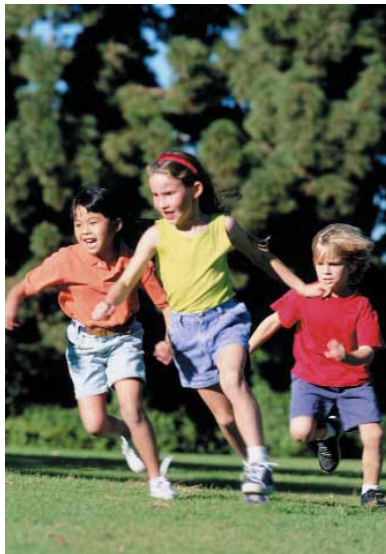
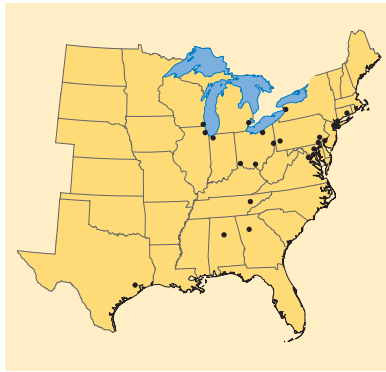


# Stop Blowing Smoke in the Heartland



PROTECTING HUMAN HEALTH  
FROM SMOKESTACK POLLUTION



**ENVIRONMENTAL DEFENSE**

finding the ways that work



# Stop Blowing Smoke in the Heartland

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FROM SMOKESTACK POLLUTION

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**ENVIRONMENTAL DEFENSE**

finding the ways that work

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Environmental Defense gratefully acknowledges Jana Milford, who was instrumental to the report's production.

*Cover photos:* Corbis.

*Our mission*

Environmental Defense is dedicated to protecting the environmental rights of all people, including the right to clean air, clean water, healthy food and flourishing ecosystems. Guided by science, we work to create practical solutions that win lasting political, economic and social support because they are nonpartisan, cost-effective and fair.

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## **A tale of two cities**

### **CHICAGO, ILLINOIS**

Cook County, Illinois, encompasses the city of Chicago, the Cultural Heart of the Midwest. Chicago's colorful history and diverse attractions bring millions of visitors to the city every year. Cook County resident Jan Davis, President and CEO of a Chicago-based company, says that what makes Chicago so special is its people and their "friendly nature and Midwestern values." Jan finds it disturbing that nearly one third of the air pollution that plagues Cook County comes from other states, and that, even after EPA implements its proposed rule to reduce the transport of air pollution across the eastern U.S., Cook County will still violate EPA standards for particulates. "I live and work in Cook County, and I want the air to be clean for myself and the other 5 million of us who call Cook County home.

Just because we are frequently referred to as the second city doesn't mean that we deserve second-class treatment as far as air quality issues are concerned."

### **ATLANTA, GEORGIA**

Georgia's Fulton and DeKalb counties comprise the city of Atlanta, the "capital city" of the Southeastern United States. Atlanta exemplifies the "New South" as an international city, fast growing and proud of its heritage. The heart of Atlanta is its people, the millions who make Atlanta the living, breathing example of the New South. Jason Bailey, a high school teacher who lives and works in Atlanta, says that the most remarkable thing about the city is its diversity. "There are so many opportunities here. People come from all over the world to live and work in Atlanta." But Jason admits that air pollution is affecting the quality of life in Atlanta. "In the school where I teach, there is a very high rate of asthma and an equally high rate of absenteeism among our students.

"The poor air quality affects us all," says Jason. "There are a lot of immigrants in Atlanta and a lot of low-income families. A majority of students in my school are uninsured. These kids are developing asthma and other respiratory illnesses and the costs are falling on the government and ultimately on taxpayers. We are paying for the pollution that makes these kids sick." Jason was dismayed when he learned that EPA's proposed rule would leave Fulton and DeKalb counties out of compliance with standards for particulates. "A few years ago the federal government blocked plans for a new highway through Fulton County because the county was failing to meet federal air quality standards under the Clean Air Act. It seems ironic that now the federal government is proposing standards to lower pollution across the East, while leaving residents of Fulton and DeKalb counties breathing dirty air."

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## Executive summary

Air pollution takes a tremendous toll on human health and the environment. Power plant smokestacks and motor vehicle tailpipes are the biggest contributors to the nation's air pollution problems. Over the next several years, the U.S. Environmental Protection Agency (EPA) will phase in tough standards to reduce pollution from automobiles and diesel equipment, freight trucks and buses. But the Agency's efforts to clean up power plant smokestack emissions lag far behind—despite the scientific evidence connecting smokestack pollution to serious human health problems.

Power plant pollution is implicated in tens of thousands of premature deaths and many more asthma attacks, respiratory and cardiovascular illnesses as well as a host of other health and environmental problems. In his January 2004 address to the nation's power companies, EPA Administrator Michael Leavitt explained that coal-fired power plants deliver harmful pollution to downwind communities: "Many counties have unhealthy air...because they live downwind from one or more coal burning power plants." Leavitt called for action: "It's time to start cleaning up."<sup>1</sup>

EPA recently found that well over half of the American public lives in areas with unhealthy particulate or ozone "smog" pollution levels. Smokestack pollution is a key contributor to this situation. The particulate and ozone pollution problems span the urbanized eastern seaboard. Dirty air also extends far into America's Heartland. Healthy air cannot be restored to these communities unless EPA puts in place tough clean-up standards for power plant smokestacks.

To the Agency's credit, it recently proposed to cut harmful sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) discharged from tall smokestacks at power plants in 28 states in the eastern half of the nation. Dubbed the "Clean Air Interstate Rule," the initiative would establish statewide limits on emissions of SO<sub>2</sub> and NO<sub>x</sub>, and the EPA estimates the public health and other benefits of such reductions would outweigh the costs by a 20 to 1 ratio. Both pollutants are essential ingredients of particulate pollution and ozone smog. But no one will breathe easier until EPA finalizes the rule. This report shows that by any measure—public health or economic—the proposed pollution reductions under the EPA power plant initiative should be strengthened.

