PLAINTIFF'S EXHIBIT
SH-3017

Attachment N

Interim Report of the Joint Select Committee on Toxic Air Emissions and The Greenhouse Effect

To the 72nd Legislature
January 1991

LAM 013116

DPMC-14435

Joint Select Committee on
Toxic Air Emissions and the Greenhouse Effect

Senator H. Tati Santiesteban
Co-Chairman
Representative Chris Harris
Co-Chairman

Members:
Senator Gene Green
Senator Don Henderson
Senator Carlos Truan
Representative Robert Eckels
Representative Nick Perez
Representative Mark Stiles
Mr. Chuck Rivers
Dr. Ken Kramer

The Honorable Bob Bullock, Lieutenant Governor
The Honorable Gibson D. Lewis, Speaker of the House
Honorable Members of the 72nd Legislature

Dear Governor Bullock, Speaker Lewis, and Members:

Pursuant to the charge by a joint proclamation issued by the Lieutenant Governor and the Speaker of the House of Representatives during the 71st Legislative Session, the Joint Select Committee on Toxic Air Emissions and the Greenhouse Effect respectfully submits its interim report and recommendations for consideration by the Members of the 72nd Legislature. Minority recommendations are included in the main body of the report.

Senator H. Tati Santiesteban
Co-Chairman

Representative Chris Harris
Co-Chairman

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Interim Report of the
Joint Select Committee on

Toxic Air Emissions and The Greenhouse Effect

Prepared by the Staff
of the
Joint Select Committee on
Toxic Air Emissions
and
The Greenhouse Effect

Senator H. Tati Santiesteban. Co-Chair
Representive Chris Harris, Co-Chair
January 1991

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LIST OF ACRONYMS*

A/C	air conditioning
ALAPCO	Association of Local Air Pollution Control Officials
CAFE	Corporate Average Fuel Economy
CFCs	chlorofluorocarbons
CFR	Code of Federal Regulations
CNG	compressed natural gas
CO	carbon monoxide (criteria pollutant)
CO2	carbon dioxide (greenhouse gas)
CSG	Council of State Governments
DFW	Dallas-Fort Worth
DPS	(Texas) Department of Public Safety
EPA	U.S. Environmental Protection Agency
Fed. Reg.	Federal Register
FTE	full-time equivalent
FY	fiscal year
GCMs	general circulation models
GFDL	Geophysical Fluid Dynamics Laboratory
GISS	Goddard Institute for Space Studies
GWP	global warming potential
HCFCs	hydrochlorofluorocarbons
HFCs	hydrofluorocarbons
HRMC	Houston Regional Monitoring Corporation
I/M	inspection and maintenance
IPCC	Intergovernmental Panel on Climate Change
LEPCs	local emergency planning committees
LPG	liquefied petroleum gas
MTBE	methyl tertiary-butyl ether
NAAQS	National Ambient Air Quality Standards
NAS	National Academy of Sciences
NASA	National Aeronautics and Space Administration
NCAR	National Center for Atmospheric Research
NCSL	National Conference of State Legislatures
NESHAP	National Emission Standards for Hazardous Air Pollutants
NGA	National Governors' Association (Washington)
NOAA	National Oceanic and Atmospheric Administration
NOx	nitrogen oxides (ozone precursors)
NO2	nitrogen dioxide (criteria pollutant)
N2O	nitrous oxide (greenhouse gas)
ODP	ozone depletion potential
OSHA	U.S. Occupational Safety and Health Administration
OSU	Oregon State University

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PAH	polycyclic aromatic hydrocarbon
PELs	permissible exposure limits
PIC	products of incomplete combustion
PM-10	particulates of a diameter of 10 microns or less
ppb	parts per billion
ppm	parts per million
ppt	parts per trillion
PSD	prevention of significant deterioration
SARA	Superfund Amendments and Reauthorization Act of 1986
SETRPC	South East Texas Regional Planning Commission
STAPPA	State and Territorial Air Pollution Program Administrators
TACB	Texas Air Control Board
TDH	Texas Department of Health
TLVs	threshold limit values
TRIS	Toxic Release Inventory System
TWC	Texas Water Commission
UKMO	United Kingdom Meteorological Office
UNEP	United Nations Environment Programme
VMT	vehicle miles travelled
VOCs	volatile organic compounds
WMO	World Meteorological Organization

* This list includes several acronyms that are unused in the report but likely to arise in following state-government, air quality, or greenhouse issues.

INTRODUCTION

BACKGROUND

The Joint Select Committee on Toxic Air Emissions and the Greenhouse Effect was created in September 1989 by joint proclamation of Lieutenant Governor William P. Hobby and Speaker Gibson D. Lewis, exercising authority granted by House Concurrent Resolution 142, 71st Legislature, Regular Session.

Senator H. Tati Santiesteban (D-El Paso) and Representative Chris Harris (R-Arlington) served as cochairs of the 10-member committee. Other legislators included Representative Robert Eckels (R-Houston), Senator Gene Green (D-Houston), Senator Don Henderson (R-Houston), Representative Nick Perez (D-El Paso), Representative Mark Stiles (D-Beaumont), and Senator Carlos Truan (D-Corpus Christi). Appointed as citizen members were Mr. Charles H. "Chuck" Rivers (Pasadena), a member of the Texas Air Control Board, and Dr. Ken Kramer (Austin), director of the Lone Star Chapter, Sierra Club.

The proclamation, incorporated as Appendix A to this report, assigned the committee two topics. It directed the committee to study the extent and nature of air toxics in Texas, their impact on the state, the regulatory means by which they are controlled, and measures by which to reduce their emission. One item from among the several in the committee's charge refers to the greenhouse effect and global warming, a topic somewhat separate from that of air toxics. Given this relative emphasis, the committee in its deliberations placed primary weight on the issue of air toxics and secondary weight on that concerning the greenhouse effect.

The proclamation makes reference to federal Clean Air Act amendments that were pending throughout the committee's deliberations. Congress ultimately enacted those amendments, which were signed by President Bush in November 1990 as the committee was nearing completion of its assignment.

The joint select committee held six public hearings in Austin, Houston, Arlington, El Paso, Houston again, and Beaumont, followed by two work sessions to consider committee recommendations, both in Austin. (See Figure 1 on page 2.) The first four hearings involved a mixture of specially invited and open public testimony. The next two, limited mainly to public testimony, were scheduled in the evening to better accommodate the local citizenry. The vast majority of witness presentations

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FIGURE 1. SUMMARY OF COMMITTEE MEETINGS

Site	Date	Type of Meeting	Major Focus	Number of Witnesses
Austin	November 29, 1989	Hearing	Organizational matters	7
Houston	January 11, 1990	Hearing	Industrial emissions	31
Arlington	May 17, 1990	Hearing	Vehicular emissions	14
El Paso	June 28, 1990	Hearing	Greenhouse effect	8
Houston	August 1, 1990	Hearing	Evening public testimony	24
Beaumont	September 18, 1990	Hearing	Evening public testimony	28
Austin	October 17, 1990	Work session	Consideration of recommendations	0
Austin	November 2, 1990	Work session	Consideration of recommendations	0

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centered on air toxics. The El Paso hearing was reserved primarily for testimony on global warming, a topic whose international dimensions fit the nature of other international air pollution issues affecting that city and neighboring Juarez.

Public hearing testimony was supplemented by committee staff research and the accumulation of published source material. For air toxics, this literature focused on emission statistics, vehicular pollution, health impact studies, Texas' air quality regulatory program, and the progress of the pending federal legislation. Greenhouse literature focused on scientific studies and debate, projected environmental impacts, and political reaction, including initiatives taken or considered at the state, national, and international levels. The staff attended seminars on the subject in Austin and San Diego, California.*1

DISCUSSION

Scope of the Study

Air pollutants consist of gaseous and other substances that are added to the natural atmosphere in sufficient quantities to produce environmentally harmful concentrations of those substances. They can be divided into four main types: criteria pollutants and ozone precursors, air toxics, ozone-depleting substances, and greenhouse gases. Figure 2 on page 4 shows this breakdown in more detail.

The proclamation creating the committee directed members to study two of the four types. The first half of this report deals with air toxics. The second half concerns greenhouse gases. In certain ways, features relating to those two pollutant types overlap with features relating to the other two types. This introduction includes an overview of all four types and a discussion of how they overlap in some ways but are differentiated in others.

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FIGURE 2. TYPES OF AIR POLLUTANTS

Criteria Pollutants/ Ozone* Precursors	Sulfur dioxide, nitrogen dioxide, carbon monoxide, lead, ozone*, and particulates (criteria pollutants); nitrogen oxides and hydrocarbons including VOCs (ozone* precursors)
Air Toxics	
NESHAP Pollutants	Asbestos, beryllium, arsenic, mercury, benzene, vinyl chloride, radionuclides, and coke oven emissions
OSHA Workplace Pollutants	List of approximately 600 toxics
State-Regulated Pollutants	700+ toxics regulated by the 50 states
TRIS Toxics	300+ toxics inventoried annually under SARA Title III regulations
Clean Air Act Toxics (Hazardous Air Pollutants)	189 toxics from the new federal Clean Air Act amendments, which incorporate and supersede the NESHAP pollutants
Ozone-Depleting** Substances	CFCs, halons, methyl chloroform, and carbon tetrachloride
Greenhouse Gases	Carbon dioxide, methane, CFCs, nitrous dioxide, and ozone*

* Refers to the tropospheric pollutant ozone that forms smog.
** Refers to the stratospheric ozone layer that protects against high levels of ultraviolet radiation.

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Types of Air Pollutants

o Criteria Pollutants and Ozone Precursors

"Criteria pollutants" consist of sulfur dioxide, nitrogen dioxide, carbon monoxide, lead, ozone, and particulates, federal controls for which date back approximately 20 years.*2 The six are emitted or occur in substantial quantities and create pollution problems across broad regions of the United States.*3 For them, regulations of the U.S. Environmental Protection Agency (EPA) set air quality criteria--maximum concentration levels--that apply nationwide as targets for the attainment or preservation of clean air.

Criteria pollutants affect both human health and the environment. Particulates, for example, encompass a variety of suspended solids that in everyday language might be referred to as soot, smoke, or dust. National standards apply to those of a diameter of 10 microns or less (PM-10), which can circumvent bodily defenses due to their small size (over 25,000 microns to the inch) and lodge deep in the lungs. Large particulates have non-health impacts such as reduction of visibility.

Ozone, a contributor to the smog that forms in cities such as Los Angeles and Houston, is different in one respect from the other five criteria pollutants. The quantity of ozone present in the air does not result from an equal quantity of emissions. Rather, most ozone results from the emission of certain hydrocarbons, known as volatile organic compounds (VOCs), which react with nitrogen oxides and sunlight to form ozone as a by-product. VOCs and nitrogen oxides are referred to as "precursors" of the ozone because the two of them lead to the third.*4

o Air Toxics

"Air toxics" is a somewhat loose description for a broad group of non-criteria pollutants that pose special toxicity problems. Congress first dealt with them in the 1970 federal Clean Air Act, which provided for a program of National Emission Standards for Hazardous Air Pollutants (NESHAP) to be implemented by the EPA. Owing to sparse medical data, the EPA has experienced numerous legal challenges in naming NESHAP pollutants and adopting appropriate regulatory measures.*5 Twenty years later, the list

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stands at eight: asbestos, beryllium, arsenic, mercury, benzene, vinyl chloride, radionuclides, and coke oven emissions.*6 In contrast, the 50 states collectively regulate over 700 air toxics.*7

The state lists correspond to some extent with another set of toxics, composed of workplace chemicals regulated by the U.S. Occupational Safety and Health Administration (OSHA). The OSHA list, numbering approximately 600,*8 affects pollutants in the workplace, including indoor air. Many of these same chemicals are similarly of concern should they concentrate in the outdoor air that is the province of state air quality programs. Hence the OSHA chemicals have served as a master list for regulators at the state level who want to expand beyond the NESHAP menu offered by the EPA.

The joint select committee's deliberations have focused primarily on two final sets of air toxics derived respectively from the Superfund Amendments and Reauthorization Act of 1986 (SARA) and the new federal Clean Air Act amendments enacted in 1990. One of SARA's aims was to designate a common set of toxics incorporating emissions into the air, effluent discharges into the water, and solid and hazardous waste disposal into the ground. Title III of SARA established the Toxics Release Inventory System (TRIS), by which industrial releases of these substances are inventoried annually. The initial TRIS list adopted by the EPA contained 329 toxics, with provision for periodic additions or deletions. SARA does not regulate TRIS emissions, but only counts them and only when emitted by manufacturers of a certain size. The TRIS data can identify potential problem spots. Texas was the national leader in TRIS emissions of air toxics the first inventory year (1987),*9 and it was this fact that served as impetus for the creation of the joint select committee.

