

# Air Board Moves to Bar Carcinogens

By RICHARD O'REILLY,  
Times Staff Writer

NAPA, Calif.—Despite opposition from the chemical and petroleum industries, the state Air Resources Board on Thursday ordered its staff to prepare a program aimed at eliminating atmospheric emissions of chemical compounds known to cause cancer in humans.

The program marks a departure from the board's historic role of setting air quality standards and emission limits for pollutants that create smog and other forms of visible and invisible air pollution.

While based on the adverse health effects of air pollution, the board's efforts so far have assumed that there is a safe level for the common pollutants it now regulates, and therefore it has sought to bring about gradual reductions.

But, according to the board's staff, there are no known safe levels for carcinogenic compounds. The new program therefore will aim at elimination of such emissions rather than gradual reduction.

## Industry's Argument

Spokesmen for the chemical and petroleum industries argued that there is no scientific agreement on what compounds cause cancer, or at what levels. In the absence of such agreement, the board should not act to control such substances, they said.

Rather, the board should limit itself to making an inventory of atmospheric concentrations of the compounds, industry spokesmen said.

But Mary Nichols, chairwoman of the board, countered that scientific consensus is not needed to justify a decision to take action to protect the public from potential cancer risks.

"There's a great body of knowledge about some compounds while there is less known about others," Nichols said.

"You have to take the action that's reasonable and not wait for total perfection in the ranking of the chemicals," she said.

## Priorities Due

The board's program will lead to development of priorities for controlling various toxic compounds that have been shown to cause cancer in humans, or those suspected of being human carcinogens because they cause cancer in animals.

The compounds that would be targeted for elimination were not specified Thursday, but the staff cited lists totaling 46 principal chemicals, plus several hundred others.

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## Not Waiting for EPA

# Toxic Air: State Fights Battle Alone

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Being able to see the air you breathe in Los Angeles has never been a pleasant experience, but breathing what you can't see may turn out to be more harmful: Growing evidence suggests that many invisible chemical compounds emitted into the atmosphere increase the risk of cancer.

"There are persuasive scientific reasons to believe that air pollutants cause a substantial fraction of today's cancer and other diseases," said David Doniger, senior staff attorney for the Natural Resources Defense Council.

He said a 1981 study done for the Washington-based council concluded "that at least 11%, and most likely 21%, of current cases of lung cancer are attributable to air pollution."

"We know enough to reliably identify carcinogens," said Doniger, a leading environmental expert on the subject. But he added, "We really do not know enough to quantify the degree of risk they pose with much meaningful certainty."

## Regulatory Paralysis

It is the inability to be certain that the Environmental Protection Agency has used to excuse more than a decade of regulatory paralysis during which it has set limits for only four of the 37 probable toxic air pollutants it has identified.

EPA Administrator William D. Ruckelshaus, however, recently told the House Energy and Commerce investigations subcommittee that he expects to have regulations in place for 20 compounds by late 1985.

But California is not waiting any longer for the EPA to act. The state is about to begin its own program to identify and control toxic air pollutants, including pesticides, under legislation sponsored by Assemblywoman Sally Tanner (D-EI Monte) and signed into law by Gov. George Deukmejian.

Toxic air pollutants are different from what commonly is described as smog, although a large family of toxics are hydrocarbon gases that also contribute to smog formation.

## Some Controls in Place

Smog, really a shorthand misnomer for a mixture of gaseous and particulate pollutants, already is regulated on the basis of known health impairment to the respiratory, circulatory and central nervous systems of the body.

Those regulations cover six pollutants and set the maximum allowable concentration in the atmosphere at the level below which there are no demonstrable health effects. This is called a threshold level, and the existence of such a threshold is a key factor in differentiating smog pollution from most toxic air pollution.

The health effect from toxics at the low levels found in the atmosphere is most often cancer. But by its very nature, cancer is not usually a disease where a threshold of risk can be assigned. Even at very small concentrations of a toxic chemical, there remains a very small chance that it will cause a cancer to develop. As the concentration increases, so does the risk.

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## AIR BOARD

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for which controls should be investigated.