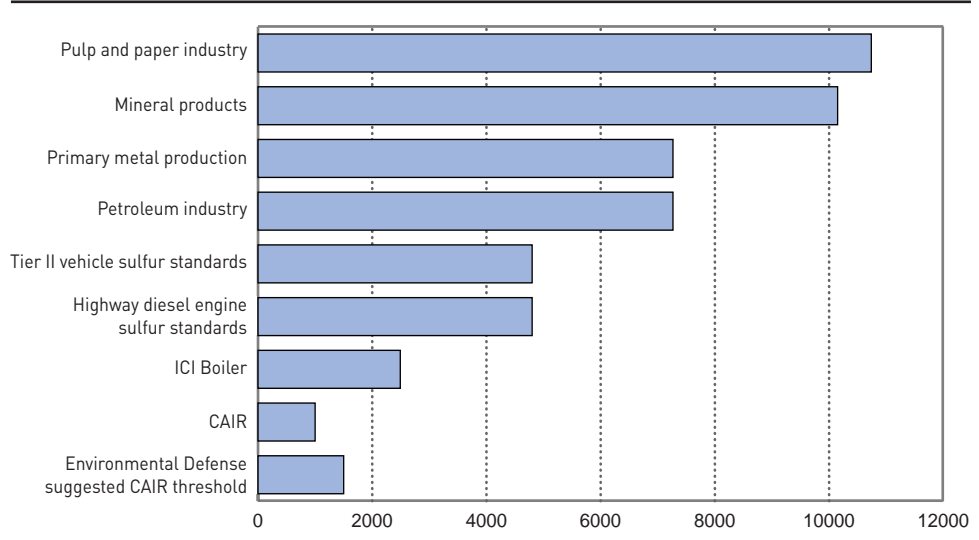
### Findings

- **The EPA power plant proposal does not measure up to the investments required of other economic sectors.** The cost-effectiveness threshold for the EPA power plant proposal is disproportionately lax compared with other EPA national clean air standards. In its power plant proposal, EPA selects a cost-effectiveness threshold of \$1,000 per ton for SO<sub>2</sub>. In other words, the cost of the power companies' compliance with the SO<sub>2</sub> pollution limits is estimated to

FIGURE A

**Cost threshold for EPA power plant proposal does not measure up to the clean air standards for other sectors**

This figure shows that the cost-effectiveness threshold for the EPA proposed power plant rule (\$1,000 per ton of SO<sub>2</sub> reduced) does not measure up to the costs EPA has imposed on other pollution sources to lower SO<sub>2</sub> and is thus less protective than other EPA standards.



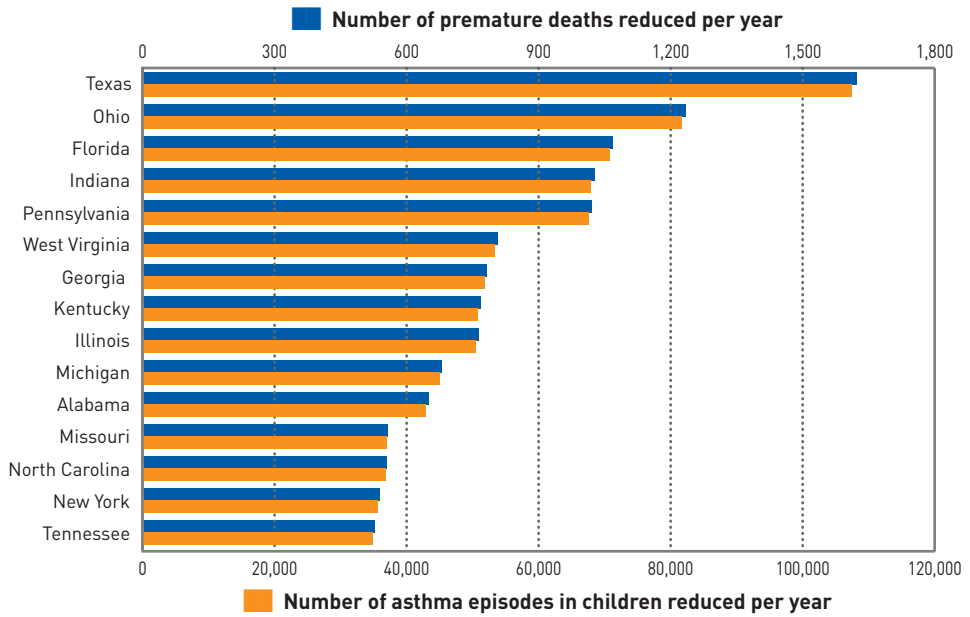
be \$1,000 per ton. Figure A, which is based on EPA data, compares the SO<sub>2</sub> pollution reduction investments for motor vehicles, diesel freight trucks, and industrial smokestack scrubbing. In dramatic contrast with power plants, these other major economic sectors are required to invest many thousands of dollars per ton to clean up each ton of SO<sub>2</sub>.

- Stronger power plant clean up standards would annually prevent 16,000 premature deaths and about 1,000,000 asthma episodes in children annually.** Even a \$1,500 per ton threshold for power plants would be highly cost-effective compared to other national EPA programs to reduce SO<sub>2</sub>, and such costs would be far surpassed by the human health benefit of controlling SO<sub>2</sub> at smokestacks. The human health benefits of lowering SO<sub>2</sub> from power plants are valued at \$15,000 per ton. Modestly increasing the cost-effectiveness threshold to \$1,500 per ton for SO<sub>2</sub> and a similar increase for NO<sub>x</sub> would annually prevent some 16,000 premature deaths from particulate pollution, and 1,000,000 asthma episodes in children across the eastern region subject to EPA's initiative.
- States and communities in the Heartland have the most to gain.** The Heartland is hit hardest by power plant pollution and has the most to gain from tougher EPA clean up standards. Using EPA's methodology, Environmental Defense estimated both the number of avoided premature deaths and the number of avoided asthma episodes in children in each affected state by modestly increasing smokestack pollution control investments. Figure B shows the top fifteen states that stand to benefit from strengthening EPA's proposal by raising the SO<sub>2</sub> cost-effectiveness threshold to \$1,500 per ton.

FIGURE B

**Top fifteen states with greatest human health benefits from stronger power plant clean up standards**

If EPA finalizes a more effective power plant rule, there would, for example, be 1,200 fewer premature deaths and 80,000 fewer asthma episodes in children in the state of Ohio. The On-Line Appendix located [www.environmentaldefense.org/go/blowingsmoke](http://www.environmentaldefense.org/go/blowingsmoke) contains estimated health benefits for each of the 28 states affected by the EPA proposal.



Strengthening pollution limits on smokestacks would also aid the many communities struggling to restore healthy air. According to EPA’s own analysis, millions of Americans in Heartland cities—including Chicago, Cleveland, Cincinnati, Detroit, Pittsburgh, Knoxville, Atlanta and Birmingham—will be left breathing unhealthy air even after the EPA power plant rule is implemented (Figure C). More protective clean up standards will lower harmful particulate and ozone pollution levels in these communities.

