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A REPORT TO THE GOVERNOR OF TEXAS AND THE
LEGISLATURE BY THE TEXAS AIR CONTROL BOARD
6330 Highway 290 East, Austin TX 78723

The 69th Legislature in May 1985 passed amendments to the Texas Clean Air Act which reflected a serious concern regarding the maintenance of the state's air quality. Most of the amendments relate to (1) compliance with air pollution control regulations by sources which emit air contaminants; (2) the need for a heightened public awareness of air quality issues; and (3) the assumption by the regulated community of greater fiscal responsibility for the operation of the state's air quality control program.

The result was that the Texas Air Control Board's enforcement tools

were strengthened, provision was made for more effective response to issues raised by the public, and the agency instituted a major cost-recovery program through the collection of new and increased fees.

This report focuses on the work of the Texas Air Control Board during the 1985/1986 biennium and also deals with significant problems which require attention in the future.

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**The Board
The Agency
The Staff**

**Since the creation
of the Board
its mission
has not changed
but industrial growth,
new technologies
require new initiatives**

The 59th Legislature created the Texas Air Control Board in 1965. Our basic mission of safeguarding the state's air resources has remained unchanged. There have been, however, significant increases in the state's industrial base and changes in the manufacturing and production processes utilized. At the same time, while our knowledge of air pollution science and technology has grown, there has been a growing awareness of unsolved problems involving air pollution chemistry, meteorology, and toxicity. Dealing with all of these changes and problems requires flexibility in our programs, and technical and scientific initiatives by our staff.

One of the major strengths of air pollution control in Texas is the composition of the nine-member Board. The Clean Air Act requires that five members represent the public and that four have specific professional and technical backgrounds. The public members are Chairman John L. Blair of Kountze (appointed in 1971), Vice Chairman Charles R. Jaynes of Waco (1971), Fred Hartman of Baytown (1969), R. Hal Moorman of Brenham (1982), and Hubert Oxford III of Beaumont (1984).

Vittorio Argento, P.E., of Duncanville, was appointed in 1979 as the Board's professional engineer member; Bob G. Bailey of Abilene was appointed industry representative in 1982; D. Jack Kilian, M.D., of Lake Jackson, appointed in 1975, is the physician member; and Otto R. Kunze, Ph.D., P.E., of College Station (1979) is the agricultural engineer.

The authority of the Board is established in the Texas Clean Air Act. The Board, appointed by the Governor, operates through an executive director and a staff of engineers, scientists, attorneys, technicians, and support personnel. The central office is in Austin; 12 regional offices are located throughout the state.

The agency staff is organized by activities: administrative; legal; ambient air monitoring and laboratory analysis of air pollutants; enforcement of regulatory requirements; permitting; technical services and the development of pollution control regulations; and research in pollution problems, particularly with regard to public health and safety. The agency's legal counsel and technical staff report to the executive director; hearings examiners report directly to the Board.

Regional offices are lo-

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cated in Abilene, Lubbock, Waco, Harlingen, Corpus Christi, Odessa, Houston, Fort Worth, San Antonio, Beaumont, El Paso, and Tyler. The operation of these offices places one-third of our staff in strategic positions to investigate citizens' complaints, respond to emergencies, perform source surveillance, and monitor air quality. During the biennium, regional staff performed almost 25,000 investigations, responded to almost 5,000 citizen complaints, and issued more than 3,600 notices of violation. Also, the staff responded to more than 200 emergency episodes and, with the cooperation of the central office Emergency Management Center, kept local and state agencies aware of developments to ensure that appropriate action was taken to prevent negative environmental impacts.

Traditionally, this agency has operated with a "lean" staff. The scope of our required work was considerably increased by the 69th Legislature's amendments to the Texas Clean Air Act at about the same time as Executive Orders MW-36 and MW-39 called for a 13 percent cutback in

agency operating costs and imposed a freeze on hiring. Growth in the state's population and economy also impacted the agency. Our authorized budget provided for a total of 370 full-time (equivalent) staff positions for FY 1985 and it provided for 375 such positions through March 1986 and 374 for the remainder of FY 1986. In compliance with Executive Order MW-36 issued in February 1986, and Executive Order MW-39 issued in July 1986, we ended the biennium on August 31, 1986 with 353.5 full-time equivalent employees. We have plans to fill one-half of our current vacancies and, consistent with FY 1987 appropriations, those that occur in the future.

The number of employees in our agency has remained constant for the past 10 years. We attempt to concentrate our staff and financial resources on problems of greatest concern to the Legislature and the general public. There is growing public concern, however, regarding regulatory issues, including particularly toxic and hazardous air contaminants. Under present funding, attention to this area of investigation and control is limited.

Our employees have a total of 3,719 years in air pollution control work with the Texas Air Control Board. This represents an

average per employee of over 10 years of service. The retention of a well-trained and experienced staff is a major cost-saving feature of our agency.

Fiscal Affairs Fees & Penalties

Aside from cost-of-living pay increases which were granted to all state employees, and some research funds, our budget has not been increased for the past 10 years. Nevertheless, over the past 10 years we returned over a million dollars in unspent funds to the General Revenue Fund.

A year ago we initiated an employee recognition program designed by the staff and operated by staff-elected employee committees. In addition to recognizing outstanding performance, the program also recognizes employees for significant cost-saving proposals which are implemented by the agency. Cost reductions amounting to several thousand dollars have been achieved under this program.

