United States General Accounting Office

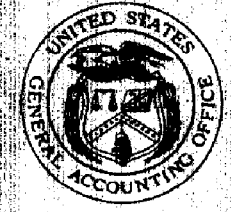
GAO

Report to Congressional Requesters

September 1994

HAZARDOUS WASTE

Issues Pertaining to an Incinerator in East Liverpool, Ohio



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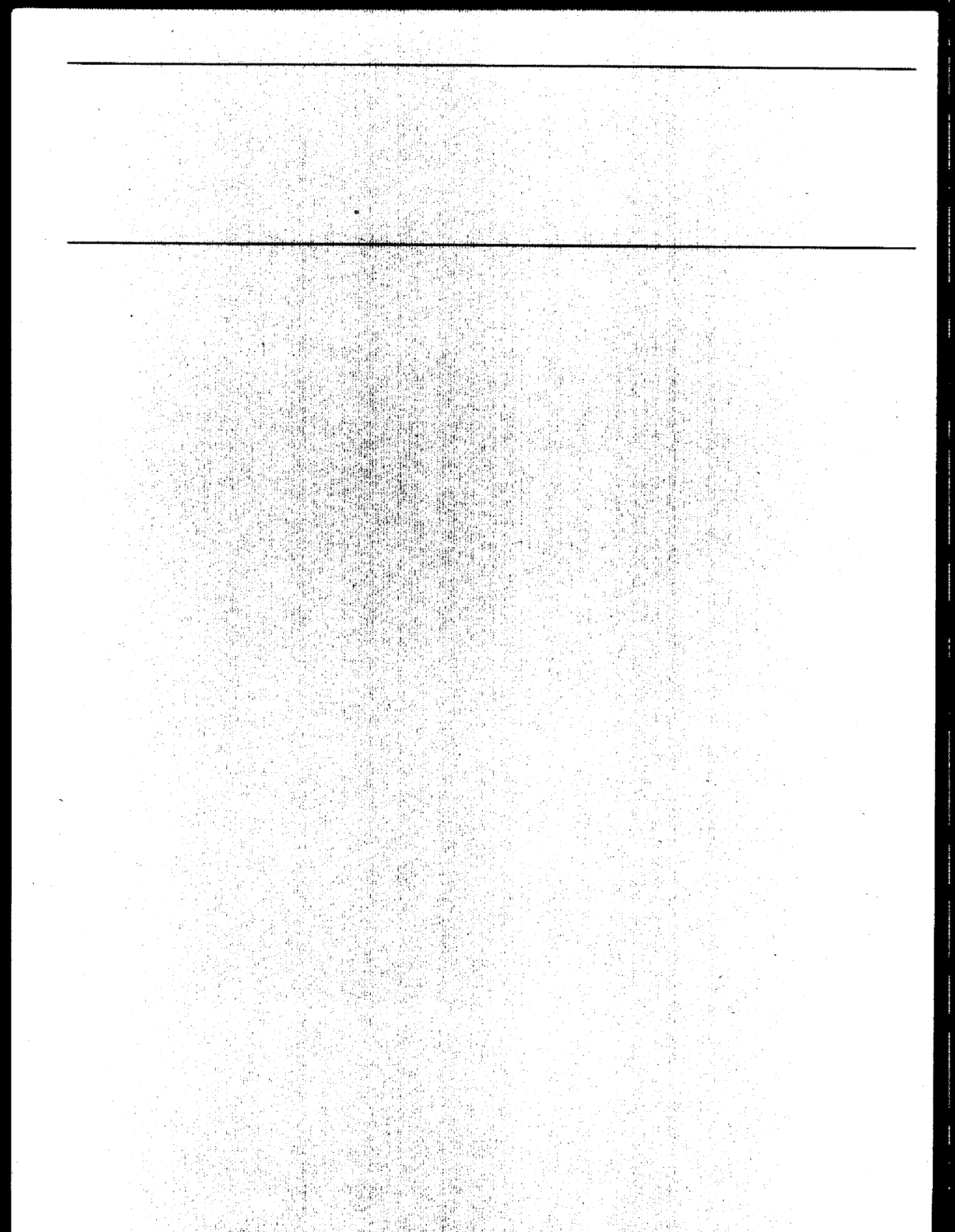


GAO

United States
General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

B-255419

September 9, 1994

Congressional Requesters

As requested, this report discusses issues pertaining to the (1) operational control and ownership of the Waste Technologies Industries' (WTI) hazardous waste incinerator located in East Liverpool, Ohio; (2) the Environmental Protection Agency's (EPA) compliance with regulations in approving and modifying the WTI permit; and (3) EPA's ability to ensure that human health and the environment are protected during incinerator operations. Our report contains recommendations to EPA to change its Resource Conservation and Recovery Act regulations to bring them in line with other federal requirements on floodplain management and to consider additional opportunities for public participation.

As arranged with your offices, unless you publicly announce its contents earlier, we will make no further distribution of this report until 2 days after the date of this letter. At that time, we will send copies to appropriate congressional committees; the Administrator, EPA; and the Director, Office of Management and Budget. We will also make copies available to other interested parties upon request.

Any questions should be directed to Bernice Steinhardt, Associate Director, Environmental Protection Issues, (202) 512-6501. Major contributors to this report are listed in appendix VIII.

Keith O. Fultz
Assistant Comptroller General

List of Requesters

The Honorable Albert Gore, Jr.
President of the Senate

The Honorable Robert C. Byrd
United States Senate

The Honorable John Glenn
United States Senate

The Honorable Howard M. Metzenbaum
United States Senate

The Honorable John D. Rockefeller IV
United States Senate

The Honorable Arlen Specter
United States Senate

The Honorable Harris Wofford
United States Senate

The Honorable Alan B. Mollohan
House of Representatives

The Honorable James A. Traficant, Jr.
House of Representatives

Executive Summary

Purpose

Annually about five million tons of hazardous waste are incinerated in the United States. Of this amount, about half is burned in 20 commercial incinerators and 24 cement kilns that take commercial waste. Public opposition to incineration has been strong in recent years. Some have become skeptical about the management of commercial incinerators, the ability of government agencies to regulate them, and whether the existing laws and regulations are sufficient to protect public health and the environment. One such facility, the Waste Technologies Industries' (WTI) hazardous waste incinerator located in East Liverpool, Ohio, has become the focus of national attention. Concerned about the process by which the Environmental Protection Agency (EPA) approved WTI's hazardous waste permit to operate and about the potentially adverse impacts of the incinerator's operation on the health of area residents, seven Senators and two Representatives requested that GAO examine (1) issues concerning the operational control and ownership of WTI and whether its hazardous waste permit is valid; (2) whether EPA and, in some cases, the state of Ohio have complied with regulations for approving and modifying the WTI permits; and (3) EPA's ability to ensure that human health and the environment are protected during the operation of the WTI incinerator.

Background

The WTI incinerator is regulated under the Resource Conservation and Recovery Act (RCRA), the Clean Air Act, and the Clean Water Act. These acts help to ensure that hazardous waste facilities safely treat, store, and dispose of such waste and limit air and water pollution. In order to construct and operate a hazardous waste incinerator, WTI, owned by a four-company partnership, was required to obtain permits from both the state of Ohio and EPA. In September 1981, WTI filed applications with the state of Ohio for two permits: a joint permit for air emissions and water discharges and a permit to construct and operate a hazardous waste facility. Another application was filed with EPA for a federal RCRA permit to construct and operate a hazardous waste facility. The permits were issued by the respective agencies during 1983 and 1984. In April 1993, the WTI incinerator, located in a floodplain (a lowland), went into limited operation.

Results in Brief

GAO concurs with EPA's conclusions that the validity of the incinerator permit was not affected by changes in operational control and the partners. EPA concluded that operational control of the WTI facility changed when WTI's managing partner was assigned substantial control over the facility. EPA modified WTI's permit to add the managing partner as a new

operator and assessed a penalty against WTI for failing to obtain EPA's approval before the change, as required by regulations. EPA also concluded that although the corporate partners changed several times and all of the partners are now owned by the same corporation, the ownership of WTI has not changed.

EPA generally followed the requirements in its regulations in permitting the WTI incinerator. However, EPA did not, among other things, (1) require WTI to provide an engineering analysis to show that its proposed flood protection devices would be able to withstand a 100-year flood and (2) conduct an alternative site analysis as required by a federal executive order on floodplain development. GAO believes that none of these circumstances required EPA to terminate WTI's permit. While EPA generally followed its public participation requirements, GAO did find opportunities, such as when a facility is required to update its contingency plan, when additional public participation would benefit the public and EPA.

Several planned and completed activities will help EPA to ensure that human health and the environment are protected during WTI's operations. As required by regulations, WTI conducted a trial burn to determine whether the incinerator could meet performance standards; it installed continuous monitoring equipment to monitor operating conditions; and EPA has inspected the facility and generally found it to be in compliance with requirements. EPA is also conducting a two-phase assessment of the health risks that may result from exposure to the incinerator's air emissions. As information has become available, EPA has required WTI to change the incinerator's operating conditions, as it did when the incinerator failed part of its trial burn.

Principal Findings

Operational Control and Ownership of WTI

Since WTI received its RCRA permit in 1983, several of the companies that made up the original WTI partnership have changed, as has the operational responsibility for the facility. Two of the original four corporate partners transferred their partnership interest to affiliated corporations, one partner changed its name, and the current WTI partners are now owned by a single corporation. In 1990, one of those partners, Von Roll (Ohio), Inc., was, in EPA's view, assigned operational control by the partnership. WTI did

not request or receive approval from EPA before making these permit changes.

In recent years, EPA has reviewed WTI's corporate makeup and RCRA permit to determine whether operational control and ownership of the facility have changed and whether the permit is still valid. EPA determined that Von Roll (Ohio), Inc., should have been added to the RCRA permit as an additional operator through a modification procedure that ordinarily requires 90 days' advance notification and EPA approval; in August 1993, EPA modified the WTI permit. GAO concluded that EPA had the legal authority to waive its regulations requiring 90-day advance notification and to modify WTI's permit to add Von Roll (Ohio), Inc.

The partners in WTI have changed and the current partners are now owned by the same corporation. The Ohio Attorney General concluded that the ownership of WTI had changed and that WTI's failure to revise or modify its Ohio permit violated Ohio's hazardous waste law. EPA concluded that WTI's change in partners did not constitute an ownership change under WTI's partnership agreement and Ohio partnership law and that the partnership is still valid. Even though EPA and Ohio did not agree on whether a change in ownership had occurred, EPA stated that resolution of this issue is not necessary for EPA to conclude that the permit is valid and enforceable. EPA argued, and GAO agrees, that both the owners and operators and the facility can be viewed as holding the permit and that the unapproved transfer of ownership does not automatically terminate a permit.

EPA Complied With Most Permitting Regulations

Generally, EPA followed most of the applicable RCRA, Clean Air Act, and Clean Water Act regulations in processing WTI's permit and overseeing the issuance of state permits. EPA, however, did not require WTI to include in its application an engineering analysis to verify that the facility could withstand the forces of a 100-year flood. An EPA Region V official stated that he did not require the analysis because he believed that the erosion control information in the application was sufficient. WTI later provided EPA with an engineering analysis. EPA told GAO that the information provided in the application, along with the analysis, meets the regulatory requirements. In addition, the RCRA regulations (1) do not include the requirement of federal Executive Order 11988 to analyze practicable site alternatives to floodplain development and (2) are not consistent with the guidance implementing the order, which calls for hazardous waste activities to be protected from a 500-year flood. Nevertheless, the WTI facility was elevated to the 500-year floodplain level. While EPA did not

follow all requirements, GAO believes that none of these circumstances require EPA to terminate WTI's permit. For instance, the executive order does not address the consequences for a permittee if an agency does not follow the order's requirements.