The new federal Clean Air Act amendments provide for a list of 189 air toxics or "hazardous air pollutants." This list incorporates and supersedes the NESHAP list, and emissions of the 189--unlike the case with the TRIS toxics--become subject to regulation. Appendices B and C identify the TRIS and Clean Air Act toxics, respectively.

o Ozone-Depleting Substances

A third category of air pollutants consists of ozone-depleting substances. A distinction must be drawn here between tropospheric ("bad") ozone and stratospheric ("good") ozone. Tropospheric ozone refers to the ozone that contributes to smog near the earth's surface, where people breathe it. This ozone

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is the sum of natural near-surface ozone and pollutant ozone. Stratospheric ozone, in contrast, refers to a natural layer high in the atmosphere, approximately 13-35 miles above the earth's surface,*10 which absorbs much of the sun's ultraviolet radiation, preventing damage to the life below. The gases that deplete the stratospheric ozone layer include chlorofluorocarbons (CFCs), halons, methyl chloroform, and carbon tetrachloride. CFCs floating upward to this ozone layer are blamed for the seasonal "ozone hole" above Antarctica first publicized in 1985.

o Greenhouse Gases

The fourth category of contaminants consists of greenhouse gases. The major ones include carbon dioxide, methane, CFCs (again), nitrous oxide (better known as laughing gas),*11 and ground-level ozone (again). All of these occur naturally, except for CFCs, which are manufactured by chemical industries. The natural greenhouse gases are beneficial because they act, together with clouds, as an insulating blanket to keep the earth warmer than it otherwise would be. Added levels of greenhouse gases trap extra heat, theoretically leading to "global warming" unless the atmosphere can somehow dissipate the surplus heat into space. The potential problem with the higher levels of greenhouse gases concerns the negative spinoff effects that may result should global warming occur. The greenhouse effect escalated as an issue in 1988 when scientist James Hansen of the National Aeronautics and Space Administration testified before a congressional committee that the hot summer drought of that year signaled the onset of global warming.*12 Most climate experts have disputed Hansen's certainty as to the signal, yet continue to anticipate such warming. Professional and popular discussion of the subject served indirectly as the impetus for the committee's second charge.

Overlap and Differentiation

Air toxics are connected to criteria pollutant particulates and ozone-precursor VOCs. Many of the heavy metals and other compounds that compose particulates are themselves toxic, as is the case with many of the VOCs. Of the toxics on the TRIS list, for example, 86 percent are VOCs.

Greenhouse gases are connected to ozone-depleting substances by virtue of the CFCs that are common to both lists. CFCs constitute a double threat, and their manufacture is being eliminated by an international treaty, the Montreal Protocol, which the United States and other countries renegotiated and updated in London in June 1990. The treaty affects CFCs and three other

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currently used ozone-depleting substances: halons, carbon tetrachloride, and methyl chloroform. Their manufacture is to be phased out by January 2000, or January 2005 in the case of methyl chloroform.

Air toxics and criteria pollutants are different from greenhouse gases and ozone-depleting substances by the nature of the threat they pose. Health effects attributable to the first two pollutant types result from breathing them. In contrast, at least 69 percent of the global warming threat (Figure 11 in Part Two) and virtually all of the ozone layer depletion threat come from gases that are perfectly safe to breathe at the concentrations that are of environmental concern. Inhaling CFCs, nitrous oxide, or carbon dioxide from the outside air produces no ill health effects whatsoever.*13 This is why, until global warming and ozone layer depletion became issues, atmospheric accumulation of the three was not seen as reason for alarm.

Air toxics, criteria pollutants, and greenhouse gases are connected by the confluence of their emission from the use of carbon-based fuels (oil, natural gas, coal, and wood). The first three of these fuels, the fossil fuels, account for 98.3 percent of the energy consumed in Texas (Figure 10 in Part Two). Pollution of all three types is inevitable, given fuel impurities and that greenhouse carbon dioxide results even when perfectly clean fuel is burned with 100 percent efficiency. Energy conservation contributes to reduction of both air toxics and greenhouse gases, the subject of this report, and to reduction of criteria pollutants.

Regulation

Criteria pollutants and air toxics are regulated by the EPA and the Texas Air Control Board (TACB). The basic division of responsibility is that the EPA sets nationally applicable standards and the TACB implements and enforces them. Air toxics regulation is a newer program than the one for criteria pollutants. Prior regulation of criteria pollutants has reduced emissions of air toxics, however, because of the connection involving particulates and VOCs.

Ozone-depleting substances come under EPA regulation through the 1990 Clean Air Act amendments, provisions of which duplicate many of the provisions of the renegotiated Montreal Protocol. No treaty, however, has been negotiated yet on global warming, nor are the non-CFC greenhouse gases subject currently in Texas to federal or state laws or regulations.

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ENDNOTES

1 The Austin seminar was hosted by the Center for Growth Studies of the Houston Advanced Research Center, a private consortium in The Woodlands. The San Diego seminar was hosted by the National Conference of State Legislatures.

2 See 40 CFR Part 50.

3 U.S. Senate Committee on Environment and Public Works, CLEAN AIR ACT AMENDMENTS OF 1989, committee report to accompany S. 1630, 101st Congress, 1st Session, December 20, 1989 (Washington: U.S. Government Printing Office, 1989), p. 127.

4 Clarification: Nitrogen dioxide, referred to by chemical formula as NO2, is a criteria pollutant. It is one of many nitrogen oxides which go by the general formula NOx. Nitrogen oxides as a group are ozone precursors.

5 William T. Harnett, Austin hearing, November 29, 1989.

6 See 40 CFR Part 61.

7 U.S. Senate Committee on Environment and Public Works, p. 128, 131.

8 54 Fed. Reg. 2334 (January 19, 1989); 29 CFR Sec. 1910.1000 et seq.

9 G. Robert Hillman, "EPA Says Texas' Air Is Most Toxic in U.S.," Dallas Morning News, March 23, 1989.

10 Sharon L. Roan, OZONE CRISIS: THE 15-YEAR EVOLUTION OF A SUDDEN GLOBAL EMERGENCY (New York: John Wiley & Sons, 1989), p. 7.

11 Nitrous oxide (N2O), is to be distinguished from nitrogen dioxide (NO2), the criteria pollutant, and the family of nitrogen oxides (NOx), the ozone precursors.

12 Philip Shabecoff, "Global Warming Has Begun, Expert Tells Senate," New York Times, June 24, 1988.

13 On the other hand, ill health effects can occur if one obtains these gases in concentrated quantities and inhales them in the manner of drug abuse.

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PART ONE: AIR TOXICS

BACKGROUND

Amounts of Air Toxics

Passage of the Superfund amendments and the creation of the Toxic Release Inventory System (TRIS) enabled the first rough approximation of the volume of air toxics emissions in the United States. Since the program is new and there is a time lag between emitting, counting, and reporting, only two years' worth of TRIS data have become available. The amounts of Texas' industrial air toxics emissions for 1987 and 1988, as inventoried by TRIS, are reflected in Figure 3 on page 12.

Companies must report to the EPA if they (1) are manufacturers within defined categories,*1 (2) employ 10 or more people, and (3) manufacture, process, or handle TRIS toxics in specified threshold amounts. The manufacturing and processing threshold decreased from 75,000 pounds in 1987 to 50,000 pounds in 1988, so that the number of companies reporting rose, as shown in Figure 3. Simultaneously, reported emissions fell from one year to the next, even after a downward adjustment of the 1987 total to subtract four chemicals that were counted that year but not in 1988.*2

This decrease may signify real emission reductions or refinements in calculation, or perhaps some combination of the two. Economic trends in the Texas chemical industry do not appear to have been a factor in the decrease, in view of a 20.9 percent increase in the industry's sales from the first inventory year to the second.*3

Texas ranked first among the 50 states in TRIS emissions in both years, a fact that drew adverse headlines.*4 Testimony before the committee attributed the ranking to the high concentration of petrochemical production (57 percent of the nation's capacity) along the Texas Gulf Coast.*5 At the request of the committee, the Texas Air Control Board (TACB) made a comparison of production versus pollution. Analyzing 18 of the major TRIS chemicals for which production information was available (see Appendix A for list), agency staff found Texas' share of production capacity for the chemicals to be two to eight times higher than its share of TRIS emissions for the same 18 chemicals.*6 TRIS emission totals and comparative production statistics provide a basis from which to argue either that Texas is "dirty" in the absolute sense or "clean" in the relative sense.

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FIGURE 3. TEXAS EMISSIONS OF TRIS AIR TOXICS, 1987 AND 1988

	1987	1988
Reporting Entities		
Number of Companies	823	943
Emissions (Millions of Pounds)		
Gross Total (Inventoried Amount)	238.8	169.9
Minus 1987 Toxics Removed from TRIS in 1988	-14.8	-0.0
Net Total (Adjusted Amount)	224.0	169.9

Source: Texas Air Control Board.

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Emission Sources

For 1987, the TACB analyzed the TRIS data and isolated industrial emissions of the Clean Air Act toxics.*7 Toxics emissions from this smaller list totalled 111 million pounds in 1987 and 110 million pounds in 1988.*8

Industrial emissions are only a small portion of total emissions. Using other data, the TACB has estimated emissions of Clean Air Act toxics from motor vehicles, nonmanufacturing commercial sources, and consumers. As indicated in Figure 4 on page 14, industrial toxics account for only 18 percent of the total statewide.

Mobile sources--automobiles, motorcycles, pickups, vans, trucks, and buses--are responsible for another 24 percent. The remainder is attributable to "area" sources, so named because they originate from a wide range of locations. Important area sources include dry cleaners, printers, machine shops, wastewater treatment plants, gasoline service stations, automobile painting and repair services, miscellaneous small manufacturers, and consumers who use solvents, cleaning fluids, disinfectants, paints and varnishes, copier supplies, lighter fluids and charcoal starters, aerosol sprays,*9 lawn mowers, and assorted other items.

The statewide percentage breakdown among industry, mobile, and area sources does not always hold at the local level. The major exception to that breakdown, as shown in Figure 4, is Beaumont where industrial emissions comprise the major portion (73 percent) of the total.

Texas' figure for mobile sources (24 percent) understates the contribution of motor vehicles somewhat because of the accounting employed. Service stations and body shops, for example, are treated as area sources, while emissions resulting from the manufacture of gasoline, tires, and other automotive products are attributed to industry. If these and other indirect contributions are added, the share of Texas' emissions relating to the use of motor vehicles climbs to 45 percent.*10

Within the industrial, mobile, and area categories, emissions can be classified in either of two ways. One way concerns how the emissions escape. "Point" emissions include those from smokestacks, vents, and tailpipes, instances in which the exit route is readily identifiable and even predesigned. Point emissions from industry frequently are referred to as "stack"

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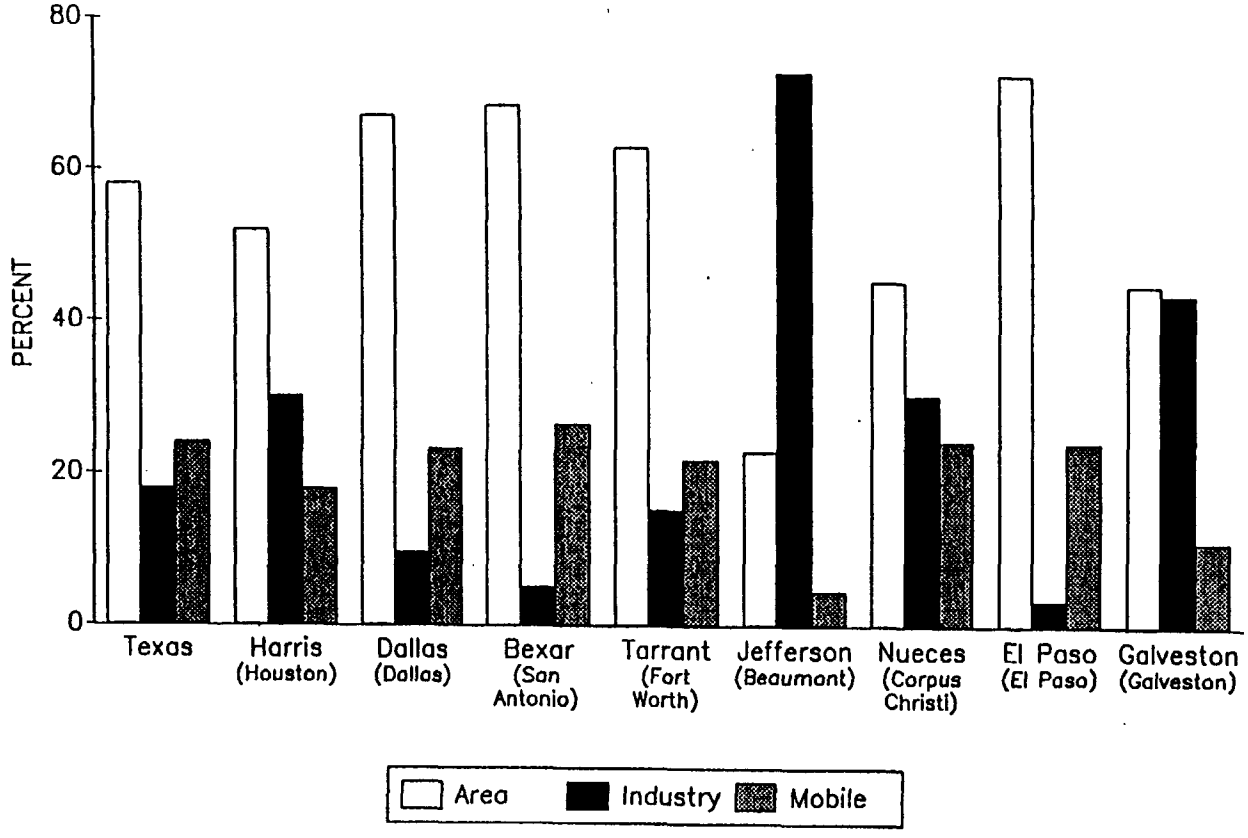
FIGURE 4. SOURCES OF AIR TOXICS, STATEWIDE AND IN MAJOR URBAN AREAS (1987)



Source: Texas Air Control Board.

