

Executive Summary

Man-Made Disaster: Texas's Failure to Protect Its Citizens from the Perils of the Houston Petrochemical Complex

by Thomas O. McGarity and Karen Sokol

A Center for Progressive Reform Executive Summary

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This report is an executive summary of the Center for Progressive Reform's September 2006 white paper, "Man-Made Disaster: Texas's Failure to Protect Its Citizens from the Perils of the Houston Petrochemical Complex," by Thomas O. McGarity and Karen Sokol. The complete white paper is available at www.progressivereform.org.

Industrial facilities across the state of Texas reported releases of more than 129 million pounds of hazardous air pollutants in 2004, giving the state the dubious distinction of being the fourth highest ranking state in the nation for releases of carcinogens, neurotoxins, and other chemicals considered to be the most harmful to human health (known as "hazardous air pollutants" or "air toxics"). The state's poor record on air pollution is not simply the result of its size, or the nature of industrial facilities within its borders. Although those factors play a role, the more significant issue is that enforcement of existing pollution standards is generally weak—a circumstance that no doubt pleases many in polluting industries, but that forces Texans to breathe air that can sometimes be downright dangerous.

This report focuses on two locations in the greater Houston petrochemical complex—southeast Houston and Texas City—where state and private monitoring has detected dangerously high levels of the toxic chemicals benzene and 1,3-butadiene in areas near oil refineries and petrochemical facilities that release the toxins. These chemicals are dangerous to anyone who inhales them, even in small quantities. In addition to cancer, chronic exposure to benzene through inhalation is associated with blood, neurological, and immune system disorders, and chronic exposure to 1,3-butadiene through inhalation is associated with cardiovascular, respiratory, blood, and liver disorders. Acute exposure—that is, short-term exposure in high doses—to benzene via inhalation can cause vertigo, headaches, and unconsciousness, while the acute effects of 1,3-butadiene inhalation include irritation of the eyes, nasal passages, throat, and lungs, blurred vision, and headaches.

This report concludes that the exposure of residents living near polluting facilities in Houston, Texas City, and other heavily-industrialized areas throughout the state to hazardous air pollutants such as benzene and 1,3-butadiene is an "unnatural disaster" that has resulted from the powerful influence that the oil and chemical industries have traditionally exercised over the state's legislature and pollution control agency. Because the government has continually failed to take protective action, the monitoring of air pollution in the area is inadequate to the task, denying regulators key information they need to control high levels of toxic pollutants in area neighborhoods. When monitoring detects high levels of air toxics, the state agency with the power to take protective action rarely does. Moreover, the area's petrochemical industry has over the years expanded production at its aging facilities without enhancing pollution controls, thereby exacerbating the problem by adding to the number of potential sources of hazardous air pollutants.

Migrating Toxic Hot Spots

Perhaps the least understood phenomenon resulting from emissions of air toxics is the emergence of so-called "toxic hot spots," areas with considerably higher-than-average concentrations of pollutants that are highly variable in location and persistence because of changing wind direction and emission sources. Unlike ozone concentrations in nonattainment areas like Houston, toxic hot spots are not easily modeled, and in fact they are not even easily monitored. Like phantoms, they come and go, as fugitive emissions from aging pipes, gaskets, and flanges combine with emissions from point sources and uncontrolled emissions from upsets, startups, and shutdowns to produce a complex soup of toxic chemicals in the air of neighborhoods surrounding refineries and associated petrochemical facilities. As breezes shift, these mobile hot spots wax, wane, and wander in unpredictable ways. Particularly in areas with large and interconnected

petrochemical facilities, like those in southeast Houston and Texas City, identifying the sources of toxic hot spots is quite difficult but often can be accomplished with adequate resources and much persistence. Tracking the hot spots as they move is also difficult, but doable with adequate resources and will. As it stands now, both are in short supply.

Such hot spots have been frequently detected around southeast Houston and Texas City's industrial complexes. But this report describes how little information has been gathered about them, as well as how little effort has been made to warn local residents of the hazard they pose.

