Ohio County, West Virginia
Mitchell County, North Carolina	Putnam County, West Virginia
Noble County, Ohio	Wayne County, West Virginia
Ottawa County, Ohio	Wood County, West Virginia

Source: Environmental Working Group.

required under the new $PM_{2.5}$ rule, because spatial averaging would bring the entire area into compliance, even as particulate pollution remained at unsafe levels at half of the monitoring sites in the region.

To identify sacrifice zones that could be created under the Clinton Administration monitoring proposal, EWG analyzed data from AIRS including the state and local air monitoring stations (SLAMS) and the national air monitoring stations (NAMS) for the 490 counties across the country with valid PM monitoring data for 1993 through 1995. We then analyzed this information by county, based on EPA's proposal that county boundaries might delineate averaging zones under the new rule. If broader areas were used, even more hot spots could be ignored.

Our analysis found 35 counties that have more than one PM monitor, where the three year average $PM_{2.5}$ levels were below 15 $\mu g/m^3$, but where the three-year average for one monitoring site exceeded the new $PM_{2.5}$ standard. In this scenario, if the county becomes the spatial averaging zone, then under the new $PM_{2.5}$ rule, the people living near the monitors with high pollution levels will receive no relief from what the EPA deems to be unsafe levels of particulate pollution in their air. If the same analysis is modified to look at one-year average $PM_{2.5}$ levels, 77 counties are affected.

EPA has argued that people living in these areas will be protected by the new daily PM2.5 standard of 50$\mu g/m^3$. Our analysis of state, local, and national monitoring data for the three most recent years available, however, shows that none of the affected

counties would trigger an enforcement action under the proposed 24 hour $PM_{2.5}$ standard of 50μg/m^3, calculated at the 98th percentile.

In order to facilitate spatial monitoring, the Clinton Administration's proposed implementation plan provides for additional monitors within spatial averaging zones. These monitors must be placed near populated areas, but they are not required to be placed systematically in "hot spots" where the pollution is the worst, nor are they required to be placed in such a way that provides a representative picture of pollution within the spatial averaging zone. Without major revisions, this proposal will create a strong incentive to place new monitors in clean locations to lower "average" pollution levels in the spatial zone — again creating a lower number but doing nothing to clean the air.

To demonstrate how additional monitoring might be used to avoid pollution reduction via averaging, we analyzed the AIRS data for counties with just one monitoring site, where particulate levels at that site exceed the proposed $PM_{2.5}$ standard. Our analysis revealed 40 counties with just one monitoring site, where particulate levels currently exceed the proposed $PM_{2.5}$ standard by less than 2.5μg/m^3 (Table 5). In any of these 40 counties, compliance could be achieved easily by adding a monitor at a less polluted location, as opposed to reducing pollution levels at the polluted site.

Most worrisomely, the Clinton Administration is proposing to allow independent parties to construct "special purpose monitors", with the promise that data showing poor air quality will not be used for regulatory purposes. Under the EPA proposal, if the data from these special monitors bring an area into a violation of the $PM_{2.5}$ health standard, there is a three-year moratorium on the use of such data. If the data bring an area into compliance, however, there is no similar explicit moratorium on use of the information. While the draft rule does not specifically state that these data will be used, the absence of a prohibition on its use creates the strong supposition that only data that would moderate regulatory burdens from these special monitors will be used in the regulatory process. As drafted, this loophole provides major polluters with a risk-free incentive to set up monitors in clean areas of spatial monitoring zones, as it simultaneously eviscerates independent efforts to monitor air where it is the most polluted. Any potential for such a double standard must be eliminated from the final rule.

Polluters' Attack on Clinton Proposal

The Clinton EPA's proposed new standard for $PM_{2.5}$ levels, while a clear improvement over the current standard, would allow polluters to maintain levels of particulate pollution across the United States that would continue to cause tens of thousands of premature deaths each year. For some of the nation's worst air polluters, however, any reduction in current pollution levels is perceived as too onerous. These polluters have funded an aggressive high profile political and lobbying effort to ensure that new standards are not implemented.

