

Texas Air Control Board
Summer - Fall 1982

Clear Blue

Survey indicates air research program needed

A large majority of respondents to a recent survey to identify Texas' air pollution research needs thinks that federal research programs are inadequate and that state-sponsored research is needed. Issues ranked highest by the respondents were related to health effects and monitoring.

Survey results are documented in an interim report prepared by Radian Corp. Radian and Engineering Sciences, Inc., have contracted to carry out a Texas Air Control Board (TACB) study to assess state air pollution/health effects research needs. (See page 4 for contract schedule.)

An eight-member Research Advisory Council, composed of air pollution and health effects experts and chaired by board member D. Jack Kilian, M.D., was appointed to advise the TACB on the development of the study.

The study was initiated for several reasons:

- the board's experience in having to address regulatory and public policy issues without sufficient research information to provide a sound scientific basis;
- growing awareness of the diversity and complexity of many air pollution problems;
- inadequate information to evaluate the significance of public exposure to the growing number of chemicals encountered in urban atmospheres;
- the relative decline in federal air pollution research and in-

creasing areas of discretion for state agencies;

- projected growth and change in Texas; and
- lead time needed for research results.

Scheduled for completion in the fall of 1983, the study may be used to formulate recommendations for an expanded state role in air pollution research.

The study is designed to:

- identify future air pollution problems and issues of particular importance to Texas and the type of research that will be needed to address the issues;
- identify air pollution research being conducted or planned by federal and out-of-state agencies and institutions;
- determine which identified state research needs are not being met; and

- identify and analyze administrative structures that might be used to provide funding and management for long-range air pollution research programs in Texas.

The purpose of the survey conducted by Radian was to identify air pollution research needs likely to be of continuing importance in Texas by querying key individuals selected for their expertise and awareness of air pollution issues. The written survey results will be supplemented by a series of in-depth personal interviews with a smaller set of individuals.

The five technical disciplines represented by survey respondents are: control technology, instrumentation, legal/regulatory, health effects (toxicology, industrial hygiene, occupational medicine, pulmonary special-

(continued)



TACB member D. Jack Kilian, M.D., center, chairs the Research Advisory Council. Members are listed on page 2.

ist, epidemiology, cytology, allergy, chemistry, dermatology), and other related areas (economics, demography, technology forecasting). The six interest group or affiliation areas represented include: academia, industry, private researchers, government agencies, environmental groups, and elected officials.

The final list of 121 potential survey respondents was selected to include enough respondents to ensure that at least 30 to 40 questionnaires would be returned. The questionnaire was designed to elicit a quick response to several "yes/no" items and issue rankings, as well as more lengthy open-ended responses.

Of the 121 questionnaires sent, 61 quick response forms were returned. (See Table 1 for issue rankings.)

The five "yes/no" statements were:

1. Air pollution problems in Texas are more serious than in the nation as a whole.
2. A significant number of air pollution problems in Texas are unique to this state.

3. Future air pollution problems in Texas are likely to be more serious than in the nation as a whole or unique to Texas.
4. Federally sponsored air pollution research efforts, past and present, are adequate to identify air pollution effects and support effective regulatory and technical control efforts.
5. State initiated efforts should be expended to support or foster Texas-oriented research programs to address Texas issues or problems.

The survey report says most respondents indicated that Texas air pollution problems were not, at present, worse than those in other parts of the nation, but that Texas air pollution problems would be more serious in the future. By large majorities, respondents believed that federal research programs were inadequate and that some form of state-sponsored research was needed.

The issues ranked highest by the respondents were related to health effects and monitoring. By contrast, the control technology issues were

rated lowest.

Forty of the 61 respondents completed part or all of the essay-type questions, which asked for an identification of short- and long-term Texas air pollution issues and descriptions of research that would address the issues. Because respondents were not confined to a given set of issues, as in the quick response form, issue descriptions varied considerably in terms of specificity and scope. The issues mentioned most frequently are listed in Table 2. The table repre-

TABLE 1 RANKING OF RESEARCH AREAS

Overall Rank	Research Issue	Mean Score
1	Need for improved medical data base to support long-term analysis of air pollution effects on human health.	7.9
2	Need for improved epidemiological research/analysis techniques to relate pollution exposure levels to observed effects on human health.	7.6
3	Need for technological improvements in monitoring techniques to detect potentially toxic substances in ambient air.	6.6
4	Need to assess the synergistic effects of various substances present in ambient air and the viability of identifying adequate biological indicators or health effects impacts.	6.3
5	Need to assess the impact of future pollution problems anticipated as the result of changing energy product/use, demographics, and economics.	5.7
6	Need to assess the economic impacts of air pollution in Texas (effects on agriculture, materials, lifestyle, etc.).	5.7
7	Need to develop realistic cost/benefit analyses to assess the economic impact of control options versus significance of reduced effects.	5.6
8	Need to assess transformation chemistry of pollutants in ambient air from contaminant emissions to receptor impact.	5.6
9	Need to assess and improve control technology options for non-industrial sources (automobile, gasoline marketing, solvent use, etc.).	4.4
10	Need for control technology improvements to better control emissions from significant facilities and industrial processes.	4.3

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sents an initial attempt to identify the issues, and ultimately the specific research needs, of particular importance to Texas.

