

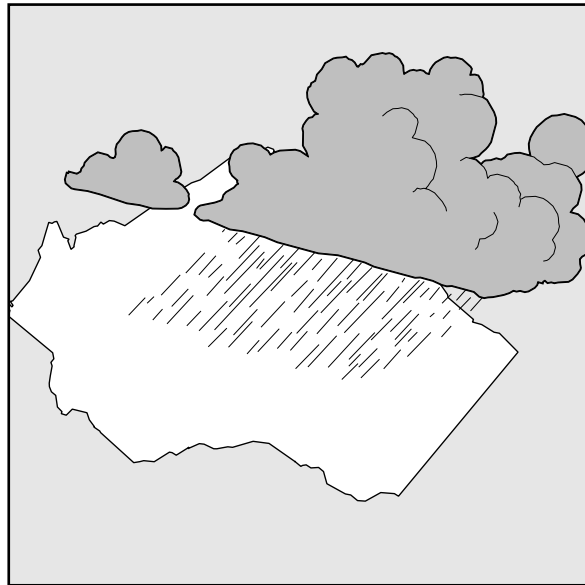
# WISCONSIN'S POLLUTED AIR...REALLY?

MARC C. DUFF

**A**nother summer has gone by, and in some areas of the state, especially Southeast Wisconsin, people have been subject to public relations campaigns telling us how bad Wisconsin's air is. At times in the summer when air quality is diminished, Ozone Action Days are declared by the Wisconsin Department of Natural Resources (DNR) and people are told to avoid cutting their lawns and fill up their gas tanks another day. The most ironic suggestion comes from electronic signs that recommend car-pooling to people who are already driving on the highways. Meanwhile, cynicism grows about these voluntary pollution reduction efforts when many Wisconsin residents see the clearest skies and breathe the freshest air they've experienced in decades.

Areas outside Southeast Wisconsin also come under scrutiny. Limits on mercury emissions and air toxins are being implemented, and many areas of the state may be included in new or updated federal clean air requirements.

As with many complicated scientific issues, public understanding of environmental concerns is influenced by assumptions, sometimes reflecting what people have learned in



school or through the media. People's fears rise when they hear reports that global warming will cause unthinkable disasters or that locating a power plant nearby will cause children to die. For example, a May 2001 Media Research Center study found that news reports about "catastrophic climate change" received far more attention than (six times as much as) reports about scien-

tists skeptical of catastrophe claims, with many broadcasts failing to include any mention of those who question the global warming theory.<sup>1</sup> Studies indicate that textbooks commonly warn about questionable environmental catastrophes,<sup>2</sup> and a Wisconsin Policy Research Institute review of university-level environmental education courses found they failed to provide future educators with a balanced, fair, and accurate background.<sup>3</sup>

As a result, it is not a surprise that public opinion surveys show people think air quality is bad or getting worse. A poll done last year by the University of Wisconsin Survey Center showed that 62 percent of state residents thought air pol-

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lution would make global warming worse.<sup>4</sup> Gallup's annual Environment/Earth Day opinion poll shows that nationally 47 percent think environmental conditions are worsening while only 33 percent believe they are improving.<sup>5</sup>

What really is the trend in air quality in the nation? Is Wisconsin's air quality really that bad? How have environmental policies affected the emission of pollutants? In fact, nationally and in Wisconsin, there have been vast improvements in air quality in recent years, and air quality will continue to improve in the immediate future.

