

SEPT. 1, 1982 BIENNIAL REPORT AUG. 31, 1984

A 1200.3
B477
1982/3-83/4

DALLAS PUBLIC LIBRARY



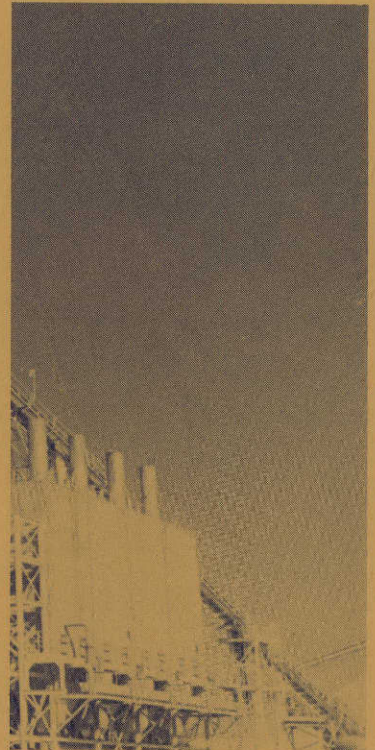
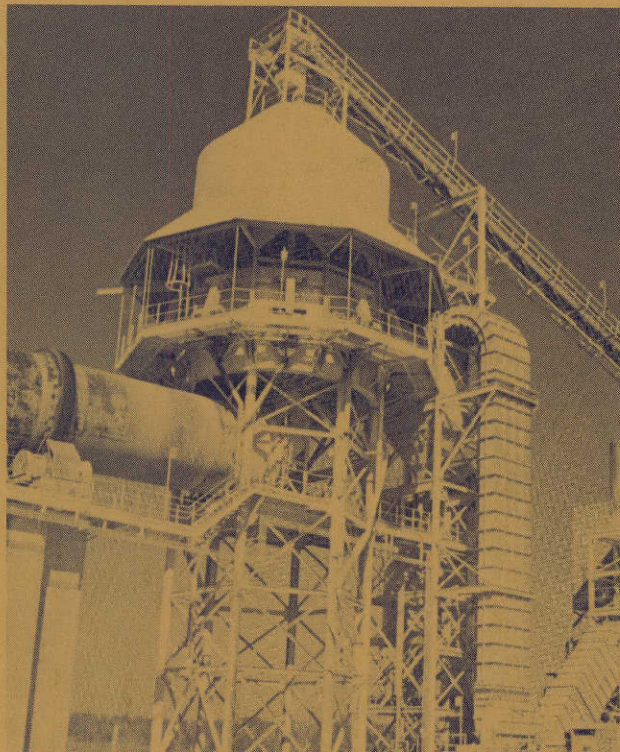
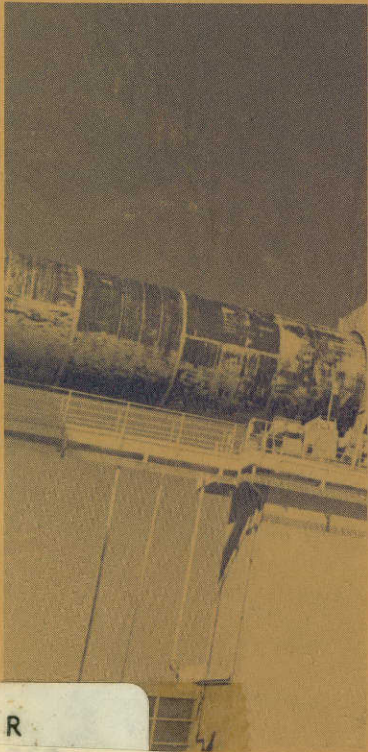
X52266665

REFERENCE

Government Publications
Texas State Documents

APR 1 1985 *pl*

Dallas Public Library



R
553
GOVERNMENT
PUBLICATIONS
1982-84

1982-84
A1200.
3



TEXAS AIR CONTROL BOARD

CGP SER 000250 Y95081689

R

353.9765

N0773405 008

T355B

TEXAS AIR CONTROL
BOARD

1982-84 A

BIENNIAL

1200.3

REPORT--PAPER

DALLAS PUBLIC LIBRARY
GOVERNMENT PUBLICATIONS

SEPT. 1, 1982

BIENNIAL REPORT

AUG. 31, 1984

TEXAS AIR CONTROL BOARD
Bill Stewart, P.E. Executive Director



N0773405 008



With this publication we are introducing the TACB's
new logo which symbolizes air currents.

X52266665

CGP 95081689 R
1982-84 A1200.3

TEXAS AIR CONTROL BOARD

6330 HWY. 290 EAST
AUSTIN, TEXAS 78723
512/451-5711

JOHN L. BLAIR
Chairman
CHARLES R. JAYNES
Vice Chairman

BILL STEWART, P. E.
Executive Director



VITTORIO K. ARGENTO, P. E.
BOB G. BAILEY
FRED HARTMAN
D. JACK KILIAN, M. D.
OTTO R. KUNZE, Ph. D., P. E.
R. HAL MOORMAN
HUBERT OXFORD, III

The Honorable Mark White
Governor of Texas and
Members of the Texas Legislature
State Capitol
Austin, Texas 78711

Ladies and Gentlemen:

In compliance with provisions of the Texas Clean Air Act,
we are submitting our Biennial Report for the period of
September 1, 1982-August 31, 1984.

This biennium has been the beginning of a new era in air
pollution control as marked by an increased emphasis by the
agency on research and the control of toxic air contaminants.
These initiatives supplement our continuing efforts to
control air pollution in the most efficient and effective
manner. We believe this report will provide information on
our accomplishments and insights into a continuing challenge
in the next biennium.

Your continued support will ensure an effective approach to
improving the air quality in Texas.

Respectfully,

A handwritten signature in black ink, appearing to read "Bill Stewart".

Bill Stewart, P.E.
Executive Director

Enclosure



Celebrating 150 Years of Texas Independence 1836 - 1986

Synopsis

Air pollution control is entering a new era. Although the criteria pollutants (particularly ozone) continue to require attention, increasing emphasis is being placed on identifying toxic air contaminants, their sources, and evaluating the health effects of public exposure to these contaminants. Consequently, the Texas Air Control Board (TACB) is responding to a regulatory challenge that is more complex, localized, and scientifically uncertain than a decade ago.

To meet the challenge, the TACB took a number of steps during the biennium to maintain a strong state initiative in combatting air pollution.

Under the guidance of its Research Advisory Council, the agency studied the need for air pollution-related research in Texas and the administrative and management structures needed to accomplish research objectives. As part of a major restructuring of the staff, a research division was established to initiate and coordinate selected health effects research activities.

A study is under way to assess public exposure to 10 selected toxic substances and classes of substances in ambient air in Harris, Galveston, Jefferson, and Orange counties. A mobile laboratory and a mobile monitoring station were developed to support this effort.

Agency staff made in-depth technical evaluations of Environmental Protection Agency (EPA) sampling and analytical methods such as evaluating the incinerator on the Vulcanus, a ship used for at-sea incineration of hazardous materials. Later, testimony concerning the incinerator was presented at a public hearing, and recommendations were made to EPA for improvements in the ocean incineration program.

With regard to state implementation plan (SIP) development, the agency responded to EPA proposals in early and mid-1983 to impose sanctions against Texas and Harris County pursuant to the Federal Clean Air Act. Staff reviewed and prepared substantial comments on EPA's authority regarding such sanctions. The TACB's response, together with that of other states and the appointment of a new EPA administrator, was instrumental in changing EPA's approach to SIP approvals.

The agency completed comprehensive revisions to the SIP for lead; completed and implemented SIP revisions for ozone in Harris County; and began preparing SIP revisions for ozone in Dallas, Tarrant, and El Paso counties. The Harris County ozone SIP calls for an enhanced emissions control inspection program for motor vehicles, which was finalized after months of negotiations with the EPA. The Texas program is the first to receive EPA approval without including a tail pipe emissions test among its requirements.

Increased emphasis was placed on long-range planning and policy analysis whereby new and innovative programs and policies and state and federal legislation will be evaluated in terms of their potential to affect TACB operations.

Other TACB activities and accomplishments during the biennium are highlighted in this report, which documents the agency's continuing quest for the most efficient, effective means for protecting the state's air resources.

John L. Blair
Chairman
Texas Air Control Board



Table of Contents

Letter of Transmittal ii

Synopsis iii

Chapter 1

Introduction 1

Chapter 2

Reviewing New Facilities 6

Chapter 3

Ensuring Compliance 12

Chapter 4

Monitoring Air Quality 17

Chapter 5

Developing Plans and Regulations 25

Chapter 6

Air Quality in Texas 32

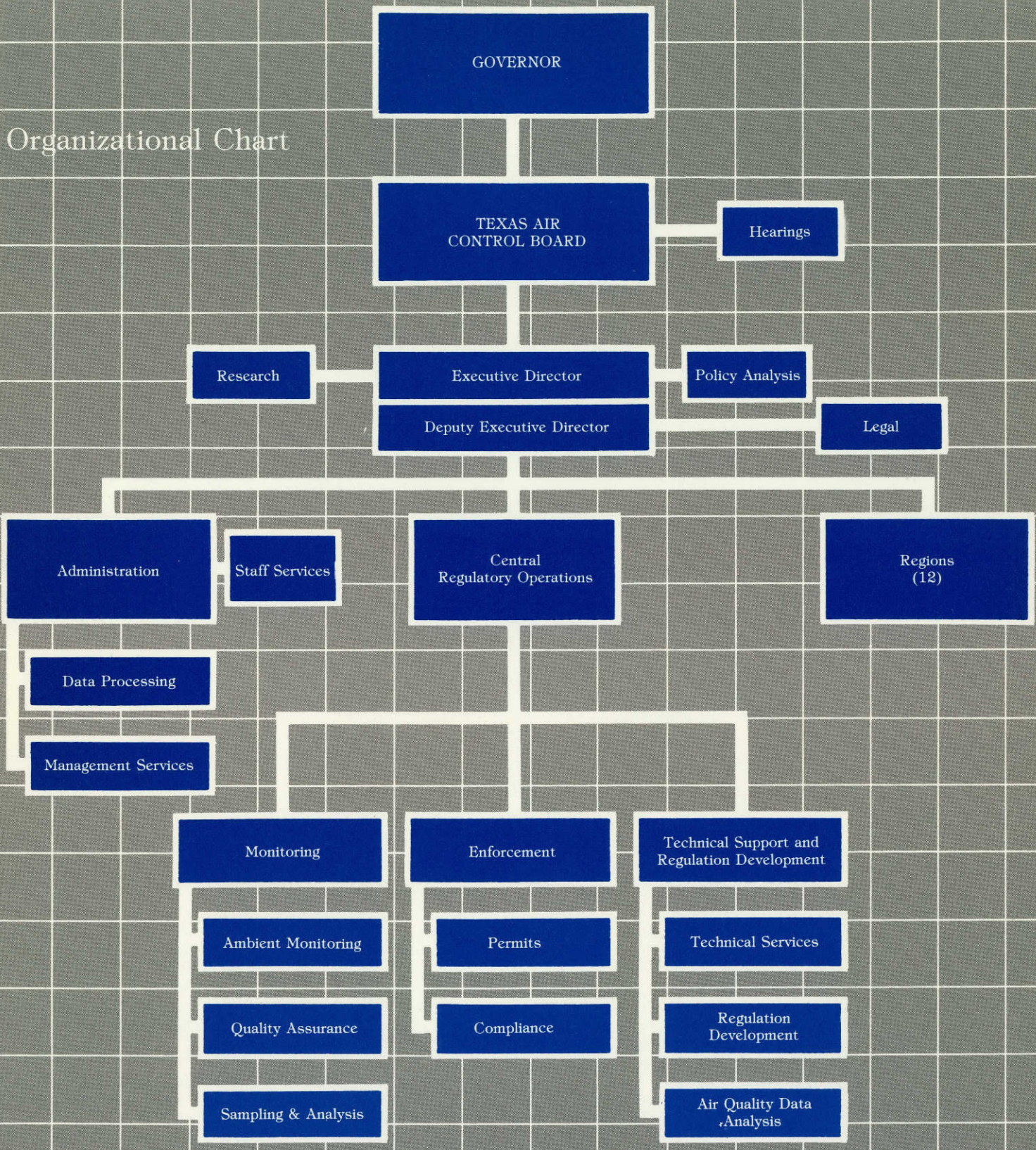
Chapter 7

Research 43

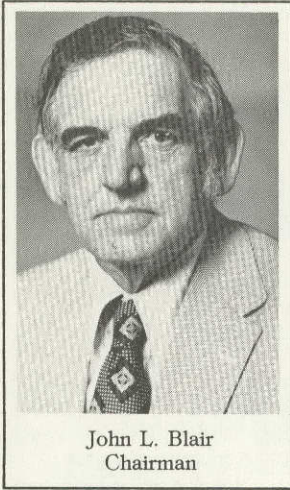
Chapter 8

Future Plans 46

Organizational Chart

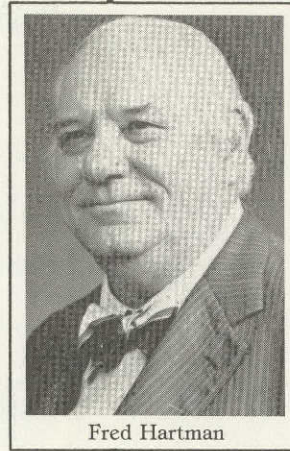


Board members



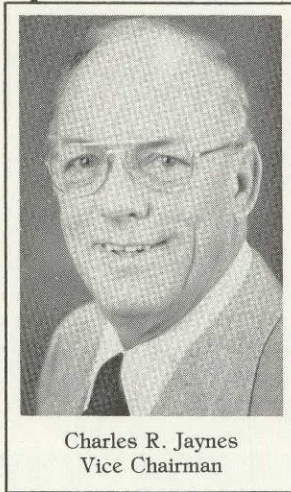
John L. Blair
Chairman

Mr. John L. Blair of Kountze, Hardin County, has served as chairman of the board since February 1974. Owner of the Kountze Insurance Agency, Mr. Blair is active in civic affairs and has represented the general public on the board since December 1971.



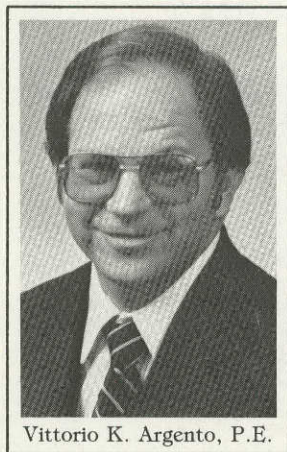
Fred Hartman

Journalist Fred Hartman of Baytown has worked for clean air as a private citizen since the mid-1950s and has represented the general public as a TACB member since October 1969. A Baylor graduate, he is chairman of the board of Fred Hartman Enterprises, Inc., which publishes newspapers in Brenham, Port Lavaca, Rockport, and Madisonville. He is also involved in other newspaper publishing enterprises of Hartman Newspapers, Inc. in southeast and north Texas.



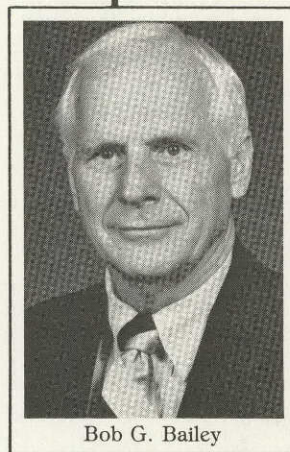
Charles R. Jaynes
Vice Chairman

Vice chairman Charles R. Jaynes of Waco is director of purchasing and maintenance and a member of the board of directors for Central Freight Lines, Inc. A business graduate of Baylor University, he has represented the general public on the board since October 1971.



Vittorio K. Argento, P.E.

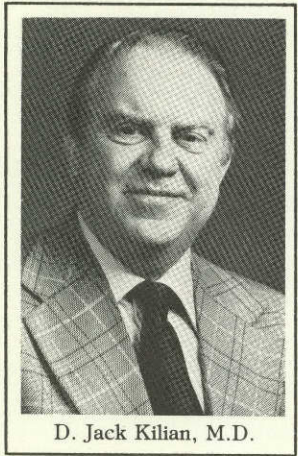
Mr. Vittorio (Vic) Argento, P. E., of Duncanville has served as the board's air pollution control engineer since August 1979. He holds degrees from San Diego State and the University of Texas at Dallas and is a senior lecturer in civil engineering at UT Arlington.



Bob G. Bailey

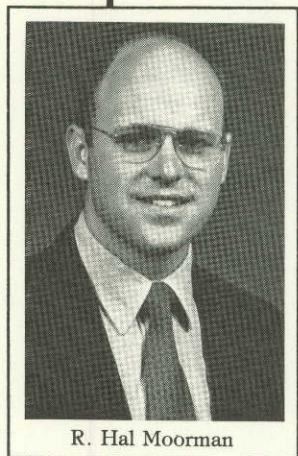
The board's industrial representative is Mr. Bob G. Bailey of Abilene who was appointed in July 1982. A graduate of Abilene Christian College, Mr. Bailey is president of Bailey Bridge Company.

Board Members



D. Jack Kilian, M.D.

D. Jack Kilian, M.D., of Lake Jackson, Brazoria County, is a consultant in occupational medicine and a professor of occupational medicine at the School of Public Health, University of Texas Health Science Center in Houston. He has served as the industrial-physician on the board since his first appointment in 1975.



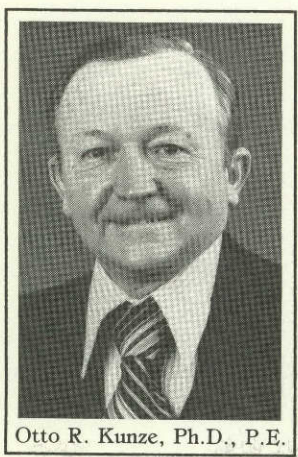
R. Hal Moorman

Attorney R. Hal Moorman of Brenham is a partner in the firm of Moorman, Tate, Moorman, and Urquhart. Appointed in March 1982, he represents the general public. Mr. Moorman is a graduate of Massachusetts Institute of Technology and Southern Methodist University Law School.



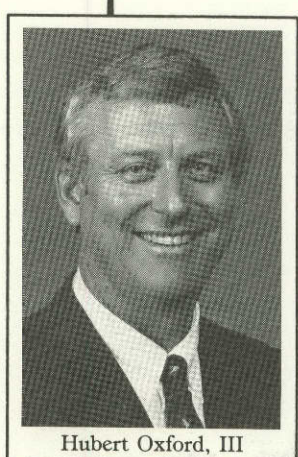
Frank H. Lewis

Mr. Frank H. Lewis represented the general public on the board from December 1977 until October 1983. A Princeton graduate, he is a rancher and farmer and serves as vice chairman of the board and trust officer of the First National Bank of Bay City.



Otto R. Kunze, Ph.D., P.E.

The board's agricultural engineer is Otto R. Kunze, Ph.D., P. E., a professor at Texas A&M University. Appointed to the board in January 1979, Dr. Kunze earned his master's and doctorate at Iowa State University and Michigan State University, respectively.



Hubert Oxford, III

Mr. Hubert Oxford, III, of Beaumont was appointed to the board in April 1984 to succeed Mr. Lewis in representing the general public. A partner in the law firm of Benckenstein, Oxford, Radford, and Johnson, he has degrees from Texas A&M University and the University of Texas Law School.

Directors' Comments

After carefully considering the issues facing the agency in the near- and long-term, in March 1984, I announced a major restructuring of staff to ensure that agency resources are applied to the maximum public benefit. Under this new organization, the deputy executive director has responsibility for all enforcement, regulation development, and monitoring operations; for administrative services; and for oversight of the regional offices. He is assisted directly by two program directors and the general counsel.

To provide independence from the other operating activities, the program director responsible for research reports directly to me concerning that activity. The executive assistant who is responsible for policy analysis also reports to me. These two activities have been given increased emphasis to broaden the information base a regulatory agency needs.

Prior to this reorganization, projects related to identifying air contaminants not regulated by the Federal Clean Air Act (FCAA) and assessing public risk from exposure to air pollution were carried out by various agency programs. By combining these activities into a single division, the agency has initiated a program for developing a long-range air pollution control strategy for Texas. A major goal of the Research Division is to assess the need for control of known or suspected toxic materials. To achieve this goal, the staff has initiated studies and research projects, both inside and outside the agency, dealing with such topics as acid rain, visibility impairment, the effects of air contaminants on asthmatics and runners, and the use of bioassays to determine the synergistic effects of complex mixtures of contaminants in urban air.

The Office of Policy Analysis assists me by monitoring and evaluating changing and emerging state and national programs and policies with the potential to affect agency activities. The office conducts studies and investigations to identify new and innovative air pollution control policies and programs and to evaluate the need for and probable consequences of implementing such programs in Texas. For example, many observers predict that significant amendments to the FCAA will be enacted in 1985. Proposed amendments concern acid rain, control of toxic air pollutants, motor vehicle emissions control, and requirements for renewable operating permits for both new and existing sources of air pollutants. In addition, the Environmental Protection Agency is encouraging states to be more aggressive in applying policies designed to provide economic incentives for control of air pollution.

Implementation of such new programs or policies may be expected to affect both the environment and economy of Texas. Careful analysis and evaluation is required to ensure that the members of the Texas Air Control Board and other state policy makers have available the information needed to evaluate and select air pollution control policies appropriate for Texas.

I am confident that with these organizational changes we are in a better position to accomplish our mission to safeguard the air resources of Texas as we enter our second decade as a separate state agency.

Bill Stewart
Executive Director
Texas Air Control Board

Executive Administration

With policy guidance from the board, this program provides direction for implementing the state program of air pollution control in accordance with all relevant state and federal statutes and regulations. The Office of Policy Analysis is responsible for analyzing and

evaluating policy issues and recommending changes in policy and programs stemming from state and federal legislation and interstate and international air quality questions. The Research Division maintains an awareness of pertinent air pollution and health effects research, develops best possible assessments of health and welfare impacts of actual and predicted exposure to air con-

taminants, and designs and coordinates implementation of needed special studies and research projects. The Legal Division provides general legal counsel to all elements of the agency and conducts and participates in public meetings and adjudicative and legislative hearings.

Directors' Comments

Regional Operations

This program is responsible for providing field support to carry out agency objectives. From 12 strategically located offices, regional personnel perform investigations related to complaints, new source permits, and compliance with regulations. They also document violations, make enforcement recommendations, perform field measurements of airborne emissions related to major sources, issue

operating permits, and operate and maintain TACB monitoring stations and air samplers. In addition, they respond to air pollution emergency situations and participate in various meetings with citizens, industry, and local officials to disseminate information and resolve problems.

During this biennium, the office of the Deputy Executive Director was established and charged with responsibility for enforcement, regulation development, monitoring, legal and administrative services, and oversight of the 12 regional offices that provide the field support for agency objectives. Major efforts were expended to:

- revise permitting rules and procedures to increase opportunities for public participation while ensuring timely processing,
- complete automation of the statewide emission inventory,
- finalize plans for and begin implementation of an emission control system inspection and maintenance program for light-duty vehicles in Harris County,
- design and develop a portable monitoring station for special projects and a mobile laboratory for sampling and analysis of hazardous air contaminants, and
- review local air pollution control programs and agency regional offices to enhance the overall effectiveness of air pollution control activities in the state.

Ten lawsuits were filed on behalf of the agency, and 13 hearings and 17 public meetings were held. In addition, computer terminals were installed in five regional offices and are used in accessing ambient air and enforcement data files in the central office.