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emissions and those from motor vehicles as "exhaust" emissions. All others can be lumped together as "nonpoint" emissions.

Nonpoint "fugitive" emissions include leaks from pumps, valves, seals, flanges, pressure relief devices, and storage tanks; evaporations from nonairtight containers of many types; and windblown particulates (dust) from roads and stockpiles (for example, a coal mound next to an electric power plant).*11 More frequently, the term "fugitive" is reserved for nonpoint emissions from industry, while the term "evaporative" usually (but not always) connotes nonpoint vehicular emissions.

Evaporative emissions include those that occur while pumping fuel into a vehicle at the service station as well as those that emanate from the fuel system after the tank is filled.*12 Nonvehicular evaporative emissions include many area source emissions, such as those from a newly varnished bookcase.

A second way by which emissions are classified is based on whether the emissions are considered normal or extraordinary. Stack and fugitive emissions from industry, though targets of reduction efforts, are expected to occur, allowed by regulation in specified amounts, and referred to as "routine" emissions. In contrast, "upset" emissions are nonroutine. They occur from operational mishaps of varying severity as well as larger releases from catastrophic explosions.

Ambient Levels, Exposure, and Health Effects

Emissions of all types put contaminants into the air, where they are influenced by wind and weather patterns, by the topography of the surrounding landscape, by chemical interactions with one another, and by various other factors. The concentration of a contaminant at a particular place and time is referred to as its "ambient" level. Ambient levels are measured in parts per million (ppm), parts per billion (ppb), parts per trillion (ppt), or micrograms per cubic meter.

Large point sources such as industry smokestacks emit large pollutant volumes, which can be diluted only so much before they reach surrounding neighborhoods. Hence, there is a public health interest in controlling emission amounts at the source. Via such controls, the ambient levels at the source's outer boundary ("fenceline") theoretically can be held low; the ambient levels beyond, lower still. These levels, however, are increased by other industry, mobile, or area emission sources in the vicinity.

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Health effects depend on the presence at a location of an unhealthy pollutant level, the presence of someone to breathe it, and a duration of breathing time sufficient to cause or threaten a negative physical reaction. The combination of the three is termed "exposure," and it is exposure, not emission amounts, that ultimately is important.*13 Industry representatives might concede that the total toxics emitted in Texas are high, but argue that the situation is not necessarily bad as long as the toxics are sufficiently diluted so that the public's exposure is low. Conversely, environmentalists might concede that the total toxics emitted as gasoline fuel pump vapors are low, but argue that exposure might be high for the motorist or service station attendant who is on the scene and breathing the vapors.

Both criteria pollutants and air toxics can produce ill health effects. The distinction between them is not always clear, but relates to the nature and degree of the health impact. Another difference is that the criteria pollutants were chosen in part for their broader environmental effects. An example is sulfur dioxide, which forms acid rain with consequent effects on lakes and forests.

With the passage of the new federal Clean Air Act amendments, Congress listed 189 air toxics and gave them health-related statutory definitions. According to the new amendments, air toxics ("hazardous air pollutants") include those that are known to cause, or can reasonably be anticipated to cause, any of the following human health effects:

(1) cancer or developmental effects; or

(2) serious or irreversible:

(A) reproductive dysfunctions;

(B) neurological disorders;

(C) heritable gene mutations;

(D) other chronic health effects; or

(E) adverse acute health effects.*14

This report discusses in detail the subject of health impacts in a subsequent subsection on health-related issues and recommendations.

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Regulation and Monitoring

For criteria pollutants, the EPA has established national ambient air quality standards (NAAQS) that set specified maximum ambient levels. Locales that exceed the standards attempt to lower pollutant concentrations to achieve them, while locales already below the standards attempt to hold concentrations down. Prevention of significant deterioration (PSD) limitations, which are even stricter, protect relatively pristine areas from approaching too closely the NAAQS and becoming, though acceptable, "just average."*15 The NAAQS and PSD limitations are supported by control measures to reduce industry (stack/fugitive) and mobile-source (exhaust/evaporative) emissions of the criteria pollutants and ozone precursors. Geographic areas where concentrations exceed the NAAQS are known as "nonattainment" areas, a designation based on levels of criteria pollutants and not on levels of air toxics. Figure 5 on page 18 identifies nonattainment areas in Texas by criteria pollutant.

The eight National Emission Standards for Hazardous Air Pollutants (NESHAP) are handled somewhat differently. Regulations set emission restrictions, sometimes specific to one type of source, but do not establish broadly applicable ambient levels as targets. For example, NESHAP standards enforced by the TACB limit how much vinyl chloride a stack gas stream may contain. For asbestos, there are no numerical limitations whatsoever, just specified purification directives.

Control of pollutants other than the six criteria and eight NESHAP pollutants is accomplished through case-by-case reviews of predicted or actual ambient impacts. In this process, the TACB applies special health standards rather than ambient air standards to determine when additional control is needed. During the permitting process for industry point sources, emission controls are required when necessary, as a condition of permit approval.*16

Since the EPA has no ambient air standards for such toxics, the TACB, when evaluating potential health impacts, borrows from other reference works. Federal Occupational Safety and Health Administration (OSHA) standards, which set "permissible exposure limits" (PELs) for the 600 toxics it regulates in the workplace, are one reference. Many of these are derived from another source, the "threshold limit values" (TLVs) published by the American Conference of Governmental Industrial Hygienists.*17 The PELs and TLVs are geared toward the industrial setting rather than the air quality of the larger community outside the industry's fenceline. The TACB, when issuing permits, provides for an extra margin of

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FIGURE 5. NATIONAL AMBIENT AIR QUALITY STANDARDS AND TEXAS NONATTAINMENT AREAS

(standards given in micrograms per cubic meter)

Criteria Pollutant	Averaging Period	Standards: Primary	Standards: Secondary	Texas Nonattainment Areas
Ozone	1 hour /c/	235.0	235.0	Houston-Galveston Dallas-Fort Worth Beaumont-Port Arthur El Paso
Carbon Monoxide	8 hours/b/	10,000.0		El Paso
	1 hour /b/	40,000.0		
Sulfur Dioxide	annual/a/	80.0		
	24 hours/b/	365.0		
	3 hours/b/		1,300.0	
Nitrogen Dioxide	annual/a/	100.0	100.0	
Particulates (diameter of 10 microns or less)	annual/a/	50.0	50.0	El Paso
	24 hours/c/	150.0	150.0	
Lead	quarter/a/	1.5	1.5	

/a/ Not to be exceeded.
/b/ Not to be exceeded more than once per calendar year.
/c/ Not to be exceeded on more than 3 days over 3 years.

Sources: 40 CFR Part 50; Texas Air Control Board, AIR QUALITY IN TEXAS (Austin: Texas Air Control Board, 1989).

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safety by comparing projected ambient levels and community exposure against more stringent values equal to only one-hundredth or one-thousandth the PELs or TLVs.*18 These modified levels, which serve a first-warning function, are referred to as "health effects screening levels" by the TACB.

The issuing of permits involves new or expanded facilities that will add more pollutants to the air. In evaluating a permit application, the TACB performs mathematical modeling to estimate the ambient levels and exposures that are likely to result when the point emissions from the proposed facility or expansion are added to any pollution already present. In the case of criteria pollutants, modeling results are compared to the national ambient air quality standards. For toxics, monitoring results are compared to the TACB's health effects screening levels in what the TACB calls its "health effects review." One result of TACB modeling has been the agency's development and ongoing update of a Point Source Data Base that inventories air toxics emissions in more detail than the federal Toxic Release Inventory System (TRIS).*19

Actual monitoring or sampling of ambient air quality can occur either (1) before a facility is built or expansion occurs, to evaluate preexisting pollutant levels, or (2) after construction, to test the accuracy of the TACB's modeling estimates. The TACB conducts regular monitoring on an ongoing basis at stations throughout the state. These efforts historically have focused more on criteria pollutants than on air toxics.*20 Since 1973, the TACB has screened samples from 30 particulate monitoring sites for concentrations of 31 potential toxic solids.*21 However, the larger body of TRIS and Clean Air Act toxics, including individual gaseous volatile organic compounds (VOCs) and hydrocarbons, has received little scrutiny.*22 State regulators consider air toxics monitoring a high priority, but resources for that purpose, in their view, have been minimal.*23

One ambitious TACB effort*24 that drew some criticism was the Gulf Coast Community Exposure Study sponsored by the TACB in the Houston-Galveston-Beaumont area from October 1985 to September 1986. The study measured ambient levels of 10 toxics over a period of one year. One toxic, benzene, was found to exceed TACB health effects screening levels.*25 Critics of the report noted the small number of substances on the list, the study's sole focus on carcinogens, and other issues.*26

To supplement the state monitoring efforts, two local consortia have gathered monitoring data in the Houston and Beaumont-Port Arthur areas. The Houston Regional Monitoring

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Corporation (HRMC), a group of more than 30 companies from the area, regularly samples for 150 volatiles (organic and inorganic) from a network of six sites. The main excess concentrations that the group reports concern benzene, as was the case with the Gulf Coast Community Exposure Study.*27 In Beaumont-Port Arthur, a 16-month effort by 27 companies includes collaborative participation by local governments and the public. The Golden Triangle's regional council of government, the South East Texas Regional Planning Commission (SETRPC), has formed an Air Quality Advisory Committee that supervises monitoring of 54 chemicals at four sites, comparing against guideline levels set at 1/420th the applicable threshold limit values (TLVs). Results are reviewed monthly with the public and media. Episodes of butadiene and methanol excesses have been observed, but generally toxics have been below the SETRPC guideline levels. At least once, this system has detected higher levels of criteria-pollutant ozone than the TACB monitors have detected.*28

An EPA urban air toxics program has two Texas sampling sites that target formaldehyde, various organics, and heavy metals. One is in Houston, and the other recently was moved from Dallas to Port Neches. In addition, the TACB can deploy a mobile laboratory or small monitoring devices to evaluate specific point sources that have been the subject of public complaints.

Health professionals support substantially increased monitoring of air toxics. In this view, the Gulf Coast study was a start, but could have benefitted from improved analytical techniques and expansion of the compounds studied.*29 As for the regionally sponsored efforts in Houston and Beaumont, another view held that state government needs its own full-fledged monitoring capabilities, independent of reliance on private-sector or local-government initiatives.*30

ISSUES AND RECOMMENDATIONS

Regulatory and Jurisdictional Issues and Recommendations

The TACB regulatory scheme for toxics has relied largely on permit application review of all new or modified industrial facilities. However, not all industrial facilities are required to obtain air quality permits. Some were "grandfathered" by prior legislation but will be required to obtain an operating permit under the federal Clean Air Act amendments. Grandfathered facilities in major urban areas have been regulated through process controls for criteria pollutant emissions, such as volatile organic compounds and particulates.*31 Site-specific control plans are

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also used when potential toxic "hot spots" are detected.

The TACB's statutory authority extends only to outdoor ambient pollution and not to air quality indoors.*32 As noted previously, though, OSHA regulates workplace air quality federally. Also beyond the TACB's jurisdiction, as interpreted in TACB permit hearings, are pollutants such as chlorofluorocarbons (CFCs) whose environmental and health effects are unrelated to their inhalation.*33 The committee heard little testimony on nonworkplace, indoor air quality and did not delve into the issue. CFCs, meanwhile, are subject to new federal and international controls, as discussed in Part Two of this report.