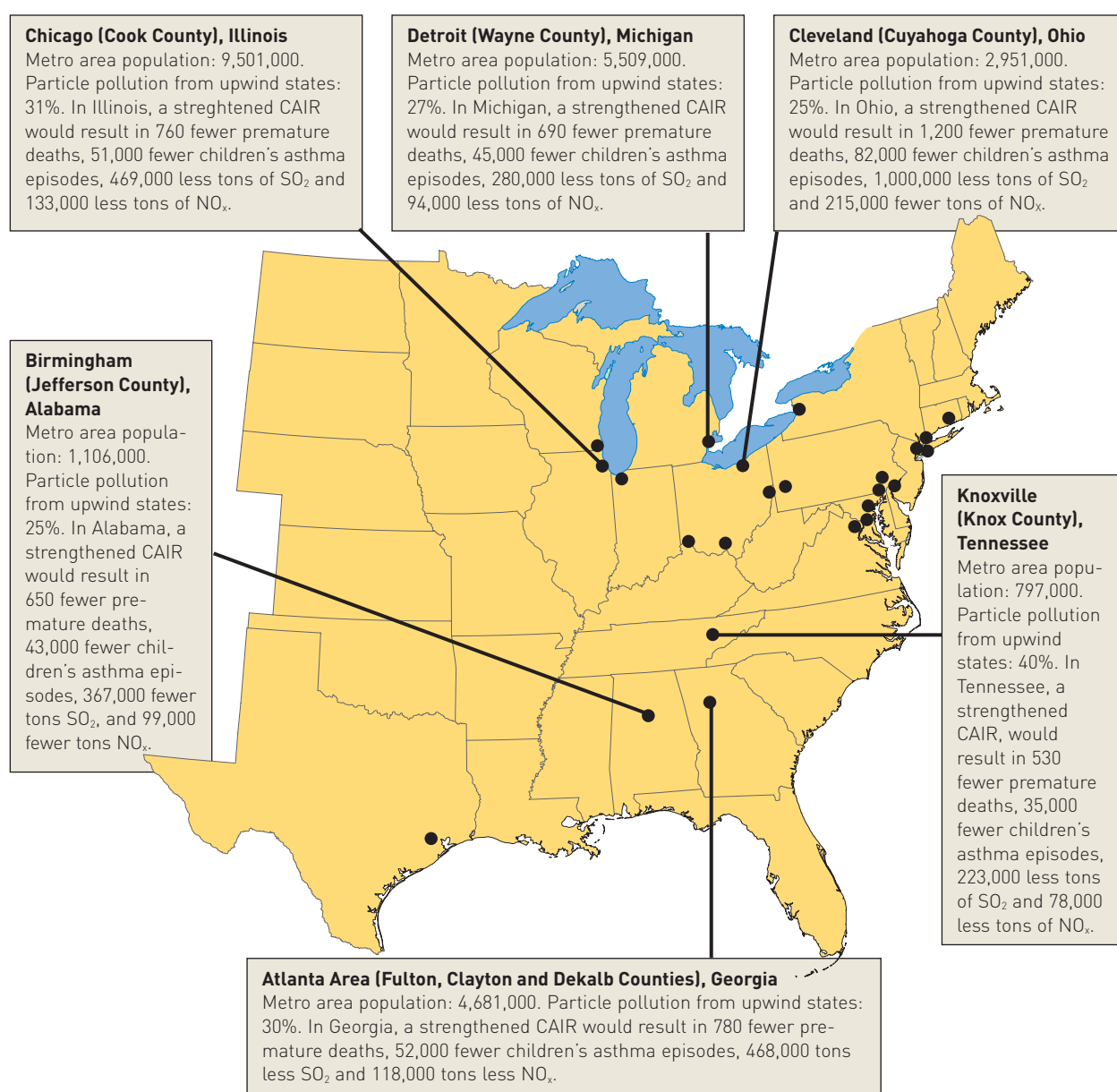
**Recommendations**

The proposed EPA power plant pollution reduction program should be strengthened and swiftly finalized to protect human health. In order to ensure that the millions of Americans in the Heartland—who are hard hit by blowing smoke—breathe easier, Environmental Defense recommends the following:

- **Strengthen the clean up standards for power plants to help millions in the heartland breathe easier.** Stringent limits for SO<sub>2</sub> pollution are common features of several bipartisan power plant pollution control bills in Congress, including the Clean Air Planning Act co-sponsored by Senators Carper, Chafee, Gregg and Alexander. Independent assessments and the technical analysis supporting these legislative initiatives make a compelling case for a 2.0 million ton cap for the 28-state region affected by EPA’s proposed clean up

FIGURE C

**Heartland communities with unhealthy air in 2015 after implementation of EPA power plant clean up standards**



Dots indicate communities predicted to be in nonattainment even after implementation of EPA's power plant rule if finalized at current levels.

- Arlington** (Arlington County), Virginia (ozone)
- Atlanta area** (Fulton, Clayton and DeKalb Counties), Georgia (PM)
- Baltimore area** (Anne Arundel and Harford Counties), Maryland (ozone)
- Birmingham** (Jefferson County), Alabama (PM)
- Buffalo** (Erie County), New York (ozone)
- Chicago** (Cook County), Illinois (PM)
- Cincinnati** (Hamilton County), Ohio (PM)
- Cleveland** (Cuyahoga County), Ohio (PM)
- Columbus area** (Russell County), Alabama (PM)

- Detroit** (Wayne County), Michigan (PM)
- Gary** (Lake County), Indiana (ozone)
- Houston** (Harris County) Texas (ozone)
- Kenosha** (Kenosha County), Wisconsin (ozone)
- Knoxville** (Knox County), Tennessee (PM)
- Middletown** (Middlesex County), Connecticut (ozone)
- New York area** (Bergen, Hunterdon, Mercer, Middlesex, Monmouth, and Ocean Counties) New Jersey (ozone)
- New York area** (Fairfield and New Haven Counties), Connecticut; (Bergen, Hunterdon,

- Mercer, Middlesex, Monmouth and Ocean Counties) New Jersey; Richmond, Suffolk, and Westchester Counties, New York (ozone)
- Philadelphia area** (Bucks, Montgomery, and Philadelphia Counties), Pennsylvania; (Camden and Gloucester Counties), New Jersey; (Cecil County), Maryland (ozone)
- Pittsburgh** (Allegheny County), Pennsylvania (PM)
- Portsmouth** (Scioto County), Ohio (PM)
- Steubenville** (Jefferson County), Ohio (PM)
- Washington, DC** (ozone)

standards. But EPA disregards this body of analysis and instead uses its lax cost-effectiveness test as the primary tool for establishing its proposed SO<sub>2</sub> pollution cap of 2.7 million tons for the 28-state region. A modest cost-effectiveness threshold of \$1,500 per ton, far less than the investments being asked of other economic sectors to lower SO<sub>2</sub>, would lead to a regional limit for SO<sub>2</sub> of 1.6 million tons per year.

Environmental Defense recommends EPA adopt tougher pollution limits to protect human health: the SO<sub>2</sub> from eastern power plants in the 28 states should be limited to 1.6–2.0 million tons annually for SO<sub>2</sub>. NO<sub>x</sub> emissions should be capped at 1.0 million tons annually for the region, based on a similarly strengthened cost-effectiveness test that will better protect the communities hard hit by ozone smog. If EPA fails to strengthen these critical pollution limits, its own analysis shows that the millions of Americans in the Heartland hardest hit by power plant pollution will suffer the most.

- **Finalize the Clean Air Interstate Rule by September 2004.** The science demands action. SO<sub>2</sub> and NO<sub>x</sub> pollution pose serious human health risks. Power plants are the predominant source of SO<sub>2</sub> pollution and a major source of NO<sub>x</sub>. Technologies to control these pollutants have been available for years. The human health costs of delay are severe. EPA should move swiftly to finalize its SO<sub>2</sub> and NO<sub>x</sub> power plant clean up standards by September 2004.