Future objectives include completion of the Texas State Implementation Plan (SIP) revisions for ozone for Dallas, Tarrant, and El Paso counties; increased emphasis on emergency management activities and monitoring and control of toxic air contaminants; and a review of the agency's hearing process to ensure efficiency. In addition, more operational responsibility and resources will be transferred from the central office to the regional offices in order to continue providing timely response to the public and to strengthen all aspects of the agency's enforcement activities. Every effort will be made to streamline procedures and deploy resources so that we can address newly discovered air pollution problems while continuing to provide basic services to a growing state population.

Eli Bell
Deputy Executive Director
Texas Air Control Board

Eli Bell

Directors' Comments

In the past biennium, the Management Services Division has responded to a major restructuring of the agency staff by providing uninterrupted support services to the agency's operating programs. Staff Services has improved the services it provides to the staff in various areas. Examples include the automation of personnel data, resulting in greater efficiencies in record keeping. The strong commitment to management training as well as technical training has ensured a staff capable of meeting the increasing complexities of achieving desirable air quality. Improved reporting and local program oversight procedures were developed to enhance the overall effectiveness of agency grant activities. And the timely dissemination of environmental air pollution information through the Public Information Section has kept both the staff and the public apprised of the most current developments in the areas of air pollution control. Public Information also published a report commemorating the TACB's 10 years as a separate state agency.

The Data Processing Division provided software development support for a point source data base system and initiated work on phase III of an air quality data system. During the biennium, support was provided for installation of computer dial-up terminals in five regional offices for use in accessing ambient air and enforcement data files in Austin. The division assisted in revamping the Information Systems Review Board that allocates and sets priorities of all agency data processing resources.

The program's principal objective in the next biennium is to provide timely response to the fiscal, personnel, public information, and data processing needs of the agency.

Alex D. Opiela, Jr.

Alex D. Opiela, Jr., P.E.
 Director, Administrative Services

Administrative Services

The Administrative Services Program is responsible for providing support services through its Management Services Division, Staff Services office, and Data Processing Division. The Management Services Division is responsible for maintenance of accounting and budgetary records for all funds appropriated to the agency; purchasing all materials, supplies, and equipment; mailroom services; multilith and reproduction services; building maintenance; scheduling and maintenance of vehicles; communication services; and receiving and distribution services. The Staff Services office is responsible for ad-

ministering all personnel functions for the agency; coordinating staff development and training activities; development and submittal of the agency's federal air pollution control program grant application; and providing all necessary support for the agency in the areas of public information and graphic arts. The Data Processing Division is responsible for developing and maintaining data systems and for processing, storing, and retrieving data for all operating and support activities.

Directors' Comments

Central Regulatory Operations

Organized into three groups--Monitoring, Enforcement, and Technical Support and Regulation Development--this program provides for: (1) the measurement and analysis of air contaminants in the ambient air and from air contaminant sources through the operation of a statewide network of continuous and noncontinuous air pollution monitors and a central laboratory;

(2) the compilation of a statewide inventory of air contaminant emissions and the analyses of emission and air quality data so as to better understand the effectiveness of and necessity for various control measures; (3) the development of and revisions to regulations and control strategies; (4) the issuance of permits to new facilities requiring the application of best available control technology; (5) the handling of violations in accordance with streamlined guidelines to facilitate

consistent and effective enforcement; and (6) the development of a statewide emergency response capability to ensure coordination with other agencies in protecting the public during and after emergencies and natural disasters which involve air pollution.

During the biennium, staff in the Monitoring, Enforcement, and Technical Support and Regulation Development Groups accomplished a number of tasks which resulted in considerable cost savings to the taxpayers. Staff designed and developed a new portable monitoring station for special projects and a sophisticated mobile laboratory for sampling and analysis of hazardous air contaminants. Additional savings were realized by automating the air monitoring network. Also, several continuous air monitoring stations (CAMS) were relocated to improve the agency's capability to detect trends in air quality.

In the area of regulation development and planning, comprehensive revisions of the state implementation plan (SIP) for lead in Dallas and El Paso counties and for ozone in Harris County were completed. The latter includes an enhanced emission control system inspection program for cars and light-duty trucks. Statewide rules were adopted to prohibit damage to automobile emission control devices from misfueling and tampering. In addition, a prototype computer data system was developed to allow for maintenance of an emission inventory with fewer resources expended.

The new source review and compliance functions were consolidated to assure efficiency in enforcement and to facilitate the transfer of resources and authority to the agency's regional offices. The staff experienced a surge in new source activity relative to cogeneration (electricity and steam), agricultural, and mineral facilities as they were being constructed and relocated. Streamlined new source review activities will enable the agency to meet these new demands without additional resources. Increased emphasis will also be placed on emergency management activities to ensure the protection of Texans and to minimize damage to the environment during fires, chemical spills and leaks, and other episodes.

In the immediate future, some resources will be shifted from monitoring only criteria pollutants (those pollutants for which national ambient air quality standards have been set) to monitoring known or suspected toxic air contaminants. SIP revisions will be completed for controlling ozone in Dallas, Tarrant, and El Paso counties; an analysis will be made of ozone formation in Orange, Jefferson, Galveston, and Brazoria counties.

Steve Spaw
Director, Central Regulatory Operations



Introduction



in the actual practice of his profession which experience shall include work in air control; one shall be a physician licensed to practice in this state, currently engaged in general practice in this state, with experience in the field of industrial medicine; one shall be a person who has been actively engaged in the management of a private manufacturing or industrial concern for at least ten years immediately prior to his appointment; one shall be an agricultural engineer with at least ten years experience in his profession; and five shall be chosen to represent the public interest.”

and that

“The members of the board hold office for staggered terms of six years, with the term of three members expiring on the first day of September in each odd-numbered year.”

and further that

“The board shall elect a chairman and a vice chairman to serve two-year terms beginning on February 1 of each odd-numbered year.”

The original appointments to the board were made in March 1966.

The board fulfills its mandate to control air pollution through appropriate delegation of its authority to the executive director who administers the day-to-day activities of the agency and through the use of board committees.

Board committees are charged with making detailed reviews of issues and formulating recommendations to the full

The Board

The Texas Clean Air Act (TCAA) of 1965, as amended in 1967, 1969, 1971, 1973, 1977, 1979, and 1981, provides for establishing and maintaining the Texas Air Control Board (TACB) as the state air pollution control agency.

The board is composed of nine members appointed by the governor with the advice and consent of the Senate. The Act stipulates that

“Of the nine members appointed by the governor, one shall be a professional engineer with at least ten years experience

Chapter 1

Research Advisory Council

D. Jack Kilian, M.D.
Professor of Occupational Medicine
School of Public Health
U.T. Health Science Center, Houston

Robert Bernstein, M.D., F.A.C.P.
Commissioner of Health
Texas Department of Health, Austin

C.S. Giam, Ph.D.
Professor of Chemistry
University of Pittsburgh
Pittsburgh, Pennsylvania

John Chapman, M.D.
Professor of Internal Medicine
U.T. Health Science Center, Dallas

James D. McCrady, D.V.M., Ph.D.
College of Veterinary Medicine
Texas A&M University
College Station

William B. Beck
Environmental Consultant
E. I. duPont de Nemours & Co., Inc.
Orange

Ms. Frances V. Smith, M.P.H.
Natural Resources Coordinator
Houston League of Women Voters

Ms. Sharron Stewart
National Advisory Committee on
Oceans & Atmosphere
Lake Jackson

board at its monthly public meetings. Currently, the six standing committees are: Regulation Development, Budget and Finance, Monitoring and Research, Public Information, Mobile Source Emissions, and Intergovernmental Relations.

Valuable assistance is provided to the board by the Medical Resources Advisory Panel, a group of health professionals established in 1977 who give expert advice on health effects issues. Panel members fill an important function as voluntary consultants. The panel met twice during the biennium.

A Research Advisory Council, chaired by a board member, served voluntarily from 1982 to 1984 to provide guidance in determining air pollution research needs and capabilities. Members included experts in the fields of air pollution health effects, air quality monitoring and analysis, industrial emissions and control, and general environmental issues.

History

The air pollution control program for Texas began with the passage of the TCAA. The Act provided legal authority for air pollution control by establishing the TACB with staff support provided by the Texas Department of Health.

Prior to passage of the Act, from 1956 to 1965, the Division of Occupational Health and Radiation Control of the State Department of Health operated the state and national air sampling networks to acquire data on air pollution concentrations. The Department of Health had limited enforcement authority then, but a number of pollution problems were corrected through education and persuasion.

The Federal Clean Air Act (FCAA) of 1963 and the Federal Air Quality Act of

Medical Resources Advisory Panel

Patricia A. Buffler, Ph.D.
Professor of Epidemiology
School of Public Health
U.T. Health Science Center, Houston

Warren J. Raymer, M.D.
Houston Allergy Clinic

Howard R. Wilcox, Jr., M.D.
Director, Wilcox Laboratories
Beaumont

Charles Shaw, M.D., retired
M.D. Anderson Hospital and
Tumor Institute, Houston

Stanley M. Pier, M.D.
Associate Professor, Environmental
Health & Aerospace Medicine
School of Public Health
U.T. Health Science Center, Houston

Marcus M. Key, M.D.
Professor, Occupational Medicine
School of Public Health
U.T. Health Science Center, Houston

Marvin S. Legator, Ph.D.
Professor & Director
Preventive Medicine & Community
Health
U.T. Medical Branch, Galveston

Edward J. Fairchild II, Ph.D.
Professor, Occupational Medicine
School of Public Health
U.T. Health Science Center, Houston

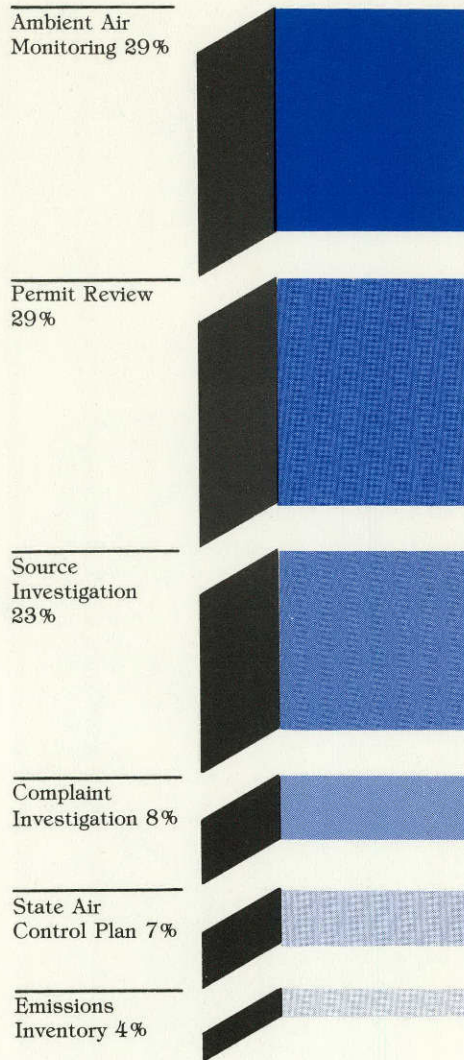
1967, as amended, established funding for state and local air pollution control programs. Texas adopted its first air pollution control regulations in 1967.

In 1968, the TACB staff expanded from nine employees in January to 32 in August. By August 1970, the board had

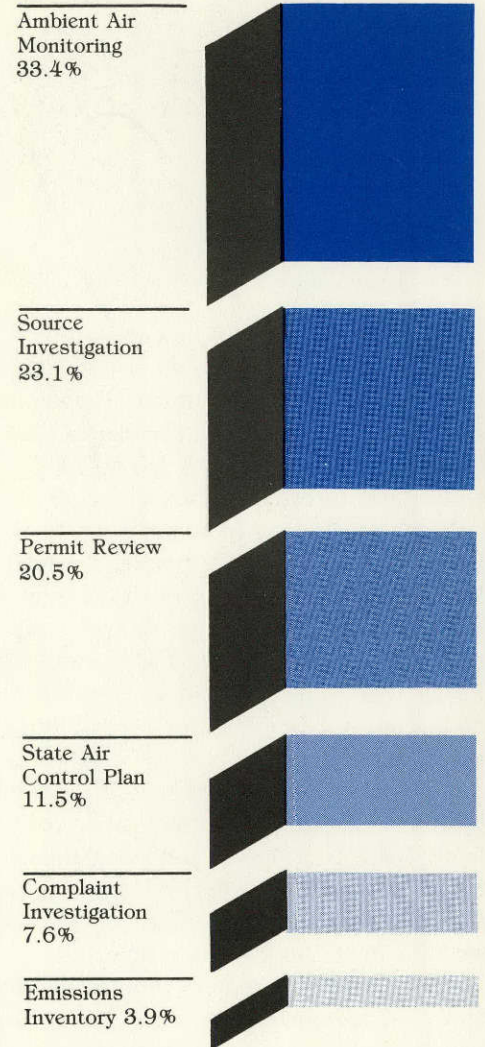
Chapter 1

Staff Breakdown by Function

Fiscal Year 1982
369 Authorized Positions



Fiscal Year 1984
370 Authorized Positions



a staff of 48 and by August 1972, the board had a staff of 220.

In August 1973, House Bill 739 established the TACB as a separate state agency.

Staffing

As a result of new priorities and the FCAA Amendments of 1977, a total of 400 staff positions was authorized for the 1980-81 biennium. However, in response to Section 70(b) of HB558, 66th Legislature, and requests by the governor's office, positions were limited to 381 by the end of 1980 and 363 by the end of 1981. Positions were limited by the executive director for 1982 and 1983 to 369 and for 1984 to 370 positions with 112 staff members assigned

to the regional offices.

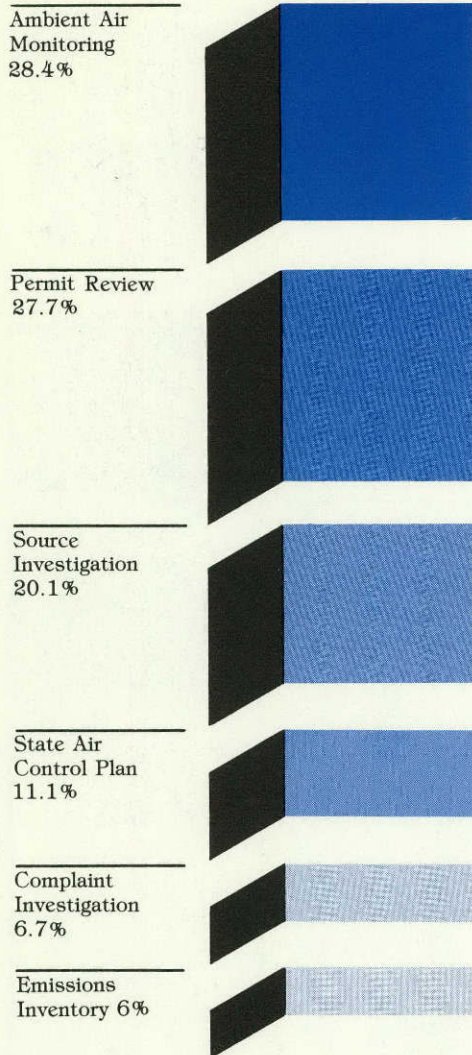
The agency's staff is maintained in accordance with merit system standards established by the U.S. Office of Personnel Management, the Position Classification Act, and the General Appropriations Act. Employee benefit programs include group insurance, retirement and death benefits, social security supplementation, workers compensation benefits, longevity pay, leave provisions, and a strong agency commitment to staff development and training.

Currently the agency's professional staff includes 14 employees with Ph.D.'s, eight with law degrees, 91 with master's degrees, 233 with bachelor's degrees, and 32 with associate degrees. Also, 50 staff members are registered professional engineers.

TACB Expenditures by Function

Fiscal Year 1982

Total Expenditures \$12,525,937



Fiscal Year 1984

Total Expenditures \$13,834,665



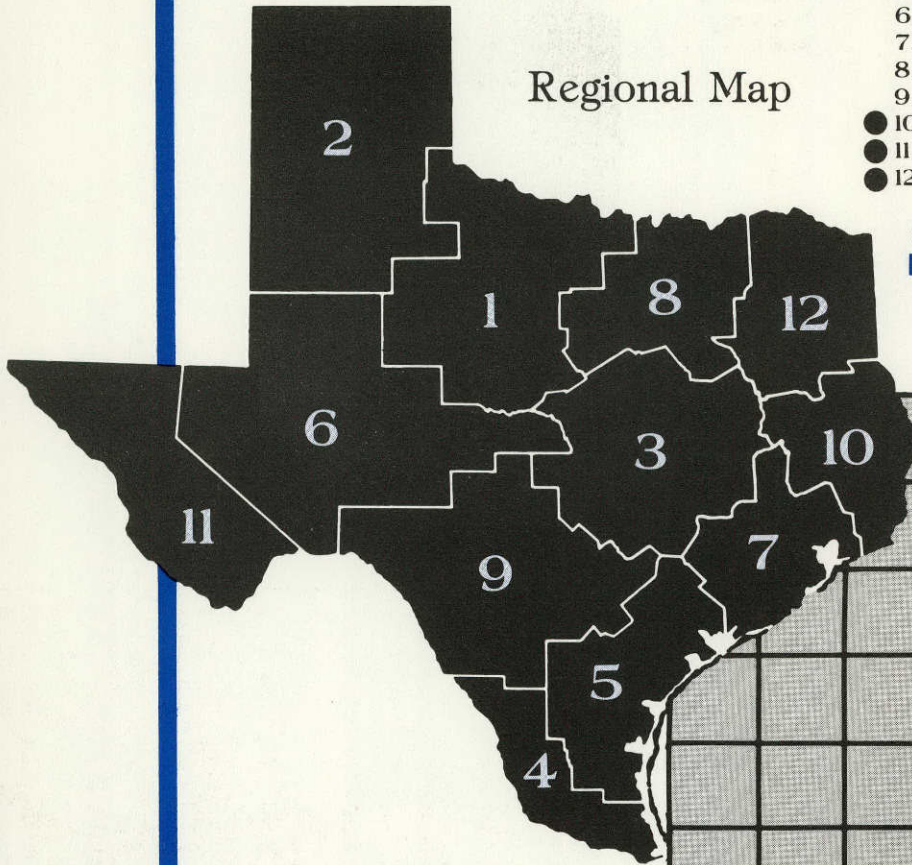
Budget

The board's financial records conform to the principles of fund accounting to aid in the observance of legal limitations placed upon the use of its funds. Operations are financed through legislative appropriations from the state's General Revenue Fund and through federal grants from the United States Environmental

Protection Agency (EPA).

During fiscal years 1983 and 1984, the EPA grants were \$4,109,500 and \$3,753,000 respectively. In both 1983 and 1984 the grant was composed of \$3,118,000 continuing funds with \$991,500 in one-time funds awarded in fiscal year 1983 and \$635,000 in one-time funds awarded in fiscal year 1984.

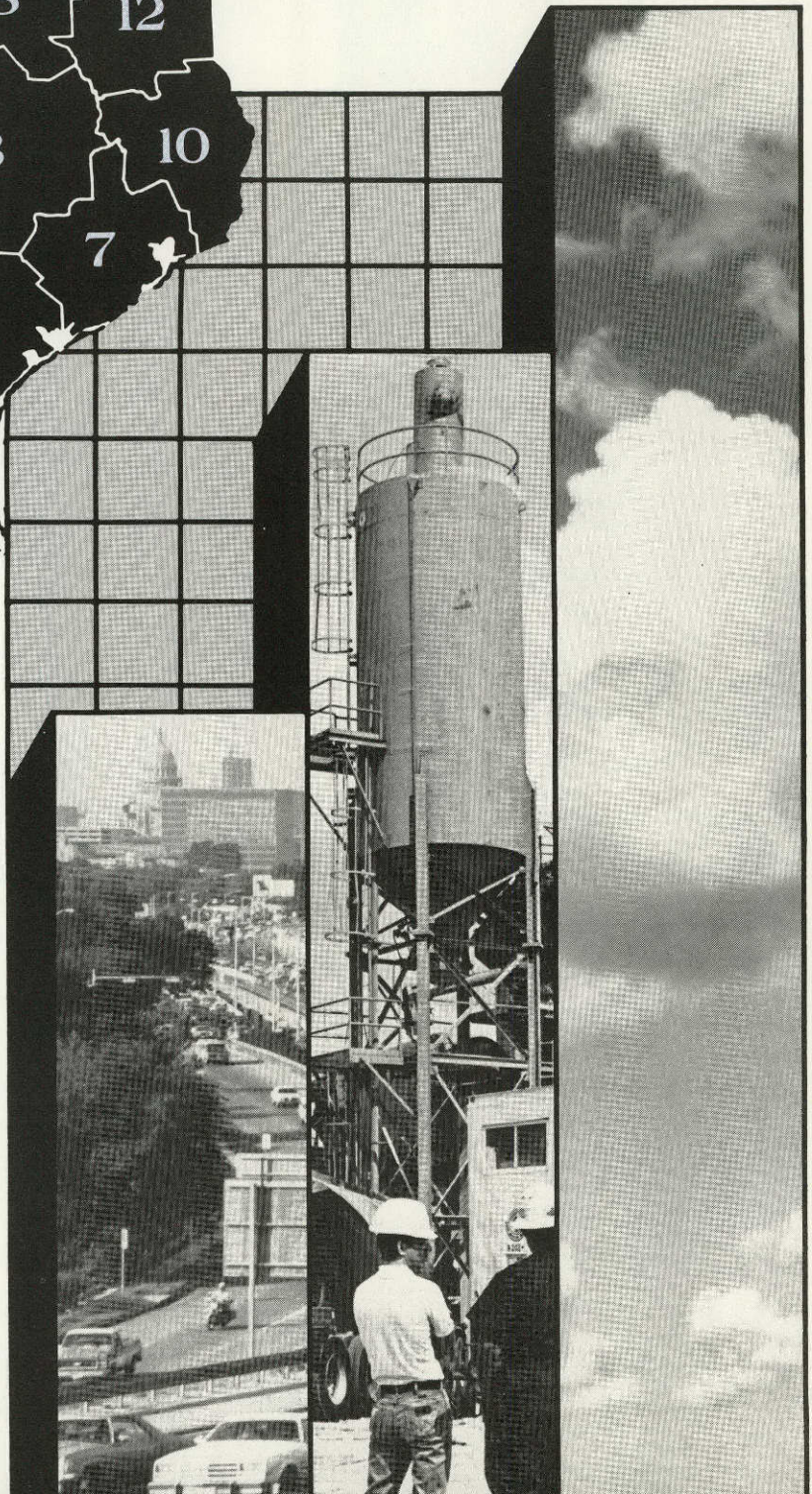
Regional Map



1. Abilene-Wichita Falls
2. Amarillo-Lubbock
3. Austin-Waco
4. Brownsville-Laredo-Harlingen
5. Corpus Christi-Victoria
6. Midland-Odessa-San Angelo
7. Houston-Galveston-Baytown
8. Dallas-Fort Worth
9. San Antonio
- 10. S. Louisiana-S.E. Texas-Beaumont
- 11. El Paso-Las Cruces-Alamogordo
- 12. Shreveport-Texarkana-Tyler

● Interstate Regions

■ Cities where Regional Offices are located.