Although EPA generally followed its public participation requirements, it did not always give the public an opportunity to comment when it did not have specific regulatory guidance. For example, the public was not given an opportunity to review and comment on updated plans, such as the contingency plan, before the agency approved those plans. In response to public concern, EPA is now providing an opportunity for the public to comment on such plans. EPA stated that better public involvement could improve the permitting process and is considering various options for expanding such opportunities.

Activities to Ensure That Human Health and the Environment Are Protected

RCRA and its regulations are intended to ensure that hazardous waste incineration protects human health and the environment. EPA has established performance standards that WTI must meet when burning hazardous wastes and has required the WTI facility to conduct a test, called a trial burn, to make sure that it could meet those standards before beginning limited or full-scale operations. It also has required WTI to install and operate equipment to continuously monitor operating conditions and to report on its compliance. Ohio EPA has an inspector dedicated full time to the WTI site, and EPA periodically inspects the facility for program compliance.

Because of community concerns, EPA has gone beyond program requirements and is conducting a two-phase health risk assessment. It also has required WTI to carry out additional activities, such as testing for dangerous metals and dioxins during the trial burn, that are not currently required by RCRA and Clean Air Act regulations and that are intended to further protect human health and the environment in the area. As information from these activities becomes available, EPA can modify or stop the incinerator's operations. Thus far, EPA has directed WTI to change the operating conditions on the basis of trial burn results.

Recommendations

GAO recommends that the EPA Administrator amend the RCRA regulations to incorporate the alternative site analysis requirement of Executive Order 11988 and require that the 500-year floodplain be used. To ensure that maximum opportunities for public participation are provided, GAO further

recommends that the EPA Administrator establish guidance on the conditions or circumstances for which opportunities for public participation should be provided beyond the present regulatory requirements.

Agency Comments

EPA, Ohio EPA, the Ohio Department of Health, the Attorney General of Ohio, and WTI provided comments on a draft of this report. EPA said that the report is a balanced and fair assessment of the activities undertaken in connection with the WTI facility. Ohio EPA offered technical corrections and clarifying information for the report, as did the Ohio Department of Health. The Attorney General of Ohio agreed that the excerpts from the report he had been given are basically accurate. In addition to providing several corrections or clarifying points, WTI observed that it found it difficult to comment on just those portions of the report that GAO provided to the company; it also believes that many of the issues discussed in the report are insignificant. GAO believes that the issues addressed in the report are relevant to the key issues that have been raised about governmental approval of the WTI incinerator. GAO incorporated technical corrections and clarifying information into the report as appropriate. The full text of the respondents' comments and GAO's evaluation of them are provided in appendixes III, IV, V, VI, and VII.

Contents

Abbreviations

EPA	Environmental Protection Agency
GAO	General Accounting Office
NAAQS	National Ambient Air Quality Standards
NOVAA	North Ohio Valley Air Authority
NPDES	National Pollutant Discharge Elimination System
PSD	prevention of signigicant deterioration
RCRA	Resource Conservation and Recovery Act
SIP	state implementation plan
WTI	Waste Technologies Industries

Introduction

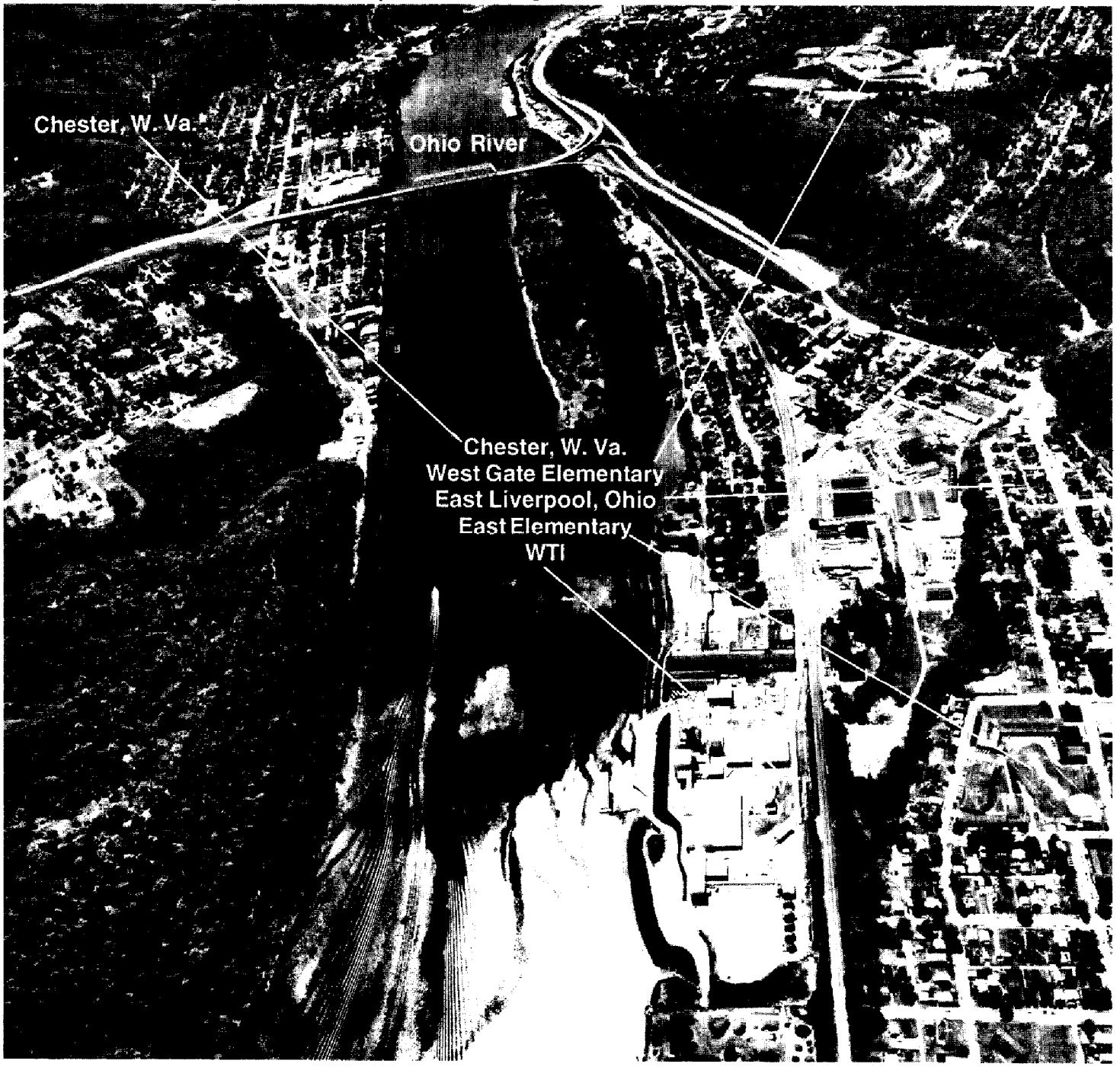
Five million tons of hazardous waste are incinerated in the United States annually. Of this amount, about half is burned in 20 commercial hazardous waste incinerators and 24 cement kilns that take commercial wastes. Incineration offers certain advantages over land disposal and deep-well injection, the more traditional methods of hazardous waste disposal. However, public opposition to the use of incineration has been strong in recent years, as some members of the public have become skeptical about the management of these facilities, the ability of government agencies to regulate them, and whether laws, regulations, and standards are sufficient to protect public health and the environment.

One of the 20 commercial incinerators is the Waste Technologies Industries' (WTI) facility located in East Liverpool, Ohio. Plans to build the incinerator began in the early 1980s. The incinerator conducted a trial burn in 1993 and has been operating on a limited basis since April 1993. During the last few years, however, it has become the focus of national attention as its critics have argued that it is an unsafe facility that poses a hazard to public health and the environment.

Origin of the WTI Incinerator; Opponents' and Proponents' Views

In 1981, four corporations formed the partnership known as WTI to build and operate a hazardous waste incineration system, including two rotary kiln incinerators. In part, WTI chose to build the incinerators in East Liverpool because of its convenience to steel mills, chemical plants, and other industries generating waste suitable for disposal at the type of facility proposed by WTI. When fully operational, the first incinerator, built between 1990 and 1992, will destroy approximately 60,000 tons of hazardous wastes annually. WTI has not announced a specific date for the construction of the second incinerator. The facility is situated on about 22 acres of land that was formerly part of the Columbiana County Port Authority's property in East Liverpool. The site of the WTI facility is zoned for general industrial activities. Fig. 1.1 is an aerial photograph of the area.

Figure 1.1: Aerial Photograph of WTI Facility and Surrounding Area



WTI is permitted to receive a variety of regulated hazardous wastes from customers such as chemical, rubber, paint, and manufacturing plants; refineries; and pharmaceutical laboratories. These wastes include oils; organic (contains carbon) solvents, liquids, sludges, and solids; paint residues; wax; grease; inorganic solids; water solutions; and dirt. Some wastes, such as PCB liquids, radioactive wastes, and dioxin wastes, are not allowed to be incinerated at the WTI facility.

In order to construct and operate its hazardous waste incinerator, WTI was required to obtain permits from both the state of Ohio, which had been authorized to administer the federal air and water discharge programs, and from the U.S. Environmental Protection Agency (EPA). Consequently, in September 1981 WTI filed applications for two Ohio permits—an air permit-to-install and a water permit (which are considered one permit since they are part of the same document) and a hazardous waste facility permit—and an EPA permit to construct and operate a hazardous waste facility under the Resource Conservation and Recovery Act (RCRA) of 1976, as amended. WTI applied to EPA for the permit because at that time EPA had not yet authorized the state of Ohio to administer the RCRA program. Therefore, it was necessary for WTI to have both a federal RCRA permit subject to EPA's oversight and a state hazardous waste permit. The EPA permit and the state permits were all issued during 1983 and 1984. In June 1989, EPA authorized the state of Ohio to administer the RCRA program.[1] As a result of this authorization, if WTI submits a timely and complete RCRA application to Ohio before its federal permit expires in 1995, WTI will continue to operate under the federal permit until a new RCRA permit is issued or denied by Ohio EPA. In 1992, Ohio EPA issued WTI an air permit-to-operate the incinerator. Ohio EPA oversees WTI's compliance with the state permits.