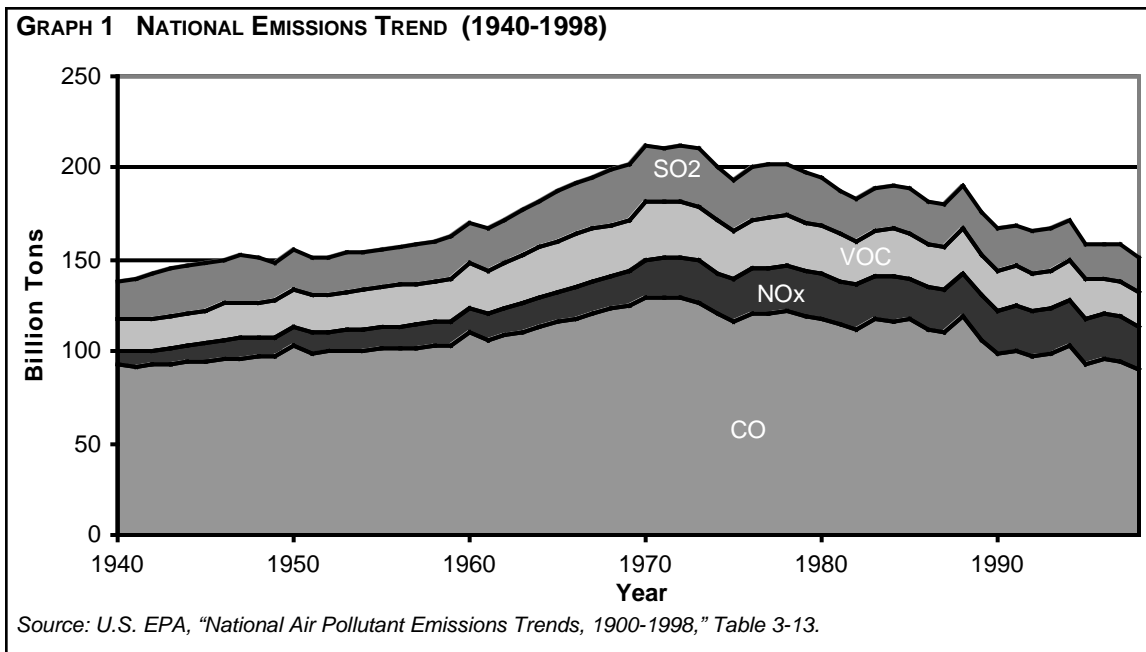
### Air Quality: History and Trends

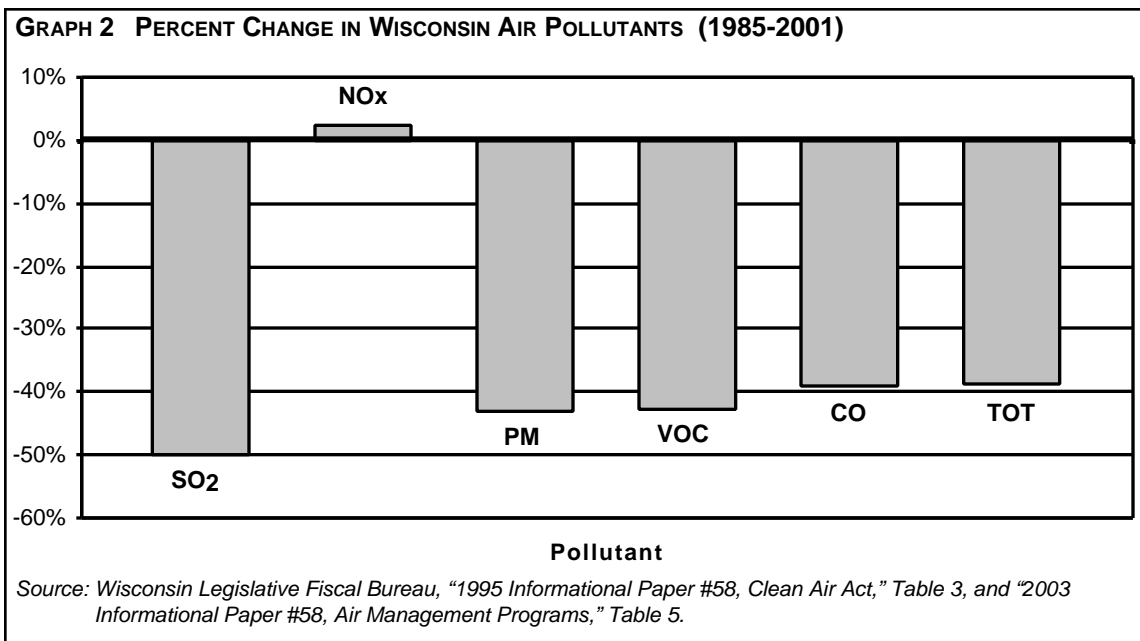
The celebration of Earth Day in 1970 marked a turning point in the environmental movement. The federal government became more active in its efforts to deal with air pollution after 1970, when the Clean Air Act was enacted. Also in 1970 the Environmental Protection Agency (EPA) was created and charged with setting air quality standards and emissions requirements for vehicles. In subsequent decades, amendments were made to strengthen the Clean Air Act, most recently in 1990.