Chapter 1

Reviewing New Facilities

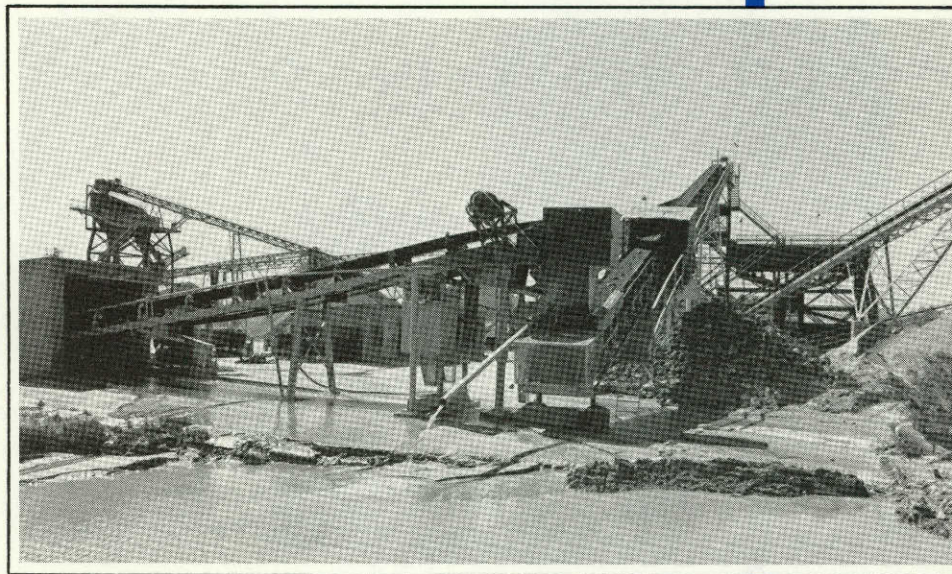
The Texas Clean Air Act (TCAA) requires a construction permit or an exemption from the Texas Air Control Board (TACB) for all new facilities and modifications to existing facilities that may emit air contaminants. The permit process is designed to ensure that these facilities utilize the best available control technology (BACT), comply with all rules and regulations of the TACB, and do not prevent the attainment or maintenance of applicable federal air quality standards.

Proposed facilities must also meet federal New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP). Administratively, the permit review process involves issuing construction and operating permits for larger facilities or issuing exemptions from permit procedures for facilities with insignificant emissions.

During the biennium, the agency adopted a permit fee schedule. The fee is 0.1 percent of the total capital cost of permit projects with a minimum fee of \$300 and a maximum fee of \$7,500. The fee requirements were initiated in January 1983, and an estimated \$615,000 in permit fees was collected through the end of the biennium.

Permits Review

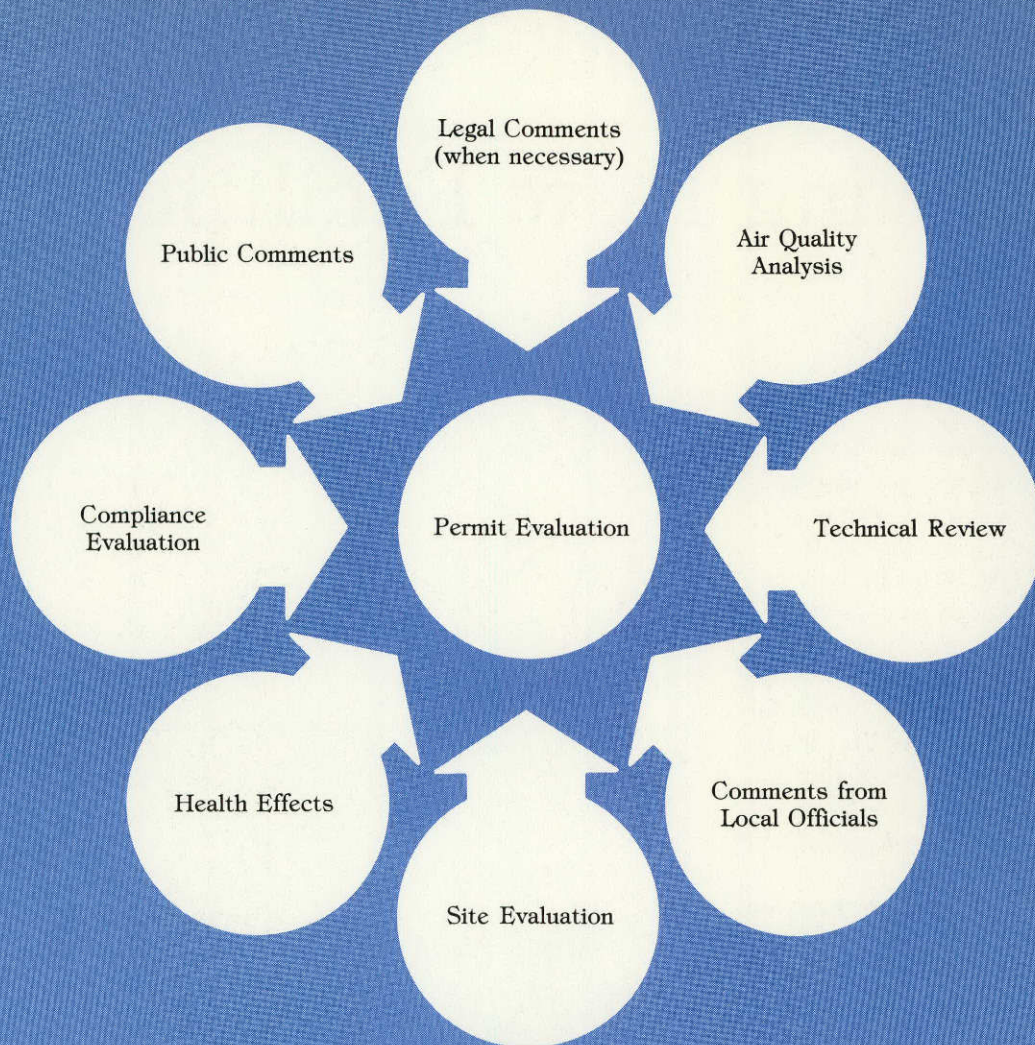
Professional engineers and engineering assistants of various disciplines in the Permits Division provide technical expertise in evaluating permit applications and exemption requests. Staff engineers keep informed about new processes, new emission control technology, regulations, and legislation to ensure that each new project is evaluated efficiently and



professionally. Each new application is assigned to a permit engineer. A review of proposed processes, emission control methods, and emission impact of facility operations is included in the evaluation. The review process also includes participation by other TACB divisions and local air pollution control programs.

Health effects experts in the Research Division provide assistance in evaluating the impact of known or suspected toxic or hazardous air contaminants by developing information on probable consequences of short- and long-term exposures. Dispersion modeling experts in the Air Quality Data Analysis Division use mathematical techniques to evaluate

Chapter 2



expected ground-level concentrations of air contaminants from proposed new facilities.

The Technical Services Division reviews control technology, submits information to the Environmental Protection Agency (EPA) Clearinghouse for Best Available Control Technology/Lowest Achievable Emissions Rate (BACT/LAER), reviews Texas Department of Water Resources (TDWR) permit applications for possible sources of air contaminant emissions, and consults with staff concerning the federal prevention of significant deterioration (PSD) rules.

Staff attorneys from the Legal Division ensure that permits prepared are legally enforceable and conduct requisite hearings or public meetings. Enforcement officers in the Compliance Division provide enforcement support when violations of new source review requirements occur. Engineers and technicians in the

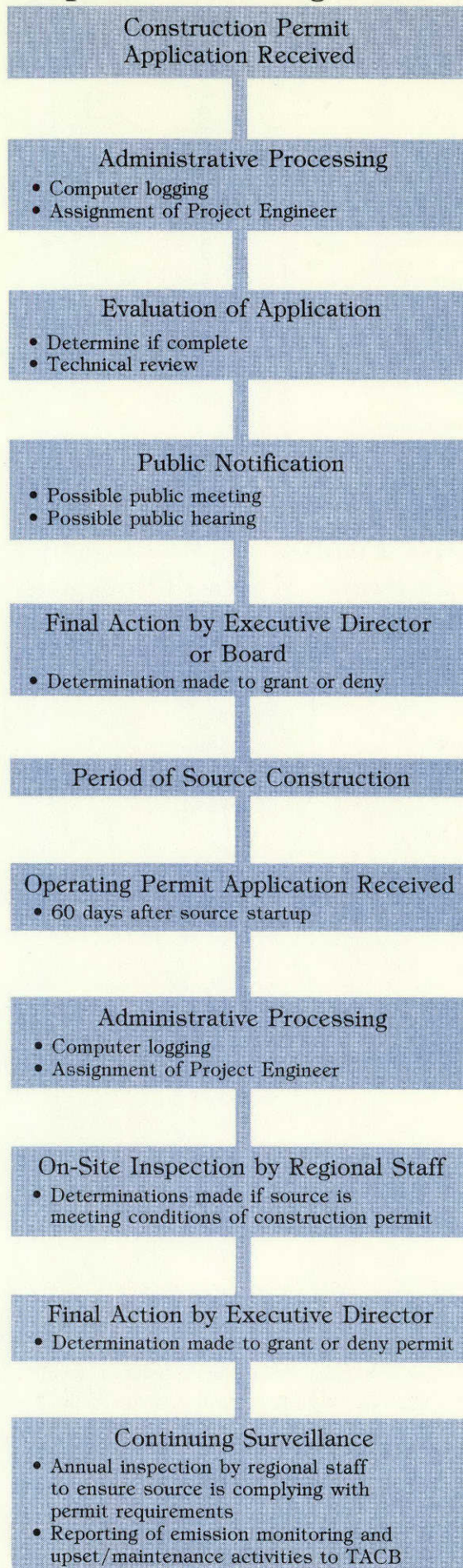
Quality Assurance Division evaluate performance testing reports and results to determine if facilities are operating in accordance with emission limits specified in permits or exemptions issued.

Engineers and investigators in the agency's 12 regional offices evaluate proposed sites and ensure that facilities are constructed and operated according to the conditions of the permit or exemption.

Prevention of Significant Deterioration

During the last biennium, the agency was delegated responsibility for conducting reviews to ensure that proposed facilities comply with federal PSD requirements. These reviews are conducted concurrently with state permit reviews. They involve a determination of whether a facility will utilize BACT and an analysis to ensure the emissions as-

Steps in Permitting Process



sociated with the proposed facility will be consistent with preserving existing clean air resources. The reviews also involve a determination of whether emissions from the source will adversely impact visibility, the soil, and vegetation.

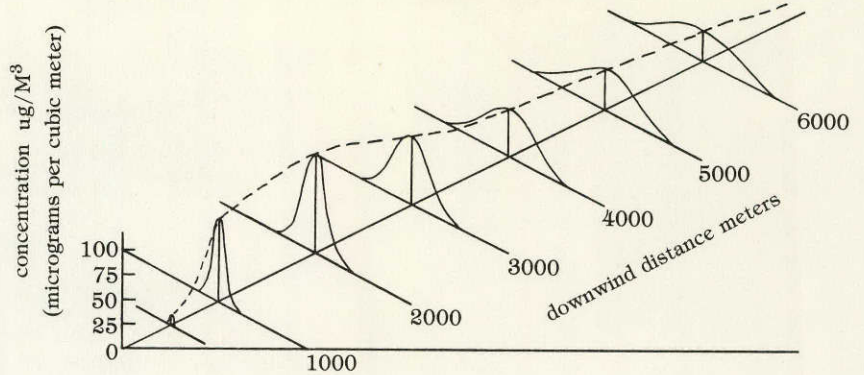
To prevent delays in reviewing applications from sources subject to both state and PSD permit reviews, joint public notification procedures are used, allowing for public comment and participation in decisions made on both permits at the same time. Since the TACB accepted delegation of the PSD permit review responsibility, approximately 100 PSD permits have been reviewed.

Modeling

An integral part of the new source review program is mathematical dispersion modeling conducted for each permit application. The models are computer programs used to simulate the transport and dispersion of emission plumes through the atmosphere. Modeling enables the staff to estimate maximum ambient concentrations of pollutants that may occur as the result of emissions from new or modified facilities. When estimating the effects of emissions from a new facility in an area where other emission sources already exist, models can combine the effects of emissions from all sources in the area to estimate the overall impact on air quality. The permit engineer can then estimate emission limits necessary to protect air quality under worst-case circumstances. Approximately 14,750 individual modeling evaluations were conducted during the biennium for state construction permits and federal PSD permits.

During the biennium, the modeling staff developed a screening technique

Ground Level Concentrations at Several Distances Downwind

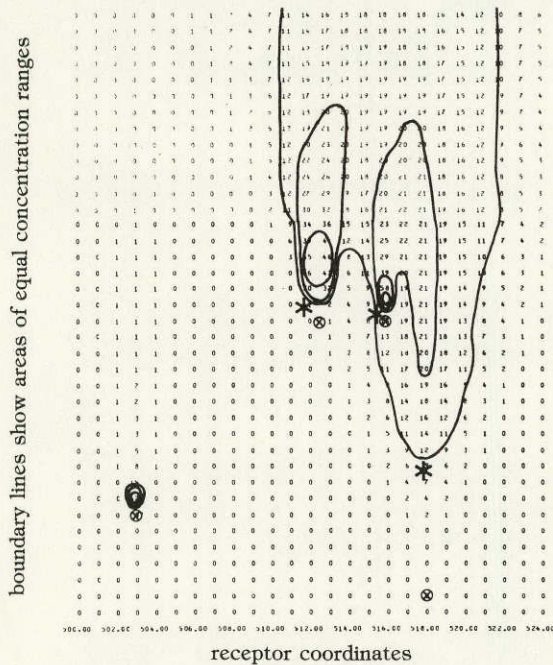


A model is a computer program used to simulate the dispersion of an emission plume through the atmosphere as it is affected by various meteorological conditions. It is used to estimate the maximum ambient concentration of pollutants from single and multiple emission sources. As an emission plume travels downwind of a source, the peak pollutant concentrations decrease but the plume spreads out to impact a wider area.

Models can estimate the combined impacts of multiple stacks or pollutant concentrations downwind of various sources.

sis, which was formerly a time-consuming manual activity. Further improvements to the model are being investigated which will extend its usefulness for regulatory purposes.

Computer Printout of Results of a Texas Episodic Model (TEM) Run



⊙ location of stacks

* start of impact from individual stacks

Exemptions

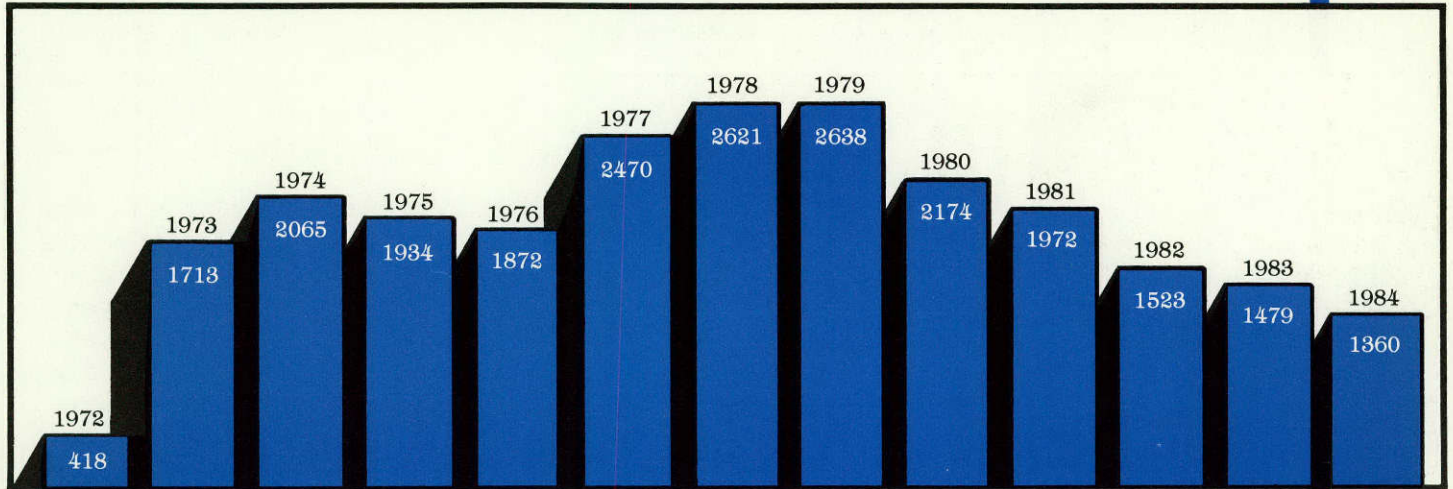
The review of requests for exemptions from permits procedures is almost identical to the permits review process. Evaluation of each application is made to ensure that the facility will comply with all applicable state and federal regulations and will not cause a significant contribution of contaminants to the atmosphere. Toxic emissions and emissions for which a national ambient air quality standard has been issued receive particular consideration. If it is determined that emissions from a facility will result in insignificant emissions, the facility is exempted from further permit review procedures. Additionally, a list of exemptions from permits procedures has been developed which exempts certain types of facilities known to have insignificant emissions, provided specified abatement measures are employed and siting criteria met. Permit fee requirements and public notification procedures are not applicable to exempted facilities.

Facility Types

A large percentage of new facility review activities involve several areas of Texas business including the oil, chemical, and gas production and refining industries. Because of continued worldwide pressure on energy supplies, oil and gas processing industries have been developing greater numbers of natural gas sweetening plants, gas de-

used to determine the meteorological data necessary to conduct dispersion modeling for PSD permit reviews which has reduced the overall cost of such modeling without sacrificing the quality of the results. Also, agency models like the widely used Texas Episodic Model have been enhanced by the modeling staff to selectively remove certain meteorological conditions from an analy-

Total Number of Construction & Operating Permit Applications and Permit Exemption Requests Received



hydration plants, and gas liquids recovery plants.

The number of natural gas compressor stations has continued to increase with the development of new gas fields and the lowering of existing gas field pressures. New engine designs and catalytic converters are used to reduce or control nitrogen oxide and carbon monoxide emissions. Additional energy source developments consist of in situ lignite gasification techniques and repressurization of gas fields with carbon dioxide.

Combustion related permit activities during the last biennium have involved primarily the review of new internal combustion engines and incinerators. The Public Utilities Regulatory Policies Act of 1978 has encouraged the permitting and construction of a number of cogeneration facilities producing both electric power and process steam.

In the coatings industry, emphasis continues in the development and use of both low solvent and waterborne coatings. Also, review of facilities manufacturing integrated circuits has increased.

Because of the continued growth of residential subdivisions, street expansion and improvement projects, and commercial buildings in Texas; the activity of construction-related facilities such as asphalt concrete plants, concrete batch

plants, and rock crushers has continued to increase. Improved techniques for projecting emission levels and dispersion characteristics have been developed to assist in the review of such facilities. Because of the continued interest in alternate fuel sources, the construction of bulk material handling and processing facilities for lignite, coal, and petroleum coke has also increased.

New facility review in the agricultural area centered around the construction of new and enlarged grain storage facilities because of the federal Payment-In-Kind (PIK) program. Other agricultural activity during the biennium has been in the enlargement of existing rendering and food processing plants.

The agency has entered into a memorandum of understanding with the TDWR to coordinate the regulation of facilities under the jurisdictions of both agencies. Such facilities include wastewater treatment plants, landfarming operations, and solid waste disposal sites. The agreement also incorporates procedures for review by the TACB of hazardous waste incinerator permit applications required under the federal Resource Conservation and Recovery Act program as delegated to TDWR. The TACB has a similar agreement with the Texas Department of Health regarding

Seventeen public meetings regarding permit applications were held during the biennium.



licensing of hazardous waste incinerators which are under that department's jurisdiction.

Public Hearings Process

Public participation in the permit review process is initiated by public notification in a newspaper of general circulation in the area where a facility is planned for construction. The public notice states the applicant's intent to construct and lists the air contaminants which will be emitted.

TACB procedural rules allow persons potentially affected by air contaminants

from a proposed new facility or modification to request a contested case hearing. If a hearing is granted by the executive director prior to the issuance of a construction permit or if the executive director determines to issue a permit and that decision is appealed, the formal hearing process is initiated. A hearing examiner calls the hearing, publishes a hearing notice, and acts as an administrative law judge. The TACB staff is represented by an attorney from the Legal Division. The company and the opponents may also be represented by counsel. The company must prove that it is entitled to a permit under the requirements set out in the TCAA and TACB Regulation VI, "Control of Air Pollution by Permits for New Construction or Modification." All witnesses are sworn and are subject to cross-examination by all parties. After the evidence has been gathered, the hearing examiner makes a recommendation to the board which rules on the recommendation. The board then enters an order including findings of fact and conclusions of law. This order can be appealed through the Travis County District Court. Sometimes an informal public meeting is held in lieu of or in addition to a public hearing. Meetings often can provide a better forum for dialogue and idea exchange than the more formal hearing. During the past biennium, a total of 13 public hearings and 17 public meetings regarding permit applications were held.

Chapter 2

Ensuring Compliance

The Texas Clean Air Act (TCAA) was adopted to safeguard the air resources of the state. To accomplish this objective the Act authorizes the board to adopt necessary regulations, conduct investigations to determine compliance, and initiate enforcement action as necessary. Ensuring compliance is a complex process initiated at the agency's regional offices but regularly involving several divisions within the agency. Six local air pollution control programs receiving partial federal funds also participate in this process.

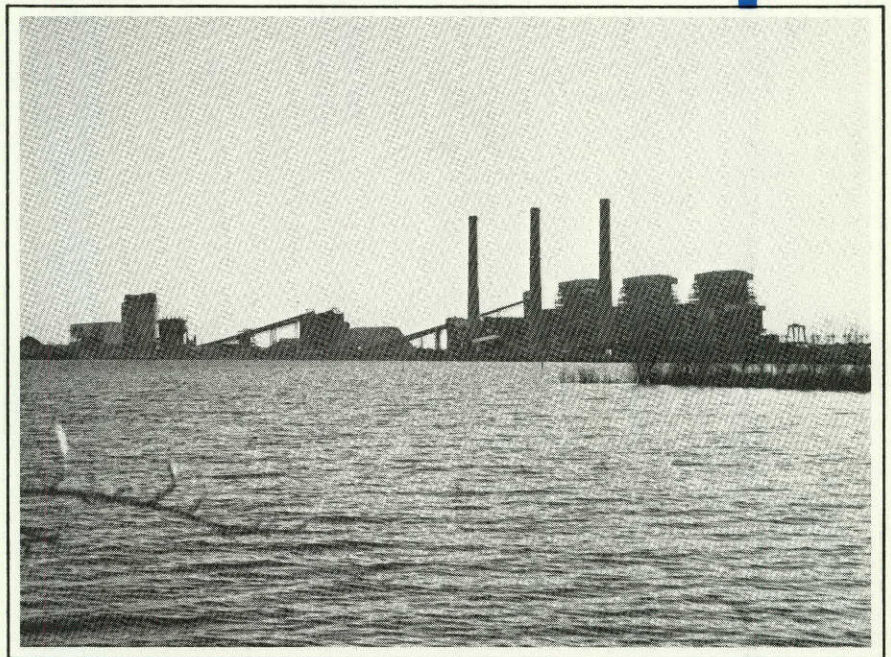
During the biennium, more than 27,000 investigations were performed. Because of the magnitude and diversity of air contaminant sources requiring investigation, surveillance and enforcement activities are directed first to those sources that:

- Are subject to complaints;
- Emit toxic or hazardous substances;
- Are located where ambient air quality is poor;
- Emit the most air contaminants; or
- Have the potential to affect the most people.

Highest priority is given those activities necessary to ensure strict compliance with all court orders, board orders, and new source permits.