A staff-initiated program of cost savings through

**New fees
are adequate
to meet required
1986 cost recovery**

the troubleshooting and repair of equipment has enabled us to reclaim an average of an estimated \$115,000 in equipment annually over the past four years. The staff has fine-tuned our ambient monitoring system, essential in detecting problems related to federally-designated air contaminants. This enables us to devote more resources to enforcement, source-specific air monitoring and analysis, and, to some extent, toxic air pollution issues.

Certain operational adjustments freed some staff resources to implement activities required by the 69th Legislature's appropriations bill and amendments to the Clean Air Act. Among these was the development of a program for assessing and collecting new inspection fees to recover part of the cost of enforcement and source inspections as well as fees for the registration of certain older facilities. With the cooperation of owners and operators of regulated facilities, we devised a fee program, including the expansion of existing permit fees, that would meet the legislative requirement to recover \$5,058,899 of our operating costs. We exceeded that requirement by over \$1.5 million which was paid into the state's unappropriated General Revenue Fund. Registra-

tion fees, a one-time charge, amounted to \$175,200. Commencing with FY 1986, inspection fees are payable annually. These amounted to over \$4.8 million for FY 1986. Statutorily increased in FY 1986, permit fees amounted to over \$484,000 in FY 1985 and over \$1.5 million in FY 1986.

Other agency activities generate revenue which is not applicable to the recovery of our costs. These include the levying of administrative penalties (\$923,225 in FY 1986) for violations of the Clean Air Act, Board regulations, and permit requirements; and, indirectly attributable to us, court actions on disputed cases of violations referred by us to the Attorney General's Office. Such court penalties in FY 1985 amounted to \$120,450 and in FY 1986, \$987,875. A large portion of this latter amount resulted from a ruling September 30, 1985 in a long-pending lawsuit against Chevron USA (with regard to its El Paso refinery) brought by the Environmental Protection Agency (EPA) and the state which resulted in the award of \$4,530,000 to the federal government and \$762,000 to the state. The City of El Paso also re-

ceived \$762,000. The awards comprised the largest fine ever assessed in the United States in a case involving air pollution.

If all fees, administrative penalties, and court fines are taken into account for FY 1986, our activities resulted in revenue that was less than \$2 million under the state's appropriation of \$10,255,000 for the operation of the Air Control Board. The EPA granted us \$3,118,000 to perform certain identified tasks, bringing the total budget for 1986 to \$13,373,000.

Inspection fees for FY 1987 could total about the same as fees assessed for FY 1986 as the same formula for assessment will be used. However, based on the current state of the economy, and particularly the oil and gas industry, we expect some reduction in these fees as a result of plant shutdowns and cutbacks in production. The faltering economy could also affect the collection of permit fees in FY 1987, when we are more dependent than formerly on fee collections for operation of the agency. For subsequent years, we are studying (in consultation with industry representatives) alternatives which may broaden the industry base somewhat for inspection fees and simplify the method of

fee calculation while yielding the necessary revenue.

The administrative penalties authorized in the 1985 Clean Air Act amendments make violations of state and national air quality regulations potentially expensive. However, the assessment of such penalties and fines is intended as an incentive for compliance with pollution control regulations rather than as a means of raising revenue. With regard to the long-term effect on air quality, the compliance schedules agreed to by penalized facility owners are of far greater significance than are the penalty assessments. Administrative penalties vary greatly in accordance with the violations cited. The largest administrative penalty assessed by the Board was \$180,000 levied against the General Dynamics aircraft plant at Fort Worth. A number of penalties of \$1,000 or less were levied against relatively smaller sources which were found to be operating without required permits. The lack of such permits was the leading violation for which penalties were levied. We conducted a statewide public information program to emphasize permit requirements. We received excellent cooperation from local governments, chambers of commerce, and industry associations.

If a violator does not

agree to a proposed compliance schedule and penalty, the matter may be resolved either by formal administrative hearing or referral to the Attorney General's Office for litigation.

Permits Special Permits Exemptions

Hearings also are held when requested by government officials and citizens in response to applications for permits for new or modified facilities. Approximately 24 public hearings regarding permit matters were called in FY 1986.

The most demanding permit hearing held during the biennium in terms of staff time and public participation concerned Enviro-safe Services of Texas, Inc. which sought a permit for a hazardous waste disposal site in Liberty County. The transcript of testimony fills 8,123 pages. Three hundred exhibits were submitted. The hearing sessions lasted 55 days over a period of 33 months. The permit ultimately was denied by the Board in December 1985.

Permits set maximum emission levels and require the application of the best available pollution controls. They constitute one of the agency's most important means of air pollution control. Violation of permit requirements is cause for enforcement action. Any time a person plans to build or modify a facility which may emit contaminants, a permit application must be submitted (unless it is determined that such construction qualifies for a standard exemption) and a 30-day public comment period is required. We issued 298 such permits in the biennium.

In accordance with a 1985 Clean Air Act amendment, a new Special Permits category was established for sources having relatively low emissions but which do not qualify for a standard exemption. Some 350 such permits were issued in FY 1986. Such permits are subjected to an abbreviated public notice period of 15 days but still must satisfy the agency's requirement to install the best available pollution controls.