Air pollution emissions in the United States peaked in 1970. As shown in Graph 1,

emissions of air pollutants like smog-forming carbon monoxide (CO), nitrogen dioxide (NO<sub>x</sub>), acidic sodium dioxide (SO<sub>2</sub>), and ozone-forming volatile organic compounds (VOC) steadily climbed after 1940, but those emissions declined significantly after Congress passed several new laws to address the nation's eroding air quality. With the exception of NO<sub>x</sub>,<sup>6</sup> total emissions of air pollutants are at their lowest levels since before World War II. Total emissions for these four major air pollutants have dropped by more than 50 billion tons annually since 1970, a reduction of more than 28 percent. This decrease occurred despite the fact that, during the same time period, the Gross Domestic Product increased 169 percent, vehicle miles traveled increased 149 percent, energy consumption increased 42 percent, and the population increased 39 percent.<sup>7</sup>

While the EPA is responsible for implementation of the Clean Air Act, the resulting programs were intended to be administered by the states. Since 1970, Wisconsin's DNR has operated programs to manage, improve and protect the state's air quality. The DNR approves construction and operation permits for air emission sources, monitors the state's air quality, and enforces air quality standards. In addition, the DNR develops and submits





state implementation plans required by the EPA, outlining how national air quality standards will be met.

The national trend toward significantly reduced air emissions is also evident in Wisconsin. As shown in Graph 2, total annual emissions in Wisconsin have dropped by more than 38 percent since 1985. The rate of decrease since 1970, one can safely assume, is greater still.

The primary air quality problem facing many areas of Wisconsin has to do with ground level ozone. Ozone is a colorless, odorless gas produced by the interaction of nitrogen oxide (NO<sub>x</sub>) and volatile organic compounds (VOC) in warm weather. Motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents are some of the major sources of NO<sub>x</sub> and VOC, also known as ozone precursors. Ozone concentrations vary, and formation is significantly impacted by weather patterns, especially the number of hot, sunny days and periods of air stagnation.

High concentrations of ground level ozone can cause coughing and throat irritation, reduce lung function, and inflame and damage the cells lining the lungs. Other health conditions are also aggravated by ozone, including

asthma, heart disease and chronic lung diseases such as emphysema and bronchitis. In addition, ozone can damage livestock, trees, plants, and crops, and it can degrade rubber, fabrics, and other materials. By interfering with the ability of plants to produce and store food, ground level ozone is responsible for 500 million dollars in reduced crop production in the United States each year.<sup>8</sup>

Wisconsin's air quality problem with ozone is exclusively a summertime situation. Other regions in the western part of the country, especially in California, experience high levels of ozone in the summer and carbon monoxide in the winter. Many aspects of the Clean Air Act, however, require year-round actions and emissions reductions, even when air quality problems could be dealt with more cost-effectively in some regions if the law allowed for flexibility tied to seasonal variations.