Complaints

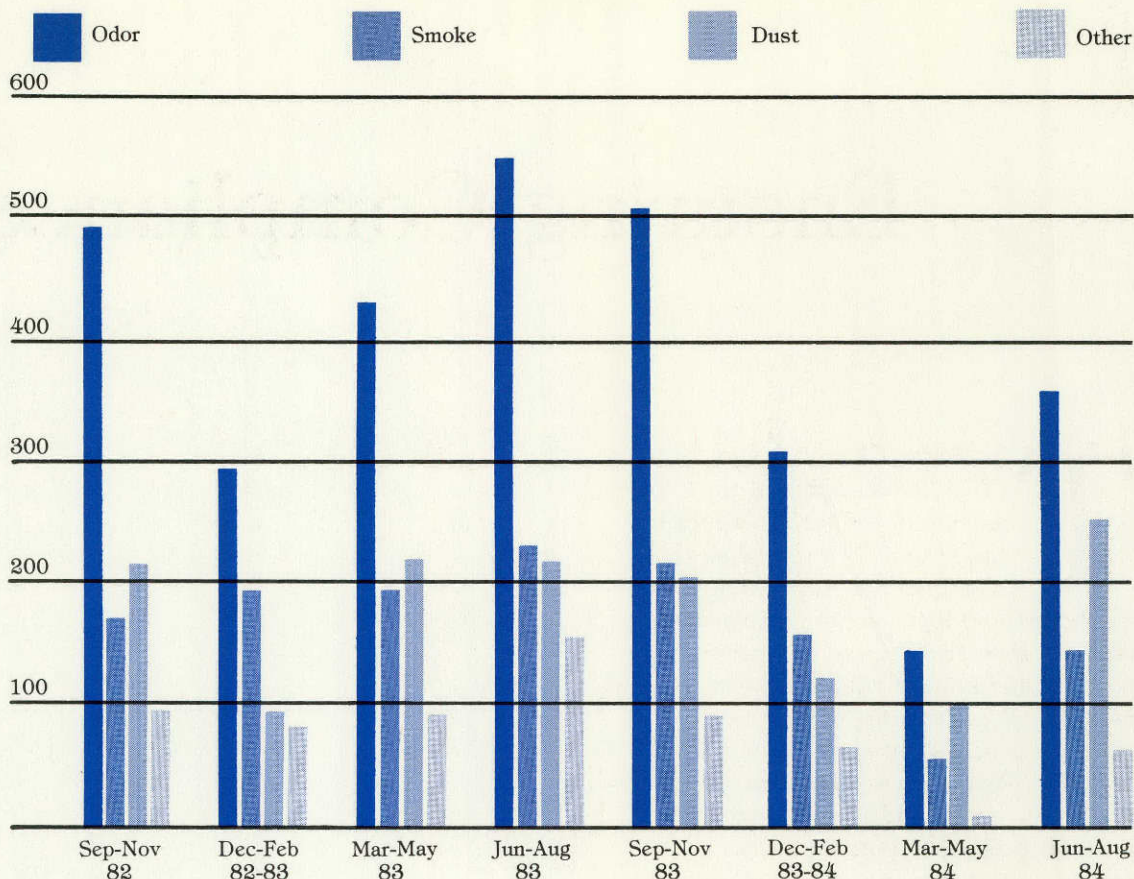
The agency gives highest priority to the prompt investigation of citizen complaints. Complaints are investigated as soon as possible after receipt, generally within 24 hours. The investigator interviews the complainant and inspects the alleged cause of the problem. When vio-



lations are noted, the appropriate source representative is directed to correct the problem. Frequently, compliance is achieved quickly and the complaint successfully resolved within a short period of time. At times, however, detected violations are not resolved until regional investigators have performed several inspections and formal action is taken to ensure the source has taken corrective measures and is operating in continuous compliance. Some complaints require extensive investigation and special sampling before the problem and its source can be identified accurately.

Chapter 3

Complaints



The number, frequency, and distribution of complaints is highly variable and influenced by many factors such as seasonal weather patterns, production variability, and population density and community preferences. The accompanying table provides summary information on more than 6,000 complaint investigations conducted during the past biennium.

Investigations

By their very nature, complaint investigations are unscheduled and occur as the need arises. However, major industrial sources are investigated thoroughly at least once a year. During this biennium, approximately 4,800 investigations of major sources were made. During these investigations, source operations are examined in relation to applicable rule requirements. If necessary, sampling is performed or scheduled for a later time. These annual inspections also provide the opportunity to document compliance with special provisions of applicable construction or operating permits.

Particular attention is given to sources

that may emit known or suspected toxic or hazardous compounds. The Environmental Protection Agency (EPA) has delegated responsibility for administration and enforcement of the National Emission Standards for Hazardous Air Pollutants (NESHAP) to the state. These rules control the emission of asbestos, mercury, and vinyl chloride. Twelve sources in Texas are regulated by the vinyl chloride rules promulgated under NESHAP. The operations of these particular sources are investigated several times throughout the year.

The agency receives notice of emergency episodes that cause a condition of air pollution or that may impact air quality and the health and welfare of the public. Notification of these episodes is processed in the central office by emergency management personnel. Frequently, the Texas Department of Public Safety (DPS) Division of Emergency Management is the first to report accidental episodes to the agency. Major industrial accidents involving spills, process upsets, and accidental releases also are reported to the agency. Emergency management personnel are respon-

Sampling is often performed to document compliance with agency regulations.



Agency personnel hear recommendations for handling episodes involving hazardous materials.



sible for coordinating emergency response activities and acting as liaison with other state agencies.

Regional personnel are provided with technical information and resource materials to help formulate an appropriate response to emergency episodes. Data available to the regional staff include information on material flammability, toxicity, chemical properties, safe evacuation distances, and other personal and public safety precautions. More than 120 emergency episodes have been reported in the past biennium.

A related activity performed by emergency management personnel involves coordinating with the National Weather Service in determining when to issue Air Stagnation Advisories (ASAs). During the periods of poor atmospheric dispersion that typify ASA conditions, heightened vigilance is maintained by the Emergency Action Center by electronically interrogating the continuous air monitoring stations in the areas of poor dispersion. Should air quality deteriorate to levels with the potential to adversely affect human health or safety, air pollution episodes may be declared pursuant to the agency's Regulation VIII.

Enforcement Guidelines

Notices of violation are issued to sources detected operating out of compliance with board regulations or the TCAA. Multiple notices can be issued during or following an investigation, depending on the number of rules violated. In the past biennium, more than 6,000 violations were recorded in the state and handled according to agency guidelines for compliance and enforcement matters. These guidelines are intended to achieve prompt voluntary compliance, to en-

Chapter 3

Chapter 3

courage continuous compliance, to ensure consistent application of board rules and regulations across the state, and to provide documentation if formal enforcement action is necessary.

During the biennium, the Compliance Division developed a data management system called ENFORCE to track violations recorded by the agency's regional offices. ENFORCE provides a chronology of events relating to each violation from date of first violation to final resolution. Retrieval of data contained in the system provides a means for the central office to review regional office enforcement activities. The activity summary provided by ENFORCE also facilitates the preparation of source files when high priority enforcement action is necessary.

Some violations cannot be resolved quickly at the regional or local level or they may require immediate formal action because of the source's potential to affect persons or their property. These violations are assigned high priority and referred to the TACB central office for continued enforcement action. Most frequently, the company's key management personnel are called to an administrative enforcement conference (AEC) with agency enforcement, technical, and legal staff represented. Fifty-five AECs were conducted during the biennium, 12 of which required further enforcement action pursuant to the enforcement guideline process.

Formal Enforcement Action

When violations cannot be resolved through voluntary or administrative means, the TCAA authorizes the board to pursue legal remedies which include

civil penalties of from \$50 to \$1,000 per day for each violation, and injunctive relief. Legal action is initiated against noncomplying sources through procedures established by board resolution. The TACB Executive Director notifies the board of his intention to refer a matter to the Texas Attorney General's Office for legal action. Members of the board have 10 days to review the matter after which the case is referred to the attorney general unless three or more members request in writing that the matter be placed on the agenda of the next regularly scheduled board meeting for discussion.

During the biennium, the agency requested that the attorney general's office initiate legal action against seven companies for violations of the TCAA and rules and regulations of the board. The majority of the violations involved nuisance conditions, failure to comply with permit provisions, or failure to obtain a construction permit.

The agency became party to two lawsuits filed by local governments against companies within their jurisdiction. Also during the biennium, one compliance hearing was held resulting in a legally enforceable board order specifying abatement measures to be implemented by the company and a schedule for their completion.

Visible Emissions Evaluator Training and Certification

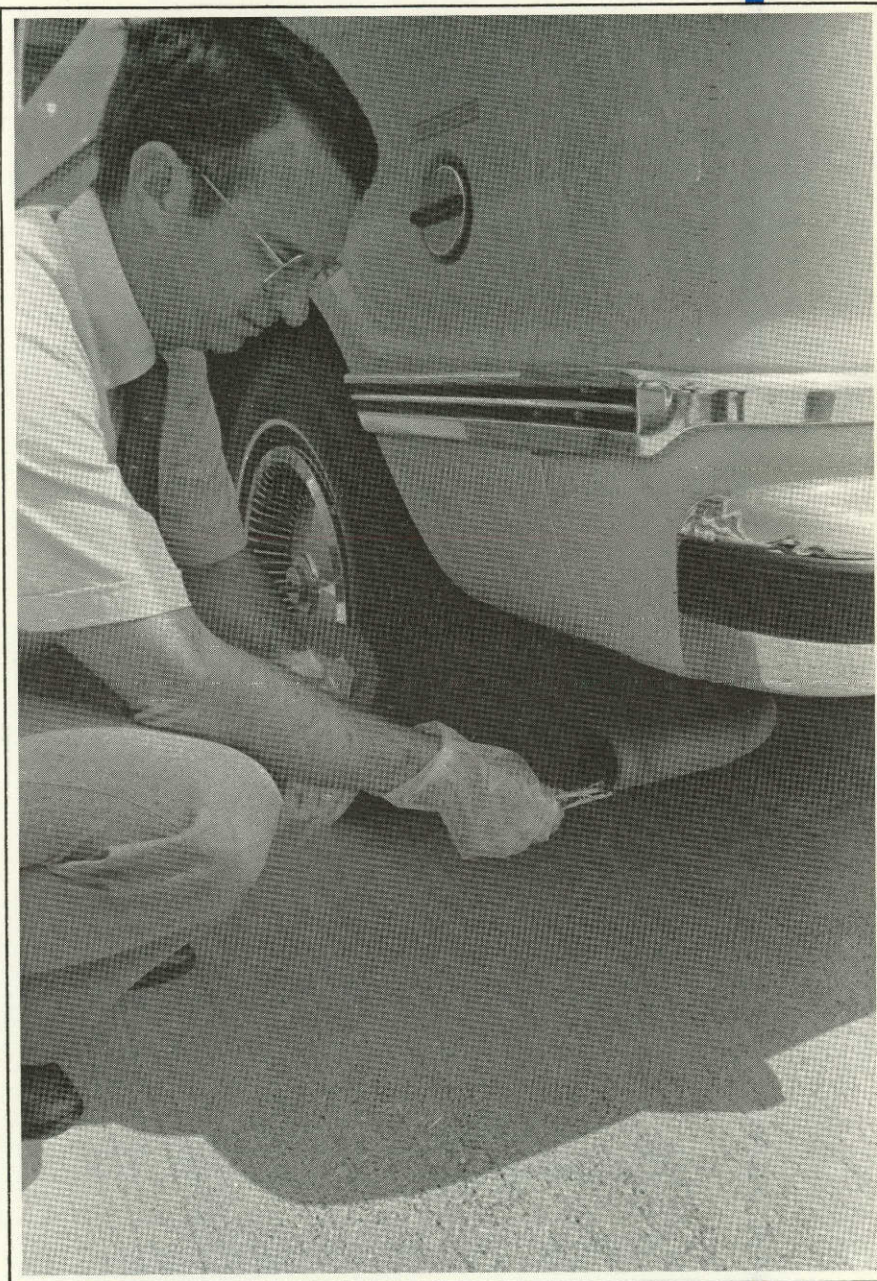
As a service to agency investigators and the general public, the TACB Quality Assurance Division conducts training designed to enable students to evaluate visible emissions from stationary sources

such as smokestacks. Participants are certified by passing a test that involves reading the percentage of vision obscured by varied amounts of white and black smoke produced by the TACB's smoke generator. During the biennium, 14 courses provided training to 1,357 students.

Mobile Source Control

During the past biennium, the staff began implementation of the Harris County vehicle parameter inspection and maintenance (I/M) program in cooperation with the DPS. Activities included negotiations with EPA to define final program elements, development of a training program to certify mechanics on the repair of late model vehicles with computer controlled engine functions, cooperating with the DPS in developing I/M data collection and reporting procedures, and promoting public awareness of the program.

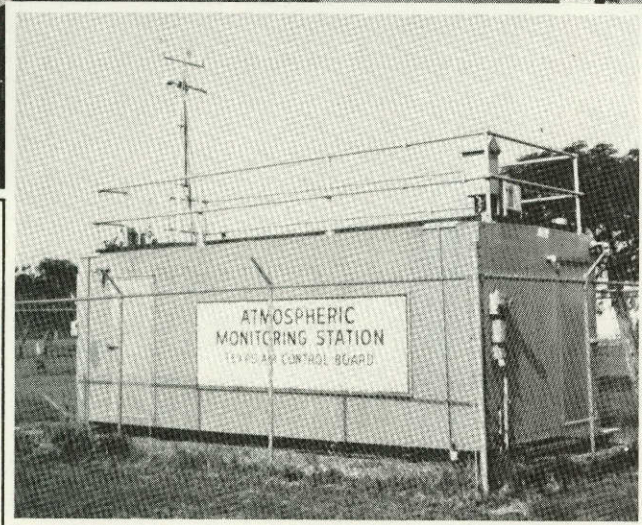
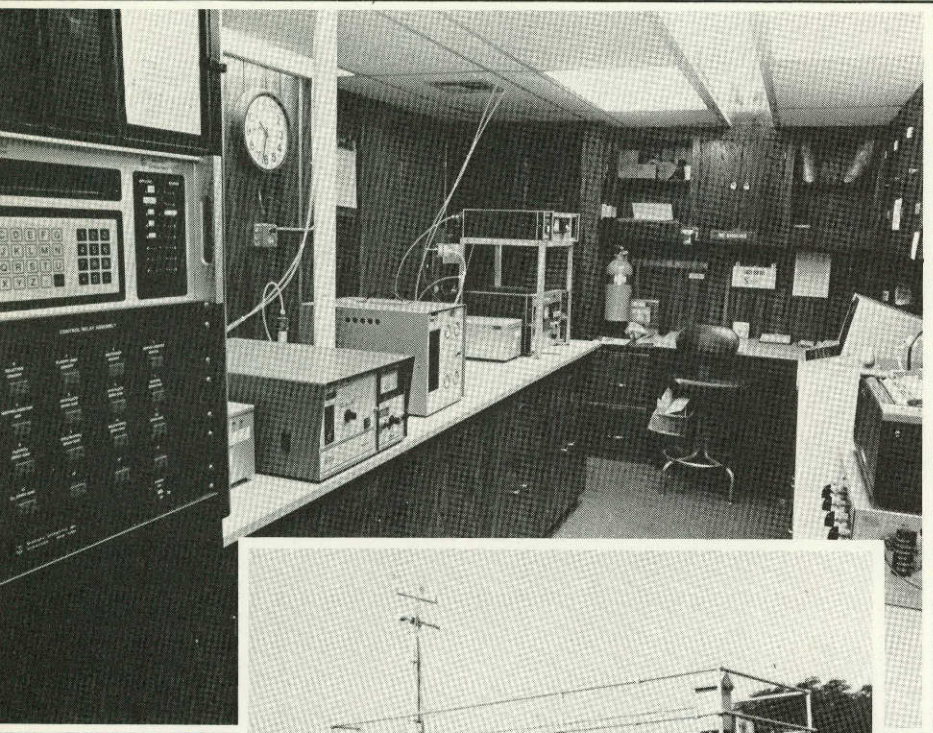
Full implementation and inspection of motor vehicles affected by the Harris County I/M program began July 1, 1984.



A test to determine the presence of lead in a car's exhaust pipe was added to the Harris County vehicle inspection program.

Chapter 3

Monitoring Air Quality



The air conditioned CAMS shelters contain from one to four continuous monitors for measuring ozone, sulfur dioxide, carbon monoxide, and nitrogen dioxide. The CAMS also houses a microcomputer data acquisition system, a computer terminal, telephone modem, and meteorological and other equipment.

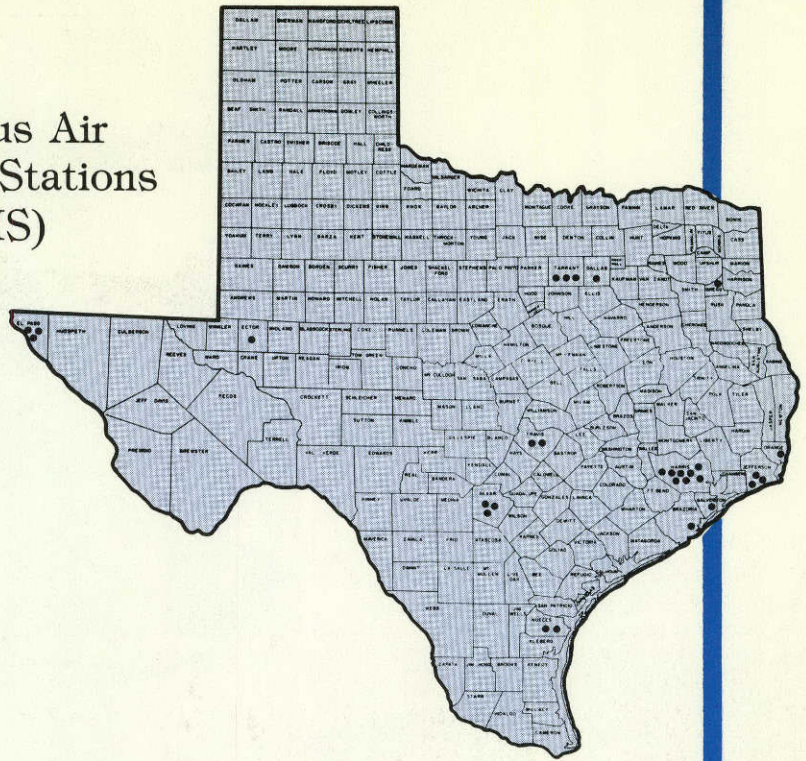
Monitoring air quality in Texas is a challenging and complex undertaking involving resources of both state and local governments. Twenty-nine percent of Texas Air Control Board (TACB) resources are allocated to collecting, analyzing, processing, validating, quality assuring, and reporting air quality data. Several divisions and all regional offices of the TACB combine their efforts to accomplish the goal of obtaining accurate and representative air quality data. Air quality data is also collected by seven city or county air pollution control programs in Corpus Christi, Dallas, El Paso, Fort Worth, Galveston, Houston, and San Antonio.

The TACB regional offices provide operational and maintenance support for all routine agency network and special purpose monitoring. They also provide quality control and quality assurance support for the continuous air monitoring stations (CAMS) and noncontinuous air monitoring stations (NCAMS). These field capabilities significantly reduce both response time and the travel costs.

The Ambient Monitoring Division provides support through engineering, maintenance, and supply services. Monitoring hardware and software is either purchased or designed and fabricated for deployment and installation by division personnel. Troubleshooting and repair are performed as required. The division is also responsible for monitor siting, the deployment of a mobile CAMS for special monitoring projects, and maintaining an equipment inventory of spare parts.

The Sampling and Analysis Division collects and analyzes ambient air samples through both source and special purpose monitoring. In addition, the division ana-

Continuous Air Monitoring Stations (CAMS)



lyzes all samples from the NCAMS network and develops and maintains analytical and sampling capabilities in response to special monitoring needs. The division maintains two mobile sampling vans, stack sampling equipment, and 15 major analytical instruments. During the biennium, the division made 391,198 analytical determinations.

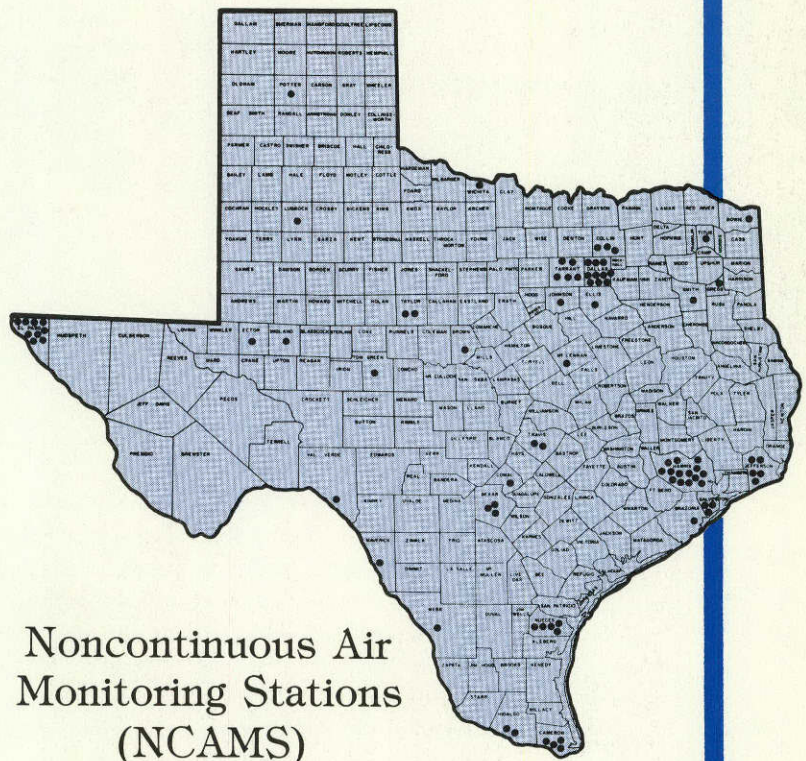
The Quality Assurance Division determines and reports the accuracy, precision, completeness, and representativeness of data collected by the agency. The division is also responsible for processing, validation, and storage of air quality data in the TACB data banks and reporting of the data to the Environmental Protection Agency (EPA) and other interested users.

The Data Processing Division provides facilities for automatically collecting air quality data. The division also develops and implements data processing programs for compiling, storing, and retrieving air quality data, and prepares data tapes for submittal to EPA.

The Air Quality Data Analysis Division identifies air monitoring needs and objectives and recommends network design and monitor locations. The division is also responsible for the review and analysis of all air quality data collected.

The data collected by the TACB have been used around the world and have been requested by industrial and business representatives, university and private researchers or consultants, citizens, and elected officials.

Most of the TACB's monitoring resources have been used to monitor the six national criteria pollutants in accordance with federal requirements. These pollutants are ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide, total suspended particulates (TSP), and lead.