The campaign to foil the new $PM_{2.5}$ standard is being coordinated by the National Association of Manufacturers (NAM) (Skrzycki 1996). This multimillion dollar campaign includes:

- The formation of the NAM "Air Quality Standards Coalition", with a $1.5 million dollar war chest to spend campaigning against tough air quality standards.

- Millions more for industry-oriented "sound science" to challenge the peer-reviewed science relied on by EPA.

- The formation and active use of phony grassroots front groups to pressure governors and local officials.

- Hiring expensive Washington lobbyists, including C. Boyden Gray, former counsel to President Bush, and public relations firms such as Burston-Marsteller, to lobby for weaker standards.

The membership of the National Association of Manufacturers Air Quality Standards Coalition reads like a "Who's Who" of America's worst particulate polluters, including the American Petroleum Institute, the American Automobile Manufacturers Association, the Chemical Manufacturers Association, the Edison Electric Institute, the National Mining Association, the American Forest and Paper Association, and virtually all of their member corporations. The rallying cry of these big polluters is that if the EPA proposal is put into effect, then millions of Americans will lose their right to barbecue and millions more will be forced to carpool (Skrzycki 1996). In reality, restrictions on personal activities will be necessary only if major polluters are unwilling to implement inexpensive pollution control measures.

Chapter Three

Particulate Pollution in North Carolina

The EWG analysis of premature deaths due to particulate pollution is modeled after the analysis published by the Natural Resources Defense Council (NRDC) in May 1996. The principal modification is the use of regional conversion factors for PM_{10}. Rather than assuming that $PM_{2.5}$ accounts for 60 percent of PM_{10} nationwide, we utilize regional conversion factors, for different sections of the country, based on actual monitoring of $PM_{2.5}$ and PM_{10} by the EPA. For the east coast the data indicate that on average $PM_{2.5}$ accounts for a greater percentage of total PM_{10} than assumed by NRDC. For the midwest, the west, and particularly the northwest, average $PM_{2.5}$ levels are a lesser percentage of total PM_{10} than assumed by NRDC. There are important exceptions to these regional figures. In certain locations, at certain times of the year, for example, $PM_{2.5}$ can account for up to 85% of total PM_{10} in major cities in the western United States. Nationwide, the average percentage of PM_{10} accounted for by $PM_{2.5}$ is about 0.56. With this one modification, we then apply the NRDC/American Cancer Society methodology and project the impact of the EPA proposed $PM_{2.5}$ standard for the nation and selected metropolitan regions.

This specific quantitative risk factor used in this analysis is based on the relationship between $PM_{2.5}$ and mortality rates in a study of 250,000 individuals in 50 U.S. cities tracked by the American Cancer Society (Pope et al. 1995). This study assumes a threshold for the mortality effects of particulate pollution of 9 $\mu g/m^3$, *not* because no

Table 6. EPA's proposal will reduce deaths caused by particulate pollution in North Carolina, but the regulations need to be strengthened to save even more lives.

Metropolitan Statistical Area	Estimated Number of Deaths Attributed to Particulate Pollution Per Year	Estimated Number of Premature Deaths Under New EPA Standard Per Year	Estimated Number of Premature Deaths Under ALA/NRDC Standard Per Year
Asheville	43	43	10
Charlotte/Gastonia	218	177	30
Fayetteville	44	42	6
Greensboro/Winston-Salem/High Point	263	235	40
Hickory	32	32	7
Jacksonville	9	9	3
Norfolk/Va. Beach/Portsmouth	186	186	33
Raleigh/Durham	104	104	21
Salisbury/Concord	47	47	11
Wilmington	31	31	7
Total	977	906	168

Source: Environmental Working Group, based on PM10 data from 1990-1994 and mortality data provided by Natural Resources Defense Council, 1996. Methods discussed in Chapter One.

effects have been demonstrated below 9 $\mu g/m^3$, but because the cleanest city in the study had a $PM_{2.5}$ level of 9 $\mu g/m^3$. In fact, no threshold has been determined below which mortality rates are unaffected by $PM_{2.5}$.