Based on the 1990 Clean Air Act Amendments, eleven Wisconsin counties were designated as "nonattainment areas" because high levels of ground level ozone over a one-hour period placed them out of compliance with the standard of 125 ppb. The nonattainment classification and the resulting regulations can be seen in Table 1.

**TABLE 1 1990 CLASSIFICATIONS AND REGULATIONS OF COUNTIES FOR OZONE NONATTAINMENT**

County	Classification	Regulations
Milwaukee, Racine, Kenosha, Waukesha, Ozaukee and Washington	Severe	Required installation of emissions control technology by industrial sources, emissions permits and limits, vehicle emissions testing, gasoline vapor recovery, reformulated gasoline, and clean fuel fleets
Sheboygan, Kewaunee and Manitowoc	Moderate	Required installation of emissions control technology by industrial sources, emissions permits and limits, and gasoline vapor recovery
Walworth	Marginal	Limited installation of emissions control technology by industrial sources and emissions permits and limits
Door	Rural Transport	None

Pursuant to federal clean air requirements, vehicle emissions testing programs were implemented in 1984 in the six southeastern counties, and in 1995 federal law required the sale of reformulated gasoline in the region. The state implemented a plan to meet the ozone standards by 2007 and reduce to VOCs by 15 percent. Emissions from vehicles and major industrial sources were targeted, and limits were also placed on solvents, coatings, and paints used in the region. Wisconsin met this requirement in 1997, only a year after its plan was approved by EPA. In 2000, the DNR determined that VOCs had been reduced by another 9 percent, meeting EPA progress requirements.

#### **Lake Michigan...A Great Ozone Lake**

Since Wisconsin and the counties in the nonattainment area have been able to dramatically reduce VOCs, a significant contributor to ground level ozone formation, why is the area still in violation of EPA standards? The reason has more to do with geography and weather than with how much air pollution is being emitted in the state.

Geography and weather are significant factors in Wisconsin's ozone problem for one big reason: the state sits next to Lake Michigan. While people may wonder why the lakeside

location impacts pollution, it is obvious that lakefront monitors are generally the only ones showing that ground level ozone consistently exceeds the EPA standard. Ground level ozone diminishes the farther you move from the lakeshore. It can be argued, accordingly, that Wisconsin faces high compliance costs and extensive regulatory burdens primarily because of high ozone levels found at Lake Michigan's beaches.

Studies and modeling by the Lake Michigan Air Directors Consortium (LADCO) indicate that weather patterns "strongly influence" ozone levels. Specifically, "ozone weather" is generated by high pressure systems in the region's east, producing light to moderate south-southwesterly winds, temperatures greater than 85°F, clear skies, and no precipitation.<sup>9</sup> These conditions cause air pollutants from Milwaukee, Chicago, Gary — from hundreds of miles away — to congregate and accumulate over Lake Michigan, especially during periods of air stagnation. The chemicals in the air then react, forming ozone. Winds blow the pollution ashore, causing high levels of ozone and violations of the air quality standard. The LADCO research indicates that, while efforts to control emissions have effectively reduced the severity of ground level

ozone, meteorology and the uniqueness of the Lake Michigan area make it almost impossible to meet federal ozone standards.

### Air Pollution Drifting In

Another obstacle to meeting the EPA standards is created by air pollution that drifts or is “transported” into the region from hundreds and thousands of miles away. What is frustrating here is that for years federal regulations mandated air pollution controls in places where monitors showed air quality to be the worst, rather than dealing with the actual cause of the problem. It’s like making someone in a restaurant’s no-smoking section deal with smoke that drifts in from the smoking section.