For hazardous waste incinerators, the Texas Water Commission (TWC) exercises permitting authority consistent with its responsibility for hazardous waste. Under "one-stop" permitting legislation enacted in 1985, the TACB reviews these permit applications for air quality concerns on behalf of the TWC, which then grants or denies the permit.*34 The previous system required permits from both agencies. A more recent law limited TACB review of other proposed hazardous waste permits to newer applications beyond a 1987 cutoff date.*35 The committee reviewed the two agencies' respective jurisdictions in this area. One finding was that the great majority of issues associated with hazardous waste incinerator permit applications relate to air quality, and only a few to on-site storage of the waste or other matters. A second finding was that the TACB is not receiving hazardous waste fee revenue associated with those permits. The committee's recommendation on hazardous waste facilities is as follows:

RECOMMENDATION 1. WITH REGARD TO HAZARDOUS WASTE AND HAZARDOUS WASTE INCINERATORS:

A. THE TEXAS AIR CONTROL BOARD (TACB) SHOULD ESTABLISH AIR QUALITY REQUIREMENTS RELATING TO ALL HAZARDOUS WASTE FACILITIES.

B. THE 72ND LEGISLATURE SHOULD DIRECT THAT ALL HAZARDOUS WASTE FEES, INCLUDING PERMIT APPLICATION FEES, BE USED TO FUND THE HAZARDOUS WASTE REGULATORY RESPONSIBILITIES OF THE TEXAS WATER COMMISSION (TWC) AND TACB. THE LEGISLATURE SHOULD ALSO ENACT NECESSARY STATUTORY CHANGES TO ENABLE THE TACB TO OBTAIN APPROPRIATIONS FOR ITS HAZARDOUS WASTE REGULATORY RESPONSIBILITIES FROM FUND 549. THE LEGISLATURE SHOULD PROVIDE SUFFICIENT RESOURCES TO THE TACB FOR THE AIR QUALITY REVIEW OF HAZARDOUS WASTE PERMIT APPLICATIONS, WHICH WILL EXPEDITE THE JOINT PERMITTING OF HAZARDOUS WASTE FACILITIES.

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C. THE 72ND LEGISLATURE SHOULD REQUIRE THE TWC TO CONSIDER THE ISSUE OF NEED IN THE PERMITTING OF NEW COMMERCIAL HAZARDOUS WASTE MANAGEMENT FACILITIES.

D. THE 72ND LEGISLATURE SHOULD ESTABLISH FOR HAZARDOUS WASTE FACILITIES, INCLUDING INCINERATORS, STATUTORY SITING CRITERIA PERTAINING TO ADJACENT LAND USE. THESE CRITERIA SHOULD BE BASED ON POTENTIAL RISKS TO PUBLIC HEALTH OR THE ENVIRONMENT.

In the course of testimony on hazardous waste incinerator permitting, the committee heard proposals for a "revolving door" law to place restrictions on the employment of former environmental regulatory officials by the regulated industries.*36 Related issues of ethics arose during 1990 at both the TACB and the Texas Water Commission.*37 Notwithstanding the merits of the proposal, the committee majority was reluctant to restrict the employment prerogatives of former agency officials who wished to market their expertise. Two members, Senator Truan and Dr. Kramer, dissented and agreed to the following minority recommendation:

MINORITY RECOMMENDATION 1. THE 72ND LEGISLATURE SHOULD ENACT A REVOLVING DOOR LAW PLACING RESTRICTIONS ON THE EMPLOYMENT BY THE REGULATED COMMUNITY OF HIGH-LEVEL OFFICIALS OF ENVIRONMENTAL REGULATORY AGENCIES, SUCH RESTRICTIONS TO APPLY ON CESSATION OF THEIR AGENCY EMPLOYMENTS.

A second subject that led to a minority recommendation dealt with TACB consideration of a permit applicant's history of regulatory compliance or noncompliance. The Texas Clean Air Act has no provision for compliance histories, except in the case of permit renewals. Disagreement among committee members dealt mainly with compliance information from facilities located out-of-state. Senator Truan and Dr. Kramer offered the following minority recommendation:

MINORITY RECOMMENDATION 2. THE 72ND LEGISLATURE SHOULD REQUIRE THE TEXAS AIR CONTROL BOARD (TACB) TO INCLUDE IN ITS PERMIT APPLICATION REVIEW THE CONSIDERATION OF EVIDENCE AS TO THE COMPLIANCE HISTORY OF THE APPLICANT, AND TO ESTABLISH UNIFORM TACB GUIDELINES GOVERNING THE CONSIDERATION OF OUT-OF-STATE COMPLIANCE INFORMATION.

Another suggestion was to reinstitute, as part of the permitting process, a consideration of land use surrounding proposed facility sites.*38 The Texas Clean Air Act contained vague language on this subject at one time, but it was deleted in 1979.*39 Related issues concern the differential treatment of

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zoned versus unzoned or unincorporated areas. The committee adopted the following:

RECOMMENDATION 2. THE 72ND LEGISLATURE SHOULD AMEND THE TEXAS CLEAN AIR ACT TO REINSTITUTE A CONSIDERATION OF LAND USE ISSUES IN PERMIT HEARINGS BY CONSIDERING ZONING AND OTHER LOCAL PREFERENCE DETERMINATIONS IN EVALUATING A SITE.

Related to the issue of land use is that of point source saturation. Local residents, for instance, might not want a major air toxics emitter next to properties reserved as public park land. On the other hand, even on properties devoted to industrial uses, they might not want too many emitters, as the combined emissions of those sources might raise adjacent ambient and exposure levels to too high a level. For criteria pollutants, national ambient air quality standards and PSD (prevention of significant deterioration) limitations act as a check against such a combined buildup. The TACB has substantial data on these pollutants and can model the combined effects of multiple point sources adequately. For air toxics, however, the agency's Point Source Data Base is still assembling emissions inventories. While superior to the information available from TRIS, it is incomplete, handicapping the TACB in its calculation and mitigation of combined point source effects.*40

RECOMMENDATION 3. THE TEXAS AIR CONTROL BOARD, IN DEVELOPING ITS AIR TOXICS EMISSIONS INVENTORY, SHOULD INCORPORATE RESULTANT DATA IN ITS PERMIT MODELING FOR PROPOSED FACILITIES SO AS TO EVALUATE THE CUMULATIVE IMPACT OF OTHER EMISSION SOURCES IN THE SAME VICINITY.

Health Effects Issues and Recommendations

In Texas, studies of the health effects of air toxics have been limited almost entirely to cancer and have been influenced by a prevailing view among health professionals that the environmental contribution to cancer is relatively low.*41 Adherents to that view estimate environmental hazards broadly to account for about two percent of total cancer risk*42 and estimate the contribution from air toxics specifically to account for a fraction of one percent of such risk.*43 Separating the air toxics risk by source, estimates nationally are that 56 percent derives from mobile sources, 24 percent from area sources, and 20 percent from industry sources.*44 In general, mobile and area sources are responsible for the majority of the aggregate cancer risk among the public at large, while large industry point sources contribute to higher individual risk among those who live in close proximity to such

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sources.*45 The most important air toxics in terms of cancer are products of incomplete combustion (PIC), benzene, formaldehyde, 1,3-butadiene, and chromium.*46

Juxtaposed to this perception of low risk by the medical community is the fact that Harris County (Houston) has the nation's highest rate of lung cancer among women and the highest overall cancer rate among men.*47 Two studies in the mid-1970s and mid-1980s, respectively, suggested a correlation between Harris County cancer rates and industrial pollution,*48 leading to critiques and rebuttals of that assertion and consequent additional studies.*49 Establishing an industry air pollution link by statistical means is difficult because of residential relocations and the influence on cancer rates of age patterns, occupational exposure, home indoor use of consumer chemicals (area sources), traffic patterns (mobile sources), smoking, diet, and other factors.

The newer studies, including one of brain cancer incidence in selected Gulf Coast counties of Texas and Louisiana, have failed to demonstrate such a link between cancer rates and industrial pollution. Much of Houston's greater cancer rate appears to be found in bodily organs for which incidence frequently is connected to tobacco use.*50 Committee members, however, rejected an indictment of smoking given the absence of any data showing that Houstonians smoke more than people in the rest of the country.*51 Similarly, no statistics are available comparing smoking rates inside Harris County (for example, comparing census tracts near the industrialized Houston Ship Channel with residential tracts in the western suburbs).*52

Residential neighbors of industrial point sources in the Houston and Beaumont areas implicitly disputed prevailing professional views. The committee heard extensive anecdotal testimony about neighborhoods where disease rates and medical problems suggested to the witnesses something more than just the law of averages.*53 Two physicians joined in the concern. One, a thoracic surgeon, was disturbed by the number of lung cancer patients under his care who had never smoked nor been subject to occupational chemical exposure.*54 A resident with a lung impairment emphasized the greater impact of air pollution on the most physically vulnerable.*55

Residents of an east Harris County subdivision, Woodland Acres, attempted to bridge the gap between anecdotal and statistical evidence by itemizing for epidemiologists at the Texas Department of Health (TDH) a list of neighbors who had been

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diagnosed for cancer. The effort prompted an agency investigation of the data. The TDH found statistically significant incidences of pancreatic and lung cancers among Woodland Acres males and females, respectively. Because of the small sample, an incidence rate of at least 3.5 times the norm was required in order for that rate to be considered statistically significant. Incidences of other organ-specific cancers were in almost all cases above expected values, but were not statistically significant. The overall cancer rate was about 1.2 to 1.3 times that expected. The TDH ultimately emphasized smoking, dietary, occupational, and other risk factors as alternative explanations, apparently leaving residents still skeptical and dissatisfied.*56

Cancer is only one of the health effects cited in the definition of air toxics under the federal Clean Air Act amendments. For the larger universe of potential medical problems--birth defects, mutations, immune system damage, nervous disorders, blood diseases, and others--the medical literature on correlation to air toxics is less extensive.*57

Two related issues bear on questions concerning health effects. Although many toxics can degrade or be washed out of the atmosphere, some may accumulate. Still others undergo chemical transformation to new toxic compounds. Health researchers fear that in many cases the new chemicals, known as "transformation products," may be even more toxic than the originals.*58

A similar issue concerns "synergistic" effects. This term refers to the health effects of the many air toxics, acting in concert. While the individual concentrations of numerous air toxics may each be below the health effects screening levels, the sum of their impacts may be harmful. Scientists know comparatively little on this subject.*59

The committee heard minimal testimony from the medical community on noncancer or synergistic health effects, although its staff solicited and received a few papers from presenters at a Houston environmental health conference.*60 One health professional stated that it is difficult to come to any firm conclusion as to the health threat of air toxics.*61 Not even the occupational exposure levels used to evaluate that threat are accepted by all experts as fully valid.*62

The new federal legislation hurdles health-related controversies of the last two decades and establishes a statutory list of air toxics based on such medical evidence as is available. For these, Congress avoids ambient or exposure standards and

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focuses instead on technological controls, source by source, to reduce emissions in any way feasible. Simultaneously, the federal legislation supports continued medical research. Specifically, it authorizes the Mickey Leland Urban Air Toxics Research Center to be located in Texas and named for the late congressman.*63

The TACB in its budget request for the upcoming biennium proposes modest increases for health research, which will enable investigation of suspicious health maladies clustered in the same locale. The committee offers a related recommendation, given below.

RECOMMENDATION 4. THE 72ND LEGISLATURE SHOULD AMEND CHAPTER 503 OF THE HEALTH AND SAFETY CODE TO EXPAND THE MEMBERSHIP AND SCOPE OF THE TOXIC SUBSTANCES COORDINATING COUNCIL TO:

A. ESTABLISH COORDINATING MECHANISMS AMONG STATE AGENCIES, ACADEMIA, THE CITIZENRY, THE MEDICAL COMMUNITY, AND INDUSTRY TO DISCUSS AND PLAN RESEARCH ON AIR TOXICS.

B. DEVELOP AND FUND A PLAN FOR THE SURVEILLANCE OF RESIDENTIAL PATTERNS OF AIR TOXICS EXPOSURE AND CANCER.

One side issue raised in the course of health impacts testimony concerned deficiencies in the state's cancer registry, created in 1979.*64 Funding to administer the registry, and to reimburse hospitals and laboratories for reporting expenses, has been inadequate.*65 The committee supports upgrading the registry, and expanding it beyond cancer, as recommended below. Proposed funding increases presumably would come from general revenue, as the registry has larger purposes beyond the evaluation of air quality impacts.