Based on the most recent AIRS data on PM_{10}, 9 $\mu g/m^3$ $PM_{2.5}$ is a reasonable estimate of fine particulate levels in the least polluted areas in the United States. Further EWG analysis shows that about 50 of 600 counties currently monitoring PM would have levels below 9 $\mu g/m^3$ $PM_{2.5}$. Given the demonstrated mortality effects at low levels of $PM_{2.5}$, our recommended annual $PM_{2.5}$ standard of 10 $\mu g/m^3$ represents a level of particulate pollution that is at least 10 percent above background levels in cleaner areas of the country. As a part of the final rule, EWG recommends that EPA determine background $PM_{2.5}$ levels in representative regions of the country. This study should not delay implementation of the health standards recommended in this report.

Lives on the Line

Nationwide, the EPA proposed annual $PM_{2.5}$ Standard of 15$\mu g/m^3$, if achieved, would prevent approximately 20,000 premature deaths each year (EPA 1996d). It would, however, need to be significantly strengthened to prevent the 45,000 premature deaths from particulate pollution that would continue to occur each year.

In the Greensboro area[1], EPA's proposal will prevent the premature death of an estimated 28 individuals each year. At the same time, 235 people would continue to die prematurely each year from airborne particles (Table 6). In comparison, the $PM_{2.5}$ standard proposed by the American Lung Association (ALA) and the Natural Resources Defense Council (NRDC) (10$\mu g/m^3$), would avoid about 220 premature deaths in Greensboro each year.

In the Charlotte and Gastonia areas, EPA's standard is estimated to cut premature death by about 41 people annually (Table 6). An estimated 170 individuals in those areas, however, would continue to die prematurely each year from particulate pollution. The $PM_{2.5}$ level proposed by the ALA and NRDC (10$\mu g/m^3$), on the other hand, would save almost 190 lives each year in Charlotte and Gastonia.

Statewide, the EPA's proposal will avoid 70 premature deaths from particulate pollution in North Carolina each year. The draft rule will need to be significantly strengthened, however, to prevent an estimated 900 residents of North Carolina from dying prematurely every year due to airborne particulate pollution (Table 6). The standard proposed by the EPA, while setting the stage for important improvements in air quality, is clearly a moderate proposal that leaves substantial room for further reductions in particulate levels.

Moreover, the benefits of the new $PM_{2.5}$ standard will be achieved only if the monitoring proposals in the proposed EPA rule are radically revised. If the proposed spatial averaging and percentile adjustments are not scrapped, then even the moderate public health gains projected here will likely not be attained.

Top Particulate Polluters in North Carolina

To quantify and analyze particulate pollution by facility for North Carolina and the nation, the Environmental Working Group obtained facility emissions data for particulate matter from the North Carolina Department of Environmental Health and Natural Resources. The most recent data available were from the state's Air Quality Emissions Inventory database for 1995. Although other pollutants serve as precursors (i.e. NO_x and SO_x) this analysis focuses on direct emissions of particulate matter.

Table 7. Ten electric utilities account for more than half of all particulate pollution generated in North Carolina.