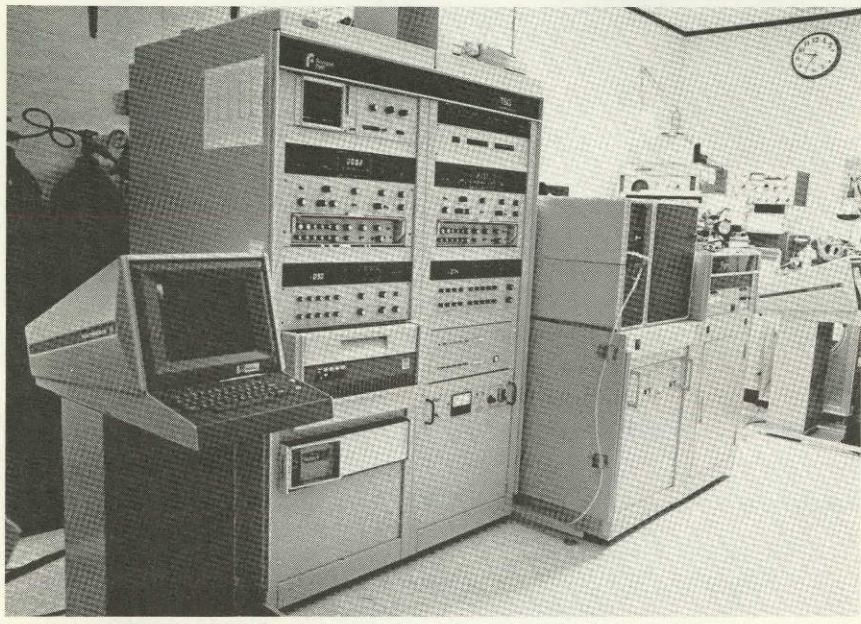
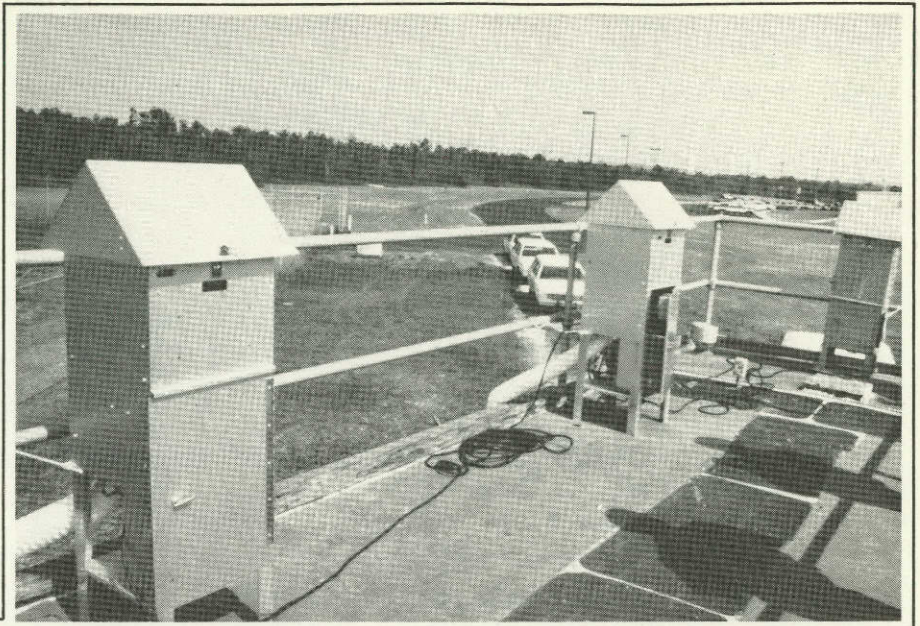


Noncontinuous Air Monitoring Stations (NCAMS)

Chapter 4

High-volume (hi-vol) air samplers (right) are used for measuring total suspended particulates and lead.

The GC/MS/MS (below) purchased in 1983, enables the laboratory staff to rapidly analyze raw, unprepared air samples for organic compounds.



Data gathered by the monitoring network are used to determine compliance with air quality standards, to support development of regulations designed to reduce air contaminant concentrations, and to assess the effectiveness of control strategies. The monitoring network also provides valuable and timely information during meteorological conditions which are conducive to the rapid buildup of unusually high pollutant concentrations.

Monitoring Networks

The TACB routinely collects ambient air samples at 31 CAMS and 132 NCAMS across the state. The configuration of the present CAMS and NCAMS networks was determined by evaluating the TACB's air monitoring and data anal-

ysis needs. Annual reviews of the networks ensure that agency resources are being utilized effectively in fulfilling current and future needs.

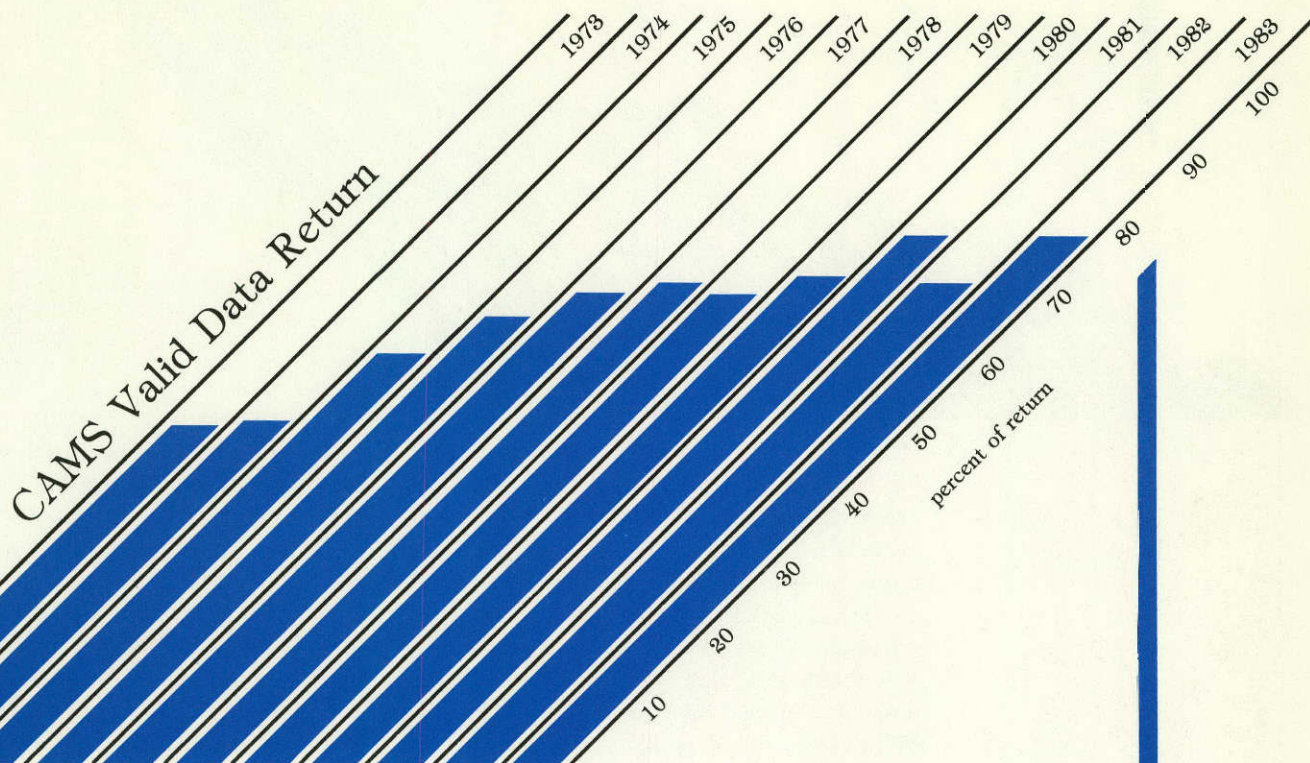
The NCAMS are high-volume (hi-vol) air samplers used for measuring TSP and lead. They are operated for a set period, usually every six days for a period of 24 hours. About 20 special purpose lead samplers are operated every three days.

The NCAMS throughout the state are operated by TACB regional personnel, local program personnel, or volunteers from other state or local agencies. The samplers are maintained almost totally by regional personnel with sampling supplies being provided by the central office laboratory. Once the NCAMS instruments are sited and functioning properly, the samples are collected routinely by field staff and sent to the central office laboratory for analyses.

Air samples are analyzed for TSP, 31 elements (including lead), sulfates, and nitrates. Elemental analysis is done using an X-ray fluorescence (XRF) spectrometer.

In response to a need for improved organic analysis capabilities, the TACB purchased a gas chromatograph/mass spectrometer/mass spectrometer (GC/MS/MS). This instrument, delivered in January of 1983, has been used in analyzing samples from a special study related to the burning of toxic materials aboard an incinerator ship in the Gulf and samples from two special fuel oil studies. Additionally, using the GC/MS/MS, analyses were made of samples from

Chapter 4



the vicinity of a warehouse fire in Los Fresnos for pesticides, combustion products of pesticides, and chlorinated dibenzo-p-dioxins (CDD's). In order to handle low concentrations standards and samples of CCD's, a special controlled-access room equipped with glove boxes was installed.

After samples are analyzed by the TACB laboratory or reported by the local programs, the data are validated and processed for storage in the TACB data bank. Data are published in NCAMS annual summaries and reported quarterly.

Separate continuous and noncontinuous air monitoring networks are also operated by seven local programs. The six federally assisted local programs maintain independent networks with quality assurance of laboratory and operational procedures reviewed annually by TACB personnel. Data from the local programs are submitted to and processed quarterly by the TACB.

The CAMS network is composed of air conditioned shelters containing from one

to four monitors which continuously measure ozone, sulfur dioxide, carbon monoxide, and nitrogen dioxide. The CAMS shelters also house a microcomputer data acquisition system, a computer terminal, telephone modem, and meteorological and other equipment.

The TACB staff designed, engineered, and specified all of the CAMS' components. To aid in design and testing, a test station is maintained at the central office.

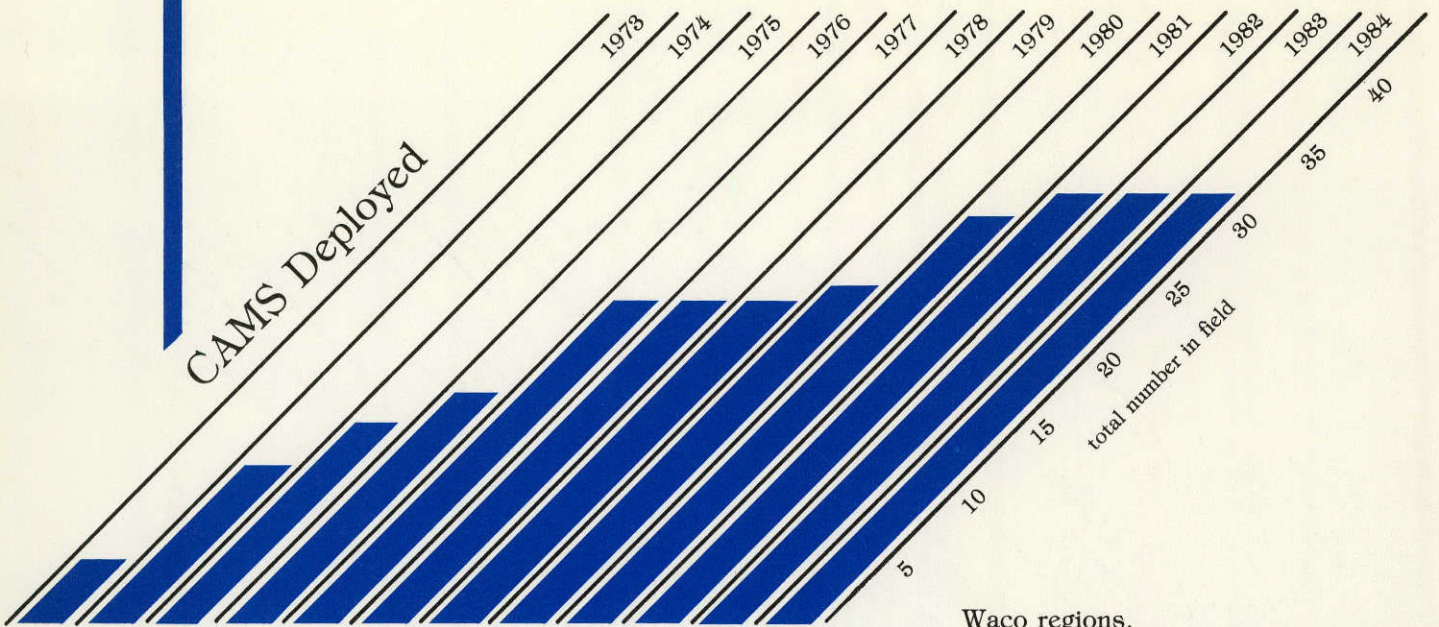
Most CAMS and NCAMS are located on public property such as school grounds and parks, and a few are on private property. Permission must be secured to use the property free of charge. The site must also comply with all siting criteria and have ready access to utilities.

Special Monitoring

The completion of CAMS automation during the biennium and the reorganization of central office staff made it possi-

Chapter 4

CAMS Deployed



ble to shift resources from routine network operations to special purpose monitoring. In this regard, a mobile monitoring trailer was deployed at different sites, usually in response to citizen complaints concerning isolated air pollution incidents. This station typically stayed at a particular location (Yoakum, Midlothian, El Paso) for one to three months and utilized continuous and non-continuous monitors.

In the summer of 1984, other special purpose monitors collected non-methane organic compound samples in seven counties in the state (Galveston, Brazoria, Jefferson, Orange, Dallas, Tarrant, and El Paso). The data were used in conjunction with the Empirical Kinetic Model Approach (EKMA) to determine hydrocarbon reductions required to achieve the ozone standard in those counties. This sampling was necessary to provide current hydrocarbon data for the model. Previous hydrocarbon sampling by the TACB had been discontinued following action by EPA to delete the national standard for ambient hydrocarbons. The information gathered from this effort may eventually be used to revise the ozone state implementation plan (SIP) control strategy.

Ambient levels of selected pesticides and arsenic are monitored at seven sites in urban areas adjacent to agricultural regions. Three sites are in operation in the Harlingen region, and one each in the Beaumont, Corpus Christi, Lubbock, and

Waco regions.

The TACB has continued and increased special monitoring activities in the vicinity of two Dallas lead-emitting facilities. By the end of the biennium, monitors at 10 sites were operated every three days to collect 24-hour samples. Monitors at two sites ran every six days. These samples were analyzed for lead and bromine.

Special monitoring was also begun in the vicinity of a lead emitting facility in El Paso, where monitors at six sites were operating every three days. Monitors at several other sites operated by the TACB and the City of El Paso were operating every six days.

The information gathered from two special fuel oil studies will be used to evaluate emissions due to the use of waste oils for fuel. Ninety-four samples were analyzed in a Fort Worth study, and 181 in a statewide study. All samples were screened for lead, sulfur, and chlorine.

The TACB participated in the Texas Beryllium-7 Monitoring Project, which was an extension of the Houston Area Oxidant Study (HAOS) conducted by the Houston Chamber of Commerce. Hi-vols were operated every day from mid-May through December of 1983 at sites in Beaumont, Corpus Christi, and Fort Worth. The purpose of the monitoring was to determine ground level concentrations of ozone resulting from upper-level ozone mixing with the lower atmosphere, a condition known as stratospheric intrusion. Beryllium-7 is believed to be an

Chapter 4

identifiable tracer of stratospheric intrusion. Statistical analysis of the data was in progress by the end of the biennium.

The agency also assisted the Texas Department of Water Resources (TDWR) by monitoring for air emissions of toxic or hazardous materials in the vicinity of six abandoned hazardous waste storage sites. This activity assisted in qualifying three of the sites for clean-up funds from the EPA Superfund program. Two of the sites have already been cleaned up.

Mobile Laboratory

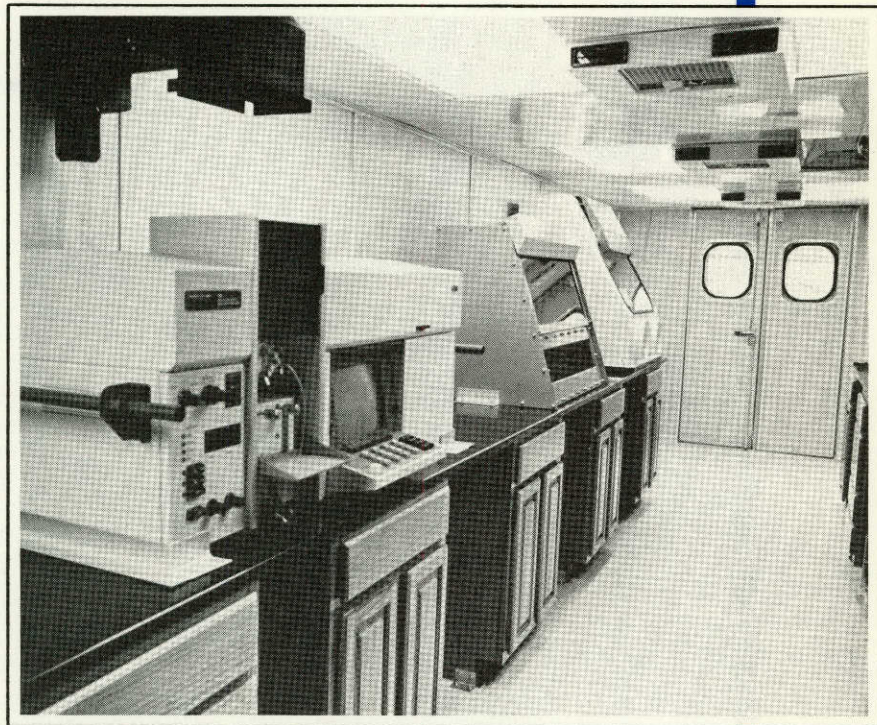
To improve TACB field response in dealing with non-criteria air pollutants, the Monitoring Group began designing a mobile laboratory early in the biennium. During large scale field sampling and analysis projects, the mobile laboratory will serve as a base of operations for ambient air sampling and provide on-site analytical results for many pollutants. This will help to assure that samplers and monitors used in special studies will be sited in areas of representative pollutant concentrations.

The mobile laboratory will possess extensive analytical capability to be used for various types of projects, such as large-scale ambient monitoring for various specific compounds, screening organic compounds, air monitoring of hazardous waste sites during cleanup, and soil testing for heavy metals. The mobile laboratory is expected to be operational by the end of the biennium. When not in the field, it will be used as an auxiliary laboratory in Austin.

Quality Assurance

In view of the importance of obtaining accurate air contaminant measurements,

TACB central office resources involved in assuring the quality of data were consolidated into the Quality Assurance Division during the biennium. This new division is responsible for assuring the quality of both ambient air pollution measurements and source emission



The mobile laboratory contains such items as an atomic absorption unit, and a glove box and fume hood for handling toxic materials.

measurements. This goal is achieved through planning, evaluation, and corrective action.

Planning for quality measurements is accomplished through the development of quality assurance (QA) plans for the TACB ambient air and special purpose monitoring projects. The "Quality Assurance Plan for NAMS and SLAMS Monitoring in Texas" was updated and revised, and QA plans for eight special

Chapter 4

Chapter 4

monitoring projects were developed this biennium.

Ambient air data is evaluated by determining its precision, accuracy, completeness, and representativeness. Corrective action consists of internal quality control checks and associated action which is part of the QA plan. No corrective action is required as long as the QA goals of precision, accuracy, and representativeness are being met.

The TACB Quality Assurance Division also assures the quality of air data that is reported by the six federally assisted local agencies. This is done by requiring them to follow a QA plan approved by the division, by reviewing their quarterly reports of data precision and accuracy, and by performing a yearly systems audit.

Quality assurance of emission testing conducted at sources throughout the state is also performed. This activity includes pretest meetings, 114 of which were conducted during the biennium, 25 by the central office, and 89 by the regional offices. Also, on-site observations of the tests and the evaluation of test data is performed by a trained TACB observer. During the biennium, 220 observations were conducted, 36 by the central office and 184 by the regional offices.

The quality of ambient air pollutant data from prevention of significant deterioration (PSD) monitoring networks established and operated by applicants for PSD permits was assured by requiring development of and adherence to an approved QA plan for each network.

Data Analysis

After ambient air quality data are collected and have undergone standard qual-

ity assurance checks, they are reviewed to identify areas where conditions of air pollution may exist and to assess the potential for health risk. The amount of control action that may be needed to reduce pollutant concentrations to acceptable levels is also determined.

Data reviews are conducted for the six national criteria pollutants. If measured concentrations exceed the standards, the pollutant and related data (meteorology, area emissions) are analyzed to determine the duration, extent, severity, and probable causes of such exceedances. Similar analyses are conducted for other potentially hazardous contaminants for which there are no national standards (e.g., arsenic, chromium, nickel, and other heavy metals for which data routinely are collected by the agency).

During the biennium, emphasis was placed on analysis of lead data collected near lead smelters in Dallas and El Paso counties; analysis of ozone data collected in Dallas and Tarrant counties; and ozone and carbon monoxide data collected in El Paso County. These data were used to support the review of additional controls required for those areas. Analyses conducted for lead involved a determination of specific source contributions by comparing upwind and downwind lead levels and estimating the resultant air quality after installation of various control alternatives. This analysis, coupled with a detailed engineering review of the smelters' operations, resulted in additional control requirements being imposed on the smelters in Dallas and El Paso. Statistical analyses were then conducted to derive a proposal for a short-term, net ground-level limit for lead.

The analyses conducted for ozone and carbon monoxide involved detailed examination of meteorological conditions

for days on which high levels occurred to identify characteristic patterns. This information was then used to determine those areas most likely to have emissions contributing to the high pollutant levels. These analyses supported subsequent control strategy determinations as part of the overall SIP revision process. Similar analyses may be required during the next biennium for the ozone nonattainment areas of Galveston, Brazoria, Jefferson, and Orange counties.

Vulcanus I and Vulcanus II Ocean Incineration

The Monitoring Group staff cooperated with the governor's office, the attorney general's office, and other state agencies in reviewing EPA's ocean incineration program and proposed federal permits for burning toxic wastes in the Gulf of Mexico aboard the Vulcanus I and Vulcanus II incinerator ships. Following a review

of available reports concerning previous test burns aboard the ships, the staff prepared and presented testimony at an EPA hearing in Brownsville and submitted formal written comments to the EPA about the proposed permits. TACB experts raised questions about deficiencies in the design of the incinerators, EPA's test program for evaluation of the incinerators' emissions, and the analytical procedures used by the EPA contractors. Recommendations were made to EPA for improvements in the ocean incineration program.

In May of 1984, the EPA's assistant administrator for water denied the issuance of special and research permits for ocean incineration of hazardous wastes. After EPA develops specific ocean incineration regulations and completes two on-going studies of liquid waste incineration technology, the issuance of research permits will again be considered following full public review and comment.

Developing Plans and Regulations

(EPA) to develop and submit for EPA approval a plan to control air pollutants covered by the National Ambient Air Quality Standards (NAAQS). Since it was first submitted in 1972, the Texas Plan has undergone numerous revisions to meet new or revised federal requirements and to update information and procedures.

To meet state and federal requirements for effective air pollution control, the agency monitors air quality and identifies significant emission sources and the types of contaminants they emit. Two methods used by the TACB in tracking and characterizing emissions in order to identify areas where air quality improvement may be needed are the maintenance of a source and emissions inventory and the operation of an extensive air quality monitoring network throughout the state. The inventory contains information on Texas industrial facilities and the air contaminants they emit. The monitoring network is deployed primarily in industrial and densely populated areas and collects measurements of the pollutants of major concern.

The Regulation Development Division is responsible for developing state regulations as well as the state implementation plan (SIP) required by the Federal Clean Air Act (FCAA). The division also reviews and evaluates hearing testimony regarding regulation and plan development. Assisting in the rule-making process are the TACB regional offices, Legal Division, Technical Services Division, Air Quality Data Analysis Division, and local air pollution control programs. Other agency divisions assist by making suggestions on regulation and plan development. Metropolitan Planning Organizations (MPO) often assist with developing the federally required plan.