Opposition to WTI's Incinerator Primarily Based on Concerns About Health and Environmental Effects

Although local opposition to build the WTI incinerator in East Liverpool began in the early 1980s, during the past few years it has become part of a national debate on the need for and protection from hazardous waste incineration. Some East Liverpool residents and others opposing the incinerator see it as an unsafe facility that adds pollution to an already polluted community and is a liability and financial burden to the community. Over the past 12 years, the opponents have voiced concerns about the unsuitability of the site; adverse environmental and health impacts; hazardous material spills in storing and handling; the

[1]RCRA gives states the option of developing and administering their own hazardous waste programs in place of the federal program that EPA administers. To gain approval, a state program must be consistent with and equivalent to the federal RCRA program and at least as stringent.

trustworthiness of the owner and operator; and the absence of sufficiently stringent operating conditions, standards, and enforcement. For example, concerns were expressed early on about the health effects of the facility because it is located about 1,100 feet from a school, 300 feet from some homes, and on the bank of the Ohio River. Noting that while the RCRA regulations focused on controlling or reducing general particulate emissions, hydrogen chloride, and certain organic compounds, community members claim that relatively little attention is being given to the wide variety of heavy metals, such as lead and mercury, many of which are often toxic, are present in hazardous waste streams, and are not destroyed during incineration. In addition, the residents of East Liverpool and neighboring communities in West Virginia and Pennsylvania fear that dioxin, a possible human carcinogen, may form and be released into the environment during the burning of hazardous waste at WTI.

Because of the concerns about the incinerator, WTI's permits have been challenged in both state and federal courts. In Ohio, facility opponents appealed the Hazardous Waste Facility Approval Board's decision to issue WTI's permit on the grounds that, among other things, WTI had not shown that the facility represents the minimum adverse environmental impact as required by Ohio law; it failed to consider alternative sites; and it did not represent the minimum risk of groundwater and surface water contamination, fire, explosions, and transportation accidents. The Ohio Court of Appeals affirmed the Board's decision, which was subsequently upheld by the Ohio Supreme Court. (West Virginia v. Ohio Hazardous Waste Facility Approval Bd., 28 Ohio St. 3d 83, 502 N.E.2d 625 (1986).)

Likewise, WTI's federal permit also has been challenged. In April 1992, the Attorney General of West Virginia, on behalf of the citizens of West Virginia, and the City of Chester, West Virginia, brought suit in the U.S. District Court for the Northern District of West Virginia, challenging the validity of WTI's federal hazardous waste permit on the grounds that, among other things, the incinerator was being constructed and would be operated without properly issued permits, the permits were unlawfully transferred in violation of federal and state law, changes in operator occurred without proper authorization, and the landowner did not sign the RCRA permit. In November 1992, the district court denied the plaintiffs' motion for a court order to stop WTI from operating. In March 1993, the U.S. Court of Appeals for the Fourth Circuit held that the district court had no jurisdiction to hear what amounted to an appeal of a RCRA permit. Appeals of EPA's permit decisions must be filed in federal circuit court within 90 days after EPA's decision. The court ordered the case to be

dismissed. (Palumbo v. Waste Technologies Industries, 989 F.2d 156 (4th Cir. 1993).)

In January 1993, Greenpeace and 12 residents of East Liverpool, Ohio, filed a complaint and a motion for injunctive relief in the U.S. District Court for the Northern District of Ohio. The suit alleged, among other things, that operation of the facility would pose an imminent and substantial endangerment to public health and the environment through indirect exposure to dioxin emissions. In March 1993, the district court found in favor of the plaintiffs and issued an order barring the limited operation of the facility during the post-trial-burn period. Later in March, the U.S. Court of Appeals for the Sixth Circuit suspended the order while it considered the case, allowing WTI to start limited commercial operation. In November 1993, the Sixth Circuit Court of Appeals reversed the district court's order and ordered the case to be dismissed, holding that the district court did not have jurisdiction for the same reasons as the fourth circuit in the Palumbo case. (Greenpeace, Inc. v. Waste Technologies Industries, 3 F.3d 1174 (6th Cir. 1993).)

In addition, two lawsuits challenging EPA's decision to allow WTI to begin limited commercial operation have been consolidated and currently are pending in the U.S. Court of Appeals for the District of Columbia Circuit.

WTI Supporters See Economic Benefits

Other local citizens favor and support the operation of the WTI facility in East Liverpool. They believe that it represents the state-of-the-art in technological design and operation and environmental safety for WTI's workers and local citizens. These citizens believe that the facility has been thoroughly reviewed and approved by state and federal regulatory agencies and meets or exceeds all standards for safe operation. In addition, proponents of the incinerator state that the facility will provide a great economic boost to the East Liverpool area by adding new jobs and increasing tax revenues.

According to WTI, over 500 workers from a variety of companies based in Ohio, Pennsylvania, and West Virginia were employed in the construction of the $165 million incinerator. As of May 1994, WTI employs 156 permanent workers and has a $5.2 million annual payroll. Half of those employees live within Columbiana County, where WTI is located. WTI also indicated that approximately 20 percent of its 1,300 suppliers are based in East Liverpool and neighboring Ohio towns and that another 63 percent come from other cities in Ohio, Pennsylvania, and West Virginia. From

January through March 1994, WTI stated that it has purchased approximately $42.5 million in goods and services from all vendors (at least $9.2 million was spent in East Liverpool).

From January 1992 through March 1994, according to WTI, it paid the city of East Liverpool, Columbiana County, and the states of Ohio, Pennsylvania, and West Virginia approximately $1.9 million in various taxes. Also during this period, the state of Ohio received $78,934 in fees for permitting and waste treatment. In addition, city and WTI officials said that East Liverpool has a nonbinding agreement with WTI to receive an estimated $600,000 annually on the basis of tons of waste incinerated ($10/ton based on 60,000 tons of waste). WTI has also said that it will provide an annual contribution of $1/ton of waste incinerated to the East Liverpool hospital. As of March 1994, WTI had contributed $12,546 to the hospital. WTI advanced East Liverpool $200,000 for the purchase of hazardous materials response equipment to be used by the city's fire department. This amount is to be deducted from the $600,000 expected to be paid to East Liverpool.

In terms of added cost, East Liverpool officials indicated that additional costs to East Liverpool for WTI's operations include $34,000 in overtime paid to the police department to control demonstrations by opponents of the facility. The city also had to reopen the East End Fire Station, requiring $49,000 annually to employ two firemen. A new fire truck for this station cost the city $115,000.

Evolution of Hazardous Waste Incinerators' Regulations, Standards, and Technologies

Under the current permitting arrangement, the WTI incinerator is regulated under RCRA, the Clean Air Act, and the Clean Water Act.[2] Since the enactment of these laws, revisions to the acts and additional regulatory requirements and guidance have been established to better protect public health and the environment. Although EPA administers these three acts, it can authorize states whose programs meet or exceed EPA's standards to carry out state programs in place of the federal program.

RCRA, enacted in 1976, and the Clean Air Act, enacted in 1970, have the primary objectives of protecting public health and the environment. Between the time that WTI applied for a permit in 1981 and today, many RCRA and Clean Air Act requirements have been revised and expanded through amendments to RCRA in 1984 and to the Clean Air Act in 1990. In

[2]See appendix I for a discussion of the major laws and key regulations on hazardous waste incineration.

addition, EPA has issued new regulations, guidance documents, and policy to reflect improved management systems, new listings of hazardous waste, more stringent performance standards and operating conditions, and additional permit requirements.

In recent years, technological advances and improvements in incinerator design, including the use of multiple combustion chambers and air pollution control equipment, have contributed to reducing the amount of pollution emitted from incinerator stacks. Other technological improvements in equipment, such as continuous emissions monitoring equipment, used for monitoring stack emissions, have provided more accurate data for the regulatory agencies to change an incinerator's operating conditions. In addition, incinerators have been required to use continuous monitoring equipment in the stack or ducts that automatically shuts off the incinerator's waste feed when certain operating conditions are not being met.

EPA's Current Program Initiatives

In May 1993, the EPA Administrator announced a Draft Hazardous Waste Minimization and Combustion Strategy. The strategy is to reduce the amount of hazardous waste produced in this country and strengthen controls governing hazardous waste incinerators and industrial furnaces, including a regulatory initiative to reduce the risk posed by air emissions from hazardous waste incinerators. In August 1993, EPA identified several ongoing major projects that it has undertaken to address the strategy's goals. The projects include assessing the technical standards, public involvement, permitting rulemaking, and risk assessment associated with hazardous waste combustion, including incineration. Issues being assessed include determining whether a need exists for (1) direct and indirect exposure risk assessments during the permitting process, (2) adding to new permits more stringent controls for emissions of particulate matter and heavy metals, and (3) public participation in the permitting process at an earlier stage than is currently done. Proposed rulemaking and updated guidance reflecting changes in these areas are planned for fiscal years 1994 and 1995.

Objectives, Scope, and Methodology

In a letter dated December 7, 1992, then Senator Al Gore, Senators Howard Metzenbaum, Arlen Specter, Robert Byrd, Jay Rockefeller, Harris Wofford, and John Glenn and Representative Alan Mollohan requested that we examine a number of questions concerning the WTI facility, the validity of its permit, and its health and environmental effects. Subsequently,

Representative James Traficant joined the request. In discussions with the requesters' staffs, we agreed to focus specifically on (1) issues concerning the operational control and ownership of WTI and whether its hazardous waste permit is valid; (2) whether EPA and, in some cases, the state of Ohio have complied with regulations for approving and modifying the WTI permits; and (3) EPA's ability to ensure that human health and the environment are protected during the operation of WTI.

While the scope of our review generally encompassed just WTI, in the course of doing our work we sometimes were able to identify and address broader systemic problems in EPA's regulatory process. Likewise, we generally limited our scope to issues surrounding the approval and issuance of WTI's federal RCRA permit and EPA's oversight of the state of Ohio's issuance and enforcement of WTI's air and water discharge permits. Ohio's hazardous waste permit actions generally were not a subject of this review. However, we did look at the state of Ohio's role and actions in considering the effects of WTI's construction on existing site contamination.

To address our first objective, we interviewed officials and obtained documentation on WTI's ownership and operational control from EPA Region V, which is the cognizant region for facilities in Ohio and is located in Chicago, Illinois; officials from the Ohio Attorney General's office, EPA, and the Hazardous Waste Facilities Board,[3] all in Columbus, Ohio; citizens groups from East Liverpool and the surrounding area; the Solicitor for the City of Pittsburgh; and counsel for WTI. We also reviewed an EPA Inspector General's report on WTI and reviewed and analyzed EPA's regulations and federal and state court opinions.

To address our second objective, we interviewed officials and obtained documentation on the regulatory agencies' permit approval and implementation processes from EPA Region V and EPA headquarters in Washington, D.C.; the Federal Emergency Management Agency; and Ohio's EPA, Hazardous Waste Facilities Board, and Department of Industrial Relations. We also reviewed and analyzed EPA's regulations, the Environmental Appeals Board's decisions, and federal court opinions.

In addition, we obtained information on public perceptions about WTI's operations and issues pertaining to the regulatory agencies' practices and procedures in permitting WTI from the Mayor and a number of citizens of

[3]At the time WTI was issued its state permit, the Board was called the Hazardous Waste Facilities Approval Board.

East Liverpool, citizens groups' representatives, an Assistant Solicitor for the City of Pittsburgh, Greenpeace representatives, and WTI officials.

To achieve our third objective, we interviewed officials and obtained documentation on trial burn results, health risk assessments, local baseline health studies, and regulatory agencies' monitoring and inspection and enforcement programs from EPA Region V, EPA's Research and Development Laboratory in Cincinnati, Ohio, and EPA headquarters; Ohio's EPA, Department of Health, and Hazardous Waste Facilities Board; the East Liverpool Health Department and citizens groups; the North Ohio Valley Air Authority; and WTI.

