

# QUAKER ECO-BULLETIN

Information and Action Addressing Public Policy  
for an Ecologically Sustainable World

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## Clean Air, Clear Skies, Plain Truth Shelley Tanenbaum and Charles Blanchard

*The President announced a new environmental approach that will clean our skies, bring greater health to our citizens and encourage environmentally responsible development in America and around the world.*

—U. S. Environmental Protection Agency

*Why is the Administration bragging about a plan that will actually result in more pollution than if we simply enforced the existing Clean Air Act?*

—Sierra Club

Everyone is in favor of clean air, but do either of these statements make any sense? What does air-pollution science say about these claims?

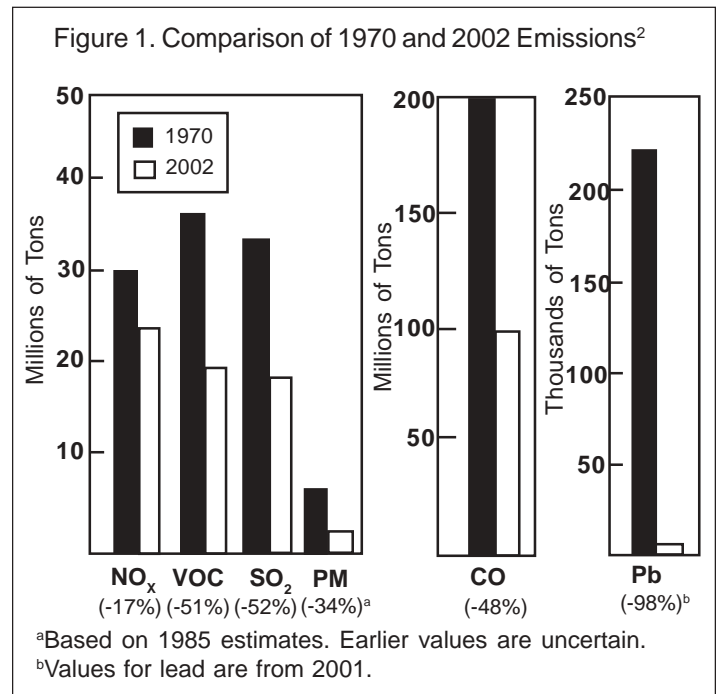
When the Clean Air Act (CAA) was passed in 1970, it was considered landmark legislation nationally and internationally for setting air quality standards for human health and safety and environmental protection. In urban areas, air pollutant concentrations exceeded healthy levels on a regular basis. In 1979, the maximum ozone levels in Los Angeles were almost four times the Federal ozone standard, and the worst monitoring site exceeded the standard on 164 days. That same year New York and Chicago exceeded the standard on 55 and 21 days, respectively. The CAA has been amended twice, in 1977 and 1990. Last year, the EPA and the current Bush administration proposed the “Clear Skies Initiative” and revisions in the “New Source Review” standards, both of which will change how we regulate pollution. These proposals generated a great deal of controversy and a recent lawsuit.

### Clean Air Act

The Clean Air Act (CAA) grants EPA the authority to establish national ambient air quality standards (NAAQS) for selected pollutants: ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), particulate matter (PM), lead (Pb), and sulfur dioxide (SO<sub>2</sub>). EPA is also charged with regulating hazardous air pollutants, such as mercury. The CAA specifies basic motor-vehicle emission standards and establishes a partnership between EPA and the states. Once air-quality standards are set by EPA, each state is required to develop an emissions-reduction plan to meet the NAAQS within a time period specified by the CAA. States were expected to meet the NAAQS by 1975. We are way behind schedule in most areas.<sup>1</sup>

Have any of these laws, regulations and government oversight done us any good? Where are the successes and where

are the dismal failures? Most of us who have been breathing for the past 30 years recognize that the air does indeed look and smell much better than it did in 1970. Is that backed up by the scientific data?