For the past several years, the TACB has carried out its mandate to safeguard the air resources of the state by:

- identifying air contaminants, not regulated under the Federal Clean Air Act, that may adversely affect human health or welfare;
- applying best available control technology to new and modified facilities to minimize public exposure to such air contaminants;
- identifying and assessing public risk from exposure to such air contaminants by conducting appropriate studies, investigations, and field sampling programs; and

- developing and enforcing emission control regulations and strategies to reduce emissions of such air contaminants in areas where public exposure to them is found to be adversely affecting health.

In February 1982, the board passed a resolution reaffirming the need to prevent excessive public exposure to air contaminants and increasing the staff's priority of efforts to implement and support research and data collection programs needed to improve knowledge and understanding of such air contaminants.

During fiscal year 1983, the agency will continue its present research-related activities, which include an investigation of 10 air contaminants in four Texas counties along the Gulf Coast. Contaminants

to be studied in Jefferson, Orange, Harris, and Galveston counties are: acrylonitrile, arsenic, benzene, epichlorohydrin, ethylene oxide, formaldehyde, lead, PCBs and their combustion products, polynuclear aromatic hydrocarbons, and vinyl chloride. TACB files will be reviewed to determine where the contaminants are emitted in significant amounts, and study sites will be selected for further assessments and monitoring.

In its budget request for 1984-85, the TACB is asking the legislature for \$500,000 to fund five special short-term research projects.

Depending upon the outcome of the present study to assess research needs, the TACB's fiscal year 1986-1987 budget request may include recommendations for establishing a long-range, comprehensive air pollution research program.

TABLE 2 MOST FREQUENTLY IDENTIFIED TEXAS AIR POLLUTION ISSUES AND PROBLEMS

I. *SOURCES*

A. *Mobile Sources*

What are the effects of traffic congestion and resulting air emissions in Texas' urban areas and how can these emissions be reduced?

B. *Lignite Development*

What are the cumulative air quality impacts of Texas lignite mining and combustion and conversion to synthetic fuels?

C. *Cross-Border Problems*

What are the sources and effects of air emissions in the U.S.-Mexico border areas and what regulatory or diplomatic strategies can be employed to reduce the emissions?

II. *POLLUTANTS*

A. *Ozone*

1. Why have the large reductions in overall HC emissions not yielded significant reductions on ambient ozone levels in the Houston area? Should control strategies be based on the relative reactivity of HC emissions? What is the role of NO_x in ozone formation?

2. What are the health and welfare effects of the types and levels of photochemical oxidants in Texas' urban areas?

B. *Hazardous Air Pollutants*

What are the ambient levels, exposure pathways and health effects of hazardous pollutants in Texas?

C. *Pesticides*

What are the effects of pesticide application by aerial spraying on human health and environment?

III. *EFFECTS*

A. *Synergistic Effects*

What are the synergistic/antagonistic reactions and effects of various air pollutant and cross-media mixtures?

B. *Acid Rain*

What are the extent, causes, and effects of acid rain in Texas?

IV. *DATA, METHODS, AND ANALYSIS*

A. *Monitoring*

How can monitoring techniques be improved to more realistically reflect population exposures?

B. *Health Data Base*

How can a medical data base be established to help determine on an on-going basis the relationship between specific pollutants (and combinations) of pollutants and specific health effects?

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Engineering Science

Catalog of Federally-Funded Air Pollution Research Projects
11/82

In-depth Interviews with Managers of Federally-Funded Research Programs
12/82

Define criteria for Successful Management of State Air Pollution Research Programs
11/82

Development of Alternative Administrative Structures
12/82

Analysis of Candidate Administrative Structures
2/83

Final Report
3/83

Radian

Preparation
7/82

Preliminary Survey
10/82

Perform Personal Interviews of Individuals knowledgeable of Air Pollution Research Needs in Texas
11/82

Determine Unmet Research Needs of Particular Importance to Texas
1/83

Further Refine Research Needs
3/83

Assess Out-of-State Research Addressing Texas' Research Needs
3/83

Final Report
5/83


TACB ACTIVITIES

1982	
ENFORCEMENT	Jan.-Sept.
Investigations	10,891
Notices of Violations	2,245
Complaints	2,253
Administrative Enforcement Conferences	20

LEGAL	
Hearings Held	13
Lawsuits	4
Board Orders	13
Judgments	6
Public Meetings	10

PERMITS	
Construction:	
Applications Received	230
Permits Exempted	70
Permits Issued	136
Exemptions Issued	622
Operating Permits Issued	252

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