EPA predicts that even after implementation of its proposed power plant rule, millions of people will be left breathing unhealthy air. Heartland states are home to some of the nation's dirtiest coal-fired power plants and have the most to gain from more protective EPA smokestack pollution control standards. Power plants are blowing smoke in the Heartland. It is up to EPA to help millions breathe easier.



## Health and environmental imperative for EPA action

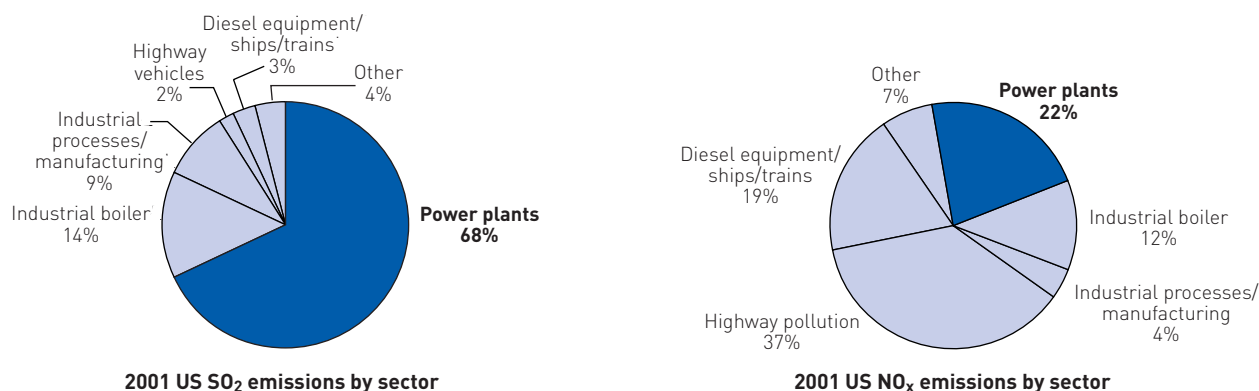
Air pollution has taken a tremendous toll on human health and the environment, with power plants emitting 68% of sulfur dioxide (SO<sub>2</sub>) and 22% of NO<sub>x</sub> pollution nationally (see Figure 1).<sup>2</sup> Because of these high emissions, power plant pollution is implicated in tens of thousands of premature deaths and many more asthma attacks, respiratory and cardiovascular illnesses as well as a host of other health and environmental effects. EPA recently found that well over half of the American public lives in areas with unhealthy particulate or ozone “smog” pollution levels. The unhealthy particulate and ozone pollution problems span the urbanized eastern seaboard and reach into the Heartland of the country including St. Louis, Chicago, Detroit, Indianapolis, Pittsburgh, Charleston, Louisville, Knoxville, Birmingham, and Atlanta.

### Taking our breath away: human health effects of power plant pollution

Particulate and ozone pollution pose a severe and widely recognized public health threat in the United States. On April 15, 2004, EPA found 474 counties, home to 159 million Americans, out of compliance with the health-based eight-hour ozone standard. On June 29, 2004, EPA also preliminarily found some 244 counties with 99 million Americans out of compliance with the health-based particulate pollution standard. The sulfur dioxide (SO<sub>2</sub>) and oxides of nitrogen (NO<sub>x</sub>) discharged from power plant smokestacks react in the atmosphere to form harmful particulate and ozone pollution.

Restoring healthy air to communities and families across America suffering from particulate and ozone pollution is a pressing national priority. EPA projects restoring healthy air to these communities would prevent tens of thousands of premature deaths and avoid hundreds of thousands of asthma attacks each year.<sup>3</sup>

FIGURE 1  
Power plants are the predominant source of SO<sub>2</sub> pollution and a major source of NO<sub>x</sub>



Source: US EPA "Technology Transfer Network: Clearinghouse for inventories and emissions factors," [www.epa.gov/ttn/chief/net](http://www.epa.gov/ttn/chief/net).

## **Lost in the haze: power plant pollution in our national parks**

The same particulate pollution that harms human health also pollutes the scenic vistas at national parks and wilderness areas. Visibility in the southern Appalachian Mountains has declined by an estimated 78% from natural levels. Natural visibility is estimated to be 113 miles on an average day in the Smoky Mountains, but today air pollution haze has cut visibility to an average of 25 miles.<sup>4</sup> Much of the loss in visibility can be traced back to pollution from coal-fired power plants.

## **Land and water: power plant pollution impacts forests and streams**

Air pollution causes acid rain and nitrogen deposition, which make vegetation more susceptible to disease and pests, contributing to stunted growth and significant declines in populations of tree species throughout the East. Atmospheric nitrogen also contributes to harmful levels of nutrient loading in sensitive coastal and estuarine water systems such as the Chesapeake Bay, Long Island Sound and the Tar-Pamlico watershed. Excess nitrogen loading from power plant NO<sub>x</sub> and other sources in waterways overstimulates algae growth, which depletes oxygen levels, causing fish kills and destroying ecologically and commercially valuable plants. Power plants need to be cleaned up across the eastern United States to remedy the ecosystem impacts of pollution.

## Stronger power plant clean up standards are necessary to protect human health

To its credit, EPA is breaking through the political logjam in Congress by using its existing power under the Clean Air Act to lower smokestack pollution. Dubbed the “Clean Air Interstate Rule,” the EPA initiative would establish statewide limits on power plant pollution of SO<sub>2</sub> and NO<sub>x</sub>. The rule is based on the “good neighbor” provisions of the Clean Air Act that prohibit an upwind state from discharging pollution that significantly contributes to unhealthy air in a downwind state. But no one will begin to breathe cleaner air until EPA makes this rule final. Moreover, millions of Americans in the Heartland will be left behind unless EPA toughens its power plant clean up standards. This report shows that by any measure—public health or economics—the EPA power plant initiative can and should be strengthened.

### Power plants blowing smoke

Power plants are blowing smoke across this nation with communities in the Heartland being the hardest hit. In order to disperse their air pollution, power companies constructed their smokestacks hundreds of feet high. The tall smokestacks discharge pollution that has a cascade of impacts, harming local communities and then being carried downwind hundreds of miles where it has far-reaching human health and environmental consequences. Table 1 ranks the communities in the eastern United States in order of the percent of particulate pollution received from upwind states. For example, Louisville, Kentucky, suffers from unhealthy particulate pollution and receives over 40% of its pollution from sources in upwind states.