Some of those compounds are manufactured in California or emitted into the atmosphere by industrial usage. Others, while also used industrially, enter the atmosphere mainly from vehicle exhausts.

The board four years ago set a standard for one known human carcinogen, vinyl chloride. It placed the allowable limit at the lowest level that emissions instruments can detect.

At present, the board is measuring atmospheric levels of asbestos and eight halogenated carbon compounds.

Thursday's action did not impose controls on any compounds.

The staff is not expected to ask the board to adopt specific measures to control the first one or two toxic air contaminants until the next fall.

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# POLLUTION: State to Test, Control Toxic Chemical Compounds

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One question for regulators, then, is to determine what level of excess cancer risk is acceptable.

Excess cancer risk is a difficult concept to grasp. It is measured as the additional likelihood of contracting cancer during a 70-year lifetime exposure to the substance in question and at the concentration in question. That risk, medical authorities say, must then be weighed against the probability that 25% of all people will get cancer during their lifetimes.

So if a toxic air pollutant is judged to impose an excess cancer risk of 50 cases per million persons, that assumes that 250,000 of those million will get cancer anyway. By those odds, a person would have one chance out of 5,000 of being one of those excess cancer victims but one chance out of four of getting cancer even without the excess risk.

When one considers that society has been able to do nothing more than put a warning label on cigarettes, although tobacco is known to cause 30% of cancer deaths, it is easier to grasp the difficulty of regulating an industrial gas to atmospheric levels so tiny that they may be virtually impossible to measure.

The first, and most difficult, question to answer is whether the compound causes cancer. That is the question that has paralyzed the EPA. After 13 years of effort, it has set standards for only four toxic air contaminants: asbestos, beryllium, mercury and vinyl chloride.

There are several ways to determine if a chemical is carcinogenic, although none is universally agreed upon. The quickest is called a bioassay, in which bacteria are exposed to the compound and the cells are checked for mutations.

## Definitive but Controversial Test

A more definitive test is to administer the compound to animals and see if cancer occurs. But to achieve statistically significant results in a reasonably short time, massive doses are used in place of the minute concentrations actually occurring in the atmosphere. That leads chemical manufacturers and industries that use the compounds to challenge the results, arguing that tiny doses would not have the same effect and that animal cancers are not the same as human cancers.

The most stringent proofs are human epidemiology studies linking actual human cancers to actual human exposures of the compound. But it is also statistically impossible to prove low-level risks in this manner. Besides, it takes a generation or more of study, and people are exposed to so many compounds and substances in their lives that it is rarely possible for researchers to isolate the effect of the compound they are studying from all the others.

In the few cases in which the EPA has determined a substance to be toxic and set regulations to control it, local air pollution control districts, including the South Coast Air Quality Management District, have also been able to enact their own rules.

But they have been hampered in controlling other toxic compounds because no federal or state standards exist. Those toxic chemicals that also are reactive hydrocarbons can be controlled to the extent that they contribute to the formation of ozone, but that generally means that small emission sources are exempted.

Toxics also can be controlled as public nuisances, and the South Coast district is beginning to do so with a few

names of suspected toxics to the Department of Health Services through adoption of the first control regulations by local districts, will take a minimum of two years.

Each time another compound or list of compounds passes through the system, it will take just as long, so it probably will be many years before a determination is made on the top 40 list of suspected toxics that the Air Resources Board maintains.

Tanner's legislation tries to avoid the quagmire experienced by the EPA by giving Health Services a maximum of four months to complete its report. But that deadline may not be realistic, because the legislation also directs the department to consult with virtually every health-related public agency and with academic researchers and private interest groups, including those who would be subject to emission controls, in reaching its decision.

"I think it's going to be a real challenge to work in (those) tight time constraints," said Alex Keller, a physician and epidemiologist who is acting of the Department of Health Services epidemiology and toxicology branch.

Job Stuart, executive officer of the South Coast Air Quality Management District, said he believes two chemicals sure to be on the Air Resources Board's first list will be benzene and ethylene oxide. There is ample evidence that both are potent carcinogens and the technology for controlling emissions of each is available, he said.