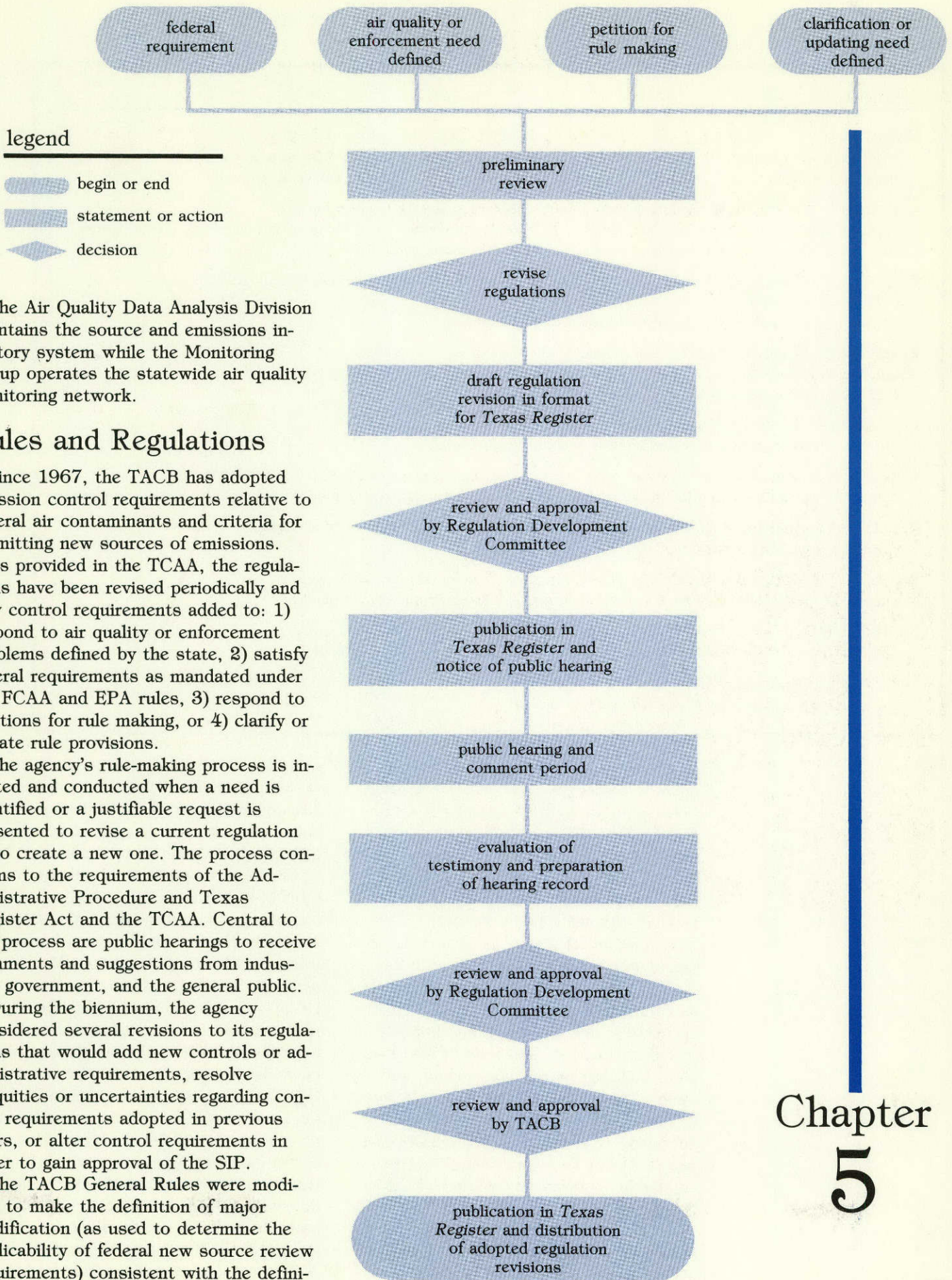
In October 1983, the agency held a public hearing in El Paso to hear testimony on proposed revisions to the state plan for controlling lead emissions in the county.

The Texas Clean Air Act (TCAA) gives the Texas Air Control Board (TACB) authority to adopt and revise rules and regulations consistent with the purposes of the Act. The regulations that have been developed are designed to protect the health and welfare of the public by achieving reasonable control of emissions.




In addition, the agency is required by the Environmental Protection Agency

Chapter 5

Rule-Making Procedure



legend

-  begin or end
-  statement or action
-  decision

The Air Quality Data Analysis Division maintains the source and emissions inventory system while the Monitoring Group operates the statewide air quality monitoring network.

Rules and Regulations

Since 1967, the TACB has adopted emission control requirements relative to several air contaminants and criteria for permitting new sources of emissions.

As provided in the TCAA, the regulations have been revised periodically and new control requirements added to: 1) respond to air quality or enforcement problems defined by the state, 2) satisfy federal requirements as mandated under the FCAA and EPA rules, 3) respond to petitions for rule making, or 4) clarify or update rule provisions.

The agency's rule-making process is initiated and conducted when a need is identified or a justifiable request is presented to revise a current regulation or to create a new one. The process conforms to the requirements of the Administrative Procedure and Texas Register Act and the TCAA. Central to the process are public hearings to receive comments and suggestions from industry, government, and the general public.

During the biennium, the agency considered several revisions to its regulations that would add new controls or administrative requirements, resolve inequities or uncertainties regarding control requirements adopted in previous years, or alter control requirements in order to gain approval of the SIP.

The TACB General Rules were modified to make the definition of major modification (as used to determine the applicability of federal new source review requirements) consistent with the defini-

TACB Regulations

General Rules

Definitions

rules that, in addition to a number of other provisions, establish procedures for source sampling, for handling nuisance complaints and petitions for variance, and establish an alternate emission reduction (bubble) policy

Regulation I - Control of Air Pollution from Visible Emissions and Particulate Matter

limitations on outdoor burning, incineration, and visible emissions; rules for materials handling, construction, and roads; emission rates for certain industrial and agricultural processes

Regulation II - Control of Air Pollution from Sulfur Compounds (sulfuric acids, sulfur dioxide, hydrogen sulfide, and elemental sulfur)

emissions rates and limits for certain industrial processes

Regulation III - Control of Air Pollution from Toxic Materials

ambient standards and upwind-downwind limits for inorganic fluoride and beryllium; control requirements for lead emissions from sources in El Paso and Dallas counties

Regulation IV - Control of Air Pollution from Motor Vehicles

requirements for proper emission control systems maintenance

Regulation V - Control of Air Pollution from Volatile Organic Compounds (VOC)

emissions rates for certain industrial processes; control equipment requirements for certain industrial processes

Regulation VI - Control of Air Pollution by Permits for New Construction or Modification

rules for permitting new or modified sources

Regulation VII - Control of Air Pollution from Nitrogen Compounds (nitrogen oxides)

emissions limitations on nitric acid manufacturing and from certain power plants

Regulation VIII - Control of Air Pollution Episodes

specifications for threshold limits of air contaminants for air pollution episodes

Regulation IX - Control of Air Pollution from Carbon Monoxide

emissions limitations on certain industrial processes

tion used by EPA. This change was made to satisfy the last of several conditions imposed by EPA for approval of 1979 SIP revisions. The definition of modification contained in the TCAA was not affected by this change and is still used to determine applicability and compliance with state requirements.

Regulation III was revised during the biennium to add a new subchapter for the control of lead emissions in El Paso and Dallas counties. The new controls specified in the regulation are designed to reduce fugitive emissions of lead from plant buildings, stockpiles, roads, and other emissions points near or at ground level. The emissions reductions were necessary to reduce ambient lead concentrations in El Paso and Dallas counties and to demonstrate attainment of the NAAQS for lead.

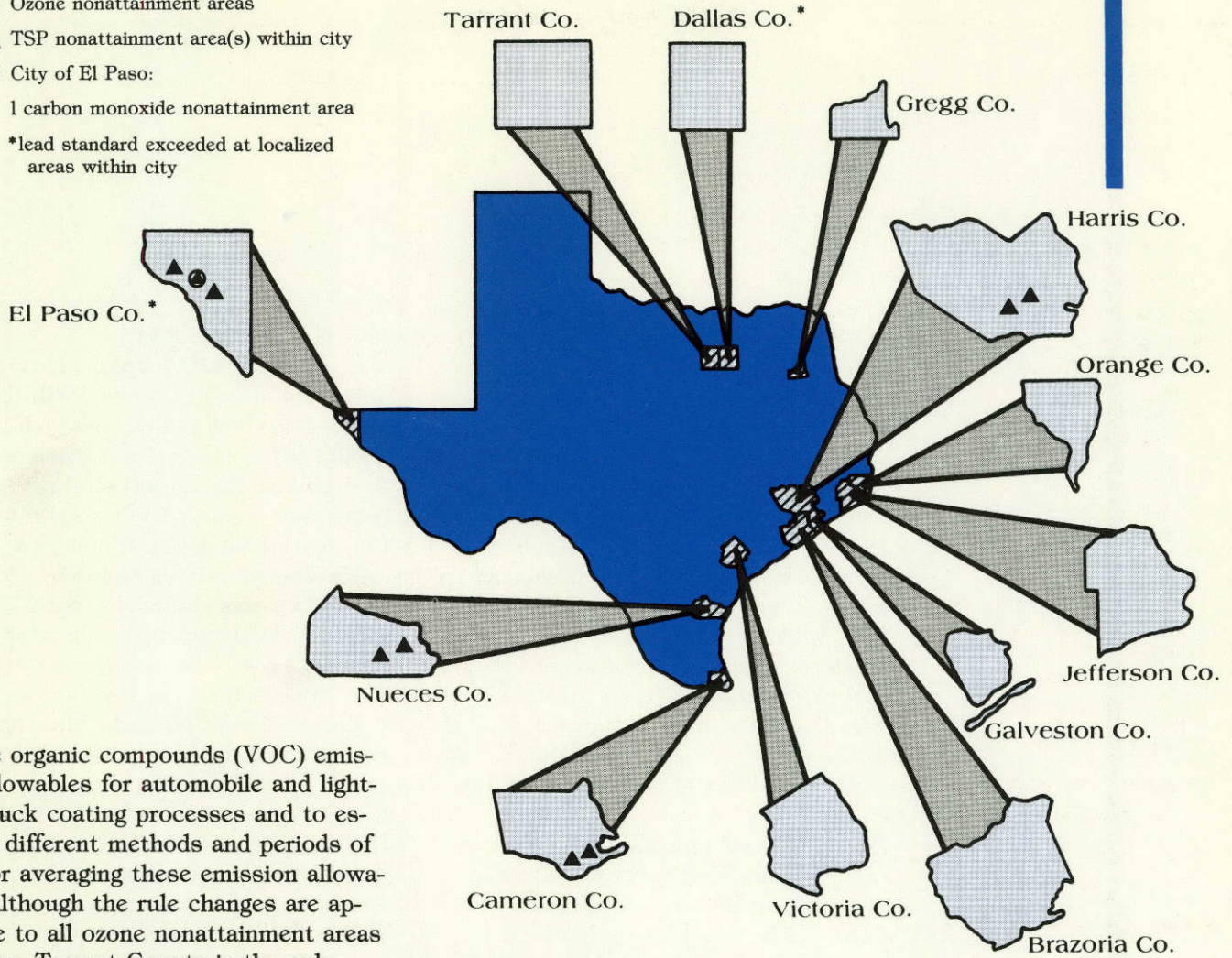
Regulation IV was amended by adding statewide provisions to prohibit the use of leaded gasoline in motor vehicles

designed to use unleaded gasoline, to prohibit the sale or use of devices for circumventing any part of a motor vehicle's emission control system, and to require motor vehicle compliance with the Texas Department of Public Safety (DPS) requirements related to emission control systems in the annual state vehicle safety inspection program. A separate rule was added to Regulation IV to require the seller of a 1980 or newer vehicle to a Harris County resident to certify that the vehicle complies with Harris County requirements relating to emission controls. Another new rule for Harris County states that an anti-misfueling notice, with specific wording, must be displayed prominently in the immediate area of the gasoline pump island at all facilities dispensing motor fuels. All these new rules were the result of negotiations between TACB and EPA for approval of the 1982 SIP for Harris County.

Regulation V was amended to increase

Texas Nonattainment Areas

- Ozone nonattainment areas
- ▲ TSP nonattainment area(s) within city
- City of El Paso:
- 1 carbon monoxide nonattainment area
- *lead standard exceeded at localized areas within city



volatile organic compounds (VOC) emission allowables for automobile and light-duty truck coating processes and to establish different methods and periods of time for averaging these emission allowables. Although the rule changes are applicable to all ozone nonattainment areas in Texas, Tarrant County is the only county in the state with a plant using such a process. The changes were made in response to a petition for rule making submitted by the General Motors Assembly Division - Arlington plant.

Regulation VI was revised to ensure that conditions under which permit exemptions are granted are as binding on the holders of exemptions as permit conditions are upon the holders of permits. Also, revisions to Regulation VI lifted requirements for Bexar County concerning demonstrations of reasonable further progress toward attaining the ozone standard because the area currently is attaining the standard.

In 1979, the legislature granted TACB the authority to adopt rules relating to charging and collecting fees for permits and variances. During the biennium, the board added a new rule to Regulation VI which requires permit fees, thus allowing the state to recover part of the cost of

issuing and enforcing TACB construction permits. The revenues generated go to the state General Revenue Fund.

State Implementation Plan

The SIP is a document describing the administrative methods, operational procedures, and control strategies followed by the state in response to federal requirements (FCAA Section 110) for controlling air pollutants in areas designated as nonattainment for one or more of the six pollutants for which national ambient air quality standards have been set. Nonattainment areas in Texas have been listed by EPA in accordance with requirements of Section 107(d) of the federal Act. The state may propose or request changes to the SIP, but only EPA has the authority to approve such requests or to promulgate additional SIP

Chapter 5

provisions. All provisions within the SIP are federally enforceable.

Revisions to the Texas SIP were submitted in April 1979 and conditionally approved by EPA in March 1980. The 1979 revisions consisted of control strategies and related regulations for ozone, carbon monoxide, and total suspended particulate (TSP) nonattainment areas in Texas. However, in February 1983, EPA proposed in the *Federal Register* to disapprove portions of the 1979 plan pertaining to six areas of the state: Dallas County, Tarrant County, El Paso County, part of Harris County, and parts of the cities of Corpus Christi and San Benito.

The TACB held hearings in April 1983 in Dallas, Fort Worth, Corpus Christi, Houston, San Benito, and El Paso to receive public comment on the EPA proposals and on the potential sanctions that could result from final action by EPA. The hearings records and public testimony from the six hearings were submitted with the TACB response to EPA prior to the close of the comment period, May 5, 1983.

Along with the proposal to disapprove parts of the 1979 plan, EPA proposed to approve additional SIP revisions for Harris County submitted to EPA in December 1982, except for the vehicle parameter inspection and maintenance (I/M) program. Disapproval of the I/M program for Harris County was based on differences in EPA and TACB calculations of the emission reduction credits to be applied to the program. The agency developed a formal response to EPA's proposed action and solicited public comments at the April 1983 public hearing held in Houston. That hearing record and the TACB response to EPA's proposal were also submitted to EPA prior to the

May 5, 1983, deadline.

A change in EPA's approach to plan approvals occurred in late 1983. EPA decided to allow states additional time to submit SIP revisions, where needed, and to negotiate the control strategy and rule provisions required to demonstrate attainment of the national standards.

The control strategy for ozone in Harris County was modified early in 1984 to satisfy EPA requirements for approval of the 1982 SIP. The modification which was supported by the Harris County Commissioners Court, the Houston City Council, and the Houston-Galveston Area Council (H-GAC) was based on EPA's assurance that the Harris County I/M program would be approved and the threat of sanctions removed, if new inspection procedures were implemented early in 1984. Proposed sanctions could have included: a ban in Harris County on major new construction or modification of facilities and the withholding of federal funds for highways, wastewater treatment projects, and air pollution program grants.

The new revisions to the vehicle parameter inspection program expanded it to cover light-duty trucks and incorporated several additional inspection test procedures all of which were adopted by the Texas Public Safety Commission as requirements of the DPS vehicle safety inspection program.

Other components of the Harris County ozone control strategy include:

- A statement of work developed by the H-GAC to define a program for training automotive mechanics and service technicians in the repair and servicing of new technology vehicles with special emphasis on emission control systems;

- The design of a comprehensive automotive mechanic training program;
- A public information and education program developed and produced by H-GAC as part of the Harris County inspection program; and
- An evaluation of various components of the Harris County program and the development and production of the DPS Inspector's Handbook for Harris County.

Revisions to the ozone SIP for Dallas, Tarrant, and El Paso counties was initiated during the last few months of the biennium. These revisions, designated as post-1982 SIP revisions, are designed to produce further reductions in VOC emissions in the three counties. In developing the post-1982 plan revisions for Dallas and Tarrant counties, responsibility for gathering mobile source data, performing analyses of transportation control measure (TCM) effectiveness, and obtaining commitments to fund and implement TCM's has been delegated to the North Central Texas Council of Governments (NCTCOG). TCM's consist of those improvements to an area's transportation system designed to reduce emissions. The revisions for El Paso County are being developed in a similar manner with assistance from the City of El Paso Metropolitan Planning Organization. The TACB is responsible for the development of the stationary source and vehicle inspection requirements as well as the overall determination of control requirements and strategy of the plan.

Extensive efforts to inform and involve the public will accompany the various developmental phases of the post-1982 plan revisions. These efforts will include

news releases, mailings, and a series of public meetings and hearings held early in the next biennium. Submission of these revisions to EPA is projected for the spring of 1985.

Early in 1983, EPA proposed conditional approval of the Texas lead SIP for all areas except El Paso and Dallas counties. Subsequently, through court action, the TACB developed a control plan for the RSR Corporation lead smelter in Dallas and incorporated its provisions into the lead SIP. Through rule making, control requirements were added to the SIP for all stationary lead sources in both Dallas and El Paso counties. These changes to the lead SIP, including the new lead rules, were adopted by the board and were submitted for EPA approval in 1984. Final EPA approval is expected by the end of the biennium.

Emissions Inventory

Much of the TACB's control strategy and regulation development work is dependent upon having comprehensive information concerning sources of air contaminants and the level of emissions in areas of interest. Also required are detailed data concerning specific industrial and process operations, control technology, and emission rates. This type of information is collected for major emitting facilities in key areas of the state and for all permitted facilities in the state. It is maintained in an automated system called the Point Source Data Base (PSDB). Information concerning emissions from automobiles and minor sources (e.g., dry cleaners, gasoline service stations, and home heating units) are derived from other data sources, such as population densities, traffic

Chapter 5

counts, gasoline sales, and national emission factors.

Emissions data are compiled for the major classes of contaminants: particulate matter (including lead), sulfur compounds, volatile organic compounds, nitrogen oxides, and carbon monoxide. Within these classes, potentially hazardous or toxic chemical compounds are also identified. Data are compiled that describe the significant operations within each industrial or manufacturing company, the types of equipment and control devices used, the physical properties of the stacks or vents from which the contaminants are emitted, and the chemical components of the emissions streams. Any industrial or manufacturing company may have from one to several hundred separate process units and emission points.

The currency and accuracy of the information in the PSDB is maintained by continuous review and entry of new permit and compliance data and by periodic update of comprehensive reports detailing complete company operations and emissions.

In 1980-1981, approximately 800 major sources in 37 counties (the major population/industrial centers of the state) provided comprehensive information to the TACB concerning their emissions via an agency-designed questionnaire. This data has been reviewed and automated and, during the biennium, was combined with compliance and permits information to form the new PSDB.

Two methods are used to keep this information current. First, significant changes in plant operations are reported as a result of the regular investigations conducted by regional and local program

investigators. Second, as a periodic quality assurance check, companies are asked to review and update a comprehensive report containing information pertinent to their operations. During the biennium, approximately 150 comprehensive reports were produced and forwarded to companies.

In the future, approximately 200 reports per year will be updated in this fashion. As resources permit, information on additional major sources will be added until the approximately 1,600 major facilities in the state are catalogued in the PSDB.

During the biennium, major emphasis was placed on collecting operating and emissions information from companies in Dallas, Tarrant, El Paso, and Harris counties. Emissions data for VOC were reviewed and updated for El Paso, Dallas and Tarrant counties, along with carbon monoxide data for El Paso County. This information was used in developing SIP revisions required for these areas.

Emissions data from companies in Harris County were also reviewed and updated as part of the Gulf Coast Community Exposure Study designed to identify possible sources of 10 potentially toxic contaminants: acrylonitrile, arsenic, benzene, epichlorohydrin, ethylene oxide, formaldehyde, lead, vinyl chloride, polychlorinated biphenyls (PCB), and polynuclear aromatic hydrocarbons.

As a continuing responsibility, the Emissions Inventory Section provides emissions estimates and summaries to support regional investigations, enforcement, new source review programs, and various special projects. Data lists and summaries are provided upon request to consultants, private businesses, public institutions, and private citizens.

Air Quality in Texas

This section presents summaries of air quality data collected by the Texas Air Control Board (TACB) during the past biennium. National Ambient Air Quality Standards (NAAQS) have been adopted for six pollutants: total suspended particulates, lead, ozone, sulfur dioxide, carbon monoxide, and nitrogen dioxide. Measured concentrations of these six pollutants are presented for comparison with the applicable NAAQS. Additional information relative to elemental (potentially hazardous) contaminants for which there are no national ambient standards is also presented.

The data presented in the graphs are primarily from TACB monitors but in some instances are from monitors operated by local agencies in major metropolitan areas. These local agencies, located in Houston, Dallas, Fort Worth, Corpus Christi, San Antonio, Galveston County, and El Paso, conduct monitoring in their respective jurisdictions and provide valuable assistance to the TACB in characterizing the air quality in each area.

The data were selected from monitors sited in accordance with guidelines designed for comparing air quality among various metropolitan and rural areas of Texas. Additionally, the monitors selected were located in areas where maximum concentrations of the pollutants were expected to occur, such as areas near major industrial complexes, specific commercial/manufacturing sources, and heavy traffic areas. The graphs show that even in these areas, the NAAQS generally are being met. The exceptions are discussed below.



Chapter 6

Pollutants for Which National Ambient Air Quality Standards Have Been Adopted

*parts per million
**micrograms per cubic meter

pollutant	description	primary standard (protects health)	secondary standard (protects welfare)
ozone	A colorless, pungent gas formed by a reaction of sunlight and various chemicals emitted by industrial facilities, power plants, automobiles, and various natural biological processes.	0.12 ppm* one-hour average, not to be exceeded for an average of more than one day per year during any 3-year period.	same as primary.
total suspended particulates	Small particles of solid or liquid matter suspended in the air. Particles may be smoke, spray, dust, or fumes. Sources include power plants, industrial and agricultural operations, volcanoes, and dust storms.	260 ug/M ³ ** 24-hour average not to be exceeded more than once a year. 75 ug/M ³ annual geometric mean.	150 ug/M ³ 24-hour average not to be exceeded more than once a year.
lead	A metallic element that may be released in the form of tiny particles from automobiles using leaded fuels, smelters, and certain other industrial processes.	1.5 ug/M ³ arithmetic mean for one calendar quarter.	same as primary.
sulfur dioxide	A heavy, pungent, colorless gas formed during some metal smelting operations and when coal, fuel oil, or other fuel containing sulfur is burned. Fuel combustion, certain chemical plants, and metal processing are common sources.	365 ug/M ³ (0.14 ppm) 24-hour average, not to be exceeded more than once a year. 80 ug/M ³ (0.03 ppm) annual arithmetic mean.	1,300 ug/M ³ (0.5 ppm) 3-hour average, not to be exceeded more than once a year. same as primary.
nitrogen dioxide	A yellow-brown gas formed during fuel combustion and certain natural biological decay processes. Automobiles, power plants, and certain chemical manufacturing operations are common sources.	0.05 ppm annual arithmetic mean.	same as primary.
carbon monoxide	A colorless, odorless, poisonous gas produced by incomplete combustion of substances containing carbon. Automobiles and petroleum refining processes are common sources of carbon monoxide.	35 ppm hourly average, not to be exceeded more than once a year. 9 ppm 8-hour average, not to be exceeded more than once a year.	same as primary. same as primary.

Total Suspended Particulates

The term total suspended particulates (TSP) does not refer to a single element or compound. Rather, TSP is a measure of airborne dust, pollen, fly ash, metals, smoke, mist, and other solid or liquid particles. The level of TSP at any site can be influenced by such local sources as cement plants, smelters, automobile traffic, and construction as well as by

regional sources such as windblown soil from agricultural land.