We maintain a Standard Exemption List that describes facilities which, because of relatively insignificant emissions, are exempted from the agency's permitting requirements. To qualify for an exemption, however, such facilities must meet stated specific requirements. The Standard Exemption List was established and is modified periodically through rulemaking.

The agency has received partial delegation from the EPA for implementing the federal Prevention of Significant Deterioration (PSD) program. This program was established in the 1977 amendments to the Federal Clean Air Act and is designed to prevent the deterioration of air quality in areas where air quality is better than the national ambient air quality standards. Under the partial delegation agreement, our permit engineers review permits under state and PSD requirements concurrently. The PSD permits are then issued by the EPA. During the biennium, approximately 50 PSD permits were forwarded to the EPA.

The Texas Clean Air Act and Board Regulation VI require the owner or operator to apply for an operating permit within 60 days after the permitted

facility has begun operation. In order to be granted an operating permit, the owner must demonstrate that the facility is complying with federal and state regulations and the terms of the construction permit.

To streamline the operating permit process, and because on-site inspection is an integral part of the technical review before permits can be issued, engineers in our 12 regional offices review the applications and issue operating permits. Approximately 500 operating permits were issued during the biennium.

The 1985 Clean Air Act amendments require that operating permits be reviewed at 15-year intervals to determine whether they should be continued, and, if so, with or without changes. We completed the necessary rulemaking to implement this program and have begun informing companies of scheduled reviews in compliance with notification requirements of the Act.

The 70th Legislature will receive a report on the issue of permit review and continuance by the Clean Air Study Committee. This committee was created by the 69th Legislature and charged with studying the renewable permits issue as well as the issues of emissions from marine vessels and the permitting of

"grandfathered" sources. (Grandfathered sources are those constructed prior to 1971 when the Air Control Board initiated its permit program for new sources. Such older facilities, however, are subject to regulations.) The Clean Air Study Committee was chaired by Mr. Hubert Oxford, a member of the Air Control Board, and our staff served as the committee's staff for the year-long study.

Pollution Monitoring & Analysis

Both stationary and mobile monitoring equipment collect air samples which are analyzed in our laboratory to identify and quantify air pollutants. This information is used in developing pollution control strategies and to determine air quality trends.

Determination of ambient air quality in Texas with reference to federal air quality standards depends primarily on the operation of our continuous air monitoring stations (CAMS). A total of 60 monitoring devices at 29 stations sample the ambient air 24 hours a

day for the federally-designated gaseous criteria pollutants (sulfur dioxide, nitrogen dioxide, carbon monoxide, and ozone). Additionally, three mobile CAMS can be equipped with a variety of instruments for special long-term or short-term ambient air monitoring projects such as a sulfur dioxide/hydrogen sulfide study recently conducted at Midlothian in response to citizen complaints, and a Collin County ozone attainment status study required by the EPA. Two of these mobile units were outfitted during the biennium. The mobile CAMS program greatly enhances the agency's monitoring program by enabling the timely analysis of any developing situation which may affect ambient air quality.

Also in response to federal regulations, nearly 60 monitoring stations collect samples of particulate matter. During the biennium, we successfully implemented an additional particulate monitoring network to collect particulate matter less than 10 microns in diameter. (This monitoring program is important because very small particles are respirable and evade the body's defenses and, therefore, can cause health problems.) This network of 17 monitoring stations is part of a national effort to measure particulate matter. Regional staff in coopera-

tion with our central office staff operate, maintain, and calibrate monitoring equipment used in the stationary ambient air monitoring networks.

Analyses of air pollutants are performed in our central laboratory and also in the field. A mobile laboratory designed and outfitted by the staff provides both organic and inorganic field analysis in support of major air toxics sampling projects. It was deployed in the field for the first time in March 1985 with a primary mission of assisting in the identification and quantitation of toxic air pollutants. The laboratory made a total of eight sampling trips in 1985 and 1986 as part of our response to citizen complaints about health effects or nuisance odors, and to assist the regional directors in resolving questions about the presence of potentially toxic compounds in populated areas near industrial facilities. The laboratory has been operated on a 24-hour basis for up to two weeks in any one area with the field staff working 12-hour shifts.

In addition to the mobile laboratory, we operate four small vans for pollu-

EPA provides funds for emergency response equipment

tant surveys. Two are equipped for on-site analysis, and the other two can be equipped with analytical instruments or pollutant-specific monitors as needed, or serve as mobile power stations for operating ambient air sampling equipment. Sampling can be performed as an independent activity or to augment the mobile laboratory to expand the area to be sampled for research, special air toxics projects, and enforcement-related activities.

During the biennium, the vans used for on-site analysis of air samples were deployed on 16 occasions to monitor emissions from 19 facilities, often in response to citizen complaints or inquiries about odors or health effects. The generator-equipped vans were used on eight occasions to investigate 12 industrial sites in support of mobile laboratory operations, for sulfur compound monitoring, and for air sampling at hazardous waste facilities.

The vans also were used during times of peak

aerial application of pesticides to determine the level of pesticides in the air. This is part of a continuing pesticide monitoring program begun five years ago. A seven-station network established in 1980 collected ambient air samples to determine public exposure to pesticides near areas of heavy use. The analysis of more than 2,200 samples detected only arsenic routinely and this at levels which should not result in adverse health effects. Another pesticide, methyl parathion, was detected two times at one site but at levels below that which threaten human health. In view of these results, the stationary network was discontinued in 1986 and the mobile monitoring program adopted.