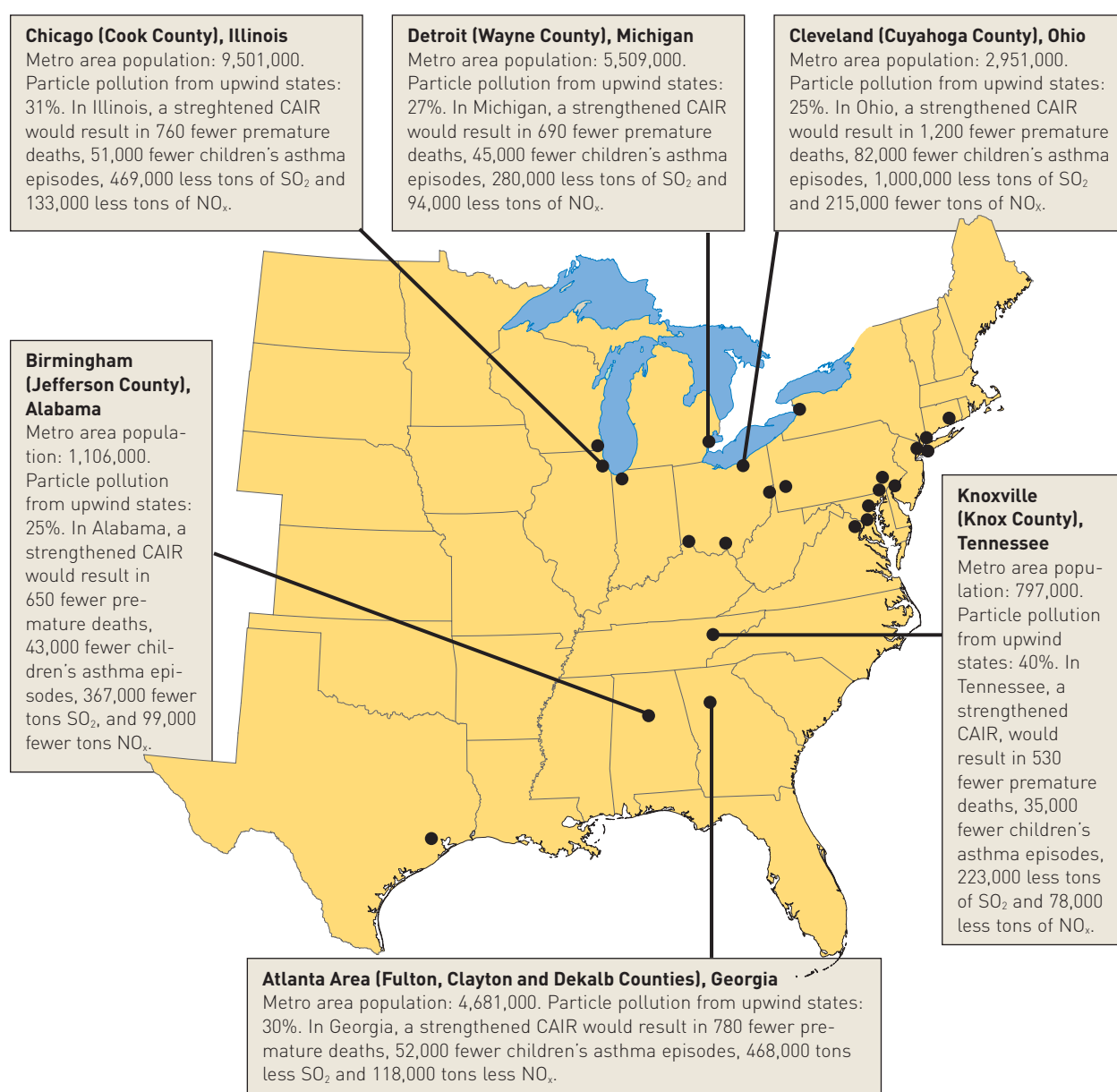
TABLE 1

**Many of today’s communities with unhealthy particulate pollution levels receive more than a third of their pollution from upwind states**

State	Nonattainment area— list by community or city	Percent pollution from upwind states	Metropolitan Statistical Area population
Kentucky	Louisville (Jefferson County)	43%	1,255,000
Indiana	Louisville area (Clark County)	43%	98,000
Missouri	St. Louis (St. Louis County)	40%	2,799,000
Tennessee	Knoxville (Knox County)	40%	797,000
Pennsylvania	Pittsburgh (Allegheny County)	38%	2,512,000
West Virginia	Charleston (Kanawha County)	37%	306,000
Delaware	Wilmington (New Castle County)	34%	6,261,000
Maryland	Baltimore (Baltimore County)	34%	7,982,000
Illinois	Chicago (Cook County)	33%	9,501,000
North Carolina	Lexington (Davidson County)	33%	1,451,000
Georgia	Atlanta (Fulton County)	30%	4,681,000
Michigan	Detroit (Wayne County)	27%	5,509,000
New York	New York (New York County)	26%	21,813,000
Alabama	Birmingham (Jefferson County)	25%	1,106,000
Ohio	Cleveland (Cuyahoga County)	25%	2,951,000

FIGURE 2

**Heartland communities with unhealthy air in 2015 after implementation of EPA power plant clean up standards**



Dots indicate communities predicted to be in nonattainment even after implementation of EPA's power plant rule if finalized at current levels.

- Arlington** (Arlington County), Virginia (ozone)
- Atlanta area** (Fulton, Clayton and DeKalb Counties), Georgia (PM)
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- Pittsburgh** (Allegheny County), Pennsylvania (PM)
- Portsmouth** (Scioto County), Ohio (PM)
- Steubenville** (Jefferson County), Ohio (PM)
- Washington, DC** (ozone)

Reducing the blowing smoke from upwind power plants is therefore essential to improve public health and bring these communities into compliance with the health-based air quality standards.

### **EPA proposal leaves major Heartland cities with unhealthy air**

The EPA proposal to cut SO<sub>2</sub> and NO<sub>x</sub> pollution from power plants in eastern states must be strengthened to protect human health in the Heartland. In fact, EPA predicts that even after implementation of its proposed Clean Air Interstate Rule millions of people across the Heartland and on the Atlantic coast will be left with unhealthy air and this rule will still allow unhealthy pollution concentrations in a number of major metropolitan areas. For example, highly populated cities such as Chicago, Detroit, Cleveland, Cincinnati, Pittsburgh, Birmingham and Atlanta will still be out of compliance with the health-based standard for particulate pollution (see Figure 2). At the same time, EPA's own analysis shows that much steeper reductions in sulfur dioxide would achieve far-reaching public health benefits and be highly cost effective.

The Heartland of the United States is hit hardest by power plant pollution and it has the most to gain from EPA strengthening its power plant clean up standards. Using EPA's methodology, Environmental Defense estimated both the number of premature deaths and the number of asthma episodes in children that could be prevented if EPA modestly increased smokestack pollution control investments that are required by federal standards to levels that are still significantly less than tailpipe pollution control investments. See Figure 3, page 6 for the top fifteen states that stand to benefit from cleaning up power plants.

