

Robert Llewellyn

Part 1:

The Air Is Cleaner—Right or Wrong?

by Kim Keschull

The air in North Carolina is getting cleaner, according to data gathered by state air quality monitoring stations. The federal Clean Air Act, passed in 1970 and updated in 1977, requires states to monitor six major pollutants for ambient air (i.e., air which the general public breathes). By 1985, all six were, on average, under the maximum limits allowed by government regulations. But the statewide data tell only part of the story.

“The available data hides the problem under the bushel basket,” says Ogden Gerald, director of the Air Quality Section in the N.C. Department of

Natural Resources and Community Development. “We don’t know if we have a problem. We’re not always measuring the problems.”

Two of the six pollutants, carbon monoxide and ozone, illustrate the point. The levels of both pollutants have declined substantially, according to statewide data. From 1977 to 1985, the statewide average of amounts of carbon monoxide per cubic

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meter of air dropped from 17 to 9.45 milligrams, below the acceptable government standard of 10 milligrams. Similarly, the amount of ozone dropped below the acceptable standard of 0.12 parts per million, from .126 parts in 1979 to .098 parts in 1985. (See Figure 1 for more data.)

Carbon monoxide, which comes principally from motor vehicle exhausts, can cause blood poisoning. Ozone, the principal pollutant in smog, is created from volatile organic compound emissions (often referred to as hydrocarbon emissions), which come from vehicle exhausts and from other sources, including certain industries. (Note that ozone in the air we breathe is harmful. Ozone far above earth, commonly known as the ozone layer, is good, for it filters harmful ultraviolet sun rays.)

The problems with the average statewide data became clear last summer. In August 1987, the Environmental Protection Agency ranked the Wake County-Durham County area 10th worst among 65 areas nationwide that did not comply with the carbon monoxide standard from 1984-86. Mecklenburg County was also on the EPA list of areas not complying with the carbon monoxide standard. In 1982, the legislature required Mecklenburg County to begin a mandatory emissions test as part of the annual state auto inspection system. "That might have helped the carbon monoxide levels some in Mecklenburg County, but we don't know that for sure," says Gerald. In November 1986, a similar program began in Wake County.

In an Aug. 29, 1987, editorial commenting on the EPA report, *The News and Observer* of Raleigh

cautioned that the emissions test is not enough: "In addition, public officials in the Triangle should be planning for other means of reducing air pollution: Promotion of carpooling and vanpooling, the park-and-ride use of public transportation, special traffic lanes on commuter routes for high-occupancy vehicles, special appeals to limit driving on days of 'air pollution alerts,' and the placing of emission limits on stoves that burn wood and coal."

The Clean Air Act required that states meet all pollution standards by the end of 1987. Magazines from *Sierra* to *The Atlantic* pointed out that after many years and delays, the deadline finally came for meeting the federal standards. *Sierra* magazine, for example, reported in its September/October 1987 issue that "there are not just a few areas that will fail to meet clean air standards, there are 80."¹

Three of those 80 are in North Carolina. Despite the fact that overall *state averages* are within acceptable limits, sections of Wake, Durham, and Mecklenburg counties are not. EPA could initiate official sanctions against these areas this year if steps are not taken to get under the limit. In other cities, the EPA has taken such actions, including bans on construction that could add to existing pollution, as well as cuts in federal highway funds.

"What I fear is stories saying that everything's okay except in certain areas," says Gerald. Sufficient data do not exist in three other urban areas—Greensboro, Asheville, and Fayetteville—to know whether there are violations of the carbon monoxide standard there as well, explains Gerald. He doesn't expect the legislature to require emissions testing in those counties, however, until there is better data. "We'll have to measure the problem before we put in a solution."

In May of 1988, the EPA considered taking action against even more counties than Gerald initially expected. The EPA indicated it would broaden the number of counties that must develop stricter programs for controlling air pollution. The EPA said it might accomplish this by broadening its definition of "non-attainment" areas to include the counties surrounding the main urban center where standards have not been reached. Ten North Carolina counties would come under the stricter EPA rules—four in the Triangle area (Durham, Franklin, Orange, and Wake) and six surrounding Charlotte (Cabarrus, Gaston, Lincoln, Mecklenburg, Rowan, and Union, as well as York County, S.C.).

In addition to attaining pollution control levels, the EPA also requires other kinds of efforts. For example, an air quality index must be available on a daily basis in large cities. In North Carolina,