We sought and received an EPA grant to develop a mobile emergency response capability to provide air sampling at sites of chemical spills or other major incidents which may involve the release of toxic or hazardous air pollutants for an extended period. The grant funds provided for a staff-designed trailer containing a field coordination center, a personnel decontamination facility, and protective gear in-

cluding fully-encapsulating "moon suits" and self-contained breathing equipment. The results of monitoring at the scene of an incident will aid in determining the need for citizen evacuation, assess the degree and extent of public exposure or environmental damage, and verify the effectiveness of remedial measures and cleanup efforts.

To increase the efficiency of the analysis of air samples collected at the various monitoring sites, the staff has succeeded in automating or enhancing certain central laboratory operations. As an example, rather than replace an older X-ray fluorescence spectrometer (XRF) used for elemental analysis in the laboratory, the staff elected to upgrade the microcomputer used to control the instrument with a more powerful model enabling data reduction independent of the agency's mainframe computer. The modification is currently in progress. All of the hardware installation and most of the software development is being done by agency staff, saving thousands of dollars.

Routine XRF analysis of particulate matter for 31

Texas Air Control Board Directory

The Board

Chairman -- John L. Blair, Kountze. Appointed: 1971.
Vice Chairman -- Charles R. Jaynes, Waco. Appointed: 1971.
Vittorio Argento, P.E., Duncanville. Appointed: 1979.
Bob G. Bailey, Abilene. Appointed: 1982.
Fred Hartman, Baytown. Appointed: 1969.
D. Jack Kilian, M.D., Lake Jackson. Appointed: 1975.
Otto R. Kunze, Ph.D., P.E., College Station. Appointed: 1979.
R. Hal Moorman, Brenham. Appointed: 1982.
Hubert Oxford III, Beaumont. Appointed: 1984.

The Administration

Executive Director: Allen Eli Bell
Executive Assistant: Beverly Fowler
Deputy Executive Director: Steven N. Spaw
General Counsel: John B. Turney