### Successes and Failures

Emissions from all six pollutants have declined since 1970 (Figure 1). In the most dramatic case, lead emissions have declined 98%. Thirty years ago, lead and SO<sub>2</sub> were considered major threats to our health, as well as to the health of forests and lakes from acid rain. These standards were met by the 1980's at almost all monitoring sites. SO<sub>2</sub> is still of concern because it contributes to the formation of fine particles, but it is no longer considered a problem as a primary pollutant.

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**Quaker Eco-Witness (QEW)** promotes government and corporate policies to help restore and protect Earth's biological integrity. It works within and through the Religious Society of Friends for policies that enable human communities to relate in mutually enhancing ways to the ecosystems of which they are a part. This witness seeks to be guided by the Spirit and grounded in reverence for God's creation.

**QEB's** purpose is to advance Friends' witness on government and corporate policy as it relates to the ecosystems that sustain us. Each issue is an article about timely legislative or corporate policy issues affecting our society's relationship to the earth.

Friends are invited to contact us about writing an article for **QEB**. Submissions are subject to editing and should:

- Provide background information that reflects the complexity of the issue and is respectful toward other points of view.
- Explain why the issue is a Friends' concern.
- Describe the positions of other faith-based and secular environmental groups on the issue.
- Relate the issue to legislation or corporate policy.
- List what Friends can do.
- Provide sources for additional information.

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At most sites, the NAAQS goal for CO was met by 1991, for NO<sub>2</sub> in the 1980's, and for inhalable PM (defined as particles smaller than 10 micrometers) in the 1990's. A standard for fine PM (particles smaller than 2.5 micrometers) was established only recently and its air-quality plans are still in process.

Emissions of both NO and NO<sub>2</sub> remain a major concern because they contribute to the formation of ozone. Because NO converts rapidly to NO<sub>2</sub>, it is customary to use "NO<sub>x</sub>" to refer to the sum of NO and NO<sub>2</sub>. Ultraviolet radiation from the sun splits NO<sub>2</sub>, forming NO and generating an oxygen atom, which rapidly combines with molecular oxygen (O<sub>2</sub>) to form ozone (O<sub>3</sub>), a powerful oxidant and irritant of eyes and the respiratory tract.

Ozone levels have declined in all regions of the United States, but remain over the NAAQS at about half of all monitoring locations. The main irritant in smog, ozone is called a secondary pollutant because it forms from reactions of other pollutants, namely NO<sub>x</sub> and volatile organic compounds (VOC, also known as hydrocarbons). As NO<sub>x</sub> or VOC emissions are reduced, ozone concentrations generally decline, but not proportionally. In some circumstances, moderate reductions of NO<sub>x</sub> even result in increased ozone formation. Current air quality studies indicate that NO<sub>x</sub> emissions must be reduced by 40 to 90 percent to achieve the newest and most stringent ozone air quality standards.

### **Clear Skies Initiative**

Many of us have wondered why we are still working to meet the NAAQS goals set for 1975. Will the Administration's Clear Skies Initiative (Clear Skies) get us there? Clear Skies proposes significant limits to emissions from stationary sources (power plants, refineries, manufacturing facilities), but it does not address pollution from motor vehicles. Emissions from NO<sub>x</sub>, SO<sub>2</sub> and mercury will all be reduced in a two-stage process, with the first phase of reductions implemented by 2008-10 and the second by 2018. These reductions address regional-scale pollution; they should lead to many more areas meeting the ozone NAAQS by 2010 and all but six areas (Los Angeles, the San Joaquin Valley, Houston, Philadelphia, New York, and Chicago) meeting the standards by 2018. EPA estimates that Clear Skies will reduce the number of counties that violate the ozone standard from 290 at present to 27 in 2020. And, Clear Skies will reduce the number of counties that violate the fine-particle standard from 129 at present to 18 in 2020.

That sounds good, but could we do better than that? In a 2001 EPA report, the agency outlined limits that it considered necessary for meeting the ozone and PM NAAQS.<sup>3</sup> Clear Skies, which was proposed a year later, allows significantly more pollution than those limits: 36% more NO<sub>x</sub>, 50% more SO<sub>2</sub>, and 190% more mercury emissions as of 2018. But there are no rules on the books or in the planning stage that would achieve those stricter limits. Clear Skies may make major improvements compared to present conditions, but it will not bring all of our largest cities into compliance with the ozone air quality standard. Clear Skies complements state rules by addressing regional-scale pollution. Some states will need to adopt additional emission-reduction rules to bring cities like Los Angeles, New York, and Houston into compliance with the ozone standard.