What little data we do have about the recently discovered problem of toxic hot spots comes primarily from extensive mobile monitoring efforts by staff members of the Texas Commission on Environmental Quality (TCEQ) involving intensive week-long visits to suspect locations. As summarized in this report and detailed in its appendix, TCEQ stationary and mobile monitoring efforts in Texas City and in the Milby Park and Lynchburg Ferry areas of southeast Houston have been at once revealing and frustrating. The few stationary monitors that TCEQ has put in place over the years are capable of detecting long-term concentrations of many toxic pollutants, but they are often located far away from the sources of the toxics and out of range of the "hot spots" that frequently migrate through nearby neighborhoods with the shifting winds. Mobile monitoring has been essential to TCEQ's ability to identify and to better understand the nature of migrating toxic hot spots. In recent years, the agency's very able mobile monitoring team has collected a considerable amount of valuable information through numerous investigations in areas close to the sources of the hazardous air pollutant emissions. In these investigations, the TCEQ team spreads out in an area and monitors, then moves to a slightly different position and monitors again, always with an eye toward capturing migrating plumes of volatile emissions.

Although TCEQ's monitoring efforts reveal that toxic hot spots are a public health threat that must be addressed, the agency's pattern has largely been one of observation, followed by neglect. For example, over the last ten years the staff of TCEQ's Toxicology and Risk Assessment Section has expressed concern that not enough was being done to characterize the benzene hot spots detected in and around residential areas of Texas City or to identify the sources of emissions contributing to those hot spots. But the response of upper level management has almost always been to take no regulatory or enforcement action, but

rather to wait a year or two and then send the team back to collect more data.

Current monitoring in heavily-industrialized areas where hot spots are likely to be located is not sufficient to identify all hot spots. This, combined with the inherent uncertainty of scientific data, permits the oil and chemical industries to exploit the many weaknesses in Texas's legal regime (such as the permit system, discussed below) to resolve any uncertainty in favor of inaction.

Suspect Health-Based Triggers

Effects screening levels (ESLs) are the primary lens through which TCEQ evaluates the information it gathers on hazardous air pollutants. An ESL is expressed as a concentration of the pollutant in ambient air, and it is based upon a toxicological evaluation of scientific data concerning the health effects of the pollutant, the potential for odors to be a nuisance, effects on vegetation, and potential corrosive effects. However, the current ESLs are outdated and, in the view of state regulators and the regulated industries, incapable of supporting regulatory action because of their nature as mere suggestive metrics rather than enforceable standards.

This is a significant obstacle to effective protection against air toxics given the centrality of ESLs in TCEQ's processing of information on this threat. ESLs provide the basis for TCEQ permitting officials' determinations of the point at which ambient concentrations of toxic pollutants at the fence line may exceed acceptable levels in connection with permits for new and modified facilities. To the extent that ESL-based limits are not written into a permit, ESLs' "guidance" status renders them virtually useless for battling hazardous air pollution. In the words of TCEQ, a pollutant concentration that exceeds the relevant ESL "does not necessarily indicate a problem but rather triggers a review in more depth." Furthermore, TCEQ's assumption that ambient levels below the ESLs should not lead to acute or chronic adverse health effects is highly questionable given that Texas's ESLs for some air toxics, including 1,3-butadiene, are hundreds of times higher than the limits imposed by other states. For example, in New Jersey, which, like Texas, is home to many industrial complexes situated near residential areas, standards for levels of air toxics are based on a cancer risk metric recommended by many of those seeking to reform Texas's system for addressing air toxics—i.e., 1 additional cancer case per 1 million people. Texas's ESL for butadiene is over 300 times greater than New Jersey's standard for the chemical.