We conducted most of our audit work between March and December 1993 in accordance with generally accepted government auditing standards. In selected cases, we updated our information through July 1994. EPA provided written comments on a draft of this report, which are included in appendix III. Written comments were also received from Ohio EPA, Ohio Department of Health, the Attorney General of Ohio, and WTI on excerpts from the report that were pertinent to them. Their comments are included in appendixes IV, V, VI, and VII, respectively; GAO's comments appear at the end of each appendix. Also, their comments were incorporated into the report as appropriate.

Issues About Changes in Operational Control and Ownership Do Not Alter Validity or Enforceability of WTI's Permit

Various changes in WTI's partners and a contract between one partner and the WTI partnership have led EPA, WTI opponents, and others to raise questions about whether the operational control and ownership of WTI has legally changed, without a required modification of WTI's RCRA permit. Opponents also have questioned whether, as a result of these changes, WTI's RCRA permit is valid.

EPA concluded that the operational control of the incinerator changed when WTI made one of its partners the managing partner and later entered into an operating contract with that partner. EPA required WTI to modify its permit to add the partner as an additional operator and imposed a $64,900 penalty for WTI's failure to notify EPA in advance of the operational control change.

In connection with the change in ownership issues, EPA concluded that the facility had not been transferred to a new owner. EPA also concluded, and we agree, that even if the ownership had changed, WTI's permit is valid and enforceable because a permit is issued to a facility as well as to an owner.

Background

In 1981, four corporations formed the partnership known as Waste Technologies Industries, or WTI. These corporations, Koppers Environmental Corporation, Energy Technology Company, Waste Technologies, Incorporated, and Von Roll America, Inc., were owned, respectively, by Koppers Company, Inc., Mustang Fuel Corporation, Stephens, Inc., and Von Roll, AG.[1]

Since 1981, various changes have occurred among the partners.[2] In 1986, two of the original partners transferred their partnership interests to affiliated corporations, and one of these corporations later changed its name. Specifically, Von Roll America, Inc., transferred its partnership interest to its newly created subsidiary Von Roll (Ohio), Inc. Waste Technologies, Incorporated (with a comma), transferred its partnership interest to sister corporation WTI Acquisition, Inc., which changed its name to Waste Technologies Incorporated (without a comma). One of the

[1]Von Roll, AG is a Swiss company. "AG" is an abbreviation for a German word denoting a business entity similar to a corporation. Von Roll, AG is also known as Von Roll, Ltd. and Von Roll Ltd.

[2]A June 1993 investigative report prepared by the Ohio Attorney General details the evolution of WTI's structure since 1981. The changes of most concern have occurred since 1986.

remaining original partners (Koppers) also changed its name (to Environmental Elements Ohio (Inc.)).[3]

The four current partners are Von Roll (Ohio), Inc., Energy Technology Company, Waste Technologies Incorporated, and Environmental Elements Ohio (Inc.). In addition, all of the partners are now owned by the same parent corporation, Von Roll America, Inc.

Finally, in a 1987 amendment to WTI's Joint Venture Agreement, Von Roll (Ohio), Inc., became the managing partner of WTI. Also, in 1990 Von Roll (Ohio), Inc., entered into an operating contract with WTI, which EPA determined assigned substantial independent operational control of the facility to Von Roll (Ohio), Inc.

Effects of Change in Operational Control

WTI's original RCRA permit application listed Waste Technologies Industries as the operator of the facility. However, at a May 7, 1992, hearing, EPA learned that WTI and one of its partners, Von Roll (Ohio), Inc., had entered into a contract on September 21, 1990, which EPA determined assigned substantial independent operational control of the incinerator to Von Roll (Ohio), Inc. Additionally, a 1987 amendment to the WTI Joint Venture Agreement had earlier made Von Roll (Ohio), Inc., the managing partner, replacing a management committee that had exclusive authority to manage and control activities related to constructing, owning, and operating the facility. Also, Von Roll (Ohio), Inc., obtained the letter of credit for facility closure,[4] which is a responsibility of the facility owner or operator.

EPA's position is that, under this arrangement, Von Roll (Ohio), Inc., is an additional operator of the facility within the meaning of RCRA and that the arrangement should have been effected through a permit modification with prior EPA approval.

[3]The spelling and punctuation of many of the companies discussed in this report are inconsistent in various documents. In his investigative report on WTI, the Ohio Attorney General generally used the actual name under which a given company was incorporated. In addition, the Attorney General investigated the discrepancies in spelling and punctuation of the corporate names. This report uses the spelling accepted by the Attorney General as the correct names for the corporations.

[4]Closure refers to the period during which an owner and operator of a hazardous waste facility stops using and actually closes the facility. EPA requires the owner or operator to submit for approval a closure plan that describes how the facility will be closed and the schedule for completion. The owner or operator is required to demonstrate adequate financial resources to carry out the closure. To demonstrate adequate resources to cover closure costs, financial assurance may be provided through various mechanisms such as a trust fund, letter of credit, surety bond, insurance, or financial test.

WTI submitted a modification request to EPA on June 18, 1992, and a revised, unsigned permit application to EPA on August 25, 1992. On September 30, 1992, EPA notified WTI that it was processing the modification request as a Class 1 modification—in this case requiring a 90-day prior notification and EPA approval—and requested a signed copy of the revised permit application. In a letter to EPA Region V, dated November 2, 1992, counsel for WTI enclosed a signed revised permit application that identified Von Roll (Ohio), Inc., as an additional operator. However, the letter expressed WTI's disagreement with EPA's position that Von Roll (Ohio), Inc., is an operator as that term is used in RCRA. WTI argued that because the facility had not yet accepted hazardous waste, the facility did not yet have an operator. Also, according to WTI, Von Roll (Ohio), Inc.'s obligation under the contract to operate the facility did not begin until the trial burn was concluded. WTI also has argued that because WTI maintains complete control over the facility and Von Roll (Ohio), Inc., is the managing partner of WTI, the contract did not represent a change in operational control. In addition, WTI, in its comments on this draft, stated that the letter of credit was obtained by Von Roll (Ohio), Inc., as managing partner of WTI on behalf of the partnership, and not by Von Roll (Ohio), Inc., on its own.

As a Class 1 modification, changes in operational control under RCRA regulations require advance notification and EPA approval but do not require a public comment period. However, because WTI failed to notify EPA 90 days before naming Von Roll (Ohio), Inc., as an operator, and because EPA believed that public involvement was warranted, EPA initiated a 30-day public comment period on WTI's request for the change. Although the revised permit application that EPA initially received from WTI was unsigned, EPA proceeded to take comments on the proposed modification. EPA accepted comments from October 2, 1992, through November 2, 1992.

On August 24, 1993, EPA modified the WTI permit to add Von Roll (Ohio), Inc., as an additional operator. EPA also issued a civil administrative complaint against WTI, in which the agency is seeking penalties of $64,900 from WTI for its failure to notify the agency prior to the change and obtain a permit modification to name Von Roll (Ohio), Inc., as an additional operator of the facility.

Incinerator opponents have argued that EPA had no authority to modify the permit to add Von Roll (Ohio), Inc., as an operator after the change in operational control had taken effect. They also stated that WTI can never comply with the required 90-day notice for Class 1 modifications, since the

actual change in operational control took place in 1990. They contend that because Von Roll (Ohio), Inc., and WTI have violated RCRA regulations, revocation of the permit and reapplication by the current owners and operators is the only appropriate course for EPA to pursue.

EPA views WTI's failure to obtain prior approval of its operator change as a violation of its regulations implementing RCRA and, as noted above, has taken enforcement action against WTI for adding Von Roll (Ohio), Inc., as an operator without prior approval. In its Response to Comments, dated August 24, 1993, EPA stated that it had authority to modify WTI's permit to add Von Roll (Ohio), Inc., as an additional operator. EPA stated that when a facility makes a change without prior approval, EPA is not forever precluded from processing a late-filed modification request to make the permit conform to the changed circumstances. The agency stated that the 90-day prior notification requirements of the regulations are primarily procedural requirements designed to ensure sufficient time for EPA to evaluate proposed changes before they occur. Finally, EPA stated that it does not interpret its regulations as compelling the agency to initiate a revocation and reissuance of the entire permit.

GAO's Analysis

The change in operational control without prior authorization presents two issues. The first issue is whether EPA may waive its 90-day advance notification requirement to add an operator to the permit. The second issue presented by the change in operational control without EPA's prior approval is the appropriate enforcement action that EPA may take.

Under RCRA regulations, only two ways exist to effect a change in operational control: modify an existing permit or revoke and reissue it. As discussed above, opponents of the incinerator claim that because WTI did not give EPA prior notice of the transfer, EPA may not now modify the permit to add Von Roll (Ohio), Inc., as an operator. Rather, they claim, EPA legally is obligated to revoke and reissue the permit. However, the regulation governing revocation and reissuance also requires advance notification. Thus, under a literal reading of the regulations, EPA could neither modify nor revoke and reissue the permit, because advance notification, required under both procedures, had not been given. Nonetheless, EPA did modify the permit, using a Class 1 modification that was "enhanced" with a formal comment period.

In modifying the permit, EPA, in effect, waived its own procedural regulations. The issue raised is whether this action is within EPA's legal authority. We believe that it is.

The Supreme Court has held that it is within the discretion of an administrative agency to relax or modify procedural rules that the agency has adopted for the orderly transaction of the business before it. (American Farm Lines v. Black Ball Freight Service, 397 U.S. 532 (1970).) Under Black Ball Freight, the determination of whether an agency is entitled to waive adherence to its own regulations turns on whether the regulations were intended to confer important procedural benefits upon the parties before the agency or whether they are merely procedural rules for the orderly transaction of the agency's business.

EPA states that the 90-day prior notification requirement of its regulations is primarily a procedural requirement designed to ensure sufficient time for it to evaluate proposed changes in ownership or operational control before they occur. Therefore, EPA had discretionary authority to waive the requirement. We agree.The requirement does not confer procedural benefits on individuals—incinerator opponents, for example—since the regulations do not provide for public notice or comment during the 90-day period. The period during which the public has an opportunity to comment on the change starts to run after EPA approves the change. After EPA's approval, the public has an opportunity to request that EPA review and reject the change. In this case, EPA's late modification procedure provided an additional comment period before EPA made its final decision to approve the modification. Thus, the modification procedure EPA adopted conferred procedural benefits that the public would not ordinarily have had.

The second issue concerns the enforcement actions that EPA may, or must, take if an unapproved transfer occurs. One possible enforcement action available to EPA is the imposition of a penalty.[5] Another enforcement action is permit termination.

Under RCRA and EPA's regulations, when EPA determines that a person is in violation of a requirement of RCRA, EPA's regulations, or a permit, EPA may issue an order assessing a civil penalty of up to $25,000 per day for each violation. In assessing the penalty, EPA must take into account the

[5]RCRA also authorizes EPA to issue an order requiring compliance with the provisions of RCRA. If a violator fails to take corrective action within the time specified in a compliance order, EPA may assess a civil penalty for noncompliance with the order and suspend or revoke any permit issued to the violator. In certain cases, EPA may seek criminal penalties for violations of RCRA.

seriousness of the violation and any good faith efforts to comply with applicable requirements.

Under EPA's regulations, the grounds for terminating a permit include noncompliance by the permittee with any condition of the permit. The transfer of a permit without advance notice to EPA violates a permit condition.[6] Thus, the grounds for terminating WTI's permit or imposing a penalty were present, and EPA could have taken either action or both. In addition, EPA could have decided to take neither action. An agency's decisions on enforcement actions are generally within that agency's discretion. (Heckler v. Chaney, 470 U.S. 821 (1985).) In this case, EPA chose to impose a penalty of $64,900 on WTI for its failure to notify EPA in advance of adding Von Roll (Ohio), Inc., as an operator. In our view, this choice was within EPA's discretion.