RECOMMENDATION 5. THE 72ND LEGISLATURE SHOULD EXPAND STATE DISEASE REGISTRY EFFORTS TO:

A. STRENGTHEN AND ADEQUATELY FUND THE STATE'S CANCER REGISTRY TO PROVIDE FOR ROUTINE STATEWIDE REPORTING AND ASSIMILATION OF CANCER INCIDENCE DATA.

B. ESTABLISH A BROADER, WELL-FORMULATED DISEASE REGISTRY EXPANDING ON THE PURPOSE OF THE CANCER REGISTRY TO INCLUDE BIRTH DEFECTS AND OTHER ENVIRONMENTAL DISEASES POSSIBLY LINKED TO AIR TOXICS EXPOSURE.

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Industrial Source Issues and Recommendations

Of the 1988 TRIS releases reported by Texas Industries, 56.2 percent were stack emissions and 43.8 percent were fugitive emissions. This was a turnabout from 1987, when fugitive emissions exceeded stack emissions by 54.9 percent to 45.1 percent. The explanation of the percentage shift, as with the overall Texas TRIS decrease, is uncertain. Again, the numerical trend may reflect plant improvements, calculation refinements, or a combination of the two.*66

Industry officials were surprised by the volume of TRIS releases. Major chemical companies have announced and pursued plans to achieve reductions even while noting the comparative magnitude of air toxics from mobile and area sources. The morning after the committee's Beaumont hearing, newspapers reported a commitment by nine major companies to achieve reductions at 40 plants nationwide, including 10 in Texas.*67 The Chemical Manufacturers Association, which represents 172 member companies including almost all the giants in the industry, has announced a chemical release reduction policy that will set reduction priorities based on health and environmental impacts and formulate reduction initiatives with periodic progress reports to the public.*68 The committee endorses this concept and recommends formalizing and standardizing the process on a statutory basis.

RECOMMENDATION 6. THE TEXAS AIR CONTROL BOARD SHOULD ESTABLISH A COMPREHENSIVE POLLUTION PREVENTION AND REDUCTION PROGRAM REQUIRING AIR TOXICS REDUCTION GOALS AND PLANS FROM INDUSTRY, ALONG WITH ANNUAL REPORTS ON PROGRESS TOWARD THOSE GOALS. THIS PROGRAM SHOULD BE COORDINATED WITH THE WASTE REDUCTION PLANS TO BE REQUIRED BY THE TEXAS WATER COMMISSION.

Upset emissions are an important candidate for industry reduction efforts. Currently, the TACB requires that all upsets be reported, but as the committee found, the reports in many cases are missing such basic information as the type of chemical, duration of the upset, and rate of release throughout the episode.*69 The TACB has less than one full-time employee equivalent available to process the reports, and followup consequently has been limited to data entry and little else. At some point of frequency, witnesses contended, repeated upsets at the same plant for the same reasons can become standard operating procedure and a means of cheating on allowable permitted emissions.*70 The alternative is a stronger regulatory program with sufficient resources to analyze the reports and take action to eliminate preventable upsets. The TACB has sufficient statutory authority, without amendment of the Texas

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Clean Air Act, to address upsets. In its budget request, the agency proposes 15.5 full-time equivalent positions to address upsets.*71 Supporting an energetic stance on the matter, with attention to upsets often associated with plant shutdowns, the committee recommends the following:

RECOMMENDATION 7. THE TEXAS AIR CONTROL BOARD SHOULD ESTABLISH UPSET CONTROL REQUIREMENTS THAT PROVIDE FOR ADMINISTRATIVE PENALTIES, WHEN APPROPRIATE, AND FOR PRIOR NOTIFICATION BY THE COMPANY OF ANTICIPATED PLANT SHUTDOWNS.

The worst upsets are catastrophic chemical accidents. Two of these occurred during the legislative interim: the Phillips explosion in Pasadena on October 23, 1989, which killed 23 workers, and the ARCO explosion in Channelview on July 5, 1990, which killed 17 workers. Following the first, and before the second, the committee heard testimony alleging systemic safety problems in the petrochemical and refining industries. Witnesses blamed, in part, excessive use of insufficiently trained contractual workers. The Phillips plant, in this view, was not alone in its high accident potential.*72 These points were reiterated following the ARCO explosion, where 12 of the 17 fatalities were contractual personnel.*73 One suggestion was to create a blue ribbon investigatory panel similar to a "Henderson Commission" in Nevada (named for a town in that state that suffered an explosion).*74 The federal Clean Air Act amendments establish a new Chemical Safety Board to deal with chemical industry accidents in much the same way as the National Transportation Safety Board deals with airline disasters.*75 The committee refrained from recommending state action.

For the public beyond the industry fenceline, the principal concern with chemical explosions is the potential release of toxic fumes. Witnesses mentioned in this context not only the Phillips and ARCO disasters, but a leak of hydrofluoric acid at Marathon's Texas City refinery that forced the evacuation of 3,000 to 4,000 persons in October 1987.*76 The TACB in its permitting process anticipates this kind of possibility through a disaster review aimed at a subset of 46 air toxics having the greatest catastrophic potential.*77

The Superfund amendments, besides creating the TRIS inventories, reacted to the Bhopal toxic cloud catastrophe in India by establishing "right-to-know" requirements to inform communities of dangerous chemicals in their midst. The legislation provided for local emergency planning committees (LEPCs) to coordinate industry, local government, and citizen reaction in the event of

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disasters. In practice, however, many LEPCs are insufficiently funded.*78 Witnesses testifying to the joint select committee reported that directions from authorities in the immediate aftermath of the ARCO disaster were slow, confusing, or absent.*79

A related issue concerns the TACB's emergency response capabilities, which appear more advanced than those in other states but nevertheless have depended on Austin-based personnel and equipment. After the Phillips explosion, deployment delays hindered timely independent evaluation of the air toxics danger to the community, although ultimately the TACB concurred with Phillips' on-site claims that dangers beyond the company's fenceline were minimal.*80 For future purposes, the TACB in its budget request proposes to establish regional capabilities in the likeliest disaster areas--Houston and Beaumont--complete with portable sampling equipment and communications gear including cellular phones to relay chemical expertise. The proposed regional response teams, like the existing one, would operate with volunteer staff.*81 The TACB budget request includes incentive pay and training funds for those response personnel. The recommendation below supports similar training for local fire fighters.

RECOMMENDATION 8. THE 72ND LEGISLATURE SHOULD PROVIDE FOR WEEKEND TRAINING IN EMERGENCY RESPONSE TO TOXIC DISASTERS, TO BE CONDUCTED BY TEXAS A&M UNIVERSITY AND OFFERED TO VOLUNTEER FIRE FIGHTERS.

Effective response by authorities also requires a guarantee of access to the scene of an accident by investigatory authorities. One witness alleged denial of such access to law enforcement officials at a disaster site.*82 The committee favored criminal penalties in such instances, which raised the more general issue that the Texas Clean Air Act provides for only civil remedies and penalties.*83 The new federal Clean Air Act amendments necessitate state adoption of criminal penalties, an item covered subsequently in Recommendation 15. The committee suggests that stiffer penalties be applied in the case of certain repeat offenders.

RECOMMENDATION 9. THE 72ND LEGISLATURE SHOULD ENACT STATUTORY PROVISIONS THAT PROVIDE FOR EITHER STRINGENT MANDATORY FINES OR INCARCERATION OR BOTH FOR SERIOUSLY FLAGRANT REPEAT CRIMINAL VIOLATIONS OF ENVIRONMENTAL LAWS OR FOR DENIAL OF ACCESS WHEN REQUESTED BY STATE AND LOCAL AUTHORITIES IN THE PERFORMANCE OF THEIR DUTIES.

Access of a second type was an issue raised by testimony and by correspondence pressing for greater responsiveness by

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environmental regulatory officials and stricter enforcement against industrial violators. Residents and plant workers wanted better means to report violations of which they were aware and to ensure that their reports reached sympathetic ears and resulted in TACB action.*84 The committee adopted a recommendation for an environmental hot line, a subject that arose also in the context of mobile source emissions with respect to smoky vehicle exhaust. A secondary purpose of the hot line would be the availability of legal expertise, with application to permitting questions as well as to enforcement. Increased funding for enforcement, part of the TACB's budget request, also would address citizen concerns about agency responsiveness.

RECOMMENDATION 10. THE 72ND LEGISLATURE SHOULD ENACT A LAW ESTABLISHING AN 800-NUMBER ENVIRONMENTAL HOT LINE TO SERVE AS A CLEARINGHOUSE, TO DIRECT CALLS TO THE APPROPRIATE AGENCY FOR RESPONSE, AND TO ASSIST CALLERS IN UNDERSTANDING THE ENVIRONMENTAL LAWS OF THE STATE AND THE LEGAL PROCESSES OF PERMITS, ENFORCEMENT, AND COMPLAINTS.

Mobile Source Issues and Recommendations

Mobile source emissions account for 24 percent of the air toxics emitted in Texas and an estimated 56 percent of the cancer attributed to air toxics nationally. They also are responsible for varying, sometimes sizable, percentages of the criteria pollutants and ozone precursors. At one time, vehicular emissions were a large contributor to criteria-pollutant lead, but the conversion to unleaded gasoline has virtually eliminated that role.*85 Worldwide, motor vehicles emit 13 percent of greenhouse carbon dioxide,*86 and leaky automobile air conditioners contribute 16 percent of the chlorofluorocarbons that are both a greenhouse gas and the principal depleter of the ozone layer.*87

Mobile sources of criteria pollutants and ozone precursors are addressed by the Federal Motor Vehicle Control Program of the EPA. The program includes exhaust standards, measured in grams of pollutant per mile, for carbon monoxide, particulates, hydrocarbons, and nitrogen oxides. Auto manufacturers must install catalytic converters sufficient to meet them.

Phaseout of leaded gasoline is a second element of the program.*88 Other potential controls in nonattainment areas include special vehicle inspection requirements, systems to prevent escape of volatile organic compounds (VOCs) at the gasoline pump, gasoline content specifications, replacement of gasoline and diesel with cleaner alternative fuels, and measures such as carpooling,

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bus lanes, and synchronized traffic lights.*89 Indirectly, the federal program for criteria pollutants has reduced air toxics, which comprise many of the hydrocarbon particulates and VOCs.*90

The phaseout of leaded gasoline applies throughout Texas, as do the exhaust standards for carbon monoxide, particulates, hydrocarbons, and nitrogen oxides. Independent of the federal program, the Department of Public Safety (DPS) supervises annual safety inspections for Texas vehicles, including an inspection of exhaust systems. These DPS inspections also apply statewide, though with differences according to vehicle model year.*91

As indicated previously (Figure 5 on page 18), El Paso, Houston, and Dallas-Fort Worth (DFW) are nonattainment areas for ozone, and El Paso is a nonattainment area for carbon monoxide and particulates. In these areas, more stringent federal "inspection and maintenance" (I/M) requirements must be met. One type of I/M program is the "anti-tampering" or "parameter" program, which goes somewhat beyond the usual DPS safety inspection in ensuring the proper functioning of exhaust control devices. Anti-tampering controls affect El Paso and Harris counties and the greater DFW metroplex (Dallas, Tarrant, Collin, Denton, Ellis, Johnson, Kaufman, Parker, and Rockwall counties). A second, more stringent, type involves a tailpipe emissions test to analyze the vehicle exhaust stream. Tailpipe emissions testing is conducted in El Paso, Dallas, and Tarrant counties but not yet Harris County nor the rest of the greater DFW metroplex. The DPS incorporates these I/M programs as part of the annual vehicle safety inspection in the affected counties.*92

"Onboard" vapor recovery systems seal the vehicle fuel tank as the motorist or attendant is pumping gasoline so as to inhibit escape of fumes. The fumes contain VOCs, which are both ozone precursors and, to a large extent, air toxics. "Stage II" vapor recovery systems, in contrast, place the sealing mechanism on the pump. Onboard systems require investments by automobile manufacturers. Stage II systems require investments by fuel retailers or the oil companies under which they are franchised. Onboard systems also control evaporative emissions while the vehicle is in operation, conferring fuel savings to the motorist.*93 Neither control is required in Texas presently, and in fact state law prohibits mandated Stage II vapor recovery except as required by the EPA.*94 The joint select committee finds this prohibition obsolete and sees no reason for tying the TACB's regulatory hands. Consistent with a philosophy that Texas should take charge of its own air quality rather than just react to federal dictates,*95 the committee favors the following

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recommendation:

RECOMMENDATION 11. THE 72ND LEGISLATURE SHOULD REPEAL THE PROHIBITION (SECTION 382.019(d), HEALTH AND SAFETY CODE) AGAINST A STATE REQUIREMENT OF STAGE II VAPOR RECOVERY SYSTEMS AT GASOLINE SERVICE STATIONS.