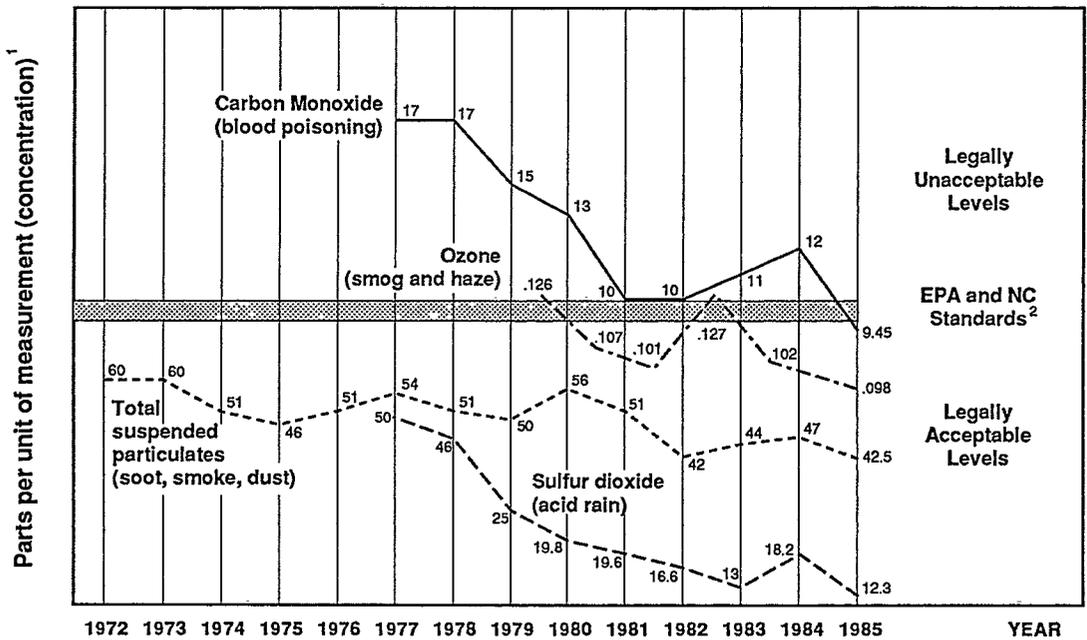
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"... A nice distinction was made by the world traveler who explained the difference between a 'developed' and an 'under-developed' country; 'In an under-developed country, you don't drink the water; in a developed country, you don't breathe the air.'"

SIDNEY HARRIS

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Figure 1. Air Quality Measurements in North Carolina for Four Pollutants, Compared to EPA and NC Standards



Source: All figures from *State of the Environment Report—1987*, Department of Natural Resources and Community Development

FOOTNOTES

¹ For purposes of conciseness and simplicity, this graph is plotted to show how the line would appear if the "part per unit" axis were graduated for the specific variable. For example, the carbon monoxide standard is 10 milligrams per cubic meter, and in 1981, the plotted point for carbon monoxide is directly on the EPA/State standard line.

² The EPA and the state have set the following legally acceptable standards for the pollutants being measured:
 Carbon Monoxide (CO) — 10 milligrams per cubic meter in an 8 hour exposure period
 Sulfur Dioxide (SO₂) — 10 milligrams per cubic meter annually
 Total Suspended Particulates (TSP) — 75 micrograms per cubic meter annually
 Ozone (O₂) — 0.12 parts per million in a 1-hour exposure period.

Figure by Kim Kebschull

this index is available through a computer telephone arrangement in Raleigh, Durham, Fayetteville, and Charlotte. The information is updated every four hours. The index shows the overall condition of the air (from "good" to "very unhealthy") and names the main pollutant, generally either carbon monoxide or ozone.

State officials decide which pollutants the state will monitor and what the acceptable standard might be for each pollutant. The N.C. Environmental Management Commission has adopted the

ambient air quality standards recommended by the Environmental Protection Agency. (Note on Figure 1 that the line showing the acceptable level of pollutant is marked "EPA and NC standard.")

"We should also deal with agents not on the standard EPA list, particularly with toxic pollutants," says Dr. Robert Harris of the University of North Carolina at Chapel Hill, a former member of the Environmental Management Commission. Regarding the suitability of the EPA standards, Harris notes: "They were based upon the best

scientific information available at the time, so they probably represent levels that are technically defensible to protect public health. However, as we learn more about the effects of polluting agents, we learn more about the subtle effects that linger on to do damage later. Therefore, the regulations need to be reviewed on a regular basis and incorporate the most up-to-date information available."

Douglas N. Rader, senior scientist with the N.C. Environmental Defense Fund, adds that while some current data may paint a rosy picture, "[T]here is serious cause for concern about air quality in North Carolina, and . . . the present measures of air quality are misleading."

The state has developed a list of 116 more air pollutants that it may regulate under proposed rules before the Environmental Management Commission. The pollutants are air toxins that neither the state nor the federal government currently regulates, but which are known to cause health problems. Only 10 other states currently have regulations for controlling air toxins, but it could be the end of 1988 before North Carolina adopts its own regulations.

One notable exception to the list of toxic air pollutants the state is considering regulating is benzene. The N.C. Environmental Management Commission in May decided not to include benzene, despite its carcinogenic characteristics that many health experts say make it a much greater health threat than other chemicals on the toxic air list. State environmental officials agree that benzene can be a hazard, but say that strategies for controlling benzene need further consideration because it is so difficult to control.

North Carolina has been delayed in adopting its standards partly because under state law, the Environmental Management Commission (EMC) cannot adopt an air pollution standard tougher than the federal standard for that pollutant—unless the legislature repeals the state laws known as the Hardison Amendments.² The EMC could, however, expand the list of pollutants monitored under federal regulations, even under the limitations of the Hardison Amendments. To adopt an additional standard, the Hardison Amendment on air quality requires the EMC to review the economic impact of such an action and hold a public hearing on the issue. Observers believe that the Hardison Amendment has had a chilling effect on the state adopting air quality regulations even where there are no federal standards.³ In addition, a larger state budget is needed for more extensive monitoring and enforcement inspections, say Harris, Gerald, and others.