Benzene is a volatile component of gasoline, which is its primary source, Stuart said. The EPA has identified it as a hazardous air compound and proposed a control standard but has not made a final determination.

Stuart said that the basic way to control benzene is by installing vapor recovery systems throughout the gasoline distribution network from the manufacturing and wholesale level to the individual gas pumps at petroleum storage tanks.

Those measures already are in effect in the four-county South Coast Air Basin and in the other major urban areas of the state, where it is required to reduce emissions of hydrocarbons—a major ingredient of photochemical smog.

A ruling by the state Department of Health Services that benzene poses a cancer risk to the public could lead to a requirement that such controls be imposed in rural areas of the state as well, Stuart said.

That undoubtedly would create opposition from service station owners faced with the \$10,000 to \$20,000 cost of vapor recovery equipment as well as from rural motorists objecting to the cumbersome nozzles and hoses they would have to operate at self-service pumps.

## Candidates for Regulation

Ethylene oxide is a gas used to sterilize medical instruments by both hospitals and medical supply manufacturers. The South Coast district has already begun a program on its own to clamp down on emissions from major ethylene oxide sources.

It can be controlled by gas absorbers or incinerators to capture ethylene oxide that otherwise would be vented into the atmosphere when sterilization chambers are emptied and by altering the timing of the sterilizing cycle when multiple chambers are in use so that only one chamber is vented at a time.

Stuart said both compounds are good initial candidates for regulation because of their potential harmful effects and because the industries that use them can afford to install the kinds of controls that would be needed.

Another suspected carcinogen is perchloroethylene, a chemical used by most dry cleaners. A regulation forcing a large reduction in emissions of that compound from dry cleaners is already on the books in the South Coast district as an anti-smog measure.

But small cleaners are exempted because of the \$5,000 to \$10,000 cost of the absorption equipment needed to meet the requirements of the rule. If perchloroethylene is determined to be a cancer risk, however, it would be much more difficult to justify the exemption.

Because the dry cleaning industry already has lobbied hard against such a ruling and because small businesses would be most affected, it is unlikely that perchloroethylene will be on the first list submitted to the health department.

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of them, but it is a cumbersome procedure and does not offer the degree of control that would be possible if there were federal or state regulations available for the local district to enforce.

If the substance was regulated as a cancer-causing toxic, even small sources probably would face some controls.

The state Air Resources Board outlined a procedure a year ago that it would follow to identify and set emissions standards for toxic air pollutants. Its action has been superseded, however, by a new state law that establishes a multistage procedure for identifying and controlling toxic air contaminants.

Assemblywoman Tanner's legislation sets up a three-step process for declaring a compound to be toxic. First, the Air Resources Board submits a list of suspected toxics to the state Department of Health Services for a determination of whether the compounds are toxic.

Those findings then will be reviewed for scientific accuracy by a nine-member panel of experts drawn from the faculty of the University of California and appointed by the Air Resources Board, the state Senate Rules Committee and the Speaker of the state Assembly.

Once a compound has been declared toxic, the Air Resources Board has the task of determining how its emissions should be controlled.

After that, the local air pollution control districts throughout the state will be responsible for imposing those controls or implementing tougher regulations.

For pesticides, the state Department of Food and Agriculture will set regulations in conjunction with the Department of Health Services.

## Three Years of Debate

It sounds like a fairly straightforward process, but it has taken about three years of debate and a fair degree of compromise to agree on a process.

Gordon Duffy, chairman of the state Air Resources Board and the state's secretary for environmental affairs, said he believes that the California toxics program will succeed where the EPA program has bogged down because it separates the task of assessing the risk of a compound from the task of regulating compounds that are determined to be toxic.

Duffy said he expects the board to begin with those compounds on which there is general agreement that they are toxic.

James Boyd, executive officer of the board, will not say what compounds will be on the first list sent by his board to the Department of Health Services for determination of human toxicity. But he did say the list probably will be a short one to give the process a chance to work.

"We don't know if we're going to identify a single compound or three or four or five," Boyd said. "The first candidates are going to be very controversial, which makes me tend to think the first list is going to be very small."

The entire procedure, from the submission of the first

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