Weak Permitting Regime

The permit system in place for the sources of hazardous air pollutants in Texas hinders effective regulatory action. Permits are the foundation of the legal regime for controlling air pollution caused by stationary sources such as those that make up oil refineries and petrochemical plants. Except for a dwindling (but still significant) class of so-called “grandfathered” facilities, all facilities must obtain authorization to emit air contaminants in the form of a permit or an exemption from permitting. The permit system in Texas, however, is unnecessarily complex and skewed in favor of the pollution source. Constituting layer upon layer of authorizations and amendments, permits can neither be readily deciphered by the public nor effectively enforced by TCEQ.

Initially, the permit system is an extremely weak tool for addressing high pollutant concentrations largely because the relevant statute arguably places the burden of proving that a given source is causing the elevated pollutant levels on the regulatory agency. Not surprisingly, this is the position taken by the companies operating the pollutant sources, who assert that the burden is on the agency to demonstrate that the source of a toxic hot spot is one or more unauthorized emissions. Because the companies are in the best position to collect information on their own emissions, but are nevertheless not required to actually monitor individual emission sources at their facilities or at the fence lines of their properties (or to make the results of any monitoring they conduct publicly available), this is a practically insurmountable burden for TCEQ. Even assuming the agency had unlimited resources, TCEQ would rarely be able to marshal evidence that a substantial portion of problematic emissions violated any particular permit requirements. Because compliance depends on detailed knowledge of the day-to-day operations inside the facility and of the sometimes very lengthy history of the source’s permit applications, TCEQ will not be able to determine whether emissions are the result of noncompliance unless they occur suddenly and in such excessive concentrations that TCEQ can establish that the facility is in a state of virtual continuous noncompliance.

Further, the current permit regime allows many toxic releases resulting from supposedly accidental “upset” emissions to go unreported and essentially excuses emissions from planned shutdowns and startups. Yet it is becoming increasingly apparent that emissions from these kinds of events are contributing greatly to Houston air pollution in general and to toxic hot spots in particular.

A Tale of Two Bills

As explained in this report, these and other glaring inadequacies remain in Texas’s system for protecting the public from air pollution principally because the petroleum and chemical industries have enormous influence over policy-making at the legislative and regulatory levels and have frequently attempted to hide or prevent the generation of information both on the amount of pollutants specific facilities release and on the health impacts of air toxics on the surrounding communities.

As an example of the pervasive political power these industries wield in Texas, this report tracks the treatment of two bills considered by the legislature in the wake of a powerful series of articles in the *Houston Chronicle* in January 2005 focusing on air toxics in southeast Houston neighborhoods—one bill that remedied many of the problems that render state officials essentially powerless to hold companies accountable for endangering the public health with toxic releases, and another bill that further weakened reporting requirements for the “upset” emissions that represent what is increasingly understood to be a significant threat to communities living near industrial facilities (by, for example, contributing to the creation of toxic hot spots).

Industry representatives strongly opposed the bill that would have gone a long way toward providing Texas residents with adequate protection from toxic air pollution (and even a significantly watered-down version), ensuring that this much-needed legislation was never considered by the full House of Representatives. In fact, the bill did not even receive a hearing in the House Environmental Regulation Committee. At the same time that the committee permitted this bill to languish, the committee held hearings on and quickly reported to the full House the industry-friendly bill that relaxed reporting requirements for “upset” emissions. After the full House approved the measure, the Senate passed it just in time to send it on to the governor for signature before the end of the legislative session.

Encouraging Developments

Notwithstanding this clear indication that Texas government officials continue to put the oil and chemical companies’ interests in maximizing profits over the interests of Texas residents living near these companies’ polluting facilities in being able to breathe safely, this report highlights two recent phenomena that have the potential to begin to chip away at the long-standing domination of the state’s political culture by the

oil and chemical industries. First, the *Houston Chronicle's* air toxics series brought the danger of hazardous air pollution to the public's attention to an unprecedented degree. The series reported on the paper's 18-month investigation in which it placed air pollution monitors on individual homes near major industrial facilities in southeast Houston, and it highlighted the health risks presented by the detected elevated levels of air toxics as well as the inadequacies of the current system for controlling industrial air pollution.