Effect of Possible Changes in Ownership

Under RCRA, any person who owns or operates a hazardous waste facility must obtain a permit. RCRA defines "person" to include a partnership. However, EPA's regulations do not require each partner to be named on the permit. Thus, EPA issued the hazardous waste permit to the partnership entity known as Waste Technologies Industries. The individual partners were not named on the permit.

RCRA regulations state that a facility may be transferred to a new owner only if the permit has been modified, or revoked and reissued, to identify the new permittee. The regulations do not provide guidance on when changes in a partnership require a permit to be modified. A change in ownership, like a change in operational control, may be made as a Class 1 modification with prior written approval of EPA.

EPA, the Ohio Attorney General, counsel for WTI, and others have turned to Ohio partnership law to determine whether the WTI facility was transferred to a new owner. EPA stated that while the requirements of RCRA would be fully enforceable against WTI in any event as de facto owner and operator of the facility, it was desirable from a practical and evidentiary standpoint to have the technically correct legal entity on the permit.

Specifically, the issues relating to ownership are (1) whether the change in partners has caused a dissolution of the partnership and (2) whether Von Roll America, Inc.'s ownership of the four partners has caused the

[6]A standard condition of a RCRA permit states that: "This permit is not transferable to any person except after notice to [EPA]." 40 C.F.R. 270.30(l)(3).

partnership to merge into a single owner. After addressing these issues, EPA concluded that no legal change in the partnership had occurred, and the Ohio Attorney General concluded that under Ohio partnership law, the partnership had dissolved. These conclusions, however, are distinct from the issue of whether the WTI permit is valid. EPA concluded that, even assuming the Ohio Attorney General's conclusions concerning Ohio partnership law and ownership of the facility are correct, WTI's permit remains valid and enforceable because a permit is issued to a facility as well as to an owner. Furthermore, an unauthorized transfer of ownership is not grounds for automatic termination.

Dissolution of Partnership

The principal issue of whether the WTI partnership has legally changed centers on the concept of "dissolution." Dissolution is a technical term in partnership law concerning the legal identity of a partnership and the authority, rights, and liabilities of the partners. It is defined as "the change in the relation of the partners caused by any partner ceasing to be associated in the carrying on as distinguished from the winding up of the business." For example, a partnership may be dissolved when a partner dies or withdraws from the partnership.[7]

Dissolution Under WTI's Joint Venture Agreement

The terms of the WTI partnership are spelled out in a document entitled "Joint Venture Agreement of Waste Technologies Industries," dated June 26, 1981. Several provisions in the Joint Venture Agreement are relevant to the issue of whether WTI dissolved when the partners changed.

The Joint Venture Agreement lists four grounds for dissolution of the WTI partnership: notice of termination signed by all partners; withdrawal of all partners; incorporation of the partnership; and bankruptcy. A change in partners is not among the grounds specified for dissolution in the agreement. The agreement also provides that the partnership shall exist until its dissolution by one of the four factors. Furthermore, the agreement provides that if a partner transfers a partnership interest to an affiliated corporation, the original partner remains liable for all obligations incurred by the partner before the transfer and for all obligations incurred by any assignee after the transfer.

Dissolution Under Ohio Law

Ohio has adopted a version of the Uniform Partnership Act, a statute governing partnerships, as chapter 1775 of the Ohio Revised Code. The Ohio Revised Code sec. 1775.28 defines dissolution as "the change in the

[7]Upon dissolution, the partnership is not terminated but continues until the winding up of partnership affairs is completed. After dissolution of a partnership, the partners may continue the business of the partnership.

relation of the partners caused by the partner's ceasing to be associated in the carrying on as distinguished from the winding up of the business." Some states' versions of the Uniform Partnership Act specifically provide that a written partnership agreement may prevent dissolution upon a change in partners (for example, Cal. Corp. Code sec. 15031).

No specific statutory provision in Ohio addresses whether a partnership agreement may prevent dissolution upon a change in partners. Therefore, EPA, the Ohio Attorney General, counsel for WTI, and others have reviewed case law to determine whether an Ohio court would give weight to such a provision in a partnership agreement, and they have reached different conclusions. One case in particular, decided by a federal district court in Ohio, has been cited by incinerator opponents and the Ohio Attorney General to support the view that the partnership was dissolved, notwithstanding any agreement to the contrary in the partnership agreement.

The case in question is Fairway Development Co. v. Title Insurance Co., 621 F. Supp. 120 (N.D. Ohio, 1985). Fairway has been cited by the Ohio Attorney General and others as standing for the proposition that a partnership dissolves whenever a partner is added to or deleted from the business. In Fairway, two partners had sold their partnership interests to the third remaining partner and one outside party. The court held that the partnership had dissolved and that the title insurance covering the dissolved partnership did not cover the reconstituted partnership. The court stated: "Ohio follows the common law aggregate theory of partnership, under which a partnership is regarded as the sum of the persons who comprise the partnership." (Id. at 122.) The court also stated that the Ohio Uniform Partnership Law did not change this rule.

WTI counsel have distinguished Fairway from the WTI situation on two principal grounds. First, Fairway involved two separate partnership agreements, where the second partnership agreement expressly acknowledged the formation of a new partnership. Second, neither of the Fairway agreements provided that the partnership would not dissolve if a partner was deleted from the business. By contrast, WTI involves one partnership agreement that contains provisions that may be interpreted as providing that the partnership would not dissolve upon a change in partners.

In two unreported Ohio state court cases, both dealing with partnership agreement provisions that differed from the Uniform Partnership Act, the

courts reached different results on whether to honor the partnership agreement. In Warren v. Craig, No. C-820789 (Hamilton Cty. App., July 20, 1983), the court held that the partnership had dissolved when one partner left the partnership, notwithstanding the fact that none of the events for dissolution under the partnership agreement had occurred. The court based its decision on the Ohio statutory provision that a partnership may be dissolved in contravention (violation) of the partnership agreement by the express will of any partner at any time. In the other case, Cherry Valley Corp. v. Estate of Riley, No. CA-2874 (Licking Cty. App., November 23, 1982), the partnership agreement provided that the partnership would not dissolve upon the death of a partner, but that the interest of the deceased partner would pass to his personal representative. In this case, the court honored the partnership agreement and held that the partnership did not dissolve, notwithstanding the Ohio statutory provision that a partnership dissolves upon the death of a partner.

Ohio Attorney General's Conclusions

The Ohio Attorney General concluded in the June 1993 Investigative Report that under Ohio partnership law, the WTI partnership had dissolved. According to the Attorney General, in Ohio a partnership dissolves whenever a partner is added to or deleted from the business. Furthermore, under both Ohio common law and the Ohio Partnership Act, the dissolution occurs, even if the partnership agreement states otherwise. After dissolution, the business is either terminated or continued as a new entity, such as a new partnership. The Ohio Attorney General relied on the Fairway case and several other Ohio cases, including Warren v. Craig.[8] The Attorney General's report did not mention the Cherry Valley case. The Attorney General concluded that dissolution of the partnership occurred on more than one occasion and resulted in transfers of ownership of the incinerator. The Attorney General further found that WTI had not applied for or received a revision or modification of the permit, in violation of three provisions of Ohio's hazardous waste law.[9] In a letter to an organization representing incinerator opponents, dated September 22,

[8]In Warren v. Craig, the court ruled that notwithstanding the partnership agreement, the partnership dissolved because one partner expressed a desire for dissolution. The Ohio Attorney General cited the case for the more general proposition that the deletion or addition of a partner dissolves a partnership even if the partnership agreement states otherwise.

[9]The Ohio Attorney General also considered whether the partnership had dissolved on an additional ground. The Joint Venture Agreement provides that in the event of a transfer to an affiliated corporation, the original partner remains liable. On this basis, WTI counsel had concluded that the transfers were not withdrawals. Instead, they were conveyances of partnership interests. Under Ohio Rev. Code sec. 1772.26(A), a conveyance of a partnership interest does not result in the dissolution of the partnership. The Ohio Attorney General interpreted this provision to mean that the Joint Venture Agreement allows transfers to affiliates of the original partners and provides that in such an event the business would continue. However, the Attorney General concluded that after such a transfer, the venture continues as a new partnership. EPA did not reach a conclusion on this issue.

1993, the Chief of the Environmental Enforcement Section of the Ohio Attorney General's office confirmed that the report "conclud[ed] that WTI's changes of ownership have resulted in unlawful installation and operation of the facility by the current owner, in violation of three Ohio provisions of law which prohibit ownership and operation without a permit."

EPA's Conclusions

In an October 1992 memorandum, well before the June 1993 Ohio Attorney General's report, attorneys for EPA analyzed Ohio's partnership law and concluded that no legal change had occurred in the WTI partnership. Thus, the attorneys determined that no transfer of ownership of WTI occurred.[10]

The attorneys stated that:

"Under state law, it appears that the changes of the WTI partners might well have resulted in the dissolution of the original partnership absent a provision to the contrary in the agreement among the partners."

The attorneys concluded, however, that the Joint Venture Agreement expressly limited the grounds for dissolution and contemplated that the partnership would continue, even though the partners had changed.

The EPA attorneys relied on the Cherry Valley case as well as cases from other jurisdictions in which courts had honored provisions against dissolution in partnership agreements. They also relied on the general principle that "[w]here a partnership agreement specifically provides that the firm will not dissolve on the withdrawal of a partner, the courts recognize that the partnership continues to exist after a partner's withdrawal."[11]

Validity of the Partnership Examined

Apart from whether the partnership has dissolved, the validity of the WTI partnership has been examined by EPA, the Ohio Attorney General, and other interested parties. Von Roll America, Inc., apparently now owns

[10]As explained below, EPA's response to the Ohio Attorney General's report was that the issues addressed had not been definitively resolved by Ohio case law and that EPA does not believe that there is a "clear right answer" on the state law issues presented.

[11]59A Am. Jur. 2d sec. 829.

100 percent of the stock of the four corporate partners.[12] With one exception, all of the officers and directors of the four corporate partners are also officers and directors of Von Roll America, Inc. The president of Von Roll America, Inc., is also the president of all four partners. Three of the four partners have no employees.

The issue raised is whether WTI legally constitutes a single corporate entity and not a four-party partnership. If it is a single corporate entity, ownership of the facility has been transferred from the partnership to a new owner—Von Roll America, Inc. EPA, the Ohio Attorney General, and others disagree on whether the separate existence of the four corporate partners would be recognized by a court.

EPA, in its analysis, concluded that an Ohio court would not disregard the corporate form of the partners. EPA stated that the four corporations comprising WTI are validly incorporated, registered in Ohio, and in good standing both in their states of incorporation and in Ohio. The partners filed separate income tax returns with the Internal Revenue Service. EPA relied on case law supporting the principle that courts are generally reluctant to disregard the separate identity of different business organizations. In one case, for example, the Supreme Court of Ohio held that the fact that a parent corporation owned all of the stock of a subsidiary corporation and that the two corporations had the same directors did not justify disregarding the separate corporate form. (North v. Higbee Co., 3 N.E. 2d 391, 939 (Oh. 1936).) EPA also relied on the legal principle that, as a general matter, the corporate entity will be disregarded only in the presence of injustice, unfairness, or fraud. (Bucyrus-Erie v. General Products, 643 F.2d 413, 418 (6th Cir. 1981) (applying Ohio law).)