Evaporative emissions from a vehicle in operation depend on such factors as the speed of travel and weather temperatures. Losses are greatest when an automobile is travelling under 40 miles per hour on a hot day, precisely the conditions, for example, of clogged urban freeway traffic in Texas during a July afternoon rush hour.*96 Vapors in such situations tend to penetrate the vehicle interior, producing commuter exposure several times worse than pollution levels in the outside air.*97

One means to control evaporative vehicular emissions is through gasoline formulation. This typically involves increasing the amount of oxygen in the fuel or reducing the fuel's vapor pressure through additives such as methyl tertiary-butyl ether (MTBE). The resultant product is marketed as "reformulated" gasoline.*98

While reformulated gasoline improves air quality in one sense, other changes in gasoline content have had mixed effects in other ways. Criteria-pollutant lead has been reduced as leaded gasoline has been eliminated, yet refiners have increased the content of certain octane-boosting additives, "polycyclic aromatic hydrocarbons" (PAHs), which are air toxics. Average PAH content in gasoline has increased from 22 to 33 percent since 1970 and in some premium blends reaches as high as 50 percent. Consumers, according to PAH critics, are buying too much premium gasoline, which in most cases confers no extra benefit beyond whatever minimum octane rating is necessary to prevent engine knock. Prevention of engine knock was the original reason for adding lead to gasoline. Thus, as one expert has stated, we have traded the mental retardation threat associated with lead for the cancer threat associated with PAHs.*99 That is not the only tradeoff. Most of the reformulated gasoline that has been introduced to date consists of the higher-octane premium blends.*100 The purchaser of high-octane reformulated gasoline may be reducing ozone-precursor and toxic volatile organic compounds (VOCs) but negating the gain because of the PAHs.

Diesel fuel involves a similar conflict of air quality concerns. It produces less carbon monoxide and nitrogen oxides than gasoline but results in some of the worst particulates, plus

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PAHs.*101 National ambient air quality standards apply to particulates less than 10 microns in diameter. Among the particulates from diesel, 90 percent are less than one micron in diameter and consequently are potent if inhaled.*102 One lever of control is the establishment of "opacity/density" standards for diesel exhaust smoke,*103 as has been considered by the EPA.

RECOMMENDATION 12. THE TEXAS AIR CONTROL BOARD (TACB) SHOULD EXAMINE THE DIESEL VEHICLE EMISSION STANDARDS BEING SET BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY AND DETERMINE THE NEED TO ESTABLISH AN OPACITY/DENSITY STANDARD FOR DIESEL EXHAUST. THE TACB SHOULD EXAMINE THE EFFICACY OF INSPECTING DIESEL VEHICLES ANNUALLY FOR CONFORMITY TO THE FEDERAL EMISSION STANDARDS OR TO A STATE OPACITY/DENSITY STANDARD OR TO BOTH, AND SHOULD IMPLEMENT SUCH AN INSPECTION PROGRAM IF IT IS DETERMINED TO BE EFFECTIVE IN MINIMIZING EMISSIONS.

As partial substitutes for gasoline and diesel, several alternative fuels have been proposed. These include compressed natural gas (CNG), liquefied petroleum gas (LPG), methanol, propane, and ethanol. CNG, in particular, reduces emissions of TRIS toxics by 91.2 percent compared to gasoline and is also cleaner with respect to criteria pollutants, ozone precursors, and greenhouse gases.*104 Used in vehicles, CNG eliminates evaporative emissions completely.*105 Methane, the principal constituent of CNG, is a greenhouse gas 25 times more potent per molecule than carbon dioxide. Leakage of unburned CNG must therefore be controlled in vehicle fuel distribution systems but does not pose a major environmental impediment to use of the fuel.*106 Recommendation 21 in Part Two addresses research on that issue.

The 71st Legislature in 1989, acting to promote air quality, enacted two pieces of legislation supporting conversion of school bus and transit authority fleets to CNG and alternative fuels.*107 The committee, targeting the vehicle population of the state as a whole, offers the following recommendation on gasoline content and alternative fuels:

RECOMMENDATION 13. TO THE EXTENT THE STATE IS NOT PREEMPTED BY FEDERAL REQUIREMENTS, THE TEXAS AIR CONTROL BOARD SHOULD PROVIDE FOR CLEANER MOTOR VEHICLE FUELS BY SETTING EXPLICIT STATE GUIDELINES FOR AUTOMOTIVE FUEL CONTENT. THE 72ND LEGISLATURE SHOULD HELP PROVIDE FOR CLEANER MOTOR VEHICLE FUELS BY LEVYING A GASOLINE TAX INCREASE ON FUELS WITH THE HIGHEST EMISSIONS LEVELS AND BY PROVIDING FOR A FUELS TAX EXEMPTION OR REDUCTION FOR VEHICLES USING CLEANER ALTERNATIVE FUELS.

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Whatever measures are employed to reduce individual vehicle emissions--exhaust controls, vapor recovery systems, gasoline content specifications, or alternative fuels--the savings are eroded to the extent that overall driving increases or vehicles consume too much fuel. Figure 6 on page 35 shows the number of vehicle miles travelled annually in the United States. Americans collectively are approaching two trillion miles per year, about double the level of the mid-1960s and four times the level of 1950.*108 The average occupancy rate, which influences how many miles are travelled, is an unimpressive 1.17 occupants per passenger vehicle.*109 Recent statistics reflect an average 19.4 miles per gallon for the nation's passenger car fleet.*110 New cars, in comparison, average about 28 miles per gallon.*111

Gasoline mileage is influenced by federal Corporate Average Fuel Economy (CAFE) standards, which require domestic and foreign automakers to meet a specified mileage minimum for new passenger vehicles they sell in the United States. Ford, for example, can sell a mixture of high-mileage and low-mileage cars, as long as its overall average meets the CAFE requirement. The CAFE legislation was enacted in 1975, and the standard increased gradually to 27.5 miles per gallon in 1985. Since then, it has undergone a rollback to 26 miles per gallon.*112 States are preempted from setting their own CAFE requirements.*113

Another federal law applicable to vehicle mileage is the gas guzzler tax. Automobiles of model year 1986 and thereafter have been subject to a tax of $500 and up, applied at the time of first purchase, if their fuel economy rating is below 22.5 miles per gallon.*114 Attempts to increase this threshold gradually to 30 miles per gallon and higher have been unsuccessful in Congress.*115 Piggybacking a more stringent state gas guzzler tax on top of the federal one, even if not preempted, would mean revenue unreliability for the state should federal threshold revisions subsequently occur.

This leaves, as a means of influencing motorists' habits, transportation control measures such as carpooling and bus ridership promotion. In Texas, TACB controls of this type have been implemented in El Paso, Harris, Dallas, and Tarrant counties.*116 Such measures, designed to increase vehicle occupancy rates and to act as a check on the vehicle miles travelled (VMT), become more important under the new federal Clean Air Act amendments, which require that nonattainment area emission increases attributable to VMT increases be offset by compensating emission reductions of whatever nature.*117

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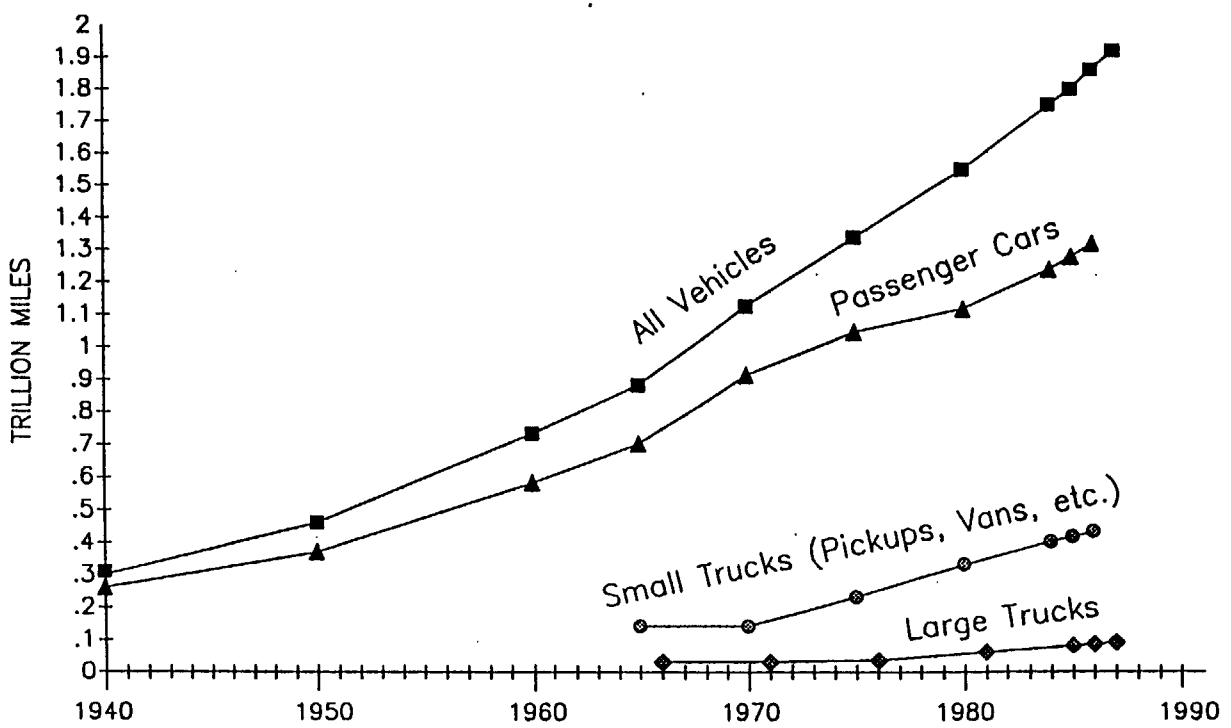
FIGURE 6. VEHICLE MILES TRAVELLED ANNUALLY IN THE UNITED STATES



Source: U.S. Senate Committee on Environment and Public Works, CLEAN AIR ACT AMENDMENTS OF 1989, committee report to accompany S. 1630, December 20, 1989 (Washington: U.S. Government Printing Office, 1989), p. 85.

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The committee, at its Beaumont hearing, reviewed transportation planning, focusing on attention to air quality considerations in the course of highway design and construction. The TACB necessarily collaborates in urban areas--particularly nonattainment areas--with local transportation planners. Collaboration with state highway planners involves occasional review of environmental impact statements for proposed highway projects. The State Department of Highways and Public Transportation uses computer models to gauge the impact of such projects on air quality, yet the result invariably is a finding that congestion relief from the project will cut emissions by speeding up traffic.*118 The modeling effectively ignores increases in vehicle miles travelled. The committee recommends stronger planning coordination plus the pursuit of transportation alternatives. Recommendation 24 in Part Two, relating to bicycling, reflects the latter objective.

RECOMMENDATION 14. STATE AIR QUALITY TRANSPORTATION PROGRAMS SHOULD BE IMPROVED BY TAKING THE FOLLOWING ACTIONS:

A. PURSUANT TO DIRECTION FROM THE 72ND LEGISLATURE, THE STATE SHOULD IMPLEMENT, AS A LONG-RANGE TRANSPORTATION PLANNING PROGRAM TO BE COORDINATED AMONG THE TEXAS AIR CONTROL BOARD (TACB), STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION (SDHPT), AND LOCAL TRANSPORTATION AUTHORITIES, THE EVALUATION AND MITIGATION OF THE PROJECTED IMPACT ON THE AIR QUALITY OF PROPOSED HIGHWAY PROJECTS. SUCH LONG-RANGE PLANNING WOULD BE CONDUCTED BY THE SDHPT OR LOCAL TRANSPORTATION PLANNING AUTHORITIES OR BOTH, AS APPROPRIATE, BUT WOULD BE PERFORMED FOLLOWING AIR QUALITY ASSESSMENT GUIDELINES TO BE ESTABLISHED BY THE TACB. THE GUIDELINES SHOULD REQUIRE SUCH PLANNING TO OCCUR AT INTERVALS NECESSARY TO SUPPORT ONGOING AIR QUALITY PLANNING EFFORTS AND SHOULD REQUIRE PROJECTIONS OF FUTURE TRANSPORTATION SCENARIOS (FOR EXAMPLE, 10- OR 20-YEAR PROJECTIONS) AS NECESSARY TO SUPPORT SOUND LONG-RANGE AIR QUALITY PLANNING AND ACHIEVEMENT OF AIR QUALITY OBJECTIVES.

B. THE 72ND LEGISLATURE SHOULD DIRECT THE SDHPT TO CONSIDER NON-HIGHWAY ALTERNATIVES IN ITS ENVIRONMENTAL IMPACT STATEMENTS FOR PROPOSED PROJECTS.