Birds-Foot Violet

Carol Majors

Despite these limitations, the existing N.C. air quality monitoring and enforcement programs got a high rating in a 1987 study released by the Fund for Renewable Energy.⁴ The study gave the N.C. program a rating of 8, on a scale of 1 to 10 (10 was highest). Only four states had a 9 or 10 rating, and hence were rated better than North Carolina (California, Connecticut, New Jersey, and Wisconsin); four other states also had a score of 8. The study did not rank the states on the individual issues examined but did compile a composite score on six issues; in that ranking, North Carolina was eighth among the 50 states (see sidebar on page 5 for more). However, the Fund for Renewable Energy based its analysis on the types of programs in place—not on how well the programs performed.

Many air quality experts believe that the data gathering process is much too limited when tied primarily to the six pollutants monitored under the Clean Air Act. "Air quality is *decreasing* in North Carolina," says Dr. Ellis Cowling, air quality expert at the North Carolina State University School of Forest Resources. "We can't think in terms of separate standards. We need to consider [air pollution] in a holistic manner."

Harris of UNC-CH agrees that the big picture is more complicated. "In the future, we will be studying such things as the greenhouse effect, carbon dioxide, and methane," he says. "The things we're concerned with now, such as nitrogen dioxide and TSPs [total suspended particulates], are important, but we're only looking at their short-term effects. Such things as the greenhouse effect could really change the heating and cooling balance of the planet, and these cannot be handled on a

statewide basis.”

Mt. Mitchell in Yancey County signals another problem that goes beyond specific standards. What's known as acid rain, or more correctly acid deposition, may be causing the trees on Mt. Mitchell to die. Atmospheric reactions of sulfur dioxide and oxides of nitrogen result in the formation of acids, which fall to earth in acidic rain or as dry particles. This acid input significantly acidifies poorly buffered soils, lakes, and streams, damaging trees and other plants, killing aquatic life, and slowly destroying buildings and statues.

“Congress is considering some acid rain legislation, concentrating primarily on sulfur dioxide and nitrogen dioxide, but this attacks only a small portion of the problem,” explains Gerald. “Scientists suspect that the *combination* of pollutants in acid rain makes vegetation vulnerable to otherwise normal environmental stresses,” he adds. “It's like somebody shooting at you with a pistol, a rifle, a BB gun, a submachine gun, and a machine gun—you've got 40 holes in you. Which one killed you? That's the way it is with acid rain. It's the combination of these pollutants that is harmful, and it's difficult to attribute the problems to specific sources.”

The acid rain discussion indicates how much the science of measuring air quality is in flux. William Hunt of the EPA office in Durham refers to air pollution reduction as a “dynamic process.” Problems with lead have been markedly reduced, for example. But new evidence shows that there may be adverse health effects at much lower levels than was previously believed, and changes in the federal standards are being considered. Although

North Carolina is below the standard statewide for carbon monoxide, Wake, Durham, and Mecklenburg counties are still not in compliance with emission standards. Auto emissions in metropolitan areas have not improved as much as regulatory officials had hoped, despite the more stringent emission controls on new cars. Ozone and sulfur pollution are still problems in urban areas in North Carolina, particularly during the summer. The EPA has threatened to impose new testing in the Charlotte and Raleigh areas to deal with this.

Overall, air quality *seems* to have improved over the years, but evidence of more complex air pollution questions is mounting. Experts warn of such far-reaching problems as acid rain and the greenhouse effect. The available data, prescribed for the most part by the EPA, might suggest a rosy picture—but only if one ignores the rest of the evidence. Even the officials in charge of gathering those numbers caution against relying on them too heavily. “Society tends to look the other way when we don't know if we have a problem,” says Ogden.

FOOTNOTES

¹“Clean Air Advocates: Still (Wheezing, Gasping, Crying) Trying After All These Years,” *Sierra* magazine, published by the Sierra Club, September-October 1987, page 13; see also, “The December Almanac,” *The Atlantic* magazine, December 1987, page 16.

²G.S. 143-215.107(f).

³Jack Betts, “The Hardison Amendments: Time for a Reappraisal?” *North Carolina Insight*, Vol. 10, No. 2-3, March 1988, pp. 107ff.

⁴“The State of the States, 1987,” released by the Fund for Renewable Energy and the Environment (to order, see information in sidebar on page 8, footnote 1).

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“ ... Now comes the gloaming. The alpenglow is fading into earthy, murky gloom, but do not let your town habits draw you away to the hotel. Stay on this good fire-mountain and spend the night among the stars. Watch their glorious bloom until the dawn, and get one more baptism of light. Then, with fresh heart, go down to your work, and whatever your fate, under whatever ignorance or knowledge you may afterward chance to suffer, you will remember these fine wild views.”

FROM WILDERNESS ESSAYS BY JOHN MUIR

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