The Ohio Attorney General examined the facts of the WTI partnership and concluded that the four WTI partners are little more than alter egos of their parent, Von Roll America, Inc. The Ohio Attorney General stated that to determine whether a business is a partnership, the courts look to a number of elements, including sharing of profits and losses, authority in all

[12]Von Roll America, Inc., transferred its partnership interest to its subsidiary, Von Roll (Ohio), Inc., on October 31, 1986. Von Roll America, Inc., purchased the stock of Waste Technologies Incorporated (no comma), and Energy Technology Company on May 7, 1990, and the stock of Environmental Elements Ohio (Inc.) on June 22, 1990.

Waste Technologies, Incorporated (with a comma) was owned by Stephens, Inc., which had approximately 99 percent ownership, and Donald Brown, who had approximately 1 percent ownership. Waste Technologies, Incorporated (comma), transferred its interest in the partnership to WTI Acquisition, Inc., which then changed its name to Waste Technologies Incorporated (no comma). According to the Ohio Attorney General, in the process Donald Brown may have been cut out of his share of the ownership of the partnership.

partners to make decisions binding on the partnership, shared ownership of the partnership's capital account, and filing of partnership tax returns. The Ohio Attorney General concluded that WTI lacks a number of these elements. The Ohio Attorney General noted that the president of Von Roll America, Inc., who is also the president of all of the subsidiaries, makes the day-to-day decisions for WTI. Von Roll America, Inc., makes all decisions and collects all profits through Von Roll (Ohio), Inc., as the managing partner of WTI. None of the other three WTI subsidiaries share in these roles. According to the Attorney General, Von Roll America, Inc., not a four-corporation partnership, has been installing and operating the incinerator. The Attorney General concluded that because WTI is no longer functioning as a partnership, but instead is functioning effectively as a single corporate entity, the Ohio EPA "could find" that the incinerator has been transferred to another person.

WTI submitted a Class 1 permit modification request to EPA on August 5, 1993, requesting that Von Roll America, Inc., be listed on the federal permit as owner and operator of the facility. If the modification is approved, WTI will transfer exclusive ownership and operational control of the facility to Von Roll America, Inc., and formally dissolve the WTI partnership. On August 24, 1993, EPA initiated a 30-day comment period on the proposed modification to list Von Roll America, Inc., on the federal permit. EPA proposes first to add Von Roll America, Inc., to the permit and, in a later modification, delete WTI and Von Roll (Ohio), Inc., from the permit. EPA will make a final determination after considering the public comments.

EPA has stated that it has decided not to bring an enforcement action against WTI or Von Roll America, Inc., at this time for failing to notify the agency of a change in ownership (in contrast to the change of operator) because of the legal uncertainties surrounding the ownership issues. EPA stated that there is not a "clear right answer" on the legal issues presented by the ownership transactions.[13]

GAO's Analysis

We have not reached an independent legal conclusion under Ohio law on either of the issues discussed above—whether the partnership has dissolved and whether the partnership merged into a single corporate entity—for the following reasons. First, while opinions differ on whether the facility has been effectively transferred to Von Roll America, Inc., because of Von Roll America, Inc.'s ownership of the four partners, EPA has, in fact, instituted a permit modification to change the owner

[13]EPA believes that even assuming that the Ohio Attorney General's conclusions on Ohio partnership law are correct, the federal RCRA permit is still valid and effective. EPA's analysis of its position principally is contained in a document entitled "Legal Analysis of Validity of WTI Permit."

designated on the permit to Von Roll America, Inc. As discussed earlier, we believe it is within EPA's discretion to modify a permit after a change in ownership (or operational control) has occurred. Second, as discussed below, the resolution of those issues under Ohio partnership law does not affect the validity of WTI's RCRA permit. Moreover, as a practical matter, those issues of state partnership law, however they are resolved, have no bearing on EPA's ability to identify responsible parties and hold them liable. As EPA pointed out in an October 1, 1992, legal memorandum:

> "[R]egardless of the resolution of these technical [Ohio partnership law] issues, the de facto owners and operators of RCRA facilities are fully liable for compliance with RCRA regardless of whether they are on the permit, and U[.]S[.] EPA has full authority to enforce the applicable statutory and regulatory requirements against all such parties. We do not believe that the enforceability of a RCRA permit turns on technical issues of state business association law."

Validity of the Federal RCRA Permit

Because of the changes in the WTI partnership, the validity of WTI's federal RCRA permit has been called into question. EPA has concluded that the permit is valid and enforceable. We agree.

Incinerator opponents have stated in various forums that the change from the entity and partners that applied for the permit to the WTI entity that now holds the permit, without modification or reissuance of the permit, constitutes an unauthorized transfer of the permit in violation of RCRA. Some incinerator opponents have stated that since the permit was not modified and transferred to reflect a change in ownership, WTI owns and is operating the plant without a permit. Other incinerator opponents also have stated that WTI's failure to obtain prior approval of owner and operator changes cannot be cured and that WTI now holds an invalid permit.

EPA has determined that the permit remains valid. In its analysis, EPA stresses that a RCRA permit is issued "to owners and operators for a hazardous waste management facility" (emphasis in original). Thus, according to EPA, under the statute and regulations, upon issuance of a facility permit, both the owners and operators and the facility can be viewed as having the permit. EPA also states that even if the old WTI arguably no longer exists and therefore could not now transfer the permit, the permit can continue to exist. EPA states that a RCRA permit tailors the general RCRA regulatory requirements to a specific facility and thereby establishes a set of requirements that should be viewed as continuing to

exist and attaching to the facility irrespective of whether the permit correctly identifies the facility's present owner and operator.

EPA also states that the regulations require that a permit either be modified or revoked and reissued in order to effect a change in ownership or operational control. However, the regulations do not require that a permit be voided or terminated if the permit modification procedures are not followed prior to a transfer of ownership or operational control. Neither the statute nor the regulations support the view that a permit is automatically terminated as a result of an unapproved transfer of facility ownership or operational control (or any other violation or event). Under the regulations, termination is not automatic; rather, it is a matter within EPA's discretionary authority.[14] If EPA chooses to pursue termination, EPA must use the same procedures used for permit issuance, including a notice of intent to terminate, an opportunity for public comment, and an opportunity for review by the EPA Environmental Appeals Board.

In further support of its view that the permit does not automatically terminate and remains valid following an unapproved transfer of facility ownership, EPA notes that it addressed this issue in the preamble to the 1980 RCRA permitting regulations. EPA stated:

"Under this scheme, transfer in itself will no longer be a cause for termination of a permit. Rather, the permit will either be . . . transferred after a required modification or revocation and reissuance; or the permit will not be transferred but will remain with the prior owner or operator of the facility, and the new owner or operator of the facility will be subject to enforcement for operating without a permit." (45 Fed. Reg. 33314 (May 19, 1980).)

Thus, EPA intended that a permit could continue to exist following an unapproved transfer of ownership or operational control. As explained above, EPA believes that even if there is no prior owner for the permit to

[14]Several lawsuits have been filed concerning WTI, challenging, among other things, the validity of WTI's permit. In Palumbo v. Waste Technologies Industries, 989 F.2d 156 (4th Cir. 1993), the U.S. Court of Appeals for the Fourth Circuit stated that the allegations that WTI failed to notify EPA that the members of the partnership had changed and that WTI had effectively transferred its permits to a new entity are challenges to EPA's permitting process. The Fourth Circuit Court of Appeals ordered the case to be dismissed because the lawsuit had been brought in federal district court, which had no jurisdiction to hear challenges to permit decisions. Thus, the court did not reach a decision on the substantive issues.

In Greenpeace, Inc. v. Waste Technologies Industries, 9 F.3d 1174, 1180 (6th Cir. 1993), a similar decision by the Sixth Circuit Court of Appeals, the court stated:

"By specifying that courts of appeals are to review the permit decision in accordance with 5 U.S.C. §§ 701-706, the judicial review provisions of the Administrative Procedure Act, Congress manifested an intention that these courts adhere to a standard of review that is deferential to the EPA's expertise in these matters."

remain with, the permit continues to exist and attaches to the facility. With respect to the statement in the preamble that the transferee is liable for operating without a permit, EPA believes that because of (1) the technical nature of any transfers of ownership in the WTI situation and (2) the complexity of the partnership issues involved, it is not clear whether Von Roll America, Inc., would be liable for owning or operating without a permit, on the basis of the conclusions in the Ohio Attorney General's report.

The agency further states that the permit is an important mechanism for enforcing the statute and regulations at a facility. EPA argues that an interpretation of RCRA by which a permit terminates automatically upon unapproved transfer (or any other violation) would cede control of the permit to the permittee. According to EPA, such an interpretation would create the incentive for facility owners and operators to transfer ownership and operational control of their facilities to other companies in an attempt to avoid permit responsibility.

EPA also states that its conclusion that an unapproved transfer does not result in automatic termination is supported by the nature of the changes in the WTI partnership. EPA states that, for a number of reasons, it views any changes in ownership and operational control here as technical changes. Von Roll America, Inc., was an original partner, so any transfer of ownership or operational control to that corporation is a transfer to a company that has been actively involved in the project from its inception. Also, all of the changes to the partnership involved affiliated companies and did not introduce outside companies into the partnership. Furthermore, under the terms of the WTI partnership agreement, Von Roll America, Inc., has remained liable for obligations of the partnership, even though it transferred its partnership to its wholly owned subsidiary, Von Roll (Ohio), Inc. In addition, WTI, as presently constituted, and Von Roll (Ohio), Inc., have obtained the financial instruments required by EPA regulations to demonstrate financial responsibility. Thus, EPA found that there had been continuity of legal liability and financial responsibility. EPA stated that financial responsibility is its principal concern with respect to changes in ownership and operational control. EPA also stated that the partnership issues addressed in the Ohio Attorney General's report are complex and, in EPA's view, have not been definitively resolved by Ohio case law. As noted above, EPA does not believe there is a "clear right answer" on the state law issues presented. In particular, because the Attorney General never reached a conclusion that the facility had been transferred to Von Roll America, Inc., and instead raised the possibility

that such an interpretation could be made, EPA viewed the report as less than definitive.[15]

EPA also addressed the issue of whether the requirements of a permit are enforceable following an unapproved transfer of ownership or operational control. Opponents of the incinerator have expressed concern that if the correct owners and operators are not named on the permit, those parties may be able to escape liability. The opponents have stated that the protection of human health and the environment must be maintained by ensuring that RCRA's financial responsibility and closure requirements can be met by those who have ownership and operator interests. EPA states that "[b]ased on the language of RCRA and the U.S. EPA's own implementing regulations," the owner and operator are legally bound by both the permit conditions and any independently enforceable regulations, regardless of whether the owner or operator signs the permit. EPA's position is supported by judicial decisions and EPA's administrative determinations.

In two court cases, individuals who were not named as owners or operators in permit applications were held individually liable, along with the named owners and operators, for compliance with RCRA.[16] Also, a 1986 administrative proceeding reached the same result. There, operators who leased premises stored hazardous waste upon the premises without obtaining a permit. The owners had no involvement with the operation of the business. Nevertheless, they were held jointly liable with the operator for penalties for failing to obtain a RCRA permit and were also liable jointly for complying with the closure requirements. (Arrcom, RCRA (308) Appeal No. 86-6 (Final Decision, May 19, 1986).)