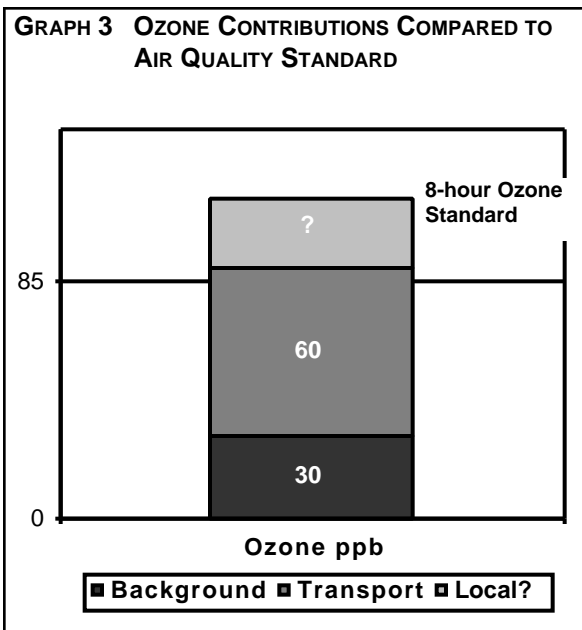
Wisconsin became active in addressing this problem and actually initiated litigation to prompt corrective action. Subsequent research by LADCO found that on peak days of ozone concentration, 40 to 60 percent of it could be attributed to emissions that drifted in from outside the Lake Michigan region, with levels reaching 70 - 110 ppb on some hot summer days. According to LADCO modeling, it would be impossible for Lake Michigan states to reach the Nation Ambient Air Quality Standards without addressing ozone transport.<sup>10</sup>

The situation could be even worse, as shown in Graph 3. If every single car was parked, every factory shut down, and all other ozone emissions were turned off in southeast Wisconsin, the naturally occurring background ozone level would be about 30 ppb. If you add to that the 60 ppb of ozone transported in from

outside the region, you will exceed the federal air quality standard. Therefore, some of Wisconsin might still violate the ozone standard even if every person, home, car, and factory were removed from the counties bordering Lake Michigan. Because of this situation, recent efforts by the federal government to reduce the impact of ozone transport are vital to Wisconsin’s efforts to meet the standard.

Recent research by the EPA on global air pollution transport makes the issue even more interesting. Bill Harnett, a division director in the EPA’s Office of Air Quality Planning and Standards, spoke to the 2002 Air Quality Standards Conference that emissions from

Asia will soon offset reductions in the United States by up to 25 percent. In addition, there is evidence air pollution from Mexico and Central America drifts north impacting Wisconsin and other central states. Finally, emissions from other countries make up 40 percent of mercury deposited in the United States — enough to possibly prevent attainment of the federal government’s own water quality standards.



dards.<sup>11</sup> Once again, as areas of Wisconsin struggle to reduce emissions to meet federal standards, more could be drifting in from foreign countries like China and Mexico. This dynamic of global air pollution transport should prompt reforms to the federal air regulations to take into account such impacts. While previous attempts to address global air quality generated controversy, like the flawed Kyoto protocol, an effective federal strategy on how to address global air pollution transport is needed.

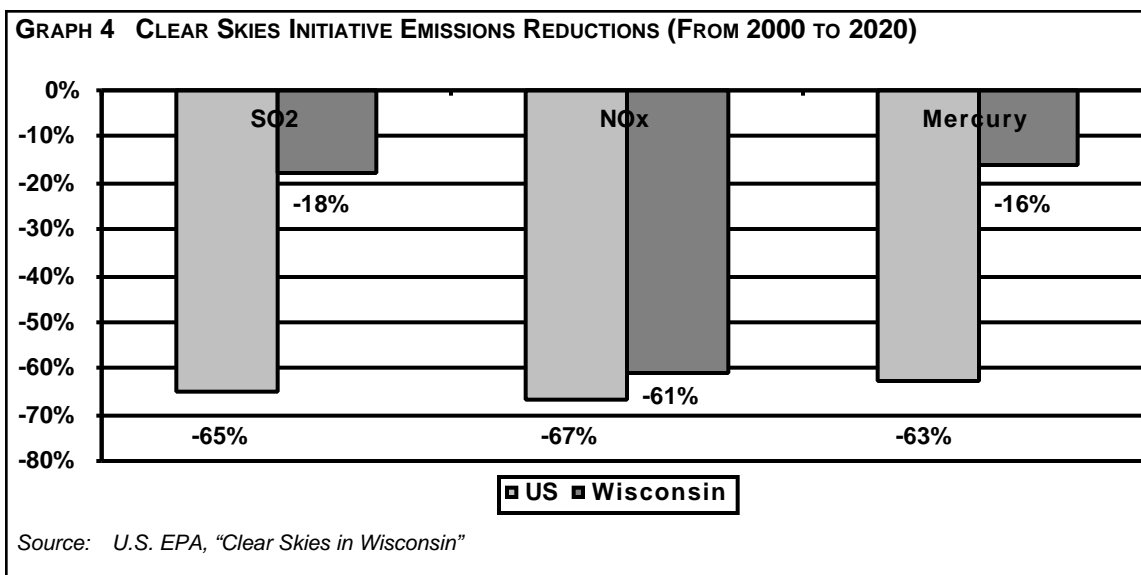
## Technology and New Regulations Will Make Air Quality Even Better