Clear Skies is currently stuck in committee in both the House and the Senate. In early December, the administrator of EPA proposed new rules for mercury, SO<sub>2</sub> and NO<sub>x</sub> emissions, which might replace the Clear Skies Initiative. As of press time, specific details had not been released, though some observers believe that the new rules will be equivalent to Clear Skies. However, information posted by EPA<sup>4</sup> suggests that the new rules could allow 25% more SO<sub>2</sub>, more than twice as much NO<sub>x</sub>, and about the same level of mercury emissions as Clear Skies.

Public comment on these rules will be accepted after they have been formally proposed. Will someone dub the new plan “Not-so-Clear Skies?”

## New Source Review

The EPA issued a rule change to the New Source Review (NSR) provisions of the Clean Air Act in August. Previously NSR had required that if major changes were made to an existing power plant, emissions controls must be brought up to standard. The NSR rule change now allows older facilities—often the most polluting—to expand or upgrade their physical plant without requiring them to meet current emissions standards.

Fourteen states, the District of Columbia, and a consortium of environmental groups filed suit against the proposed changes to NSR in October. EPA has claimed that the rule change will not increase emissions or health risks and will not significantly increase costs. However, a General Accounting Office (GAO) report issued in August says that EPA lacked sufficient data to make these claims.<sup>5</sup> The GAO concluded that EPA’s analysis was based on a few example facilities, rather than a systematic assessment. While modernizing old plants will indeed help them run more cleanly and efficiently, overall emissions could increase if plant operators expand their facilities significantly.

In November, EPA announced that it was dropping its investigation of some 50 facilities that an earlier EPA action had claimed were in violation of NSR. Originally, old plants were exempted from the controls required of new facilities by a grandfather clause that allowed old plants to operate through the end of their expected lifetime without incurring major new costs.

Does it make sense to extend the “grandfather” clause 25 years after NSR was established, allowing old facilities to be rebuilt and operated without current emissions regulations?

## What About Cars?

While Clear Skies imposes stricter limits on emissions from stationary sources, it does not address emissions from vehicles. According to the EPA, pollution from cars, trucks, trains and planes accounted for about 70% of CO, 41% of hydrocarbons, 54% of NO<sub>x</sub> and 8% of fine PM emissions in 2000.<sup>7</sup>

The good news is that over the past 30 years our vehicles have gotten much cleaner, with less than ten percent of the CO, and VOC emitted per mile by the uncontrolled vehicles of the 1960s.<sup>8</sup> However, vehicle miles traveled have increased by 155% (see Figure 2). NO<sub>x</sub> emissions have not declined nearly as much as have CO and VOC emissions (Figure 1), and virtually the entire NO<sub>x</sub> decrease since 1997 is credited to stationary-source emission reductions.<sup>7</sup>