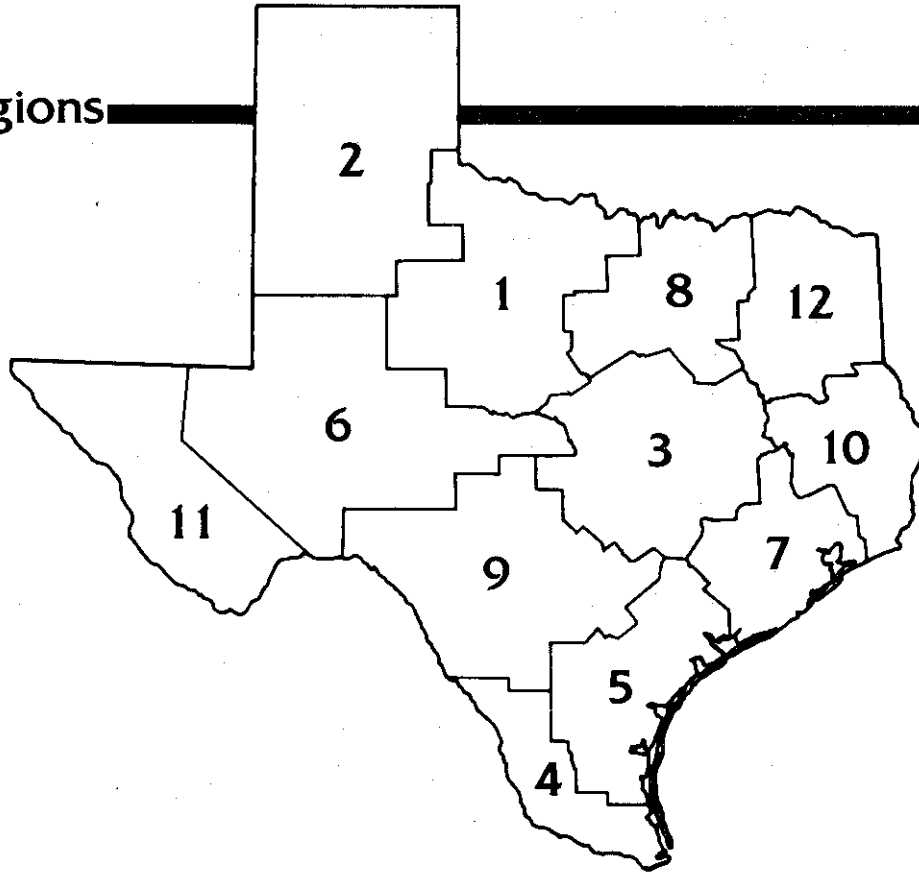
Regional Offices

- REGIONS
- 1 ABILENE: Debra J. Barber, Director. (915) 698-9674
 - 2 LUBBOCK: Gerald Hudson, P.E., Director. (806) 744-0090
 - 3 WACO: Eugene Fulton, Director. (817) 772-9240
 - 4 HARLINGEN: Robert Guzman, Director. (512) 425-6010
 - 5 CORPUS CHRISTI: Tom Palmer, P.E., Director. (512) 289-1696
 - 6 ODESSA: Charley Sims, Director. (915) 367-3872
 - 7 BELLAIRE (Houston): Herbert W. Williams, Jr., Director. (713) 666-4964
 - 8 FORT WORTH: Melvin Lewis, Director. (817) 732-5531
 - 9 SAN ANTONIO: James Menke, Director. (512) 734-7981
 - 10 BEAUMONT: Michael Peters, Director. (409) 838-0397
 - 11 EL PASO: Manuel Aguirre, P.E., Director. (915) 591-8128
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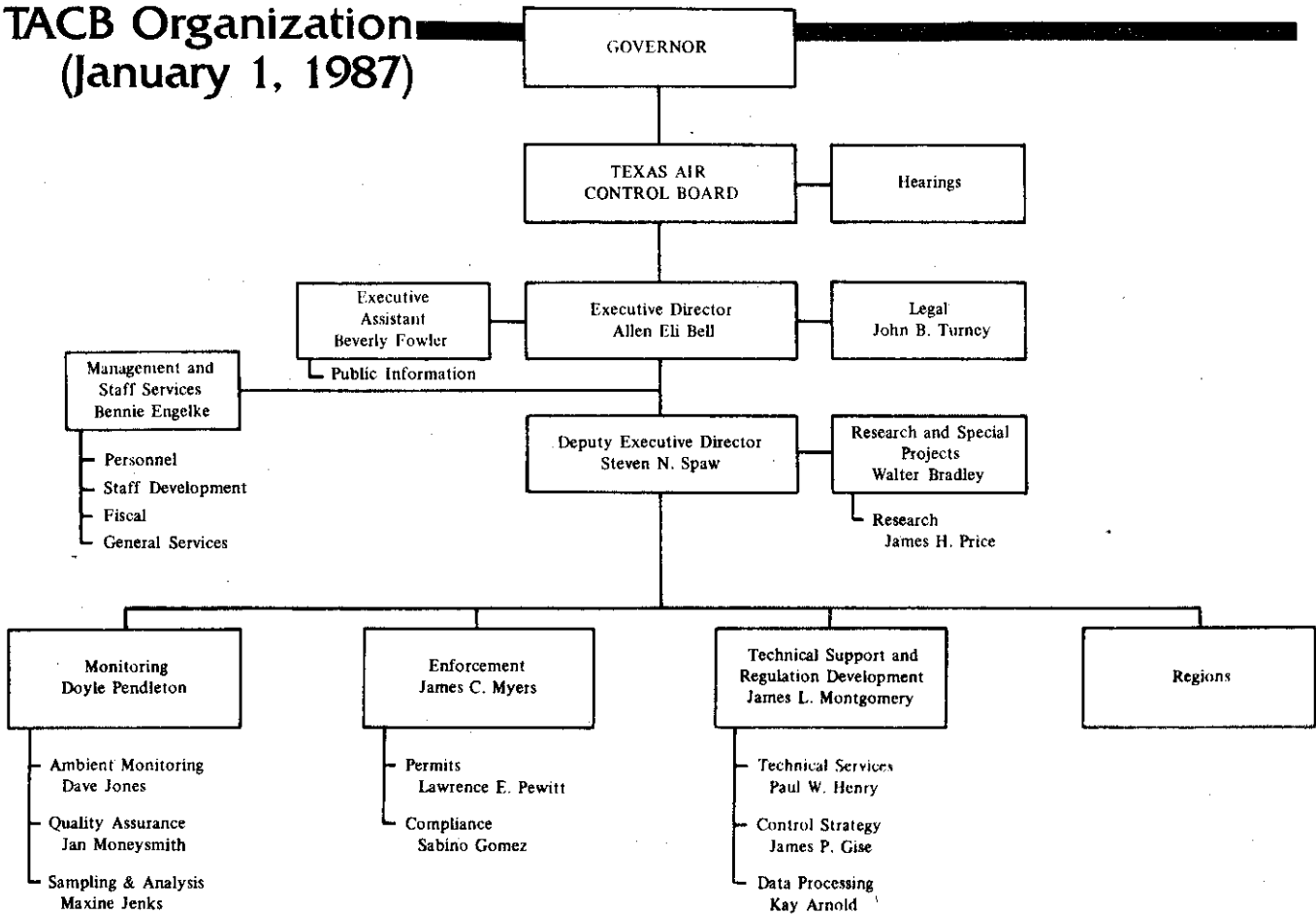
Useful telephone numbers:

Emergency Management Center: Bob Mauel - EMC Staff Coordinator
Ed Gonzales - Operations Chief
Daytime: (512) 451-5711, ext. 470 & 419
Nighttime: (512) 444-3335 or (512) 441-4164
Librarian: Ms. Kerry Williams. (512) 451-5711, ext. 397
Public Information Officer/TACB Bulletin: (512) 451-5711, ext. 209 & 362

TACB Regions



TACB Organization (January 1, 1987)



elements is performed on all filters from the particulate matter network. As part of a special study, filters from selected areas of the state are being subjected to additional analyses for arsenic, total chromium, and hexavalent chromium, a known carcinogen and the most toxic form of the metal. After screening for these elements, concentrations of arsenic and chromium which may be below the XRF detection limit are determined by use of even more highly sensitive and complex methods of analysis.