With the progress being made on reducing air pollution levels throughout the nation and Wisconsin, one would think we would hear applause and celebration. Unfortunately, many groups continue to indulge in rhetoric giving the impression that air quality is horrible or will be getting worse. The League of Conservation Voters gave President George W. Bush an "F," saying he "is well on his way to compiling the worst environmental record of any president in the history of our nation." The American Lung Association gave the 15 of 27 Wisconsin counties with ozone monitoring an "F" and accused the President of wanting to "deny tens of millions of Americans healthy air for the foreseeable future." But scientific modeling of new and existing clean air policies shows that we are well on our way to having cleaner air than we have had since before the industrial revolution.

Environmental groups spreading alarm rarely disclose information about how air pollution is being dramatically reduced. In addition, new and existing air pollution regulations managed by the EPA will continue to improve upon the trend toward reduced emissions. These initiatives include the Clear Skies Initiative, NO<sub>x</sub> SIP Call, and the implementa-

tion of the more stringent 8-hour 85 ppb ozone standard. Many of these new air quality regulations will address some of the problems Wisconsin is facing with ozone transport.

However, the new 8-hour ozone standard may also cause more Wisconsin counties to be designated as nonattainment areas. DNR staff originally suggested classifying 11 new counties as nonattainment areas, partly because their emissions adversely affect air quality in other areas. This suggestion generated considerable debate, since monitoring showed almost all the counties in question to have ozone concentrations below the federal standard. Governor Doyle recommended to the EPA that no additional counties be designated as nonattainment areas, but Doyle acknowledges that air quality monitoring this year might require some counties to be reclassified. Brown, Jefferson and Rock Counties are the closest to exceeding the 8-hour ozone standard. The EPA will make its final decision in April 2004 regarding which Wisconsin counties might be designated as nonattainment areas according to the 8-hour ozone air quality standard. Counties classified as non-attainment areas could face several new air pollution regulations, including emission caps, installation of emission control technology, fuel requirements, and vehicle inspection maintenance programs.



Little time will be needed, most likely, for many areas to meet the 8-hour ozone standard of 85 ppb. EPA modeling indicates that almost all of the existing counties will meet the standard by 2010 under existing Clean Air Act requirements. In addition, new controls (mainly on power plants in 21 states) could reduce NO<sub>x</sub> emissions by more than 85 percent from 1990 levels. Since the transport of NO<sub>x</sub> into Wisconsin contributes to the state's ozone problem, the state's air quality should continue to improve.