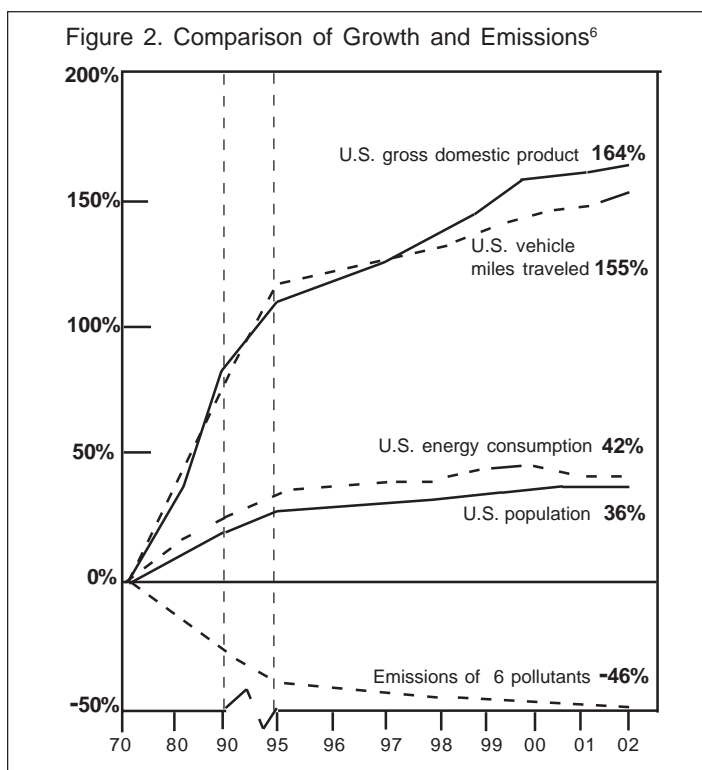
So, while regulations on vehicle emissions have been getting stricter over the past 30 years, the population has been growing and patterns of vehicle use have been changing. The effects of current and proposed vehicle-emission rules on future air quality depend on how quickly the motor vehicle fleet turns over, what types of vehicle we choose to use, and how much we use them.

Until 2001, SUVs and light-duty trucks, most of which are now used as passenger vehicles, were regulated under light-duty truck standards that allowed 25 to 75 percent higher emissions than the standards that were applied to all other passenger vehicles. The discrepancy widened in 2001, with the introduction of the National Low Emissions Vehicle program, which tightened the emissions standards for cars and the lightest light-duty trucks – but not for trucks and SUVs exceeding 6000 pounds.

EPA’s new Tier 2 vehicle emissions program will ultimately require fleet averages for all classes of cars and light-duty trucks to meet an NO<sub>x</sub> emission standard that is over 80% lower than the pre-2001 NO<sub>x</sub> standard for passenger cars. New cars and light-duty trucks less than 6000 pounds must comply by 2007, but vehicles exceeding 6000 pounds will have until 2009.

Off-road diesel vehicles—primarily construction and agricultural equipment—generate as much air pollutants as do highway trucks and buses and have been essentially unregulated. EPA has recently proposed new standards for on-road and off-road diesel NO<sub>x</sub> emissions.

Congress’ recent failure to appreciably tighten fuel-efficiency standards represents another lost opportunity for reducing motor vehicle emissions—better gas mileage also means less pollutants emitted per car trip. In April of 2003, the Corporate Average Fuel Efficiency (CAFE) standard of 20.7 miles per



gallon (mpg) for light-duty trucks was revised to 22.2 mpg for model-year 2007; the original CAFE standard for cars was and remains 27.5 mpg.

A recent report by the National Academy of Sciences concluded that the current CAFE standards are saving us 2.8 million barrels of oil per day—more oil than we import from the Persian Gulf.<sup>9</sup> The NAS report also shows that new vehicles, from largest to smallest, could achieve averages of 28 to 38 mpg using existing technology, with a fleet average of nearly 40 mpg possible, given introduction of some newer technologies during the next ten years. Achieving a 40 mpg fleet average by 2012 could reduce U.S. oil consumption by another 2 million barrels of oil per day—and save consumers \$16 billion per year in gasoline expenditures.<sup>10</sup>

### Next Up—Climate Change

Meanwhile, carbon dioxide (CO<sub>2</sub>) has been associated with climate change. Carbon dioxide concentrations are currently 30 percent higher than pre-industrial levels. In February 2002, the Climate Change Initiative was proposed by the federal government, to reduce CO<sub>2</sub> emissions by 18% in ten years, primarily through voluntary changes in emissions and fuel economy. This August, the EPA refused to accept responsibility for regulating CO<sub>2</sub> and other greenhouse gases, stating that the CAA does not provide for such authority. In the face of such limited efforts by the Federal government, California and several states in the northeast are leading the way by adopting specific plans for reducing CO<sub>2</sub> and other greenhouse-gas emissions.