Hazardous & Solid Waste

Equipment and procedures developed for emergency response also will be available for use in monitoring air emissions from potentially contaminated areas such as hazardous waste disposal facilities undergoing evaluation or cleanup. We reached a contract agreement in the biennium with the Texas Water Commission (TWC) to provide air sampling and monitoring at three hazardous waste disposal sites selected by the TWC as candidates for

cleanup under the EPA Superfund program.

House Bill 2358, 69th Legislature, altered the Board's role in the permitting of hazardous waste and solid waste management facilities. Under the bill, permits are issued only by the TWC unless the Federal Clean Air Act and the federally required state air quality plan require additional permits. In areas where federal air quality standards for specific pollutants have been attained, the EPA requires PSD permits. In areas where such air quality standards for federally regulated pollutants have not been attained, the Board issues permits for new major source/major modification facilities. Our engineers and health effects scientists review all of these permit applications to determine emissions impacts stemming from proposed hazardous waste management facilities. Also, our staff participates in TWC permit hearings on such facilities. In order to implement our participation in the issuance of TWC permits, the Board recently adopted a new Regulation X in a joint rulemaking procedure with TWC.

Through similar joint rulemaking with the Department of Health, the Air Control Board adopted Regulation XI which assigns to the agency responsibility for

air quality review of applications for state permits for municipal solid waste facilities. At the present time, facilities to burn municipal solid wastes appear to be a most feasible alternative to landfills. We evaluate each of these facilities for best available control technology to minimize potential hazardous emissions. This review can be extensive. Such permits are issued by the Department of Health unless the facility is to be constructed in an area where PSD or federal new major source/major modification non-attainment permit review is required. In such areas, permits are issued by the Air Control Board and the EPA as well as by the Health Department.

To prepare for the evaluation of possible environmental effects of municipal solid waste incinerators, the staff undertook a literature search in regard to chlorinated dibenzodioxins (CDD's) and chlorinated dibenzofurans (CDF's), both highly toxic by-products of combustion of municipal waste. This search identified certain severe animal effects at high exposure levels. However, effects on human health at such levels are not clear. Methodologies were then developed for the sampling and analysis of CDD's, CDF's, and other chlorinated organic compounds in

Toxic Air Contaminants

stack gases and the ambient air. These methodologies are being employed at an existing municipal incinerator to investigate the potential for the formation of such hazardous materials.

Ocean incineration is another major method of waste management. This is significant to Texas because the Gulf of Mexico was one of the areas used for research incineration in the past. The EPA decided to abandon plans to conduct another research burn in the Gulf of Mexico and recently determined that a scheduled burn in the Atlantic would be delayed until ocean incineration regulations are issued in late 1987. Our scientists and engineers informed the EPA of their opinion that better quality research must be done to demonstrate conclusively the safety and effectiveness of ocean incineration for destruction of hazardous liquid chemical wastes.

While we give attention to national pollution control issues such as ocean incineration of toxic wastes, our agency's resources to a large degree are concentrated on pollutants for which federal standards have been set. Primary among these are the "criteria" pollutants: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulates, and lead. In addition, there are federal standards for asbestos, beryllium, mercury, vinyl chloride, benzene, arsenic, and radionuclides, which are much less common but highly toxic in small concentrations. The Board also regulates these. (The Department of Health has the lead role in radionuclides regulation.)

Our staff is concerned that in many instances exposure to relatively minute concentrations of toxic air contaminants for which standards have not been set may pose a greater threat to public health than exposure to comparatively high concentrations of the criteria pollutants in the outdoor air. The EPA is currently studying 400 toxic air contaminants for possible regulation. For a number of years, we have been building an operational foundation for a toxics program.

We believe Texas needs

to give immediate attention to toxic air pollutants. In the near future, we hope to be able to do more extensive evaluation and management of toxic emissions and their effects, but such work would require additional resources or a reduction of effort in other activities.

One of our major concerns, and one often expressed by the public, is the need for a state program to safeguard the public from potential major releases. We currently perform a limited permit review designed to help ensure that new processes with potential for toxic releases causing acute effects incorporate appropriate safeguards. Our new source review program considers all air contaminants including toxics as well as those for which federal standards have been set. With adequate funding, endeavors to monitor company efforts to minimize the likelihood of such incidents could be extended to existing sources.

The capabilities of our automated computer information system have been expanded, making it possible for us to store and retrieve reports of excessive emissions caused by major upsets and planned or un-

planned maintenance. We have processed more than 13,000 such reports during the biennium. This information has been used to assist in enforcement efforts.

Texas is the home of nearly half of the nation's basic petrochemical industry. We anticipate that one of the first priorities for development or expansion of Board regulations in regard to air toxics would concern fugitive emissions of known or suspected carcinogens from this industry. Fugitive emissions typically make up a significant portion of the total emissions from chemical plants. Such emissions for the most part occur at or near ground level which tends to increase the opportunity for public exposure. Texas was one of the first states to require the monitoring by industry of fugitive volatile organic compounds.

Our Gulf Coast Community Exposure Study is a research project designed to monitor the ambient air for 10 toxic substances or classes of substances which are potentially harmful to human health and to which the public may be exposed in industrialized Gulf Coast areas. A monitoring network was deployed in October 1985 to collect air samples following development of several new sampling and analytical methods by our

laboratory chemists, research scientists, engineers, and technicians. The sampling protocol was altered as needed on the basis of the analysis of pollutants detected. Analyses of these samples are continuing and are expected to be completed in early 1987.