C. THE SDHPT SHOULD HAVE TACB STAFF, RATHER THAN SDHPT STAFF OR CONTRACTORS, PERFORM AIR QUALITY MODELING FOR PROPOSED HIGHWAY PROJECTS. SUCH MODELING WOULD BE FUNDED BY THE SDHPT THROUGH CONTRACT WITH THE TACB.

D. AIR QUALITY MODELING FOR PROPOSED HIGHWAY PROJECTS SHOULD

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BE EXPANDED TO INCLUDE NOT JUST CRITERIA POLLUTANTS BUT ALSO AIR TOXICS.

The committee noted that TACB funding depends primarily on fees from industrial point sources, without direct contribution from vehicle owners who are responsible for at least 24 percent of Texas' air toxics. The committee addresses this inequity in Recommendation 17, proposing a vehicle inspection fee surcharge. The proposed surcharge would be applied to safety inspections rather than vehicle registration because of constitutional limitations applicable to registration receipts.*119

Federal Clean Air Act Amendments and Recommendations

The joint select committee heard little testimony about area sources, which are responsible for 58 percent of the air toxics emitted in Texas. Area sources, however, are addressed by the new federal Clean Air Act amendments. The legislation designates as "major sources" all stationary (nonmobile) sources that emit 10 or more tons annually of any one of 189 listed air toxics or 25 or more tons annually of a combination of the listed toxics. "Area sources" as defined by Congress include all stationary sources falling below the 10-ton and 25-ton thresholds.*120

Major sources are further subdivided into a large number of categories (for example, coke ovens). The act establishes a set of deadlines by which the EPA must issue, within 10 years, technological standards for emission control among these major source categories. For area sources, the EPA by regulation must identify and designate a number of categories (for example, dry cleaners) sufficient to encompass 90 percent of total area emissions. The area source categories similarly become subject to technological control standards to be adopted by the EPA.*121

For pollutants generally, the new amendments establish a comprehensive stationary-source permitting program. Grandfathering of older facilities is eliminated. Those facilities must obtain permits in the same manner as other facilities, and all permits must be renewed every five years. Up to now, the renewal period in Texas has been 15 years.*122

The Clean Air Act amendments establish pollutant emission fees of $25 per ton, to be collected at the state level and devoted to air quality purposes. Fee receipts are dedicated strictly to such purposes and cannot be diverted elsewhere (for example, to general revenue). Preliminary TACB estimates indicate that Texas eventually could collect as much as $34 million annually in Clean

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Air Act revenue.*123

Some of the more significant provisions of the new law pertain to ozone. The amendments divide the 96 ozone nonattainment areas in the United States into five classes:

(1) extreme nonattainment (Los Angeles only);

(2) severe nonattainment (the Houston-Galveston area and eight areas outside Texas);*124

(3) serious nonattainment (El Paso, the Beaumont-Port Arthur area, and 14 areas outside Texas);*125

(4) moderate nonattainment (the Dallas-Fort Worth area and 31 areas outside Texas);*126 and

(5) marginal nonattainment (39 non-Texas areas).*127

The legislation sets varying ozone attainment deadlines for the five classes. Houston-Galveston, in the severe class, has 17 years to meet the ozone standard. El Paso and Beaumont-Port Arthur have nine years to meet the standard and Dallas-Fort Worth has six.*128 Toward those targets, the four Texas nonattainment areas must demonstrate regular incremental progress in ozone precursor emission reduction. Generally, progress achievement and standard attainment will mean various point-source, area-source, and mobile-source controls on volatile organic compounds (VOCs), or equivalent controls on emissions of nitrogen oxides. That in turn will mean different combinations of Stage II vapor recovery, inspection and maintenance programs, vehicle fleet conversion to alternative fuels, and transportation control measures including the offset requirement for vehicle miles traveled. Ozone attainment and toxics reduction will be facilitated further by EPA regulations regarding onboard controls and vehicle fuel content. The legislation, for example, limits permissible PAH for gasoline sold as "reformulated" to 25 percent. Finally, the amendments upgrade vehicle exhaust standards. States may adopt stricter exhaust standards equal to those adopted in California, but their choice is limited to either the national or the California standards.*129

El Paso poses a special problem because of pollution from Juarez on the opposite side of the Rio Grande.*130 The new amendments effectively relax for El Paso certain otherwise applicable nonattainment-area requirements. El Paso becomes responsible only for reducing its own emissions and not for

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reducing those from across the border. Attainment is judged by an adjustment that subtracts the portion of ambient pollutant levels contributed by Mexico.*131

Other provisions create the Mickey Leland Urban Air Toxics Research Center, establish the federal Chemical Safety Board, require criminal penalty authorization at the state level, and provide for a special assistance program to small business contributors of area source emissions. The Texas Clean Air Act gives the TACB broad authority but inevitably will require amendment to conform to the federal legislation. The TACB will be outlining necessary changes in detail as the 72nd Legislature approaches.

RECOMMENDATION 15. THE 72ND LEGISLATURE SHOULD ENACT ALL AMENDMENTS IDENTIFIED BY THE TEXAS AIR CONTROL BOARD TO BE NECESSARY TO CONFORM THE TEXAS CLEAN AIR ACT TO THE FEDERAL CLEAN AIR ACT AMENDMENTS. NECESSARY AMENDMENTS INCLUDE BUT ARE NOT LIMITED TO:

A. REQUIREMENT OF OPERATING PERMITS FOR GRANDFATHERED AS WELL AS PERMITTED FACILITIES SUBJECT TO TITLE V OF THE FEDERAL CLEAN AIR ACT AMENDMENTS.

B. REVISION OF THE RENEWAL PERIOD FOR OPERATING PERMITS FROM 15 TO 5 YEARS.

C. REMOVAL OF THE STATUTORY CAP ON INSPECTION FEES, AND CLARIFICATION THAT THE AGENCY IS AUTHORIZED TO COLLECT SUCH FEES BASED ON EMISSIONS LEVELS FROM THE SITE.

D. REVISION OF THE TEXAS MOTOR VEHICLE INSPECTION AND MAINTENANCE PROGRAM AUTHORITY AND FUNDING TO ALLOW EXPANSION INTO ALL OF THE COUNTIES IN THE HOUSTON-GALVESTON AND BEAUMONT-PORT ARTHUR CONSOLIDATED METROPOLITAN STATISTICAL AREAS AND TO MAKE ANY OTHER CHANGES IN PROGRAM DESIGN AND/OR ENFORCEMENT NECESSARY TO SATISFY THE FEDERAL CLEAN AIR ACT AMENDMENTS.

E. REVISION OF ENFORCEMENT PROVISIONS TO INCORPORATE CRIMINAL PENALTIES AS REQUIRED BY THE FEDERAL CLEAN AIR ACT AMENDMENTS.

F. ESTABLISHMENT OF A SMALL BUSINESS TECHNICAL ASSISTANCE PROGRAM TO INCLUDE A SMALL BUSINESS OMBUDSMAN AND A COMPLIANCE ASSISTANCE PANEL AS REQUIRED BY THE FEDERAL CLEAN AIR ACT AMENDMENTS.

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Budgetary Issues and Recommendations

At present, the TACB is budgeted at an annual level of $15.8 million.*132 Fee revenue from the federal Clean Air Act amendments, while potentially large, will not become available immediately. In the meantime, the TACB in its FY1992-FY1993 budget request to the 72nd Legislature has been limited to current funding sources.

Implementation of the amendments will necessitate a massive expansion of TACB resources, in terms of both expenditures and personnel. Regulation of an increased number of emission sources will involve more permit review, more modeling and monitoring, and more inspections and enforcement. Enlargement of the agency's mission beyond the eight NESHAP pollutants to the 189 Clean Air Act toxics will involve implementation of attendant controls on point and area sources of those 189 toxics. New mobile source controls applicable to nonattainment areas create additional regulatory demands.

As the joint select committee began its study assignment in late 1989, the TACB had embarked on an extensive planning process to determine how the pending federal legislation might affect the agency. The TACB currently is budgeted for 422 employees, full-time equivalent (FTE). Planning calculations suggested an eventual increase, based on the Clean Air Act amendments, to about 1,500 FTEs. Similarly, TACB presentations to the committee suggest a long-term near quadrupling of funding from the present $15.8 million to $57.7 million.*133

Three bienniums (six fiscal years) would probably be required to accommodate agency growth of this magnitude. The TACB proposes to start immediately. Thus its board members are pursuing a Level 4 (highest level) budget request for the upcoming biennium that would entail, by the second year of that biennium (FY1993), a funding level of $27.5 million.*134

Figure 7 on page 41 summarizes this proposed increase, much of which derives from a proposed fourfold expansion of the TACB's air toxics program over the next two fiscal years. That program, currently funded at $1.1 million, or seven percent of the agency's budget, would increase to $4.6 million, or 17 percent of the total. The agency would devote 30.5 FTEs to monitoring, 15.5 to upset emissions, 17.5 to the development of air toxics emission inventories, and 4.5 to fuel content and alternative fuel efforts.

Eventually, given the air toxics requirements of the federal

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FIGURE 7. TACB BUDGET REQUESTS FOR FY1992 AND FY1993

	--Air Toxics Budget-- Appropriations	FTE	-Total Agency Budget- Appropriations	FTE
Current	$1,111,354	30.0	$15,779,730	422.1
FY1992 (requested)	$4,362,214	70.5	$27,329,693	583.1
FY1993 (requested)	$4,646,626	116.0	$27,479,464	703.1
Increase:	$3,535,272	86.0	$11,699,734	281.0

Note: Proposed FY1992 spending includes about $6.3 million in capital outlays, versus only $1.7 million for that purpose in FY1993. The FTE increases from FY1992 to FY1993, however, mean that appropriations for the two years would be approximately equal.

Source: Steve Spaw (Texas Air Control Board), Beaumont hearing, written testimony, Part I.

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legislation, TACB planning suggests an increase to as much as $21.7 million, or 38 percent of the $57.7 million envisioned in the agency's long-term plan.*135 Expansion of this magnitude would place the regulation of air toxics more on a par with that of criteria pollutants.

The joint select committee endorses the TACB's Level 4 budget request. For the biennium, as shown in Figure 7, the increase from the current annual level to the proposed FY1993 level is $11.7 million. The committee does not consider this goal to be fiscally unrealistic. At the Beaumont hearing, TACB staff identified $9.8 million in potential state-level fee increases, leaving $1.9 million to be met from general revenue or other sources.*136 This was prior to the committee's contemplation of a potential vehicle inspection surcharge to better balance the agency's funding--that is, to better reflect the emissions contribution of mobile sources. With approximately 13-14 million motor vehicles statewide,*137 a modest inspection surcharge would cover the outstanding $1.9 million, if not a large share of the proposed $11.7 million increase. Various inspection fees, permit fees, surcharges on nonattainment area emission sources, state-level toxics fees, and hazardous waste fee transfers from the Texas Water Commission (for review of hazardous waste incinerator permits) could cover the remainder.*138 With passage of the 1990 federal Clean Air Act amendments, and its requirement for emission fees, adjustments to these revenue method proposals may be warranted.

RECOMMENDATION 16. THE 72ND LEGISLATURE SHOULD SUPPORT THE TEXAS AIR CONTROL BOARD (TACB) LEVEL 4 BUDGET REQUEST TO THE LEGISLATIVE BUDGET BOARD AND GOVERNOR TO PROVIDE AMPLE FUNDING, STAFF, AND RESOURCES FOR:

A. REGULATORY RESPONSE TO UPSET EMISSIONS.

B. MONITORING AND ANALYSIS OF TOXICS LEVELS, INCLUDING A DOUBLING OF MOBILE LABORATORY TRIPS; MONITORING INCREASES IN AREAS OF HEAVY TRAFFIC; AND AN EXPANSION OF TOXICS MONITORING STATIONS IN NONCOASTAL AREAS.

C. BEGINNING EXPOSURE ANALYSIS AND HEALTH IMPACTS RESEARCH.

D. RESPONSIBILITIES OF THE TACB RELATING TO THE STATE'S ALTERNATIVE FUELS PROGRAM.

E. ENFORCEMENT AND COMPLIANCE.

F. PERMIT APPLICATION REVIEW.

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G. AIR TOXICS REDUCTION PLANS.

H. GATHERING A MORE COMPLETE AIR TOXICS EMISSIONS INVENTORY.

RECOMMENDATION 17. THE 72ND LEGISLATURE SHOULD FUND THE TEXAS AIR CONTROL BOARD LEVEL 4 BUDGET REQUEST THROUGH A COMBINATION OF NEW AND REVISED FEE PROGRAMS THAT WILL ESTABLISH FUNDING MECHANISMS THAT REFLECT THE SOURCES OF THE EMISSIONS PROBLEMS AND THE WORKLOAD OF THE AGENCY IN REGULATING THE RESPECTIVE EMISSIONS SOURCES. THESE FEES SHOULD INCLUDE ANNUAL INSPECTION FEES ON MOTOR VEHICLES, FEES ON AREA SOURCES, AND HAZARDOUS WASTE FEES TRANSFERRED FROM THE TEXAS WATER COMMISSION.