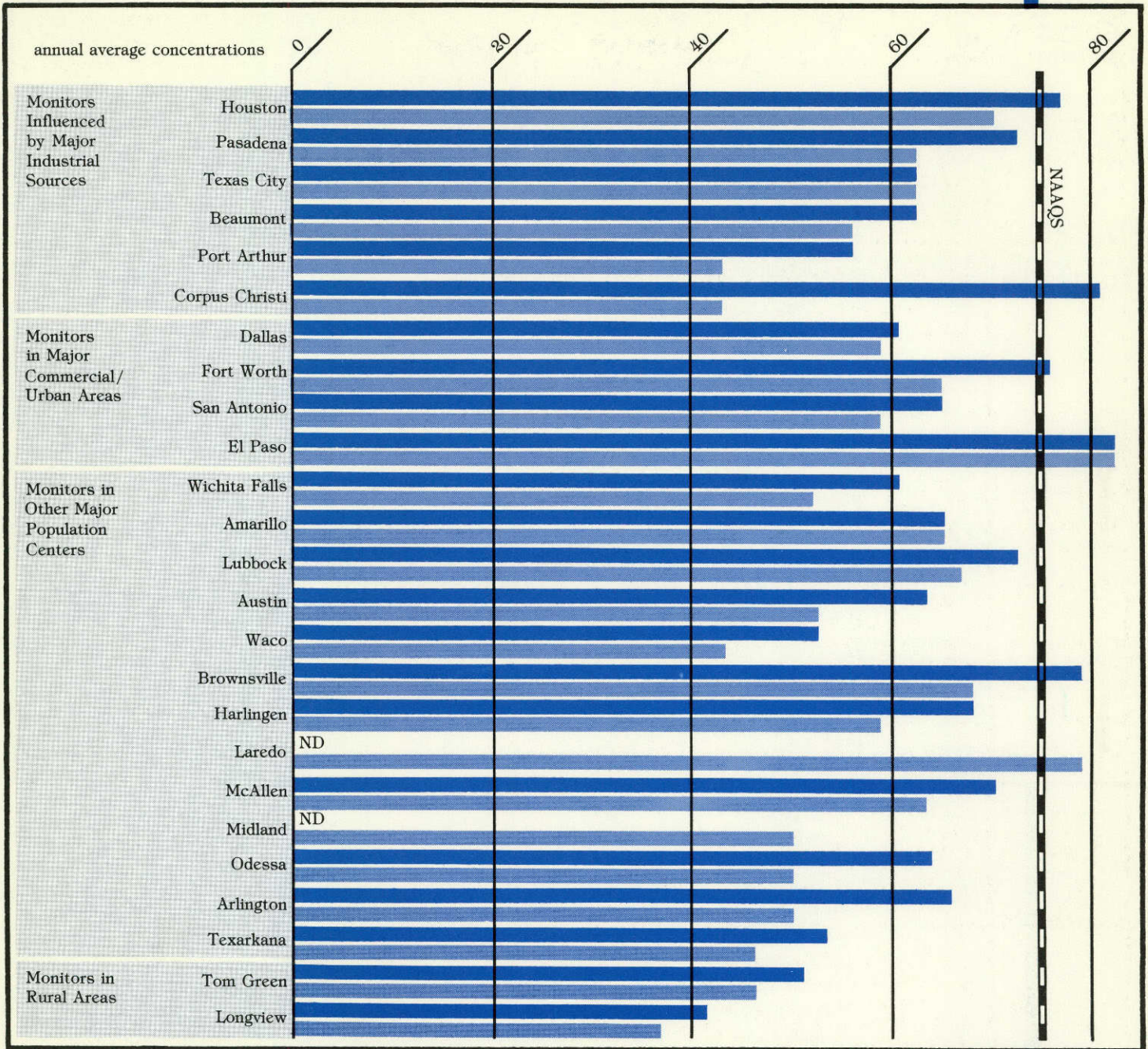
The relatively few high TSP values measured often reflect temporary or localized conditions rather than a widespread or pervasive air pollution problem. In many cases, high TSP measurements may be more indicative of nuisance conditions than of conditions having the potential for causing health problems. The TSP standards in effect during the biennium did not account for particle size or chemical composition and

Chapter 6

Total Suspended Particulates

(annual averages expressed in micrograms per cubic meter)

■ 1982
■ 1983



their relationship to health or visibility effects. The Environmental Protection Agency (EPA) has recently proposed to revise the primary standard for particulates to include only those smaller particles which may be inhaled and are most responsible for visibility impairments.

The TACB routinely conducts analyses to identify individual elements that make up a significant portion of measured particulate matter. More information about this program is included in the discussion of the elemental contaminants. The agency has conducted field studies relat-

ing to collection and analysis of fine particulate data in preparation for the pending change in the national TSP standard.

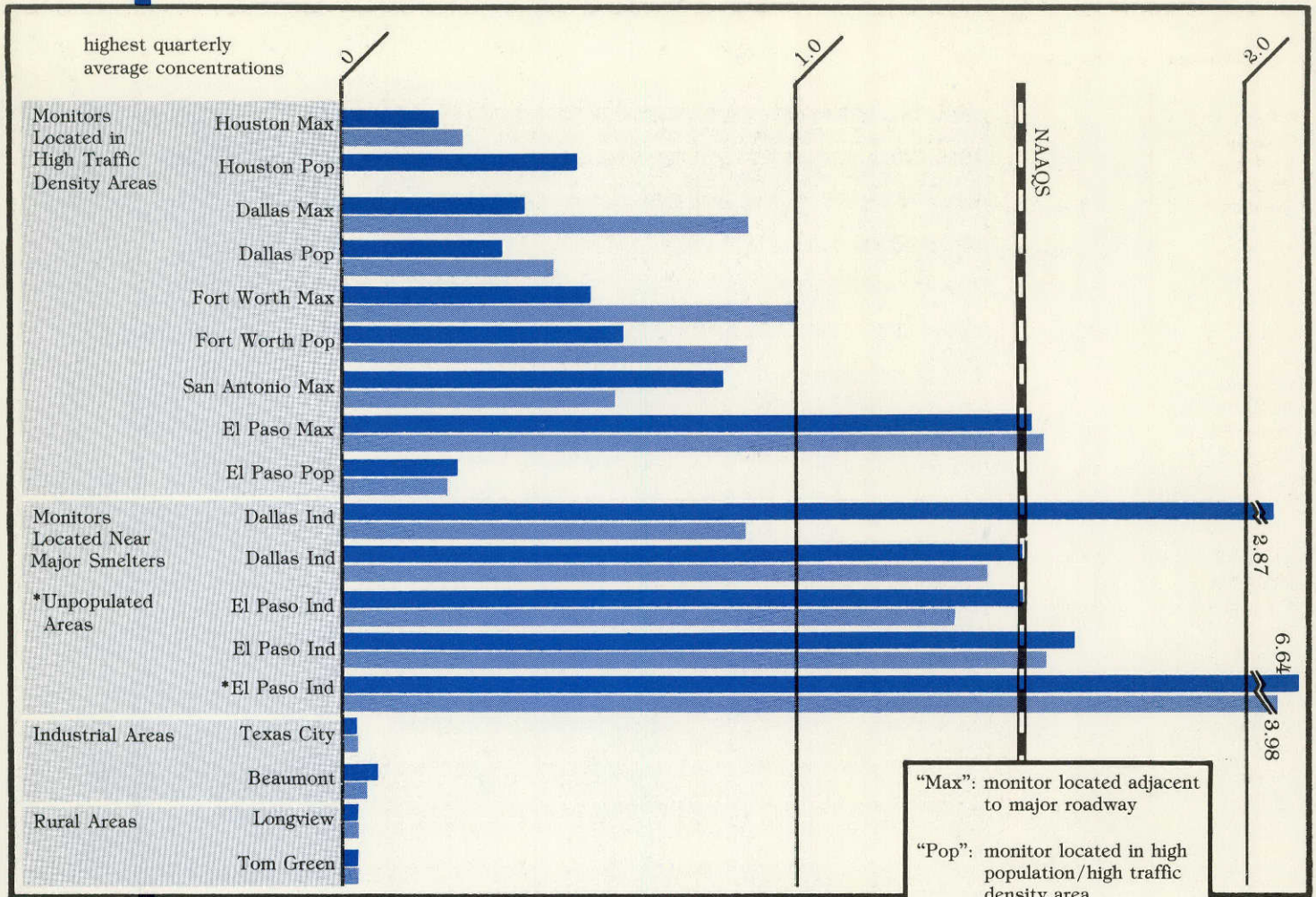
Data from monitors located in areas where the maximum impact of industrial and urban activities is expected are summarized in this graph. Data from two monitors located in rural areas are included for comparison. Measurements taken during dust storms have been removed because such data is not representative of normal air quality.

Chapter 6

Lead

(quarterly averages expressed in micrograms per cubic meter)

1982
1983



“Max”: monitor located adjacent to major roadway
 “Pop”: monitor located in high population/high traffic density area
 “Ind”: monitor located in the immediate vicinity of industrial lead source

Lead

The NAAQS for lead is a quarterly average concentration established to minimize the effects of airborne lead on public health. Emissions from lead smelters and from automobiles using leaded gasoline are the primary sources of airborne lead in Texas. This graph shows quarterly average lead concentrations measured by monitors located in areas heavily influenced by such sources and in general industrialized areas. Data from rural areas are presented for comparison.

Monitoring data collected throughout the state indicates that the lead standard is exceeded only in the immediate vicinity of significant industrial lead sources in Dallas and El Paso. In El Paso, a major industrial lead source, the area's unique topography, complex local weather patterns, and heavy traffic in certain areas have caused high ambient lead levels in the past. During the biennium, new rules

were adopted which require additional controls be added to the industrial lead sources in El Paso and Dallas. Reductions in the use of leaded gasoline in addition to these industrial controls are expected to result in attainment of the standard in Dallas and El Paso.

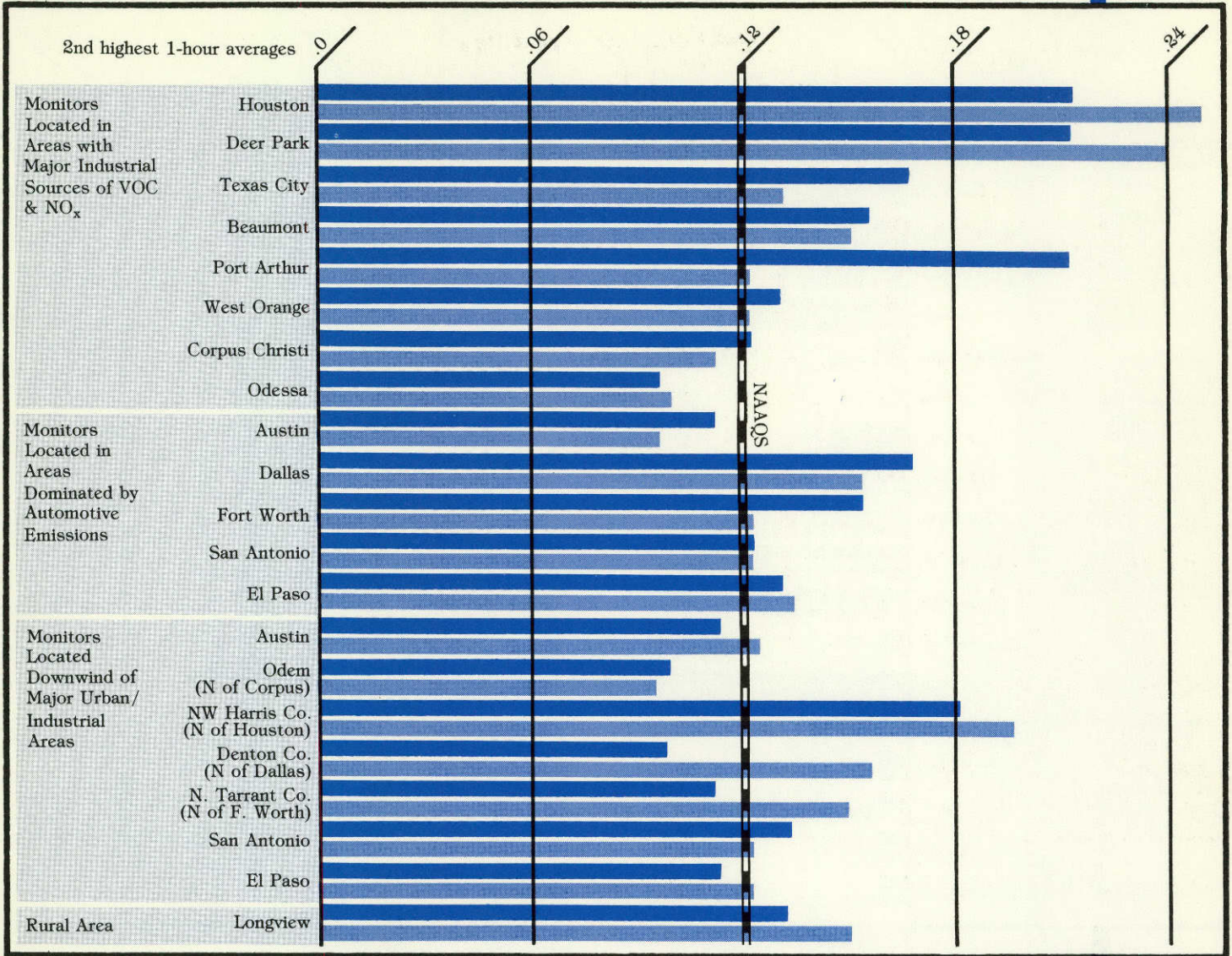
Ozone

Ozone is a pollutant that is not emitted directly into the atmosphere in significant quantities by man-made sources. Rather, it is formed in the lower atmosphere as a result of a series of sunlight-induced chemical reactions involving such pollutants as oxides of nitrogen and volatile organic compounds (VOC). The oxides of nitrogen and VOC can originate from both natural and man-made sources; however, in urban or industrialized areas, the man-made sources

Ozone

(1-hour averages expressed in parts per million)

■ 1982
■ 1983



are primary contributors. Ozone is also formed in the upper atmosphere and through stratospheric intrusion can occasionally be mixed into the lower atmosphere during such meteorological circumstances as thunderstorms. The highest ambient concentrations of ozone in Texas occur most often in major metropolitan areas during the summer months. However, during the past 10 years, ozone levels above the NAAQS have also occurred in rural areas and in certain areas during winter months.

This graph compares the 1982 and 1983 second highest daily maximum concentrations of ozone, which are indicative of the relative magnitude of peak ozone concentrations recorded in each area. Although many areas of the state exceed the NAAQS, it is important to note that

in almost all areas the hourly ozone values are below 0.12 parts per million (ppm) more than 98 percent of the time.

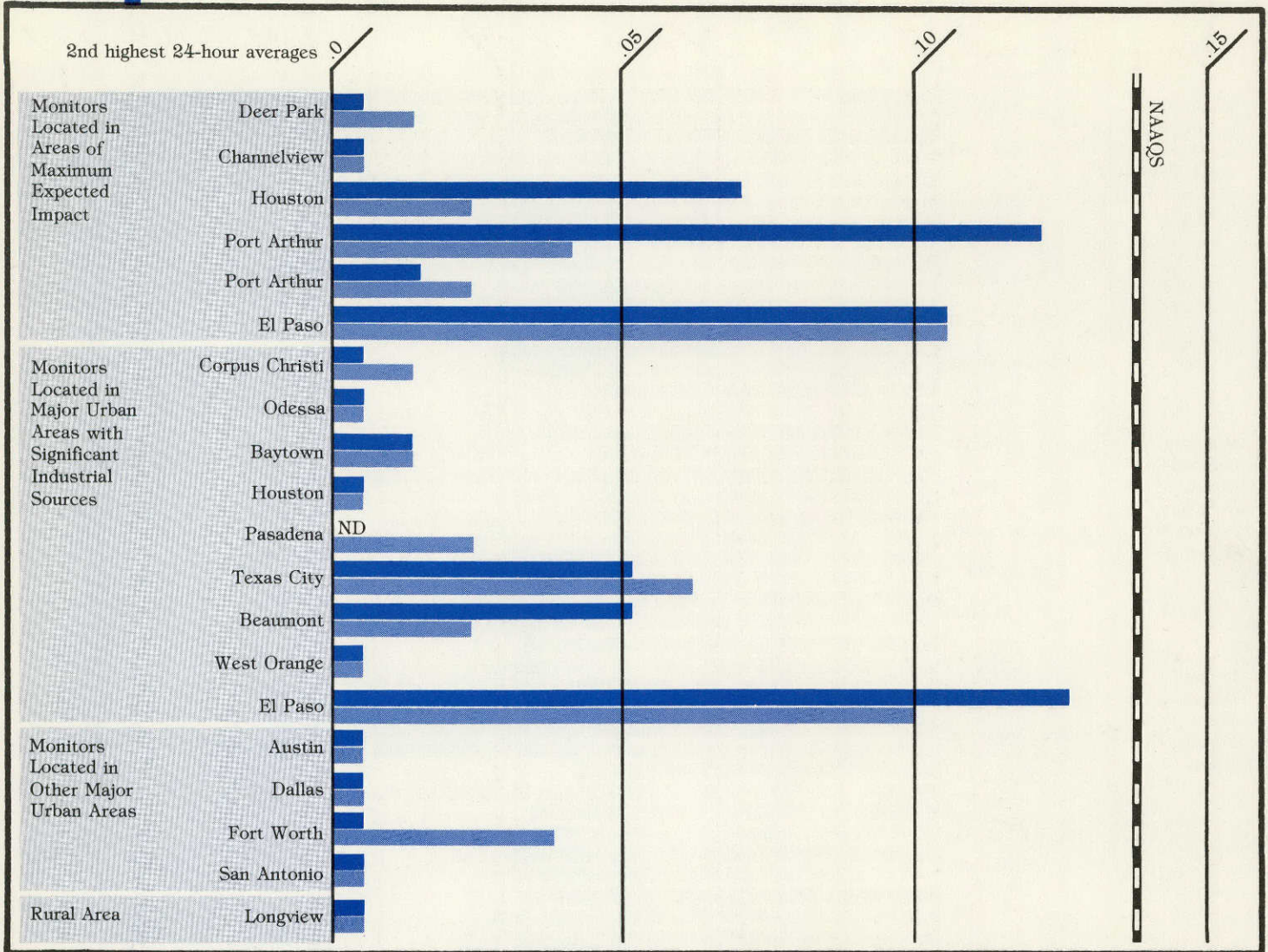
Significant reductions in VOC emissions have occurred over the past 10 years as part of a federally designed control effort to reduce ozone levels. To date, however, ozone levels have not been reduced significantly. A revised state implementation plan (SIP) is in effect for Harris county, which requires additional stationary source and automobile VOC controls. Similarly, the SIP for Dallas, Tarrant, and El Paso counties is being revised to require additional VOC controls in those counties. Additional SIP revisions for other areas of the state may be required during the next biennium.

Chapter 6

Sulfur Dioxide

(24-hour averages expressed in parts per million)

1982
1983



Sulfur Dioxide

Sulfur dioxide is released into the air during burning of sulfur-containing fossil fuels and during smelting of sulfur-bearing metal ores. Measured sulfur dioxide concentrations across the state are generally very low compared to the federal standards, and long-term average concentrations seldom vary significantly. Relatively high short-term (one hour or less) concentrations do occur occasionally in some areas as a result of specific source influences during certain weather conditions.

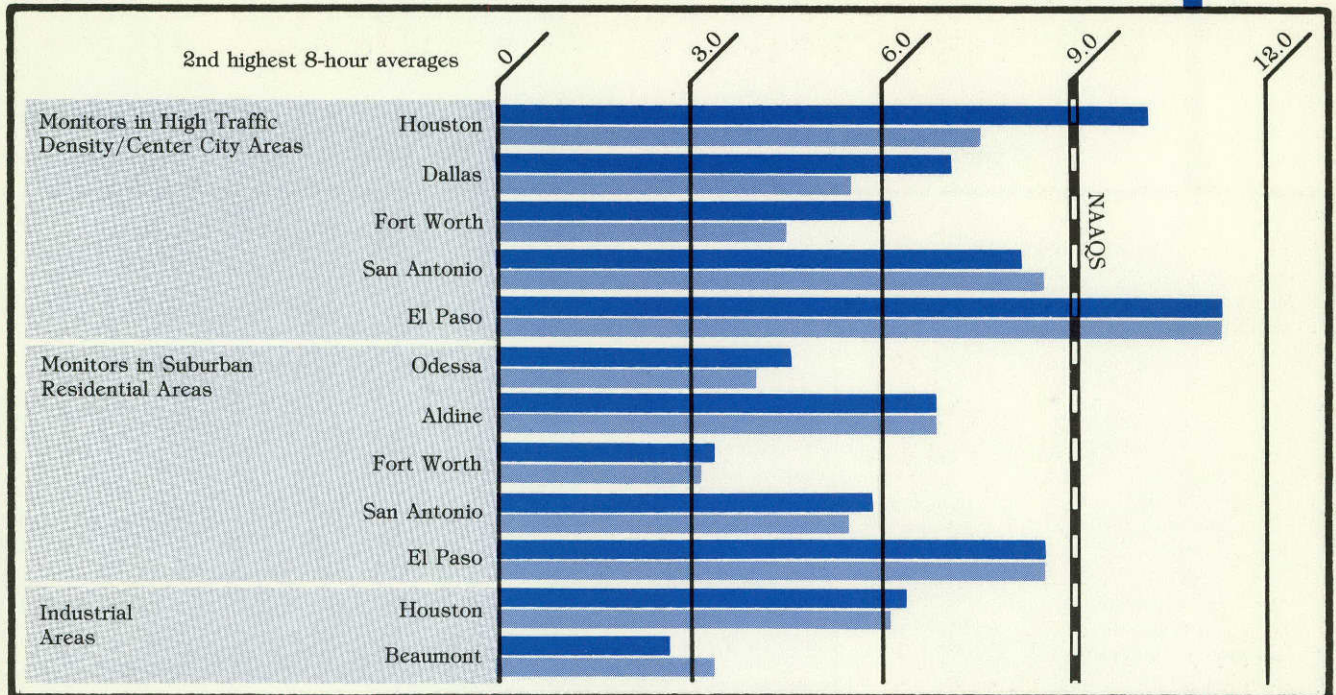
This graph shows the second highest 24-hour concentrations recorded for a number of areas in the state. If the second highest values were to exceed 0.14 ppm, the standard would be exceeded for that area. New monitoring efforts were

initiated during the biennium to measure sulfur dioxide levels in areas where industrial impacts are expected to be most significant and to monitor any increases that may occur if there is a significant change in fuel usage (such as conversions from use of natural gas to coal or fuel oil). As can be seen, the NAAQS for sulfur dioxide is not exceeded in Texas.

Carbon Monoxide

(8-hour averages expressed in parts per million)

■ 1982
■ 1983



Carbon Monoxide

Carbon monoxide (CO) is produced by incomplete combustion of fossil fuels. Both one and eight hour standards have been set for ambient concentrations. The one hour standard has not been exceeded in Texas, and the eight hour standard (9.0 ppm averaged over an eight hour period) has been exceeded consistently only in El Paso. Isolated instances of marginally high CO levels occurred in Houston in 1982 and 1983. Levels measured in major metropolitan areas where maximum concentrations would be expected to occur are presented in this graph.