The nature and number of potentially toxic air contaminants make sampling, identification, and quantification of such substances particularly difficult. Sampling and analytical methods must be exceptionally sensitive. The diverse nature of air toxics also means there is no universal analytical method available, and in many cases new methods must be individually tailored to specific pollutants.

Traditional mechanical air monitoring and analysis techniques seek to identify and measure individual contaminants that could potentially cause harm to the public. Once they are identified and quantified we can make some predictions about their potential to affect public health, based on existing scientific literature. This approach, albeit indirect, is the best method of risk assessment that has been available. At this time, we have no means for

looking at the effects of an aggregate of contaminants such as may be present in the outdoor air. Under contract with the University of Texas Medical Branch at Galveston, we are currently trying to develop a more direct method to assess potential effects on health.

Specifically, we are seeking to determine the value of using animals to assess the effects of exposure. Such air-effects assessment, used in conjunction with traditional field monitoring and analyses of air samples, would allow us to look for contaminant interactions as well as to identify individual pollutants. This would permit early response to health and environment-threatening situations.

The biological test investigation has been underway since 1984. The nature of the research and the findings thus far have attracted considerable interest and scientific support. Results of tests have shown that some bioassays are sensitive enough to detect adverse effects of exposure to low levels of air contaminants. Specifically, exposure to the mixture of air contaminants tested caused cellular changes that indicate impaired immune system function. The current investigation phase deals with detecting biological response to the level of contaminants that may ex-

ist for long periods of time in outdoor air.

If we can develop a biological testing protocol sensitive enough to be used in the field, we hope to be able to pursue methods of funding, including federal support, to permit us to design, construct, and operate a field biological monitoring unit.

Visible Pollution Acid Rain

**Research projects
yield synergistic
benefits in studies
related to
environment, health
effects of pollution**

To reduce expenditures, we have placed some of our research programs on an inactive status. Insofar as possible, we are continuing inquiries into subjects of primary public concern.

Since the public uses visibility to judge air quality, it is important to understand the effects of man-made emissions on visibility impairment in Texas. Understanding these effects would allow informed decisions to be made about the effect of various emission controls on visibility and the changes in visibility that are likely to occur with increasing economic activity. Visibility trends in Texas cities were determined through contract

work in 1984 and staff work in 1985. A pilot study was undertaken in 1986 in El Paso as a result of the trends study and in response to public concern. A staff report on the study cites a severe wintertime haze problem in the City of El Paso despite monitoring results which indicate that otherwise the area has the best visibility in the state. We will now seek to determine any effects on downtown visibility of motor vehicle pollution controls implemented January 1, 1986.

Residents of Dallas are concerned about a "brown cloud" that occurs there in wintertime. Also, over the past 20 years visibility in the Dallas area has decreased noticeably. Our studies show that since 1960 the distance one can see in the area has decreased by about 50 percent. To understand possible causes, in 1986 we began a laboratory analysis of archived particulate matter samples from the Dallas-Fort Worth and associated rural areas. We are concentrating our research capability on a year-long study of visible pollution in Dallas beginning with a three-month study of the brown cloud in cooperation with EPA Region 6 (Dallas) and the City of Dallas. With some participation by the City of Dallas, we will continue for another nine

Ozone Issues

months to inquire into the cause of area haze. The study is to be concluded in December 1987.

Meanwhile, we will continue to analyze the composition of particulate samples collected in El Paso and Dallas in order to evaluate potential causes of visibility degradation. We also will do some preliminary work to investigate the relationship between visibility impairment and emissions from coal and lignite-fueled power plants.

Information we gather about fine particulate matter, the primary cause of visibility degradation, will also aid us in studies of the potential for adverse health effects resulting from air pollution. Fine particles can be deposited in the deepest portion of the lungs and can cause serious health problems.

Additionally, a better understanding of fine particulate matter -- its sources and interaction with other pollutants, and the influence of air-mass movement patterns -- will be valuable in studies of acid deposition (acid rain). We began monitoring rainfall in 1979 to establish baseline precipitation data and the potential sensitivity of certain areas of the

Despite control measures, no trend in state levels of this pollutant has been seen

state to acid precipitation. Our monitoring network has been expanded to include stations at Tyler, Beaumont, Fort Worth, Austin, and Houston to collect rainfall "event" samples, and automated monitors at Huntsville and Longview to collect samples of all rainfall within the period of an entire week. The Longview station is operated as part of a national acid rain study.

The data collected so far suggest that acid rain is not a problem of immediate concern for Texas. The potential for a problem in the future may exist, however, in parts of East Texas where the most acidic precipitation has been monitored and where the greatest susceptibility to acid rain effects is found. For this reason, during the biennium we added the automated monitor at Huntsville to our network.

The meteorology of long range pollution transport significantly influences the problems of acid rain and visibility degradation. Our staff and many other researchers believe this is also a major contributor to the difficulty in controlling ozone, the criteria pollutant most prevalent in Texas and nationwide, and which in high concentrations can affect health. Visibility and acid rain research studies may aid in developing a better understanding of the ozone problem.