Facility Name	City	Annual PM10 Emissions (Tons/Year)	Description
Duke Power Marshall Plant	Terrell	3,024	Electric services
CP&L - Roxboro Units 1 2 3 4	Roxboro	2,959	Electric services
International Paper-Riegelwood	Riegelwood	2,370	Pulp mills
Duke Power Co - Belews Creek Steam Station	Walnut Cove	2,010	Electric services
Duke Power Allen Plant	Belmont	1,657	Electric services
PCS Phosphate Company, Inc.	Aurora	1,448	Phosphatic fertilizers
Weyerhaeuser Company	Plymouth	1,050	Paper mills
Weyerhaeuser Company	Vanceboro	742	Pulp mills
E.I. Dupont Company	Leland	692	Organic fibers, noncellulosic
Hoechst Celanese	Wilmington	643	Industrial organic chemicals, nec
The Celotex Corporation	Dudley	621	Asphalt felts and coatings
Weyerhaeuser	Moncure	457	
Duke Power Company	Cliffisde	449	Electric services
Westpoint Stevens	Wagram	435	Broadwoven fabric mills, cotton
Champion Roanoke Rapids Plant	Roanoke Rapids	420	Paper; coated and laminated packaging
PPG Industries Inc	Shelby	389	Pressed and blown glass, nec
Georgia Pacific Corp.- Conway	Conway	357	Reconstituted wood products
Perdue Farms, Inc.	Cofield	331	Prepared feeds, nec
SGL Carbon Corporation	Morganton	301	Carbon and graphite products
Georgia Pacific Comply Plant	Dudley	298	Softwood veneer and plywood
International Paper-Armour Plant	Riegelwood	287	Sawmills and planing mills, general
CP&L - Mayo, Unit 1	Roxboro	274	Electric services
Georgia-Pacific Corp -Whiteville Ply	Whiteville	259	Sawmills and planing mills, general
Cargill, Inc.	Raleigh	248	Soybean oil mills
FMC Corp Lithium Div	Bessemer City	230	Industrial inorganic chemicals, nec
CP&L - Cape Fear Plant	Moncure	217	Electric services
Kelly-Springfield Tire Co	Fayetteville	215	Tires and inner tubes
CP&L H.F. Lee Plant	Goldsboro	214	Electric services
Libbey-Owens-Ford Co	Laurinburg	213	Flat glass
Perdue Farms-Eagle Springs	Eagle Springs	212	Prepared feeds, nec
Dupont Kinston Plant	Kinston	207	Organic fibers, noncellulosic
Miller Brewing Company-Eden Plant	Eden	186	Malt beverages
PPG Industries Lexington Plant	Lexington	182	Pressed and blown glass, nec
Easco Corporation	Ahoskie	174	Aluminum extruded products
CP&L - Sutton Plant	Wilmington	167	Electric services
Bernhardt Furn Plts 1, 3, 7	Lenoir	167	Wood household furniture
Weyerhaeuser Forest Products	Plymouth	160	Sawmills and planing mills, general
Cherokee Sanford Group - Sanford Plt	Colon	158	Brick and structural clay tile
Willamette Industries, Inc.	Moncure	154	Softwood veneer and plywood
Weyerhaeuser Company-Elkin Plant	Elkin	142	
Boral Bricks, Inc./Isenhour Div.	East Spencer	142	Brick and structural clay tile
Ball-Foster Glass Container Company, Llc	Wilson	141	Glass containers
Camp Lejeune Marine Corp Base	Jacksonville	137	National security
Lane Upholstery Plt 10	Conover	137	Upholstered household furniture
Weyerhaeuser Company	Grifton	133	Sawmills and planing mills, general
Georgia Pacific Chip-n-Saw	Dudley	131	Sawmills and planing mills, general
Occidental Chemical Corp.	Castle Hayne	131	Industrial inorganic chemicals, nec
Masonite Division, International Paper	Spring Hope	130	Reconstituted wood products
Broyhill Virginia Street Complex	Lenoir	127	Wood household furniture
Genwove US Ltd	Indian Trail	124	Hardwood veneer and plywood
Nu Woods Inc	Lenoir	122	
Cargill Inc	Fayetteville	122	Soybean oil mills
Cherokee Sanford Group - Moncure Plant	Moncure	121	Brick and structural clay tile
Jeld-wen Fiber Of North Carolina	Marion	114	Reconstituted wood products
Atlantic Veneer Corp	Beaufort	114	Hardwood veneer and plywood
Carroll's Foods, Inc	Warsaw	111	Prepared feeds, nec
Ararat Rock Products Company	Mount Airy	109	Crushed and broken stone, nec
Duke Power Buck Plt	Spencer	105	Electric services
Union Camp Corp	Seaboard	102	Sawmills and planing mills, general

Source: Environmental Working Group, compiled from North Carolina Air Quality Emissions Inventory, 1995.

Table 8. Electric utilities are responsible for the most particulate emissions in North Carolina.

Industry	Total Annual Particulate Emissions (tons/year)
Electric services	11,568
Pulp mills	3,142
Sawmills and planing mills, general	2,649
Prepared feeds, nec	2,472
Asphalt paving mixtures and blocks	1,907

Source: Environmental Working Group, compiled from North Carolina Air Quality Emissions Inventory, 1995.