To attract and retain technical staff, the TACB as part of its proposed budget has suggested the establishment of exempt salaries for certain engineering, attorney, and administrative positions, plus authority to hire nonexempt personnel at salaries above Step 1 in the state's position classification system.*139 The committee endorses those two requests, plus the amendment of TACB appropriations riders to enable fee increases in support of the agency's proposed budget increase. Recommendation 15 provides for amendment of the Texas Clean Air Act to adjust existing fee caps.

RECOMMENDATION 18. THE 72ND LEGISLATURE SHOULD INCLUDE RIDERS TO THE TEXAS AIR CONTROL BOARD (TACB) APPROPRIATIONS TO ACCOMPLISH THE FOLLOWING:

A. IMPLEMENTATION OF TACB EXEMPT SALARY REQUESTS TO ENABLE BETTER AGENCY RETENTION OF TECHNICAL AND PROFESSIONAL STAFF.

B. TACB HIRING OF NONEXEMPT PERSONNEL ABOVE STEP 1.

C. ADJUSTMENT OF THE TACB FEE CAP FROM $50,000 TO $100,000.

As a secondary goal, once federal fee money begins to flow, the state should consider funding support for local air quality programs. Another local need concerns the local emergency planning committees established under the 1986 Superfund amendments.

RECOMMENDATION 19. THE TEXAS AIR CONTROL BOARD SHOULD EXAMINE THE NEED TO ALLOCATE EMISSION FEE REVENUE FROM THE PROPOSED FEDERAL CLEAN AIR ACT AMENDMENTS TO CITY, COUNTY, AND REGIONAL AIR QUALITY PROGRAMS. THE GOVERNOR'S DIVISION OF EMERGENCY MANAGEMENT SHOULD EXAMINE WAYS TO PROVIDE ADDITIONAL FUNDING TO LOCAL EMERGENCY PLANNING COMMITTEES.

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ENDNOTES

1 Standard Industrial Classification (SIC) codes 20-39.

2 The four were melamine, sodium sulfate, aluminum oxide, and sodium hydroxide.

3 Steve Spaw (Texas Air Control Board), El Paso hearing, June 28, 1990, written testimony, p. 16.

4 G. Robert Hillman, "EPA Says Texas' Air Is Most Toxic in U.S.," Dallas Morning News, March 23, 1989; Bill Dawson, "Texas Again Tops U.S. List for Toxic Releases Into Air," Houston Chronicle, April 20, 1990.

5 David L. Goris, Houston hearing, January 11, 1990 (henceforth cited as Houston I).

6 Steve Spaw, El Paso hearing, written testimony, pp. 14-16. For 10 inorganics, Texas had 15.6% of U.S. production capacity and 6.75% of U.S. emissions. For eight organics, the respective figures were 64% and 7.5%.

7 See Figure 1. TACB emission estimates relating to Clean Air Act toxics, where cited in this report, refer to a proposed list of 191 rather than the list of 189 that Congress eventually enacted.

8 Steve Spaw, El Paso hearing, written testimony, p. 12.

9 Since a 1978 ban on CFC aerosol sprays in the United States, hydrocarbon gases have been used as propellant alternatives.

10 Texas Air Control Board, reply to questionnaire of May 23, 1990, from the joint select committee staff. The estimate was 267 million pounds out of a total 600 million pounds.

11 Steve Spaw, El Paso hearing, written testimony, p. 12; Wade Thomason, Austin hearing, November 29, 1989.

12 Evaporative emissions at the gasoline pump are inventoried as area source, rather than mobile source, emissions. Potential reduction measures include "Stage 2" and "onboard" controls--two terms introduced later in this report. Evaporative emissions from the fuel system are inventoried, together with

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exhaust emissions, as mobile source emissions. They can be subdivided into "running losses" (what evaporates from the fuel system while the vehicle is running), "hot-soak" emissions (what evaporates after the ignition is turned off but the engine is still hot), and "diurnal" emissions (what evaporates from an unused parked vehicle on a hot day). These terms are more esoteric and are not used subsequently.

13 Thomas H. Stock, Houston hearing, January 11, 1990 (henceforth cited as Houston I).

14 Steve Spaw, El Paso hearing, written testimony, p. 9.

15 An illustrative, but purely hypothetical example: Suppose the standard is .14 ppm and in San Angelo prevailing ambient levels are .02 ppm versus .14 ppm in Cleveland, Ohio. If enough polluting industries descend on San Angelo to take regulatory advantage of its relatively clean air, ambient levels might increase to the .14 ppm standard, the "lowest common denominator" for the nation. PSD regulations, however, protect San Angelo air quality from deteriorating to the level of Cleveland's. That is, they set a cap on incremental pollution above the existing level; let us suppose, again hypothetically, a limit of .05 extra ppm. Thus, while the national ambient air quality standard is .14 ppm, San Angelo effectively is limited to no more than .07 ppm (.02 + .05).

16 S. Thomas Dydek, et al., "Risk Assessment in Health Effects Review of Air Permits in Texas," Texas Air Control Board paper, 1985; James H. Price, et al., "Texas Procedure for Assessing Air Toxics," Texas Air Control Board paper presented to a symposium of the Lone Star Chapter of the Society for Risk Analysis, Houston, January 22, 1987; Les Montgomery, et al., "The Texas Air Toxics Program," Texas Air Control Board paper presented to the 81st annual meeting of the Air Pollution Control Association, Dallas, June 20-24, 1988.

17 Grace E. Ziem and Barry I. Castleman, "Threshold Limit Values: Historical Perspectives and Current Practice," paper presented to the American Occupational Health Conference, Boston, Massachusetts, May 5, 1989.

18 Price, pp. 3-4.

19 Steve Spaw, El Paso hearing, written testimony, pp. 12-14.

20 Texas Air Control Board, AIR QUALITY IN TEXAS (Austin: Texas Air Control Board, 1989), p. 10.

21 Steve Spaw, El Paso hearing, written testimony, p. 18.

22 Kathy Jacob, Arlington hearing, May 17, 1990.

23 Steve Spaw, El Paso hearing, written testimony, pp. 17-18; Charles H. "Chuck" Rivers, joint select committee member, Arlington hearing comments.

24 Vittorio K. Argento, Arlington hearing.

25 Texas Air Control Board, FINAL REPORT: GULF COAST COMMUNITY EXPOSURE STUDY (Austin: Texas Air Control Board, 1988). The 10 toxics were acrylonitrile, arsenic, benzene, ethylene oxide, formaldehyde, epichlorohydrin, lead, polynuclear aromatics, polychlorinated biphenyls (PCBs), and vinyl chloride.

26 See, representatively, Brandt Mannchen, "A Critique of the Gulf Coast Air Toxics Study," (Sierra Club) State Capitol Report 5 (August 8, 1988), pp. 4-5.

27 Radian Corporation, AIR QUALITY CONCERNS IN THE HOUSTON AREA (Austin: Radian Corporation, 1989); F. Scott LaGrone, "Assessing Community Exposure to Selected Volatile Indicator Compounds," Journal of the American College of Toxicology 8 (1989), pp. 897-904. Benzene, according to the HRM, exceeds the TACB health effects screening level but is below the "TLV/420" guideline. (See subsequent discussion in the same paragraph.)

28 Robin Kump, Beaumont hearing, September 18, 1990.

29 Marcus M. Key, Houston I hearing; Vittorio K. Argento, Arlington hearing; Marvin S. Legator and Sabrina Strawn, "Toxic Means Just That," Houston Post, November 26, 1989.

30 Rick Abraham, Houston I hearing.

31 Steve Spaw, El Paso hearing, written testimony, pp. 16-17.

32 John B. Turney, "TACB Jurisdiction Regarding Indoor Air Pollution," interoffice memorandum to Bill Stewart, Texas Air Control Board executive director, March 24, 1982.

33 Brandt Mannchen, Houston hearing, August 1, 1990

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(henceforth cited as Houston II).

34 See Section 361.072, et seq., Health and Safety Code.

35 See Section 361.073(b), Health and Safety Code.

36 Georgia Haskell, Linda Hueske, and Pat Pinkerton, Beaumont hearing.

37 Bill Collier, "Air Board Chief's Move to Law Firm Faulted," Austin American-Statesman, January 17, 1990; Harold Scarlett, "Bonus Paid to Ex-Chairman Stirs Water Commission Controversy," Houston Post, September 14, 1990.

38 Pat Pinkerton, Houston II and Beaumont hearings.

39 Chapter 726, Acts of the 66th Legislature, Regular Session, 1979.

40 Norma Touchstone, Houston I hearing; David H. Killgore, Beaumont hearing; Steve Spaw, comments on concerns raised by Senator Gene Green, joint select committee member, discussed at the second work session to consider committee recommendations, Austin, November 2, 1990.

41 Patricia A. Buffler, Houston I hearing.

42 Virginia L. Smith, et al., A DISCUSSION OF EPIDEMIOLOGIC STUDIES OF LUNG CANCER MORTALITY RATES WITH SPECIAL ATTENTION TO THE TEXAS UPPER GULF COAST AREA (Austin: Texas Air Control Board, 1985), p. 6.

43 Marcus M. Key, Houston I hearing.

44 William T. Harnett, Austin hearing. Compare with the distribution of Texas emissions given earlier: 24 percent mobile, 58 percent area, and 18 percent industry.

45 Elaine Haemisegger, et al., THE AIR TOXICS PROBLEM IN THE UNITED STATES: AN ANALYSIS OF CANCER RISKS FOR SELECTED POLLUTANTS (Washington: U.S. Environmental Protection Agency, 1985).

46 Vittorio K. Argento, Arlington hearing.

47 Wendy Shepherd, Houston I hearing, written testimony.

48 E. J. Macdonald, "Air Pollution, Demography,

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Cancer: Houston, Texas," Journal of the American Medical Women's Association 31 (1976), pp. 379-395. The other study was the "Ill Winds" study, discussed and cited in Smith, supra note 42, pp. 2, 6-7, 10.

49 Smith, pp. 2-9; Patricia A. Buffler, "Air Pollution and Lung Cancer Mortality in Harris County, Texas, 1979-1981," American Journal of Epidemiology 128 (October 1988), pp. 684-699.

50 Patricia A. Buffler, Houston I hearing.

51 Representative Chris Harris, committee cochair, Houston I hearing questions.

52 Buffler, American Journal of Epidemiology, pp. 687-688.

53 Karyl Dunson, Houston I and Beaumont hearings; Geraldine Brown, Paula Cruickshank, George Farenthold, Margaret Green, Georgia L. Haskell, Sandra Mayeaux, and Sam F. Parigi, Houston I hearing. Five of these witnesses were from the Houston area and three from the Beaumont area.

54 Linda de Hoyos, Houston I hearing; Neal T. Foley, Beaumont hearing. Dr. Foley is the surgeon referenced in the text.

55 Jane W. Elioseff, Houston II hearing.

56 Linda Hueske, letter to joint select committee staff, August 16, 1990, with attached Texas Department of Health correspondence and memoranda covering the period August 14, 1989, to May 15, 1990.

57 George Farenthold, Houston I hearing.

58 "Toxics Release Inventory: The Numbers Are Startling, But What Do They Mean?" Texas Preventable Disease News 50 (March 10, 1990), p. 2; Eli Bell (former Texas Air Control Board executive director), Austin hearing; Marcus M. Key, Houston I hearing; Price, supra note 16, p. 7.

59 Ken Kramer, joint select committee member, Houston I hearing comments; Steve Spaw, El Paso hearing.

60 Second Scientific Assembly for Environmental Health, Houston, September 14-15, 1990.

61 Marcus M. Key, Houston I hearing.

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62 Ziem and Castleman, supra note 17.

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78 Frances Smith, Houston I hearing.

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82 David H. Killgore, Houston II hearing.

83 See Sections 382.081-382.115, Health and Safety Code.

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101 Renner, supra note 86, p. 40; Jonathan M. Adler and Penny M. Carey, "Air Toxics Emissions and Health Risks from Mobile Sources," paper presented to the 82nd annual meeting of the Air & Waste Management Association, p. 5; Andrew Mangan, Arlington hearing.

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102 Candice Garrett, Arlington hearing.

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108 Candice Garrett, Arlington hearing.

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124 For purposes of this class, the Houston-Galveston area includes Harris, Galveston, Brazoria, Chambers, Fort Bend, Liberty, Montgomery, and Waller counties.

125 For purposes of this class, the Beaumont-Port Arthur area includes Jefferson, Orange, and Hardin counties.

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