Ozone is not directly emitted into the atmosphere. It is produced in sunlight by a complex chain of reactions of air contaminants, including nitrogen dioxide and hydrocarbons. These contaminants can travel great distances before they react, so that it is sometimes difficult to determine the cause of high ozone levels in a particular area.

Although we have measured ozone since 1973, we can find no definite upward or downward trends in Texas ozone levels. This is despite the fact that significant control measures for industrial and automotive

Federally required strategies affect an increasingly broad population base

sources of precursor emissions have been implemented at the state and federal levels.

In the biennium, the EPA required revised ozone control plans for Dallas, Tarrant, and El Paso counties, which along with Harris County have been classified by EPA as "urban ozone nonattainment" areas. The revisions were adopted in August 1985 and new controls began to be phased in on January 1, 1986. Similar control measures for Harris County have been in effect for two years.

In urban ozone non-attainment areas, the Federal Clean Air Act and EPA regulations require the implementation of control strategies which affect an increasingly broad base of our population. Presently, the impact is being felt by vehicle owners in Harris, Dallas, Tarrant, and El Paso counties. A vehicle inspection program is carried out in these counties under the direction of the Texas Department of Public Safety. An inspection includes a check for evidence of misfueling and tampering with manufacturer-installed pollution control devices. In El Paso County this inspection will be expanded in early 1987 to determine compliance with exhaust emission limits for carbon monoxide. El Paso is the only area of the state which is not in compliance with the federal carbon monoxide standard.

During the biennium, EPA directed that we undertake ozone monitoring in certain counties which border on metropolitan areas and which, because of the absence of data, have not been classified as "attainment" or "nonattainment" for ozone. Such a program will require a number of years to complete. Beginning in Collin County in 1986, over the next eight years we are scheduled to

monitor for ozone in Wise, Montgomery, Fort Bend, Rockwall, Kaufman, Ellis, Johnson, Hood, Parker, Hardin, Harrison, Liberty, and Waller counties. These counties are located in the Houston, Dallas, and Fort Worth metropolitan areas. Two counties, Nueces and San Patricio, were referred by us to the EPA for reclassification from "nonattainment" to "attainment" for the ozone standard on the basis of monitored ozone levels. EPA has approved the redesignation.

Our staff and other researchers predict that ambient ozone levels higher than the federal standard will persist for the next decade despite the fact that nearly all of the cost-effective ozone abatement measures have been implemented in the major urban areas of Texas. We believe the problem is regional (multi-state) and is influenced by the transport of ozone and its precursors from distant areas.

Federal emphasis on air pollution problems is chiefly focused on ozone. The time-consuming development of ozone control strategies competes significantly for resources which could be applied in Texas to other areas of concern, including particularly enforcement and air toxics.

In Conclusion

The 1985/1986 biennium was a period of great activity and transition for our agency.

Legislative actions affected us significantly. We underwent review by the Sunset Advisory Commission in 1985. Subsequent amendments to the Texas Clean Air Act by the 69th Legislature ushered in the second year of the biennium. These gave us new enforcement tools; changed some previously discretionary actions to required actions; created new responsibilities including a renewable permit program and staff assistance to the Clean Air Study Committee; and gave us the responsibility for generating agency-supporting revenue through creation of new fee programs. One of the new enforcement tools, administrative penalties, is being challenged as violating the Texas Constitution in a lawsuit filed by the Texas Association of Business. The suit challenges the statutory authority for assessment of administrative penalties by the Board and the Texas Water Commission on the grounds that such authority denies the right of trial by jury and violates the constitutional separation of powers. The Sierra Club and the League of Women Voters of Texas intervened in the lawsuit on behalf of the agencies.

We had a change in agency administrators. Bill Stewart, registered professional engineer who served for eight years as the agency's second executive director, retired in March 1986 after 20 years of state service, most with the Air Control Board. He was succeeded by Eli Bell, deputy executive director. An attorney, Bell joined the agency in July 1972 and held such positions as general counsel and director of the enforcement program.

The state's economic problems had a major effect on the agency. The dramatic decline in state revenues resulted in new pressures on the Board and staff to find ways to reduce expenditures without impairing the state's air quality program.

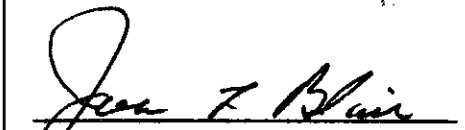
Despite the broad effects of these events, we maintained a viable program to safeguard the state's air resources.

Through reductions of contaminants in industrial and vehicular emissions during the biennium, and indeed since the inception of the state's air pollution control program, we have made considerable progress in safeguarding air quality.

Overall, we have clean air in Texas, and we want to keep it that way. At the same time, we favor the continued economic develop-

ment of the state and we do not think this is in conflict with our objectives. As manufacturing processes have developed, so has the technology for controlling harmful emissions into the air. Additionally, Texas is recognized nationally for the effectiveness of its pollution control requirements. Through the application of technology and regulation, we believe Texas can have healthy economic development without degradation of air quality, and we are committed to working toward that end.

In the coming years, that work will emphasize air toxics, the continuing ozone dilemma, finding better ways to assess effects of outdoor pollution on human health and the environment, and the prevention of major releases that might have acute effects on people and the environment. These issues are of the greatest public concern and must be on our agenda for the future.


John L. Blair
Chairman of the Board


Allen Eli Bell
Executive Director