Waukesha and Washington Counties already meet the standard, but they are still being designated as nonattainment because the past practice of including all Milwaukee metropolitan counties as areas in violation. Monitoring in these counties show ozone levels at about 81 ppb, which is lower than concentrations in Rock, Jefferson, Walworth, and Brown counties. Yet Rock, Jefferson, Walworth, and Brown Counties are being excluded from nonattainment designation. EPA has provided guidance for boundaries to be changed to allow counties to be excluded from previously determined nonattainment areas. While changing the southeast Wisconsin severe ozone nonattainment area to exclude Waukesha and Washington Counties would be difficult to accomplish, few are taking the leadership in these areas to attempt this.

Another trend that will allow for dramatic improvements to air quality in Wisconsin and the nation is the gradual increase in use of cleaner vehicles. New vehicle manufacturing regulations and emission trends show per-mile emissions will decline about 90 percent during the next 20 years. If Americans drive 50 percent more miles in 20 years (a greater increase than projected), total emissions would still decline 85 percent from current levels.<sup>12</sup>



Vehicle models since 1996 also have on-board diagnostic computers to that ensure emission control systems operate properly. Wisconsin spends more than \$11 million per year to have a private contractor operate a relatively expensive vehicle emission testing program. The advent of on-board diagnostics could make this method obsolete. The state should look accordingly to overhaul its emissions testing program in order to make it more cost effective. Unfortunately, the state recently renewed its contract for the current emissions testing system, with few revisions.

#### **Regulations Overtake Taxes as Business Concern**

The mantra in Wisconsin among business and industry leaders has been to rail on how the state's high taxes burden the economy. But surprisingly, in a recent survey of CEOs by Wisconsin Manufacturers and Commerce, reducing regulations was cited as the top action state government could take to help their businesses.<sup>13</sup> Underlying concerns

focused especially on DNR air quality regulations and permitting. In many cases, people object not to the actual environmental standard or regulation, but to significant delays that frustrate efforts to get a timely permit from the DNR bureaucracy.

Under the Wisconsin air permit law, no business can start construction or undertake a project until it gets a permit from the DNR. Amazingly, it can take from six months to a year to obtain a DNR air permit. A Wisconsin-based company with facilities in different parts of the country indicates that other states can process air permits in only a week.<sup>14</sup>

Nationwide delays in providing required air permits prompted an evaluation of the situation by the EPA Office of the Inspector General (OIG). It was noted that under the 1990 federal Clean Air Act Amendments, all air permits under Title V of the law were to be issued by November, 1997. However, by the end of 2001, only 70 percent were issued, and only a handful of state and local agencies issued all of their permits. Wisconsin was one of the six states highlighted in the OIG evaluation; the final report showed that the state had one of the poorest records for issuing Title V air permits.

As can be seen in Table 2, the DNR had not issued even half of its permits, far less than the national average. In addition, the state took over a year longer to issue air permits than the average amount of time taken by the other five states included in the study. Finally, the fees Wisconsin charges to cover the costs of the air permit program tend to be higher than fees

elsewhere, suggesting that the DNR has adequate funding to operate its program.

Concerns over the serious DNR delays in issuing air permits have prompted a request by the Legislature to audit the program. During the February 5, 2003, Joint Committee on Audit's hearing on the issue, Jay Hochmuth, Administrator of the DNR Division of Air and Waste, admitted that while more than 800 Title V operating permits have been issued, the DNR continues to have a backlog of 500 permit applications. In addition, Hochmuth indicated that it takes the DNR on average more than a year to approve a construction permit under the New Source Review program.

The OIG evaluation of the Title V air permitting delays found that the EPA deserved part of the blame for the situation. The EPA failed to provide adequate oversight and technical assistance to states, and it delayed issuing regulations. However, it should be noted that many states were able to complete 100 percent of their air permits despite difficulties arising from the EPA. Wisconsin, on the other hand, struggled.