### **Human health benefits of stronger EPA action far outweigh clean up costs**

Under Executive Order 12866, White House policy requires EPA to "select the approach that maximizes net benefits."<sup>5</sup> Based on EPA estimates, its proposed emissions standards for power plants, in 2015, would lead to \$84 billion in societal health and environmental benefits and less than \$4 billion in costs, or about \$80 billion net benefits. Thus, the benefits of the rule outweigh the costs by more than 20 times, as shown in Figure 4, page 6. This comparison does not include the numerous unquantified public health and environmental benefits from lowering SO<sub>2</sub> and NO<sub>x</sub> emissions. Contrary to Executive Order 12866, EPA gives no indication that its proposal maximizes net benefits, and EPA should adopt deeper power plant pollution cuts if it seeks to maximize net benefits as called for by the White House's own rulemaking policy. EPA's lopsided benefit-to-cost ratio demands more protective power plant standards to strengthen the human health benefits.

EPA's own analysis of legislative proposals to clean up power plant pollution, such as the Clean Air Planning Act and Clean Power Act, demonstrates that human health and environmental benefits of more protective standards would still far

FIGURE 3

**Top fifteen states with greatest human health benefits from stronger power plant clean up standards**

If EPA finalizes a more effective power plant rule, there would, for example, be 1,200 fewer premature deaths and 80,000 fewer asthma episodes in children in the state of Ohio. The On-Line Appendix located [www.environmentaldefense.org/go/blowingsmoke](http://www.environmentaldefense.org/go/blowingsmoke) contains estimated health benefits for each of the 28 states affected by the EPA proposal.

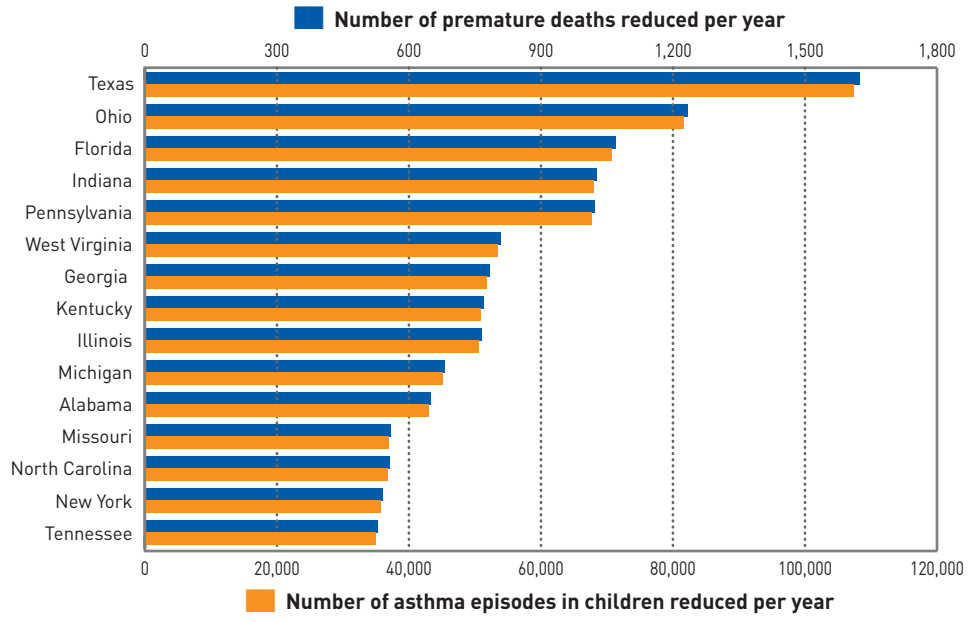
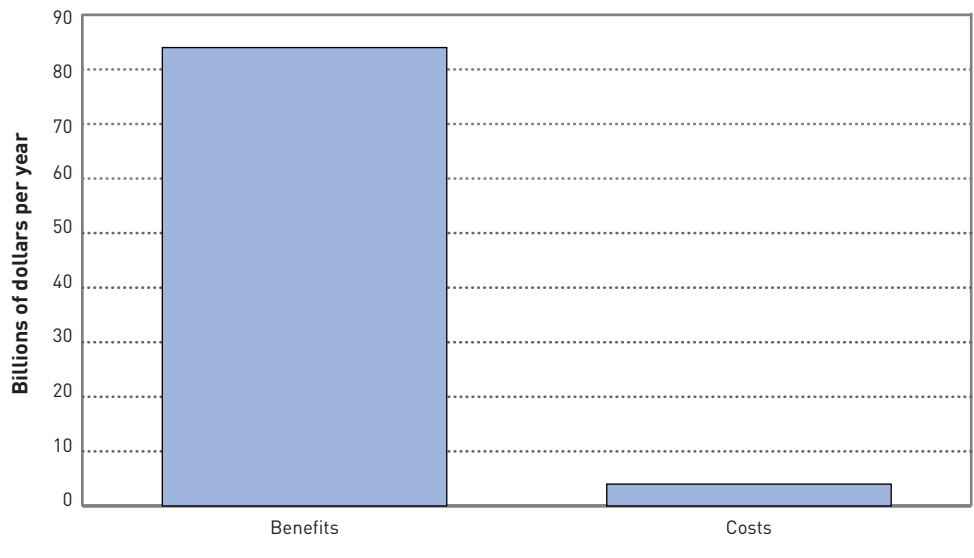


FIGURE 4

**EPA estimates the value of human health benefits outweighs costs by a 20-to-1 ratio**

The benefits-to-costs ratio demonstrates that EPA can require substantially deeper cuts in SO<sub>2</sub> and NO<sub>x</sub> and still provide society with benefits that far outweigh the costs.



Source: EPA

outweigh the costs. For example, Senator Jefford’s proposed Clean Power Act would require deeper and faster SO<sub>2</sub> and NO<sub>x</sub> cuts along with reductions of mercury and carbon dioxide levels. EPA estimates this much more ambitious legislation would cost about \$16.5 billion, still far less than the estimated \$84 billion in benefits from implementation of the CAIR. Clearly, the EPA proposal could be strengthened to achieve far greater societal benefits while still remaining cost effective.

### More protective EPA action is highly cost-effective

EPA proposes to establish pollution caps of 2.7 million tons for SO<sub>2</sub> and 1.3 million tons for NO<sub>x</sub> in the year 2015 over a region that includes 28 eastern states and the District of Columbia. EPA estimates the marginal cost of reductions necessary to meet these caps will be approximately \$1,000 per ton of SO<sub>2</sub> and \$1,500 per ton of NO<sub>x</sub>. EPA establishes these cost-effectiveness limits as upper bounds on the pollution control investments to be made under the rule. But EPA’s proposed cost thresholds are weak. EPA, for example, can substantially increase the human health and environmental benefits while still operating within a “highly cost-effective” reduction scenario by relying on pollution abatement cost thresholds of \$1,500 for SO<sub>2</sub> reduced and \$2,000 per ton of NO<sub>x</sub> reduced.