Concern also has been expressed about whether WTI would have sufficient assets or insurance in the event of a catastrophe. RCRA regulations establish financial assurance requirements. The liability insurance required by those regulations was obtained by WTI, effective December 31, 1991. The regulations require the owner or operator to maintain liability coverage for sudden accidental occurrences in the amount of $1 million

[15]EPA stated that the Ohio Attorney General's report equivocated on the ownership of the partners by Von Roll America, Inc. The report states that the Ohio EPA "could" find that the incinerator had been transferred to Von Roll America, Inc.

[16]United States v. Environmental Waste Control, Inc., 710 F. Supp. 1172 (N.D. Ind. 1989). (Court determined that corporate owner of the land on which landfill is located is liable under RCRA as an owner. Court also determined that president of the corporation that operates the landfill, who previously had been sole shareholder of the corporation, was liable as an operator under RCRA because of his active involvement in day-to-day activities and decision-making at the facility.) United States v. Conservation Chemical Co., 733 F. Supp. 1215 (N.D. Ind. 1989). (Principal shareholder who was also president and chairman-of-the-board of corporate permittee was held liable as an operator under RCRA because of his active involvement in the operation of the facility.)

per occurrence, with an annual aggregate of at least $2 million, excluding legal defense costs. WTI obtained insurance coverage in the amount of $4 million per occurrence and $8 million in the aggregate. A standby letter of credit for closure, also required by the regulations, was obtained by Von Roll (Ohio), Inc. Regulations governing financial assurance for closure require an owner or operator of a facility to estimate the cost of closing the facility and establish financial assurance to cover the adjusted closure cost estimate. In December 1991, WTI received an irrevocable standby letter of credit from the Union Bank of Switzerland for up to $6 million. The insurance and letter of credit meet the financial responsibility requirements in the regulations.

Conclusions

Various changes in WTI's partners and a contract between Von Roll (Ohio), Inc., and the WTI partnership have led EPA, WTI opponents, and others to raise questions of whether the operational control and ownership of WTI has legally changed, without a required modification of WTI's permit. Opponents also have questioned whether, as a result of these changes, WTI's RCRA permit is valid.

EPA had the authority to modify WTI's permit to add Von Roll (Ohio), Inc., as an additional operator, notwithstanding the fact that WTI had failed to give EPA prior notice of the change, as required by RCRA regulations. In modifying the permit, EPA, in effect, waived its own procedural regulations. The U.S. Supreme Court has held that it is within the discretion of an administrative agency to relax or modify procedural rules that the agency has adopted for the orderly transaction of business before it. The advance notification requirement of EPA's regulations does not confer procedural benefits on individuals. Rather, it is designed to ensure sufficient time for EPA to evaluate proposed changes in ownership or operational control prior to their occurrence. Accordingly, EPA's waiver of its prior notification requirement was within its discretionary authority. Additionally, although the grounds for terminating WTI's permit or imposing a penalty were present and EPA could have taken either action, or both, EPA also could have decided to take neither action. EPA's decision to impose a penalty on WTI for its failure to notify EPA in advance of adding Von Roll (Ohio), Inc., as an operator, but not to terminate the permit, was within EPA's discretion.

On the issue of whether ownership of WTI has changed, requiring a permit modification, we have not reached an independent legal conclusion under Ohio law on whether the partnership has dissolved and whether the

partnership merged into a single corporate entity for the following reasons. First, while EPA and the Ohio Attorney General hold different opinions on whether the facility has been effectively transferred to Von Roll America, Inc., because of Von Roll America, Inc.'s ownership of the four partners, EPA has, in fact, instituted a permit modification to change the owner designated on the permit to Von Roll America, Inc. As discussed above, this is within EPA's discretion. Second, as discussed below, the resolution of those issues under Ohio partnership law does not affect the validity of WTI's RCRA permit. Moreover, as a practical matter, those issues of state partnership law, however they are resolved, have no bearing on EPA's ability to identify responsible parties and hold them liable.

We agree with EPA that WTI's permit is valid and enforceable. EPA's analysis concerning the validity of the permit is persuasive. A RCRA permit establishes a set of requirements that should be viewed as continuing to exist and attaching to the facility, irrespective of whether the permit correctly identifies the facility's present owner and operator. Moreover, EPA regulations on transfers of ownership do not require that a permit be terminated if the permit modification procedures are not followed prior to a transfer of ownership or operational control. Under RCRA and its regulations, EPA has discretion to determine whether to terminate a permit; no provision exists for automatic termination of permits. As with EPA's enforcement decision on the change in operational control for Von Roll (Ohio), Inc., EPA has discretion to decide whether to terminate WTI's permit for an unapproved transfer of ownership. In fact, in the preamble to its RCRA regulations, EPA contemplated that a permit would continue to exist following an unapproved transfer of ownership.

Finally, on the basis of judicial decisions and EPA's administrative determinations, each of the partners of WTI and Von Roll America, Inc., may be held liable under RCRA as owner and operator of the facility, although they are not named on the permit.

EPA Complied With Most of Its RCRA Regulations, but in Certain Cases Procedures Were Not Followed

In issuing a RCRA permit to WTI, EPA Region V generally followed and in some cases exceeded regulatory requirements. Nevertheless, it did not follow its regulations and procedures when it (1) issued WTI's permit without obtaining the landowner's signature, (2) did not require WTI's permit application to include an engineering analysis to show that the facility and its flood protection devices could withstand the forces of a flood, and (3) initially made a procedural error, which it later corrected, in not providing complete information to the state of West Virginia during a public comment period on WTI's permit application. In addition, we found that EPA's RCRA regulations do not provide for an alternative site analysis as required by a federal executive order on floodplain management. None of these shortcomings, however, would require EPA to terminate WTI's RCRA permit.

In addition, in addressing other issues, we found that EPA Region V followed its regulations and procedures in approving WTI's request for a permit modification to add a piece of pollution control equipment to the incinerator; has recently determined that the site meets the load-bearing capacity requirement of its federal permit and made a proposal to eliminate apparent inconsistencies between WTI's federal and state permits with respect to the site's load-bearing capacity; and has established the correct effective and expiration date for the permit. We also found that the Ohio EPA considered the effects that construction of the facility would have on existing soil and groundwater contamination at the site.

Validity of RCRA Permit Is Not Affected by Omission of the Landowner

The Columbiana County Port Authority, which was the owner of the land on which the WTI facility was located at the time the permit was issued, was not listed as a co-permittee. In fact, under EPA regulations the Port Authority was required to sign the permit as a co-permittee. We do not believe, however, that this error renders the permit invalid.

EPA requires owners and operators to have permits in order to ensure maximum enforceability of the requirements of RCRA and its implementing regulations. Furthermore, EPA considers an owner of the land upon which a hazardous waste facility is located to be an "owner" for purposes of RCRA. Thus, EPA's regulations require an owner of land upon which a hazardous waste facility is located, as well as the owner and operator of the facility, to become a permittee. A landowner, such as the Port Authority, must sign the permit application and be listed as a co-permittee, along with the facility's operator. However, as discussed in chapter 2, EPA considers owners and operators legally bound, under RCRA, by both the permit

conditions and any independently enforceable regulations, regardless of whether they sign the permit.

In February 1992, Region V unilaterally modified WTI's permit to include the Port Authority as a co-permittee. Region V acknowledged that it had never sought to require the Port Authority's signature on the permit application, filed years earlier, even though it was aware the Port Authority owned the property on which the facility was located.[1] EPA stated that by adding the Port Authority as co-permittee on the WTI permit, it was only formalizing what RCRA required.

The Port Authority protested the inclusion of its name to EPA's Environmental Appeals Board.[2] While it did not dispute EPA's reading of RCRA in terms of property owners' responsibilities, it objected to being added to the permit in 1992, when its ownership of the land and its relationship to WTI were known to Region V as early as 1981 when WTI first applied for the permit. The Port Authority contended that the region was barred as a matter of law from adding its name to the permit.

In July 1992, the Environmental Appeals Board upheld on procedural grounds the Port Authority's protest against being added to the permit. It also noted, however, that EPA could add the Port Authority's name to the permit in valid ways, such as issuing a compliance order under RCRA directing the Port Authority to sign the permit application. In any event, the Board pointed out that whether or not the Port Authority had signed the permit application, EPA considers a landowner, such as the Port Authority, jointly and severally liable with the facility for carrying out the requirements of the RCRA regulations.[3]

In September 1992, the Port Authority sold the land on which the facility is located to WTI, which had previously leased the land from the Port Authority. As a result, EPA is no longer seeking to list the Port Authority as a co-permittee on WTI's permit.[4]

[1]Region V used the request by the operator of the facility, WTI, to modify the permit to authorize the installation and operation of a spray dryer as an opportunity to correct the omission of the Port Authority's name from the permit.

[2]The Environmental Appeals Board has the authority to review RCRA permit decisions.

[3]In the Matter of: Waste Technologies Industries, East Liverpool, Ohio, Consolidated RCRA Appeal Nos. 92-7, et alia, 1992 WL 19152(E.P.A.).

[4]The Ohio Attorney General's office, which conducted an independent investigation of the WTI hazardous waste facility, agreed that the Port Authority need not be a co-permittee since it no longer owns the land.

The statutory provision governing permit termination does not require EPA to terminate an issued permit in the event it discovers that a party that should have been listed as co-permittee has, in fact, not been listed. RCRA authorizes EPA to determine the causes for terminating a permit.

EPA, in its regulation, has listed the following such causes: (1) the permittee has not complied with the conditions of the permit; (2) the permittee has failed to disclose fully all relevant facts or has misrepresented relevant facts; or (3) the permitted activity endangers human health or the environment and can be regulated to acceptable levels only by permit modification or termination.

None of the causes for permit termination under EPA's regulations are applicable to this situation. The failure of the Port Authority to sign the permit application, while a violation of RCRA regulations, was not a violation of WTI's permit conditions. Furthermore, WTI identified the Port Authority as the landowner when it filed its permit application. Thus, it would be difficult to argue that WTI either failed to disclose, or misrepresented, any relevant facts about the Port Authority's ownership of the land. Thus, to terminate the permit under either of the first two causes would inappropriately penalize WTI for the omission of the Port Authority from the permit.[5]

The third cause for termination is that the permitted activity endangers human health or the environment. The mere failure of the Port Authority to sign the WTI permit does not, in and of itself, constitute a threat to human health or the environment. The U.S. Court of Appeals for the Fourth Circuit characterized this failure as an "essentially technical violation in the EPA permitting process."[6]

[5]The Ohio Attorney General's office also concluded that action against WTI because the Port Authority did not sign the permit application would not have been warranted.

"The Ohio EPA could have taken enforcement action against [the Port Authority] for owning a hazardous waste facility without having a permit at any time while the [Port Authority] owned the land and did in fact issue orders to the [Port Authority] requiring the Port Authority to submit an application to be added to the permit. It is not so clear, however, that the Ohio EPA could have taken action against WTI.

"While the partnership was operating under a permit which should have included the landowner, the permit was issued in accordance with [applicable Ohio law]. Any action against WTI, rather than the [Port Authority], would have had limited chances of success."

Investigative Report, pp. 81-82.