### What Can Friends Do?

Many Friends recognize the need to think systemically about environmental and resource issues. We need to work together to encourage both systemic and personal changes. We are often encouraged to write to our legislators or letters to the editors of our local newspapers as a way to have an effect on environmental laws and regulations. We are also encouraged to support environmental non-profits that are lobbying and providing public education on environmental concerns, either with financial support or volunteering our time. These are all useful tools that have helped shape environmental protection, and information is provided below to make these connections.<sup>10-12</sup>

However, as Friends, if we are concerned about air quality, we are also called to examine what we are doing that contributes to air pollution. We are called to “walk our talk” and live closer to our professed ideals. Most of us have some control over how much we drive, how much we travel, what kind of fuel-efficiency our cars get, how much and how efficiently we heat and cool our own homes. Some Friends have drastically reduced their impact on the earth by not owning or driving cars and living very simply. Most of us are far from that extreme and are searching for ways to reduce our consumption of limited resources. These are just a few of the ways that you can reduce your own sources of air pollution:

1. Live close enough to your work to ride a bike or walk. If you must commute, use public transportation or a fuel-efficient vehicle.
2. Make sure your motor vehicle is maintained properly. The dirtiest 10% of motor vehicles produce about half the vehicle emissions.<sup>5</sup>
3. Insulate your walls, roof and water heater—even clean-burning natural gas is a source of CO<sub>2</sub>. When replacing windows, choose double-paned. Seal leaks around windows and doors with weather-stripping.
4. Do not over-heat or over-cool your home—try sweaters and fans.
5. Replace incandescent with fluorescent lightbulbs—generating electricity from fossil fuels is a major source of air pollutants.
6. Eat locally and seasonally, as much as possible—transportation of food across thousands of miles consumes fossil fuels and generates air pollutants. Do you really need to eat strawberries in January?
7. Travel lightly—this is a huge challenge for Friends with numerous organizations that expect yearly or even quarterly meetings in distant locations. How can we maintain our Friendly connections without burning up those airplane miles?

### For Further Information

- 1 EPA “Plain English Guide to the Clean Air Act” <[www.epa.gov/oar/oaqps/peg\\_caa/pegcaain.html](http://www.epa.gov/oar/oaqps/peg_caa/pegcaain.html)>
- 2 Source of data <[EPA.gov/airtrends/highlights.html](http://EPA.gov/airtrends/highlights.html)>
- 3 EPA “Discussion of Multi-Pollutant Strategy” <[www.cleartheair.org/currentstatus.pdf](http://www.cleartheair.org/currentstatus.pdf)>
- 4 EPA <[EPA.gov/interstateairquality](http://EPA.gov/interstateairquality)>
- 5 GAO “Clean Air Act: EPA Should Use Available Data to Monitor the Effects of Its Revisions to the New Source Review Program,” GAO-03-947, August 25, 2003.
- 6 Source of data <[EPA.gov/airtrends/sixpoll.html](http://EPA.gov/airtrends/sixpoll.html)>
- 7 EPA <[EPA.gov/airtrends](http://EPA.gov/airtrends)>
- 8 Sawyer et al., *Atmospheric Environment*, 2000, 34: 2161-2181
- 9 NAS Report <[www.nap.edu/books/0309076013/html](http://www.nap.edu/books/0309076013/html)>
- 10 Union of Concerned Scientists <[www.ucsusa.org/clean\\_vehicles/index.cfm](http://www.ucsusa.org/clean_vehicles/index.cfm)> for information on vehicle emissions and fuel efficiency.
- 11 To learn more about the New Source Review lawsuit, contact Earthjustice at <[www.Earthjustice.org](http://www.Earthjustice.org)>
- 12 Save the Clean Air Act <[www.SaveTheCleanAirAct.org](http://www.SaveTheCleanAirAct.org)> is a collaboration of environmental groups

*Shelley Tanenbaum and Charles Blanchard do research from their home office on atmospheric chemistry and air quality trends, primarily focused on ozone and particulates. They are married and live with their two teenage children in Albany, California, where they are usually able to walk or bike to shops, farmers' market, meetings and schools. They are both members of Strawberry Creek Monthly Meeting in Berkeley.*