Using EPA data, Environmental Defense estimates that if EPA’s cost thresholds for SO<sub>2</sub> and NO<sub>x</sub> reductions were increased to \$1,500 and \$2,000 per ton respectively, SO<sub>2</sub> emissions would be lowered by an additional 1.1 million tons to a cap of 1.6 million tons per year and NO<sub>x</sub> emissions would be lowered by 437,000 tons

TABLE 2  
**Health benefits of reducing power plant pollution**

Health effect	COST-EFFECTIVENESS THRESHOLD*		Additional benefit of stricter cost-threshold
	Proposed SO <sub>2</sub> - \$1,000/ton NO <sub>x</sub> - \$1,500/ton	Alternative SO <sub>2</sub> - \$1,500/ton NO <sub>x</sub> - \$2,000/ton	
Premature death (PM)	13,000	16,000	3,000
Non-fatal heart attacks (PM)	18,000	22,000	4,000
Adult bronchitis cases (PM)	6,900	8,400	1,500
Hospital admissions, respira- & cardiovascular (PM)	13,000	16,000	3,000
Acute bronchitis, children (PM)	16,000	19,000	3,000
Asthma emergency room visits, children (PM)	9,200	11,000	1,800
Lower respiratory symptoms, children (PM)	190,000	230,000	40,000
Upper respiratory symptoms, asthmatic children (PM)	620,000	750,000	130,000
Asthma exacerbations, asthmatic children (PM)	240,000	290,000	50,000

\*Environmental Defense written comments to EPA on the CAIR proposal, March 30, 2004. Copy available by request to mshore@environmentaldefense.org.

FIGURE 5

### Upwind pollution and the incremental benefits of increasing the CAIR cost-effectiveness threshold

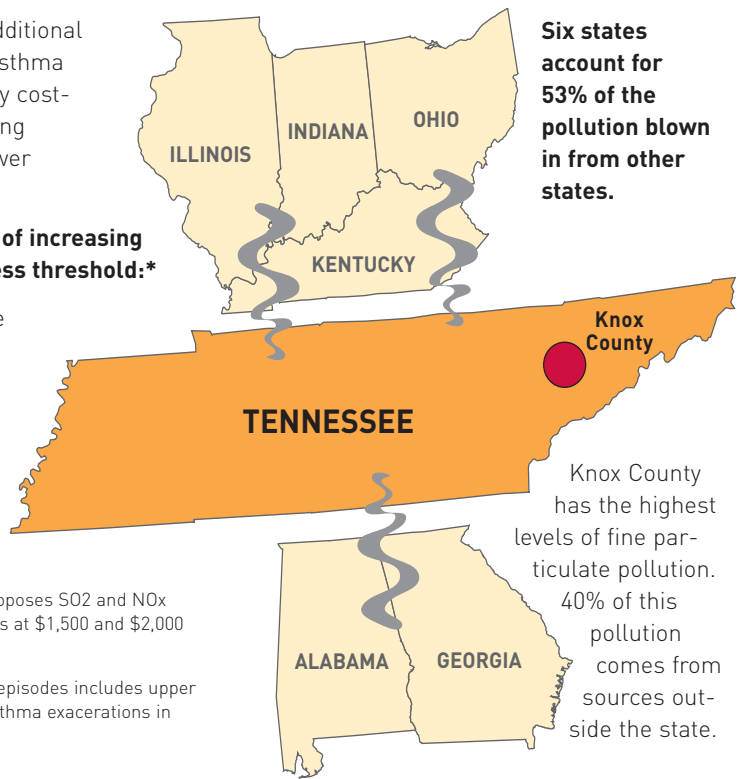
EPA can prevent an additional 90 deaths and 6,000 asthma episodes in children by cost-effectively strengthening pollution limits on power plants.

#### Incremental benefits of increasing CAIR cost-effectiveness threshold:\*

- 90 fewer premature deaths annually
- 6,000 fewer child asthma episodes\*\*
- 14,000-ton reduction in NO<sub>x</sub>
- 39,300-ton reduction in SO<sub>2</sub>.

\* Environmental Defense proposes SO<sub>2</sub> and NO<sub>x</sub> cost-effectiveness thresholds at \$1,500 and \$2,000 respectively.

\*\* Number of child asthma episodes includes upper respiratory problems and asthma exacerbations in asthmatic children.



State charts available for all 28 eastern states at [www.environmentaldefense.org/go/blowingsmoke](http://www.environmentaldefense.org/go/blowingsmoke).

to a cap of 860,000 ton per year across the 28 state region.<sup>6</sup> The \$1,500 per ton cost-effectiveness threshold for SO<sub>2</sub> would still be far outweighed by the estimated \$15,000 benefits per ton of SO<sub>2</sub> reduced.<sup>7</sup>

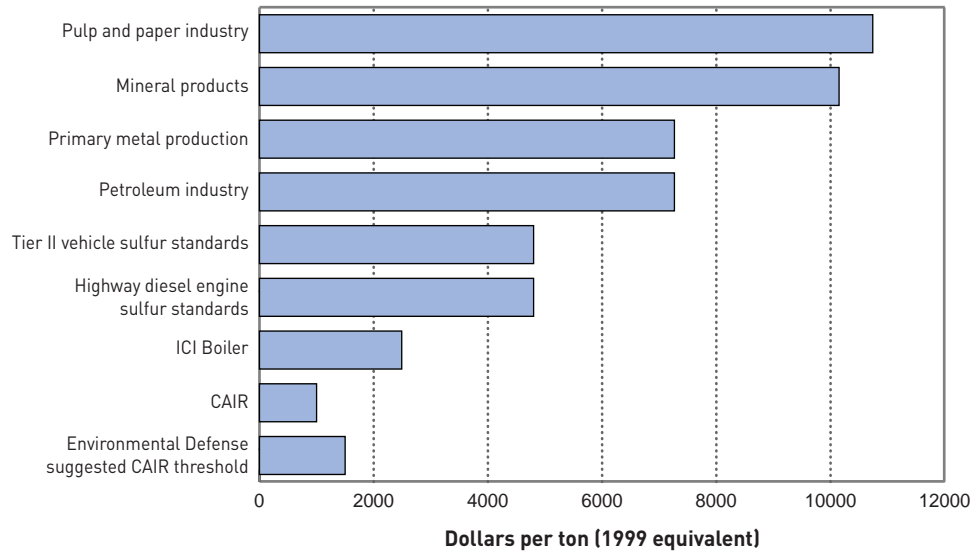
An impressive increase in human health benefits would accompany the incremental pollution reductions that occur as a result of relying on cost-effective investments of \$1,500. The resulting health benefits are listed in Table 2.<sup>8</sup> Modestly increasing the cost-effectiveness threshold to \$1,500 per ton for SO<sub>2</sub> and a similar increase for NO<sub>x</sub> would annually prevent some 16,000 premature deaths from particulate pollution, and 1,000,000 asthma episodes in children across the eastern region subject to EPA's initiative.

Each of the 28 states covered by the EPA proposal would realize important human health benefits from the more protective cost-effectiveness threshold. For example, Figure 5 shows that in the state of Tennessee a more protective cost-effectiveness threshold would cut SO<sub>2</sub> pollution by 39,300 tons annually and NO<sub>x</sub> pollution by 14,000 tons. These pollution reductions would lead to 6,000 fewer asthma episodes in children and avoid 90 deaths. This figure also shows the high contribution of pollution that Tennessee receives from its neighbors. Similar figures for each of the 28 states covered by EPA's proposal are presented in the On-Line Appendix.<sup>9</sup>

FIGURE 6

**Cost threshold for EPA power plant proposal does not measure up to the clean air standards for other sectors**

This figure shows that the cost-effectiveness threshold for the EPA proposed power plant rule (\$1,000 per ton of SO<sub>2</sub> reduced) does not measure up to the costs EPA has imposed on other pollution sources to lower SO<sub>2</sub> and is thus less protective than other EPA standards.