All data in this section of the report are presented as total direct particulate emissions, because $PM_{2.5}$ data are not collected by the state. Although the exact percentages may vary, $PM_{2.5}$ are generally proportionate to total particulate emissions (CARB 1991). Thus while ranks might change slightly if $PM_{2.5}$ data were available, as a general rule large particulate polluters will also be among the largest direct $PM_{2.5}$ emitters. Perhaps of greater concern is that these data do not include major emitters of the precursors to particulate matter (SO_x and $NO_{x)}$. These precursors are converted to $PM_{2.5}$ and contribute to a large part of the particulate problem nationwide. The major emitters of these pollutants will be discussed in a forthcoming EWG report.

Nationwide, about 3.5 *billion* pounds of PM_{10} are spewed into the air each year by stationary pollution sources. Cars and trucks, which emit about 25 percent of PM_{10} each year, are not included in these estimates, nor are the many tons of precursors (NO_x and SO_x). Electric utilities and concrete producers are the top point source emitters of particulate pollution in the United States, followed by steel mills and industrial blast furnaces, iron ore production, and grain milling operations. The major sources of $PM_{2.5}$ "precursors" — SO_x and NO_x — are power plants, oil refineries, and automobiles.

In North Carolina, the Duke Power Company - Marshall Plant, in Terrell, was the top particulate polluter, emitting 3,024 tons of PM_{10} particulates in 1995 (Table 7). They were followed by the Carolina Power and Light's Roxboro Units 1-4 in Roxboro (2,959 tons), International Paperboard in Riegelwood (2,370 tons), the Duke Power Company - Belews Creek Steam Station in Walnut Cove (2,010 tons), the Duke Power Company-Allen Plant in Belmont (1,657 tons), and the PCS Phosphate Company, Inc., in Aurora (1,448 tons).

In North Carolina, there were a total of seven facilities emitting more than 1,000 tons of total particulates, and 58 facilities emitting more than 100 tons — EPA's definition of a "major" source. The five largest facilities account for 26 percent of total particulate pollution in North Carolina. EPA's AIRS database indicates that five industries were responsible for 46% of the more than 47,000 tons of particulate emissions in the state. The largest emitters were members of the Electric Services Industry (mainly electric utilities). As an industry, they were responsible for 11,568

Table 9. Monitoring hot spots where particulate pollution will likely exceed EPA's proposed standards.

County	Three Year Annual PM2.5 Average	Street Address
Mitchell	17.20	City Hall, Summit Street
Buncombe	16.98	US70 West, Swannanoa NC 28778
Buncombe	16.61	London Road, Asheville NC 28803
Mecklenberg	16.55	400 Westinghouse Blvd.
Mecklenberg	16.35	Fire Station #11, 620 Moretz Street
Forsyth	16.08	1401 Corporation Parkway
Mecklenberg	15.67	Fire Station #10 2146 Remount Road

Source: Environmental Working Group, compiled from North Carolina Air Quality Emissions Inventory, 1995.

tons of particulate emissions in the state. They were followed by pulp mills (3,142 tons), sawmills and planing mills (2,649 tons), manufacturers of prepared feeds (2,472 tons), and manufacturers of asphalt paving mixtures and blocks (1,907 tons) (Table 8).

Hot Spots and Sacrifice Zones

As drafted, EPA's proposal needs significant strengthening to prevent the premature death of hundreds of North Carolinians each year from particulate pollution. Efficient solutions to this pressing public health problem will be even harder to come by due to the lack of a scientifically based monitoring plan. Given the nearly random nature of existing monitoring locations, the high spatial variability in air quality, and the use of spatial averaging, some areas with high annual average particulate levels could be ignored by the regulatory process, simply because they may be grouped together with lower PM areas. EPA's proposal to allow "special purpose monitors" will make it even more likely for this to occur. In this scenario, heavily polluted areas where PM levels hover just below the 24-hour standard for long periods of time will essentially become sacrifice zones.

In North Carolina, out of 50 monitors, there are seven where the three-year average $PM_{2.5}$ levels exceeded the EPA proposed standard, based on our analysis of data from 1993 through 1995. These hot spots in Mecklenberg, Buncombe, Forsyth and Mitchell counties could become sacrifice zones if the EPA proposal is implemented (Table 9).