Exhaust from motor vehicles is the principal source of CO in El Paso. The NAAQS for CO has been exceeded in El Paso primarily because the complex mountain-valley terrain occasionally causes unusual buildups of pollutant concentrations during winter months when very stable (low wind and little vertical mixing) atmospheric conditions occur. Reduction in automobile emissions will

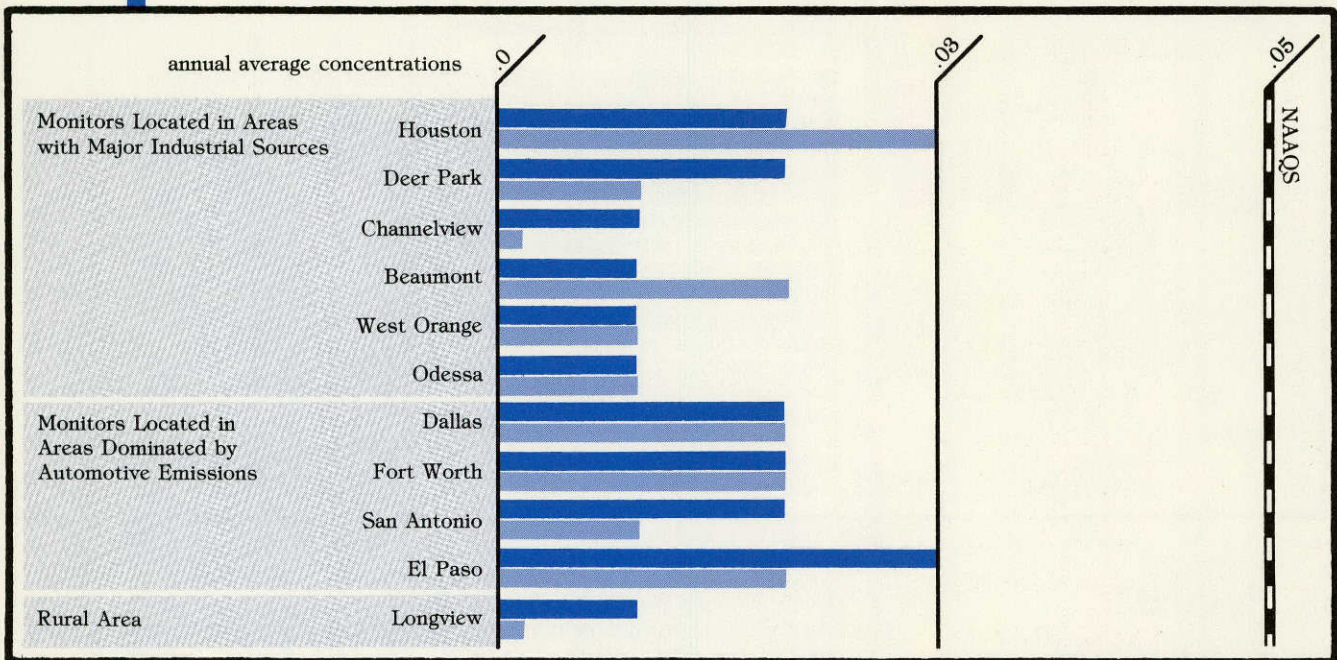
continue as a result of federally imposed automobile emission control systems. However, increases in CO levels may occur as a result of increased vehicle density and contributions from uncontrolled automobiles commuting across the Texas/Mexico border. Additional control alternatives have been reviewed this biennium during development of revisions to the SIP.

Chapter 6

Nitrogen Dioxide

(annual averages expressed in parts per million)

1982
 1983



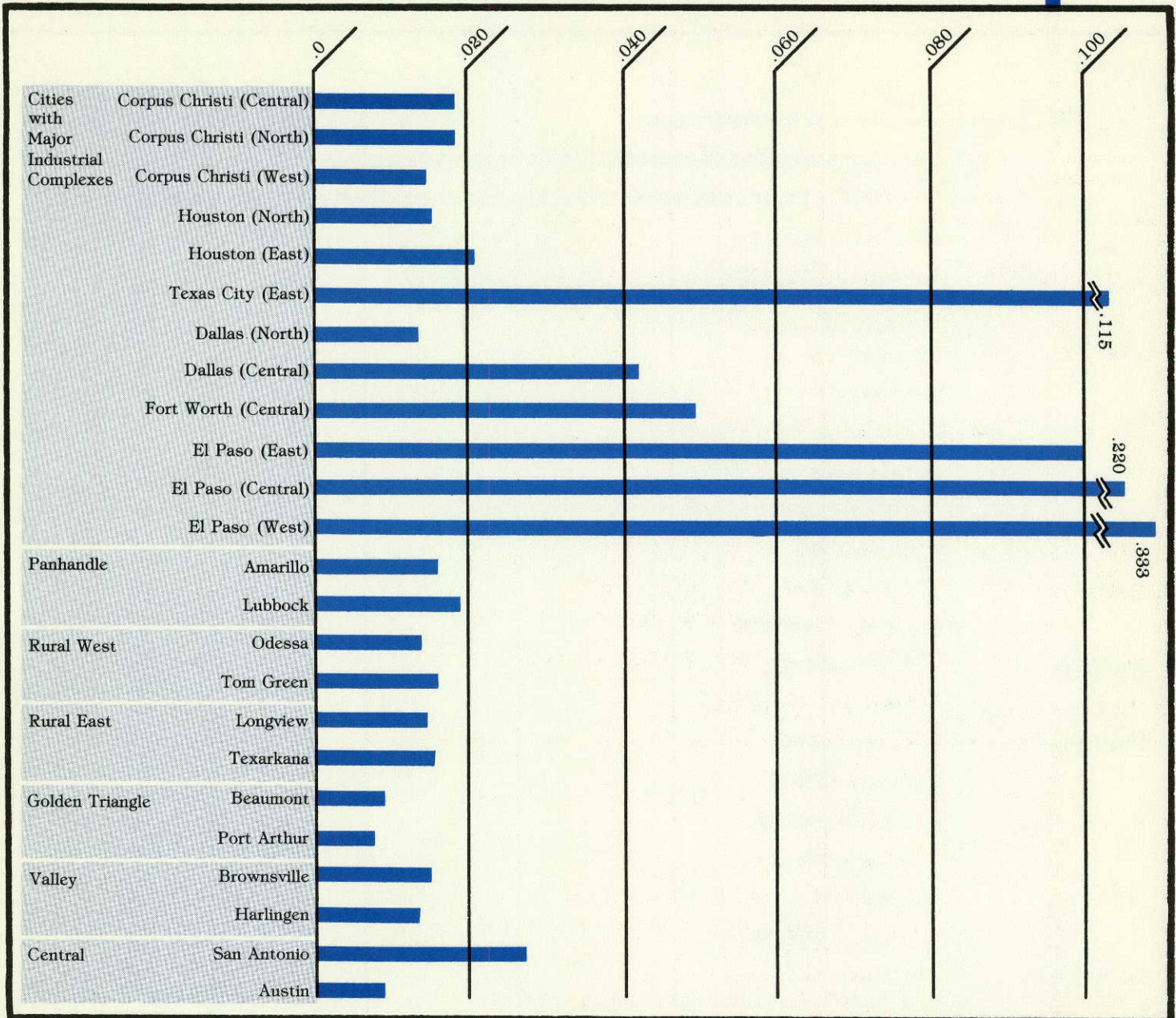
Nitrogen Dioxide

High temperatures produced by fuel burning cause nitrogen and oxygen to combine and form oxides of nitrogen. This graph presents annual average concentrations of nitrogen dioxide, the one oxide for which a national standard has been established. As in the past, nitrogen dioxide levels remained well below the NAAQS during the biennium.

Chapter 6

Arsenic

(1983 annual averages expressed in micrograms per cubic meter)



Elemental Contaminants

The agency routinely conducts analyses of TSP samples collected throughout Texas to identify more than 30 individual elemental contaminants. Annual averages for three of these contaminants (arsenic, chromium, and nickel) are presented in these graphs. These three elements are subject to detailed analyses because they are known or suspected carcinogens and have the potential for being present in

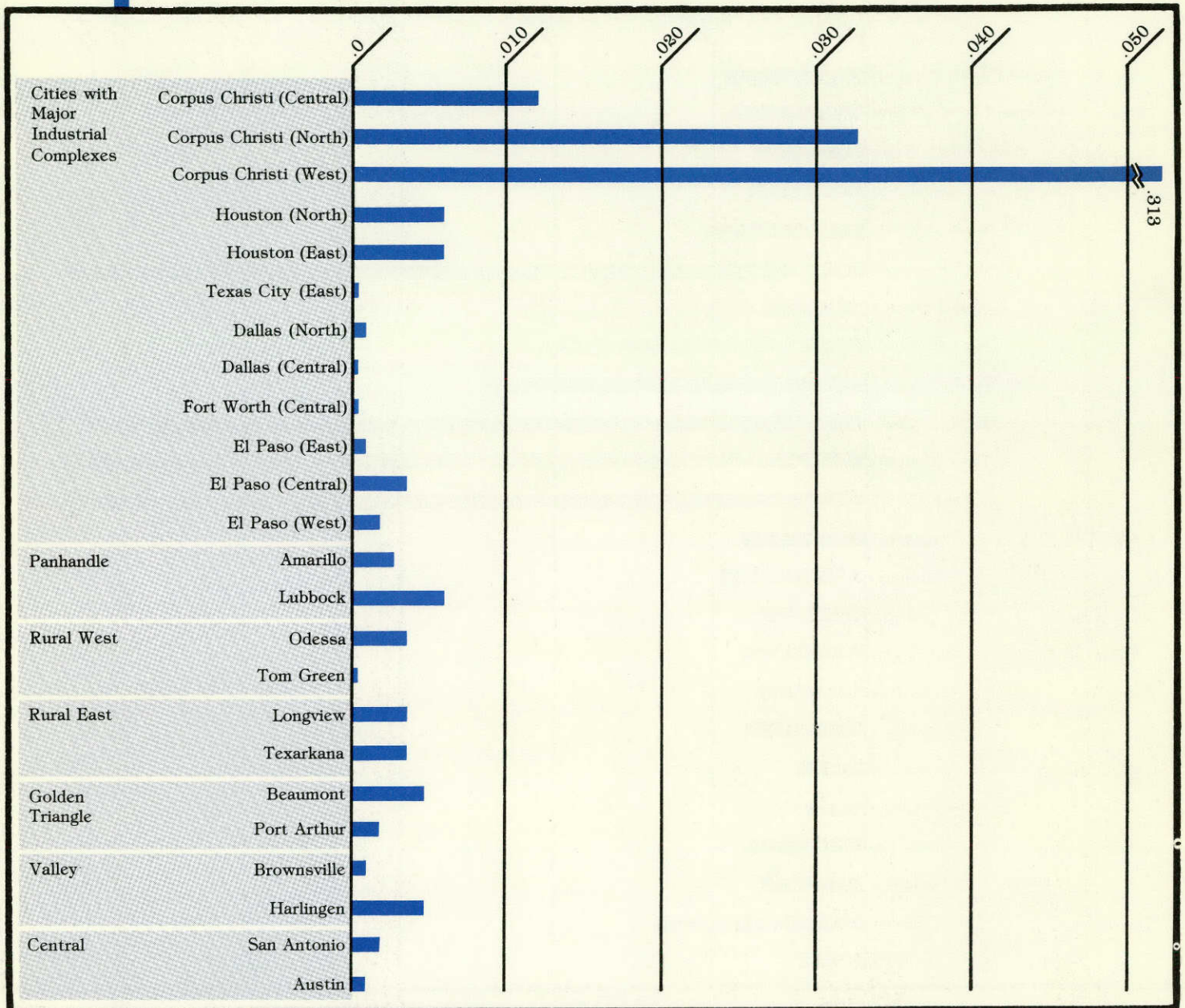
ambient air. Annual averages are examined when interest is in the long-term effects of a contaminant that may have the potential to produce chronic health effects. Because there are no national air standards established for these contaminants, the TACB staff compares these data to occupational limits and other toxicological literature to estimate possible health impacts.

Arsenic, chromium, and nickel are common in some industrial emissions.

Chapter 6

Chromium

(1983 annual averages expressed in micrograms per cubic meter)



Chapter 6

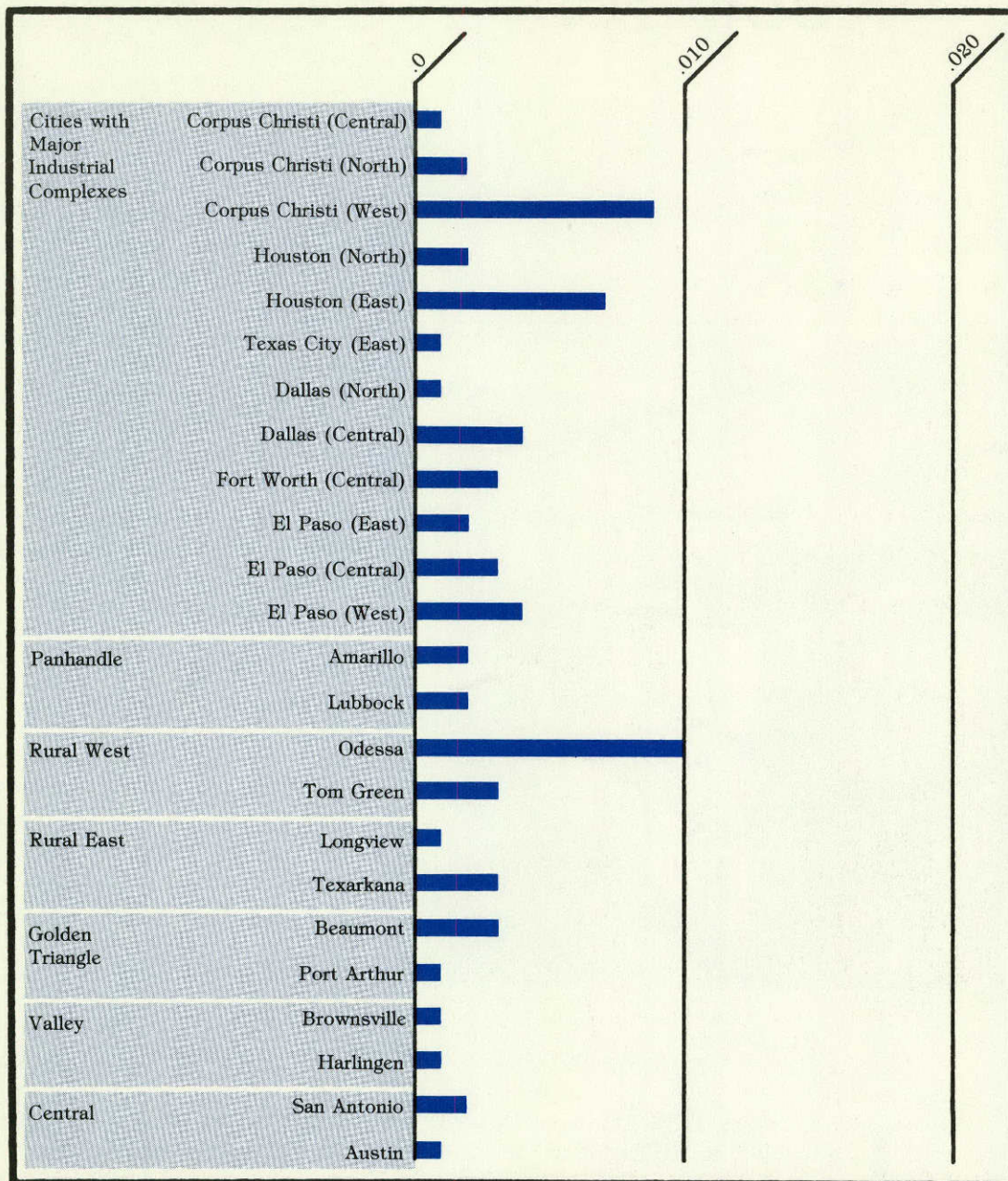
Therefore, several sites in Texas metropolitan areas with major industries are represented on the graphs.

For the purpose of comparison with these metropolitan areas, data from monitors located in cities with few industrial facilities, as well as data from rural areas, also are shown on the graphs. Because of changes in TACB data processing and analysis techniques during the biennium, only 1983 data are shown.

The 1983 annual average arsenic levels shown for certain areas in Texas City and El Paso, and chromium levels shown for one area in Corpus Christi, are generally greater than levels typically found in other urban areas of Texas. Public exposure to these levels may present a small degree of health risk. The staff expects that new controls implemented in El Paso will decrease arsenic levels there. The agency is investigating possi-

Nickel

(1983 annual averages expressed in micrograms per cubic meter)



ble sources of arsenic in Texas City and chromium in Corpus Christi to determine what controls may be necessary.

Nickel levels measured in 1983 in Texas are not expected to cause any adverse public health effects.

Research



The Research Division operates the TACB library of more than 5,000 books and periodicals to provide technical information to the staff.

Chapter 7

In February 1982, the board passed a resolution reaffirming the need to prevent excessive public exposure to air contaminants while increasing staff emphasis on research and data collection programs to improve understanding of air contaminants for which national air quality standards have not been established.

An eight-member Research Advisory Council, composed of air pollution and health effects experts and chaired by a board member, was appointed to advise the TACB.

The council advised the staff on the

- 1) design and completion of a contractual study of air pollution research objectives in Texas, 2) the ability of state institutions to perform such research, and 3) the development of a long-range air pollution research program.

In the past, special studies of non-criteria pollutants were carried out by different programs within the agency as needed. Treating the study and control of noncriteria pollutants as an ongoing activity indicated the need for a research group that functioned independently of agency regulatory operations.

To meet the need, the Research Division was created in March 1984. The division's objectives are to provide the best and most pertinent technical information and analysis for agency determinations of: 1) whether conditions of air pollution exist, 2) what air contaminant levels are excessive, and 3) what emission sources are contributing to excessive levels. Special studies and research projects are conducted to provide new information in view of which regulatory and standard-setting decisions can be made.

The division staff includes an epidemiologist, a chemist, toxicologists, information specialists, a meteorologist, programmers, an atmospheric scientist, a librarian, and data entry specialists. In addition to its general operating budget, the division has been allocated a special research budget of \$300,000 for both 1984 and 1985 fiscal years.

To determine fully the potential for adverse effects during reviews of new facilities, the division staff is charged with reviewing permit applications to determine if adverse health or welfare effects are expected from emissions of contaminants not covered by the national air quality standards. Closely associated ac-

In 1983, the agency sponsored a risk assessment seminar to identify methods to evaluate exposure and air quality information developed during the Gulf Coast Community Exposure Study.



tivities include participating in public meetings to explain expected effects of emissions and giving expert testimony as witnesses in public hearings and court cases.

In addition, the division operates the TACB library of more than 5,000 books and periodicals to provide technical information to the agency's professional staff. This library activity extends to include the maintenance of hard-copy files on the effects of approximately 1,200 potentially hazardous air contaminants and the development and implementation of an automated data base to facilitate use of the health and welfare effects information.

In its efforts to implement expanded studies of noncriteria pollutants, the division staff has initiated work on several research projects, including:

- Analysis of data collected in 1981 by the University of Texas School of Public Health regarding the effects of ozone and other air contaminants on both healthy runners and asthmatics in the Houston area. This analysis is a necessary step toward determining whether air pollution in Texas is causing acute or short-term effects on the human pulmonary system under stressed or diseased conditions and, if it is, what pollutants are responsible.
- Assessment of the usefulness of biological test systems for evaluating the possible human health effects of exposure to complex mixtures of contaminants in ambient air. Such biological monitoring may be able to detect synergistic

effects and help determine whether areas in the state contain hazardous concentrations of air contaminants.

- Assembly and analysis of Texas urban and rural atmospheric visibility data and literature to help predict the effects of emission changes on visibility. The staff has found that visibility is a key factor in the public's perception of polluted air. With a better understanding of the causes of impaired visibility, the TACB staff can determine whether feasible control on sources may effect an improvement.
- Use of available data to estimate crop loss and other vegetation damage occurring in Texas as a result of air pollution. Injury to plants caused by air pollution results in economic loss and can also portend adverse effects to humans. Completion of this project will enable the staff to determine whether research is needed in the area of air pollution effects on vegetation in Texas.
- Assessment and characterization of the transport mechanisms for air contaminants, with emphasis on the upper Gulf Coast of

Chapter 7

Gulf Coast Community Exposure Study Technical Advisory Committee

D. Jack Kilian, M. D.
Professor of Occupational Medicine
School of Public Health
UT Health Science Center
Houston

William B. Beck
Environmental Consultant
E. I. duPont de Nemours & Co., Inc.
Orange

Patricia A. Buffler, Ph.D.
Professor of Epidemiology
School of Public Health
UT Health Science Center
Houston

C. S. Giam, Ph.D.
Professor of Chemistry
University of Pittsburgh
Pittsburgh, Pennsylvania

K. R. Loos, Ph.D.,
Staff Research Chemist
Shell Development Co.
Houston

Stanley M. Pier, Ph.D.
Associate Professor of Environmental
Health & Aerospace Medicine
School of Public Health
UT Health Science Center
Houston

C. H. Rivers
Senior Staff Engineer
Shell Chemical Co.
Deer Park

Gary K. Tannahill
Exxon Company, U. S. A.
Houston

Richard A. Beauchamp, M. D.
Environmental Epidemiology
Texas Department of Health
Austin

Edward J. Fairchild II, Ph.D.
Professor, Occupational Medicine
School of Public Health
UT Health Science Center
Houston

Karen Shewbart
Manager, Environmental
Services and Operations
Texas Operations
Dow Chemical U.S.A.-Freeport

Texas. This assessment and a subsequent literature review will help the staff determine the climatological factors that improve air pollution problems in some areas yet worsen them in others.

Gulf Coast Community Exposure Study

During the biennium, the staff continued its study of toxic air contaminants in four counties (Harris, Galveston, Jefferson, and Orange) along the Gulf Coast. The executive director created a

Technical Advisory Committee to provide assistance to the staff in designing, developing, and reviewing the Gulf Coast Community Exposure Study. Milestones in the study during the biennium were: an assessment of various methods of data interpretation, including a search of nationwide data bases; a compilation of data in typical ambient levels of the study substances measured in other areas; evaluation of risk assessment methods and their appropriateness for use in the study, including a 1983 TACB sponsored workshop on risk assessment; and the design and implementation of an initial emissions inventory of the study substances in the Houston area.

Chapter 7

Future Plans

The agency has established a number of objectives for the next biennium.

Additional studies in air pollution and health effects research will be initiated to develop scientific information needed for regulatory and standard-setting decisions.

More emphasis will be placed on monitoring and controlling noncriteria pollutants. In addition to short-term, special purpose monitoring performed in response to localized problems, major long-term projects (such as in support of the Gulf Coast Community Exposure Study) will be carried out. The mobile laboratory will be used for sampling and making on-site analyses, and an inhalable particulate monitoring network will be established.

More operational responsibility and resources will be transferred to the agency's 12 regional offices. The move is intended to facilitate timely response to the public, to strengthen all aspects of the agency's enforcement activities, and to address newly discovered air pollution problems.

Emergency management activities will be emphasized to protect Texas citizens and to minimize damage to the environment during emergency episodes.

Revisions to the state implementation plan will be completed for ozone formation in Dallas, Tarrant, and El Paso Counties. And ozone formation in Orange, Jefferson, Galveston, and Brazoria counties will be analyzed to respond to expected changes to the Environmental Protection Agency's (EPA) requirements for rural ozone nonattainment areas.

Staff will continue to monitor, evaluate, and advise the board concerning proposals to amend the Federal Clean



Air Act. Several innovative approaches to air pollution control will be reviewed and analyzed. These include economic incentives for control of air pollution (bubble, banking, emissions fees), renewal permits, and existing source operating permits. The agency also will coordinate with EPA to assist in developing an air pollution amendment to the U. S.-Mexico agreement on cooperation for the protection and improvement of the environment along the border.

In addition, the TACB will continue to: streamline new source review activities, enhance communications with other state agencies where there is jurisdictional overlap, and participate in the national acid rain monitoring program.

These objectives were established to move the agency closer to its paramount goal of protecting one of the state's most precious natural resources--air.

Chapter 8