**More protective EPA action would be consistent with pollution control costs under other national clean air programs**

Cost-effectiveness provides an important tool for comparing the pollution control investments across national clean air programs. It provides a benchmark to assess, for example, whether EPA is asking power plants to invest pollution control costs similar to those invested by other economic sectors.

The costs of reductions for pollutants in other EPA programs are presented in Figure 6 above. When compared with other EPA programs, a \$2,000 per ton abatement cost for SO<sub>2</sub> and a \$2,000 per ton abatement cost for NO<sub>x</sub> would fall well within the range of costs that EPA programs have historically relied on. In fact, a \$1,500 per ton abatement cost for SO<sub>2</sub> under the power plant proposal would be significantly lower than the abatement costs of other important EPA regulations.

**States are requiring greater pollution control investments**

States are willing to make considerably higher investments in pollution control than what EPA labels “highly cost-effective” in its power plant proposal. For example, the Texas Emission Reduction Plan (TERP) provides funding to retrofit diesel engines with an abatement cost of up to \$13,000 per ton of NO<sub>x</sub>. The Texas Legislature has appropriated about \$130 million a year between 2004 and 2008 for this program.

North Carolina's Clean Smokestacks Act of 2002 requires significant cuts in sulfur dioxide from power plants by 2013. Based on underlying state data,<sup>10</sup> Environmental Defense estimates that Progress Energy's average cost per ton to reduce SO<sub>2</sub> is \$5,042, while Duke Energy's cost per ton is \$7,588. These are just two examples of state clean air initiatives that are based on a willingness to require a much higher cost per ton investment in lowering harmful air pollution than the thresholds EPA has proposed for coal-fired power plants.

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## Healthier air in the Heartland

### Recommendations

The proposed EPA power plant pollution reduction program should be strengthened and swiftly finalized to protect human health. In order to ensure that the millions of Americans in the Heartland hard hit by blowing smoke breathe easier, Environmental Defense recommends the following:

- **Strengthen the clean up standards for power plants to help millions in the heartland breathe easier.** Stringent limits for SO<sub>2</sub> pollution are common features of several bipartisan power plant pollution control bills in Congress, including the Clean Air Planning Act co-sponsored by Senators Carper, Chafee, Gregg and Alexander. Independent assessments and the technical analysis supporting these legislative initiatives make a compelling case for a 2.0 million ton cap for the 28-state region affected by EPA's proposed clean up standards. But EPA disregards this body of analysis and instead uses its lax cost-effectiveness test as the primary tool for establishing its proposed SO<sub>2</sub> pollution cap of 2.7 million tons for the 28-state region. A modest cost-effectiveness threshold of \$1,500 per ton, far less than the investments being asked of other economic sectors to lower SO<sub>2</sub>, would lead to a regional limit for SO<sub>2</sub> of 1.6 million tons per year.

Environmental Defense recommends EPA adopt tougher pollution limits to protect human health: the SO<sub>2</sub> from eastern power plants in the 28 states should be limited to 1.6–2.0 million tons annually for SO<sub>2</sub>. NO<sub>x</sub> emissions should be capped at 1.0 million tons annually for the region, based on a similarly strengthened cost-effectiveness test that will better protect the communities hard hit by ozone smog. If EPA fails to strengthen these critical pollution limits, its own analysis shows that the millions of Americans in the Heartland hardest hit by power plant pollution will suffer the most.

- **Finalize the Clean Air Interstate Rule by September 2004.** The science shows that SO<sub>2</sub> and NO<sub>x</sub> pollution pose serious human health risks. Power plants are the predominant source of SO<sub>2</sub> pollution and a major source of NO<sub>x</sub>. Technologies to control these pollutants have been available for years. And the human health costs of delay are far too high. EPA should move swiftly to finalize its SO<sub>2</sub> and NO<sub>x</sub> power plant clean up standard by September 2004.

### Conclusion

Power plants have been blowing smoke across the Heartland of America for years. Technologies and strategies to reduce SO<sub>2</sub> and NO<sub>x</sub> pollution are widely available, and the human health benefits of pollution reductions far outweigh the costs. EPA has adopted tough standards to clean up the pollution from automobiles, diesel equipment, diesel freight trucks and diesel buses that will be phased in over the

next several years. But the Agency's efforts to clean up power plant smokestacks has lagged far behind despite a body of scientific evidence connecting smokestack pollution with serious human health impacts.

Cleaning up America's dirty power plants is long overdue. EPA must adopt strong standards to protect human health and the environment from smokestack pollution. It is time to stop blowing smoke in America's Heartland.

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## Notes

- <sup>1</sup> US EPA Press release, "EPA Administrator Tells Power Companies to Invest in Clean Air," Washington, DC, January 9, 2004; <http://yosemite.epa.gov/opa/admpress.nsf/0/217c26cff40b45a885256e16005693b5?OpenDocument>
- <sup>2</sup> <http://www.epa.gov/ttn/chief/net/index.html>.
- <sup>3</sup> U.S. Environmental Protection Agency, "Benefits of the Proposed Interstate Air Quality Rule," January 2004. Docket #OAR 2003-0053-0175. <http://www.epa.gov/air/interstateairquality/technical.html>
- <sup>4</sup> National Park Service, *Proposed Air Quality Benchmarks at Great Smoky Mountains and Shenandoah National Parks*, submitted to the Southern Appalachian Mountains Initiative, November 2, 2001.
- <sup>5</sup> <http://www.epa.gov/fedrgstr/eo/eo12866.htm>
- <sup>6</sup> Environmental Defense Written Comments to EPA on the CAIR proposal, March 30, 2004. Copy available by request to [mshore@environmentaldefense.org](mailto:mshore@environmentaldefense.org).
- <sup>7</sup> Benefit Analysis for the Section 112 Utility Rule (EPA 452/R-03-021), <http://www.epa.gov/ttn/atw/utility/proposalutilitymactbenefitsanalysisfinal.pdf>. From this source the benefit per ton of SO<sub>2</sub> reduced were calculated by multiplying total PM benefits by the sulfate apportionment factor then dividing by SO<sub>2</sub> emission reductions. SO<sub>2</sub> \$/ton = (0.852) \* (\$64,000,000,000)/(3,526,491) = \$15,000.
- <sup>8</sup> Ibid.
- <sup>9</sup> Similar state figures and the spreadsheet which supports them can be found online at [www.environmentaldefense.org/go/blowingsmoke](http://www.environmentaldefense.org/go/blowingsmoke).
- <sup>10</sup> <http://www.ncuc.commerce.state.nc.us/reports/smokstak.pdf>



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