The OIG report identified states implementing strong, proactive, and committed permit management programs. These states utilized effective staff training, a reliable database and reporting system, federal/state/industry communications strategies, and stakeholder outreach programs. In addition, the OIG found that cooperative programs and partnership programs between the state agency and industries were highly successful in Florida and

**TABLE 2 COMPARISON OF TITLE V PERMITS, WISCONSIN VS. US**

	Wisconsin	U.S. Average
Percent of Title V Permits Issued as of 12/31/2001	48%	70%
Total Elapsed Days to Issue Title V Permits	1,704	1,329*
Fees Per Ton of Emissions	\$35.71	\$28.48*

Source: U.S. EPA Office of Inspector General, "AIR, EPA and State Progress in Issuing Title V Permits," Report No. 2002-P-00008, March 29, 2002.

\* Amount represents the average of six states covered in the study (CO, FL, MA, WI, MO & PA).



Pennsylvania. While other state's successes were highlighted, Wisconsin was referenced as a state claiming that it lacked adequate funding and staffing to effectively complete its permitting responsibilities.

Industry and environmental groups have been pressuring the EPA and the state to address the permit delay problem in Wisconsin. Environmental groups are concerned because the permits can help improve air quality through enhanced monitoring, enforcement, and the use of more efficient air pollution control measures. Business and industry would like the permits so they can move forward with construction, expand their businesses, and create jobs.

The DNR has announced an initiative to improve the efficiency of its permitting process. Unfortunately, it has set a goal of mid-2005 for the permit streamlining project even though it is clear that the problem needs to be addressed immediately. The reforms to the air permitting program should include the following:

- Permit flexibility allowing construction to proceed before final permit approval;
- Allow private approved experts to make preliminary determinations on permits or to assist with the backlog;
- Focus on reducing unnecessary permit requirements to free up staff time, including excessive application and permit filing paperwork; and
- Implement effective state/industry partnership programs similar to those in Florida and Pennsylvania.

While much frustration in the business community currently focuses on the DNR's

bureaucratic processes, new air pollution regulations may generate new anxiety. The DNR's proposed revisions to hazardous air pollution rules would increase the number of regulated substances by 144, to 577 substances. Currently the EPA regulates only 188. Industry groups estimated that the new regulation would generate more than \$200 million in compliance costs, while producing few benefits. The Legislature rejected the proposed rule and sent it back to the DNR's drawing board. However, the DNR is also going forward with a rule to regulate mercury emissions, at an estimated cost of \$1 billion. Many doubt that technologies exist to address the levels of mercury in

air emissions. In addition, since the bulk of the mercury found in Wisconsin's waters blows in from hundreds of miles away, there would likely be no noticeable benefit to area waters from the new rule. Rather than move forward with these separate initiatives, the DNR should attempt to conform to the EPA's hazardous air pollution requirements and seek mercury emissions reductions nationally through the Clear Skies Initiative.

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#### Conclusion

Is Wisconsin's air really polluted? No one can refute the fact that emissions both in the country and Wisconsin have dramatically declined and that air quality is better today than it has been in many decades. Having air pollutants drop nationally 28 percent since 1970, and 38 percent in Wisconsin since 1985, is very impressive. What is even more remarkable is that existing and new air regulations are so effective in reducing emissions that we are on our way to having the cleanest air we have enjoyed since well before World War II—despite our recent history of strong economic activity, more automobile use, population growth, and greater energy consumption.

Most of Wisconsin's air quality problems are no longer caused by activities in the state. Significant air pollution is transported into the region from other parts the globe. Finally, regarding high levels of ozone, the Lake Michigan area of the state is largely at the mercy of Mother Nature and her weather patterns. As a result, state government leaders, DNR staff, and Wisconsin's members of Congress should pursue changes to federal air quality regulations so that they take into account the state's unique situation. While progress has certainly been made, especially in addressing ozone transport issues, more could be done.

DNR management of air regulation programs also needs attention. Prompt reforms to the struggling air permitting program should be a priority for the DNR and the Legislature. In addition, while achieving air quality should be the DNR's primary goal, it should also be sensitive to the problems created by overregulation and excessive air requirements that may place imprudent burdens on individuals and businesses in Wisconsin.

## Notes

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