The Clinton Administration proposal is nearly silent on the placement of monitors. While they suggest that they be placed near populations, there is no requirement for scientifically validated monitoring that clearly delineates hot spots and cleaner areas within the state. In essence, the proposal suggests that the air in some areas may remain heavily polluted, as long as the air in other areas meets the new standard.

Note

[1] Greensboro estimates include Greensboro, Winston-Salem, and High Point.

Chapter Five

Recommendations

More Protective Health Standards

The Clinton Administration's proposed $PM_{2.5}$ standard for particulates represents a significant improvement in the status quo. In order to fully protect the public health, and particularly the health of the most vulnerable individuals in the population, however, it must be strengthened substantially. By the EPA's own calculations, the proposed rule would reduce premature mortality from airborne particulates by 50 percent, while tens of thousands of premature deaths will continue even after the proposed health standards are met (EPA 1996d).

Moreover, the proposed particulate standard is more accurately viewed as a goal than an enforceable health standard. Historic enforcement of Clean Air Act requirements suggests that attainment of any new particulate standard will be achieved only over a number of decades, during which time millions of people will suffer the health consequences of unsafe air as EPA fights to bring polluters into compliance.

Given these realities, we strongly support the $PM_{2.5}$ standard of $10\mu g/m^3$ as recommended by the American Lung Association and the Natural Resources Defense Council. This goal will provide dramatic health benefits when achieved, and puts the agency more squarely in compliance with the basic requirements and intent of the law. To guard against the adverse health effects of peak particulate exposures, we recommend a 24-hour $PM_{2.5}$ standard of $20\mu g/m^3$.

Better Monitoring

The proposed rule could create sacrifice zones, where unsafe air is not cleaned up, but instead is averaged together with cleaner air from an adjacent community to create the statistical illusion of clean air within an arbitrary spatial averaging zone. We strongly oppose the used of statistical techniques to hide pollution and avoid cleaning up unsafe air breathed by millions of Americans.

Instead, EWG recommends tough health standards that are backed up by a scientifically valid system of airborne particulate monitoring. In most major U.S. cities many more monitoring sites are needed to achieve this goal.

EWG supports scientifically validated monitoring so that regulators can characterize accurately the spatial distribution of particulate pollution. The purpose of identifying hot spots is to clean them up, not to fake pollution reductions through statistical techniques that leave people at risk, or through dispersing pollution sources throughout cleaner areas, a maneuver that might actually place more people at greater risk than is currently the case.

To ensure that representative monitoring occurs, all major particulate polluters, as currently defined by EPA, should be required to contribute to a fund, administered by local air quality officials, that is dedicated to statistically valid particulate monitoring in all metropolitan statistical areas in the United States. Spatial averaging techniques must not be used in any metropolitan region that does not have a representative particulate monitoring network in place.

With better monitoring and delineation of hot spots the EPA can achieve two goals. It can aim its regulatory efforts at the biggest polluters in the most polluted locations, and it can minimize the number of times that clean areas are dragged into noncompliance due to arbitrary political distinctions such as a county or township boundaries.

Finally, we oppose any plan that achieves compliance with the new health standard by:

- moving existing monitors to cleaner locations
- adding monitors only at cleaner locations, and
- dispersing the pollution source (e.g. a bus transfer station) and thus increasing pollution in cleaner areas.

Hot Spots

The current monitoring system, while not fully representative of local and regional pollution levels, does identify specific locations, or hot spots, where airborne particulates are at unsafe levels. There is no reason to delay pollution reduction measures at these sites. Therefore, until such time as a representative monitoring system is in place, EWG recommends that the EPA maintain the current rules for monitoring, where exceeding the standard in one location triggers a violation.

Right to Know

The public has a fundamental right to know about pollution in the air they breathe. EWG's experience in gathering the particulate monitoring data used in this report shows that the public, and to a significant degree, federal regulators, have no practical way to find out about levels of deadly particulate pollution in their communities.

We recommend, therefore, that the EPA maintain an up-to-date database of particulate pollution levels nationwide, and that these data be available to the public in a manner consistent with data already widely available in the Toxic Release Inventory.

We further recommend that citizens in polluted communities be given the right to petition for and receive in their communities the monitoring equipment needed to detect particulate and other air pollution, and a timely public notification of monitoring results.

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