Second, there are promising indications that the City of Houston is willing to step into the state governmental void and hold industry accountable for the creation of toxic hot spots and other dangers of hazardous air pollution. After the *Chronicle* series on its monitoring of air toxics in Houston communities and a subsequent TCEQ report confirming the newspaper's findings, Mayor William White convened a special session of the City Council attended by TCEQ officials and representatives of companies that own some of the worst-polluting facilities in the areas of concern. Mayor White urged the state officials to act faster to protect the public from toxic pollutants and called on the companies to submit plans on emission reductions and the development of an enforceable system of accountability. He subsequently presented a multi-year proposal that outlined initiatives the city would take to curb Houston's air pollution, stating that "[t]his is a sea change in attitude" for city officials. "We will make sure on our own that the air is safe."

This will, however, be a significant struggle given the financial clout that industry actors have long been wielding in this state to firmly entrench themselves in the centers of power.

Indeed, state officials have already hampered the city in its efforts to protect Houston residents from air toxics. This report describes what appears to be interference by the TCEQ Commissioners' Office with the city's attempts to negotiate an enforceable contract with Texas Petrochemicals, owner of the facility emitting the greatest quantities of 1,3-butadiene in a southeast Houston neighborhood plagued by elevated levels of the chemical. Texas Petrochemicals representatives told city officials that one of TCEQ's commissioners was advising the company. Subsequently, TCEQ and Texas Petrochemicals entered into an agreement that, while containing emission-reduction, technological, and monitoring commitments beyond current legal requirements, is merely voluntary and thus unenforceable by the state. After signing this agreement with TCEQ, Texas Petrochemicals cut off negotiations with the city. Given Texas Petrochemicals'

extensive history of violations, city officials and environmental advocates questioned TCEQ's decision to enter into an agreement with the company that the agency was powerless to enforce. The city then retained a lawyer known for his civil litigation skills to represent the city in air pollution lawsuits, and, within a week, Texas Petrochemicals reopened negotiations with the city. Consequently, despite the state meddling, the city was able to secure a landmark, legally-enforceable agreement in which Texas Petrochemicals committed, *inter alia*, to reduce its emissions of butadiene by 50 percent, to implement specified technological improvements and leak detection and repair practices, and to monitor emissions of certain equipment and at the facility's fence line and provide the data to the city in a timely manner.

At the same time Houston is seeking enforceable emission-reduction agreements with polluting companies, it has boosted its enforcement of existing regulatory and common law obligations. Mayor White declared in his 2005 State of the City address that "if plants have no realistic plans to reduce emissions of air toxics to levels found acceptable by objective public health standards," the city intended to collaborate with other local governments to bring legal actions. Given that it appears that the specter of litigation brought both Texas Petrochemicals and, more recently, Valero Energy, to the negotiating table with the city, it appears that the city is using its enforcement authority to protect its residents from illegal and irresponsible industrial activities.

The Need for Reform

Ultimately, the answers to Texas's problem of hazardous air pollution are state-wide, legally-enforceable obligations on industry such as those that Houston officials succeeded in creating in their agreement with Texas Petrochemicals. This report concludes with a set of recommendations for how to take the necessary comprehensive approach to this public health threat, including more extensive monitoring to add to our understanding of the new phenomenon of toxic hot spots and other consequences of toxic emissions, more aggressive implementation of existing authorities by the state agency charged with that responsibility, and changes in state law to enable state and local officials and private citizens to minimize the dangers to public health presented by toxic air pollution.

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CPR President **Thomas O. McGarity** holds the Joe R. and Teresa Lozano Long Endowed Chair in Administrative Law at the University of Texas School of Law. He has taught and written in the areas of Administrative Law, Environmental Law, Occupational Safety and Health Law, Food Safety Law, Science and the Law, and Torts for 25 years. McGarity has served as a consultant and/or advisor to the Administrative Conference of the United States, the Office of Technology Assessment of the U.S. Congress (OTA), the U.S. Environmental Protection Agency, the U.S. Occupational Safety and Health

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