[6]Palumbo v. Waste Technologies Industries, 989 F.2d 156, 160 (4th Cir. 1993).

EPA Did Not Follow All Federal Floodplain Requirements

Executive Order 11988, as amended, requires that federal agencies not support development within a floodplain unless no other practicable alternative exists. If no practicable alternative exists to locating in a floodplain, then agencies must take actions to minimize any potential harm to people and property and natural floodplain values. In addition to the executive order, RCRA regulations include specific requirements that apply to facilities proposed to be located in a floodplain. One of those requirements specifies that the applicant must design, construct, operate, and maintain the facility to prevent a washout of hazardous materials as a result of a flood. To demonstrate this, the regulations require the applicant to submit an engineering analysis, as part of the permit application, that shows the various forces, such as water pressure and wave actions, expected to result from a flood.

We found that RCRA regulations do not include a requirement to assess practicable alternatives to floodplain siting and are not consistent with the executive order's guidance on the level of flood protection that should be provided. We also found that EPA Region V did not conduct a practicable alternative site analysis when it processed WTI's permit application. While EPA did not comply with this executive order requirement, it does not appear that this failure would require EPA to terminate the permit.

We also found that EPA did not require WTI to provide the engineering analysis to verify that the facility and its flood protection devices would be able to withstand the forces of a flood, as required by RCRA regulations. WTI provided EPA with an engineering analysis in March 1990, about 8 months before beginning construction of the facility. EPA Region V's files, however, did not contain evidence that the agency had reviewed and determined that the information met the regulatory requirement. In May 1994, an EPA Region V official told us that the March 1990 analysis confirmed that the river bank should withstand the forces of the flooded river and that the information WTI provided in its application, along with the analysis it submitted in 1990, satisfied the informational requirements of the regulations.

RCRA Regulations Do Not Include All Executive Order Requirements

In May 1977, the President issued Executive Order 11988, amended by Executive Order 12148 in 1980, on floodplain management; it directs federal executive agencies to avoid support of floodplain development wherever a practicable alternative exists. The executive order applies to all federal actions affecting land use, including issuing permits, in a floodplain. Under the executive order, the term floodplain is defined as the

lowland and relatively flat areas adjoining inland and coastal waters, including, at a minimum, that area subject to a 1 percent or greater chance of flooding in any given year. This area is also referred to as the base, or 100-year, floodplain. Because a portion of the WTI site was below the 100-year floodplain, EPA's issuance of WTI's permit was subject to the requirements of the executive order.

Among other things, the order requires that if an agency proposes to allow an action such as development in a floodplain, the agency shall consider alternatives to avoid adverse effects and incompatible development in the floodplain. The order further states that if the agency finds that siting in the floodplain is the only practicable alternative, then it shall (1) design or modify its action to minimize potential harm to or in the floodplain and (2) prepare and circulate a notice containing an explanation of why the proposed action is to be located in the floodplain. Additionally, the order requires each agency to provide an opportunity for early public review of any plans or proposals for actions in the floodplain. Finally, it requires that each agency, within 1 year of the date of the order, issue or amend its existing regulations and procedures to comply with the order.

RCRA regulations, however, do not include the executive order's requirement for assessing practicable alternatives. In 1981, EPA considered the executive order's requirements in developing its RCRA regulations and determined not to require an analysis of practicable alternatives in the proposed regulation's floodplain standard. EPA decided not to require a practicable alternatives analysis on the basis of the following policy considerations: (1) a shortage of hazardous waste facilities exists, (2) many industrial on-site hazardous waste treatment facilities are located in 100-year floodplains, and (3) flood prevention technologies are available. EPA stated that it relied on RCRA section 3004, which authorizes it to set standards for hazardous waste facilities, and not the executive order, to regulate private facilities in floodplains. EPA further stated that it considered the proposed RCRA floodplain standards as satisfying section 3004 while being consistent with the executive order. EPA, however, did not address whether its regulations fully satisfied the executive order's requirement or its obligation under the executive order to include a practicable alternatives analysis. EPA officials told us that the agency had not reevaluated the need for a practicable alternatives analysis since the regulations were promulgated.

Including the executive order's requirement for an alternative sites analysis in RCRA regulations, in our opinion, would be consistent with an

EPA plan, announced in October 1993, to issue a notice of proposed rule-making on new location standards. According to EPA, the basis for these standards would be section 3004 of RCRA, as amended in 1984. Under that section, EPA may specify criteria for the acceptable location of new and existing hazardous waste treatment, storage, and disposal facilities as necessary to protect human health and the environment. The announcement stated that EPA's goal for the location standards is to ensure siting of new hazardous waste treatment, storage, and disposal facilities in the most suitable locations.

The executive order does not address the consequences for a permittee if an agency does not follow the order's requirements. Moreover, EPA included in WTI's permit, in accordance with the executive order and RCRA regulations, conditions requiring the facility to be designed, constructed, operated, and maintained to prevent washout of hazardous wastes from a 100-year flood. Therefore, in our opinion, EPA's failure to follow the executive order's requirement to conduct an assessment of practicable alternative sites for the WTI facility would not require EPA to terminate WTI's permit.

Additionally, RCRA regulations are inconsistent with the U.S. Water Resources Council and Federal Emergency Management Agency's guidance on implementing the executive order. The guidance states that for "critical" federal actions, the 500-year floodplain should be used instead of the base, or 100-year, floodplain. Under this guidance, hazardous waste activities are considered "critical" actions. Although the WTI site, in fact, was elevated to the 500-year floodplain level—consistent with the guidance—RCRA regulations require only that facilities be designed, constructed, and maintained to protect against washout of hazardous wastes from a 100-year flood.

EPA Did Not Require WTI to Provide Engineering Analysis of Floodplain Impacts

RCRA regulations require that a permit application for a hazardous waste facility identify whether the facility is located in a 100-year floodplain. If the facility is located in the floodplain, then the applicant must provide either a detailed description of procedures it will follow to remove the hazardous waste to safety before the facility is flooded or information to show that the facility will be built, operated, and maintained to withstand the forces of a flood. If the applicant chooses the latter alternative, which WTI did, then the regulations require the permit application to include an engineering analysis to indicate the various hydrodynamic and hydrostatic

(that is, wave action and water pressure) forces expected to result from a flood.

WTI, in its permit application, provided information which showed that portions of the site on which it proposed to build the incinerator were located below the 100-year floodplain level and included a section to indicate how the site would be elevated to prevent a washout of hazardous wastes by a 100-year flood. In this section, WTI stated that the Columbiana County Port Authority, the landowner, had agreed to elevate the site to the 500-year floodplain level. WTI also stated that the erosion control provisions it proposed at the site would be designed to withstand the hydrostatic and hydrodynamic forces of the Ohio River during a 100-year flood, but stated that it would provide additional engineering calculations that verify the ability of the erosion control devices to withstand the hydrostatic and hydrodynamic forces of the Ohio River during a 100-year flood before beginning construction.

On May 3, 1982, EPA Region V notified WTI that its application was complete. That letter also stated, however, that under the regulations, EPA reserved the right to request any additional information necessary to evaluate the application. EPA Region V officials discussed the need for WTI to provide the required engineering analysis with WTI officials at two meetings in May and June 1982. In July 1982, EPA Region V sent a letter to WTI that, among other things, specifically requested WTI to provide the required engineering analysis. EPA's letter stated that the information provided should include special flooding factors such as wave action that would be considered in designing, constructing, operating, and maintaining the facility to withstand a washout of hazardous materials by a 100-year flood.

Later that month, WTI's counsel stated in a letter to EPA that detailed information on fill engineering and erosion control would not be available until WTI exercised its lease option with the Port Authority and the Port Authority, in turn, authorized its consultant to do the necessary engineering work. In November 1982, just before the opening of the public comment period provided for WTI's permit application and EPA's draft permit, WTI revised portions of its application, including the floodplain section. That revised section, however, did not include the requested engineering analysis but stated only that WTI would submit it 60 days before beginning construction.

Subsequently, an EPA headquarters permit assistance team, which was reviewing and assisting the region in processing the WTI application, in April 1983 comments on Region V's draft permit stated that the artificial elevation of the site above the floodplain should be viewed as a measure to prevent washout. The team further stated that the key question is whether the measures used to elevate the site will withstand a 100-year flood. It also questioned the adequacy of the floodplain information WTI had provided and recommended that the region request WTI to provide more supportive evidence that the facility would meet the regulatory floodplain requirements.

EPA Region V, however, did not request WTI to provide the engineering analysis before it issued the permit in June 1983. In its response to comments on the draft permit, issued on the same date as the final permit, EPA Region V stated that the elevation of the site above the floodplain does not remove it from the jurisdiction of the floodplain standard. It also stated that the conditions on elevation of the site included in the issued permit would meet the requirement to design, construct, operate, and maintain the facility to prevent washout of hazardous waste by a 100-year flood. Although EPA incorporated most of the flood protection provisions WTI had included in its application, it did not require WTI as a permit condition to submit the engineering analysis required by the regulations. According to the EPA Region V official responsible for reviewing WTI's application, WTI was not required to include the engineering analysis in its application because, based on his professional engineering judgment, the erosion control information included in the application was sufficient. By not requiring that WTI submit the analysis as part of the application, EPA also did not provide the public an opportunity to comment on the analysis. (RCRA's public participation requirements are discussed later in this chapter.)

Although not required by its permit to provide the information to EPA, in March 1990, about 8 months before it began constructing the facility, WTI did provide EPA with an engineering analysis indicating that the soil erosion measures proposed for the WTI site would be able to withstand the forces of a 100-year flood. The WTI file at Region V, however, did not contain either (1) a May 1987 soil study done at the WTI site and used by the engineering firm that prepared the analysis as support or (2) evidence that EPA had reviewed and analyzed the information that was provided. Furthermore, our review of this document showed that it proposed changing specific soil erosion provisions required by WTI's permit, but EPA's administrative file does not show that it ever questioned WTI about the

proposed changes. According to EPA, the facility, nonetheless, was built following the provisions of the original permit.

For these reasons, we asked EPA Region V officials on what basis they could be assured that the WTI facility could withstand the forces of a 100-year flood. In an April 1994 letter to us, the EPA Region V Director of the Waste Management Division stated that EPA believed the March 1990 analysis confirmed that the river bank should withstand the dynamic forces of the flooded river. The letter further stated EPA's belief that the information WTI provided in the application, along with the additional information submitted by WTI in March 1990, satisfied the informational requirements of the regulations.

EPA Acts to Resolve Load-Bearing Capacity Issue

Concern has been expressed that the WTI site does not meet a load-bearing capacity requirement contained in its RCRA permit. Originally this requirement was contained in both WTI's federal and state permits. After Ohio EPA notified WTI that it was in violation of this requirement, WTI requested and obtained approval from Ohio EPA to substitute a requirement for a geotechnical study for the specific load-bearing capacity contained in its state permit. WTI, however, did not request EPA to change the load-bearing requirement in its federal permit at that time. Thus, WTI's RCRA permit continues to contain the specific load-bearing capacity requirement that Ohio EPA said WTI violated. Subsequently, in April 1994 EPA announced that it believed WTI met the load-bearing requirement contained in its federal permit and also made a proposal involving the load-bearing capacity issue which it believes will resolve the apparent inconsistency between WTI's federal and state permits.

In its application for both the federal and state permits, WTI proposed filling in the site to elevate it to the 500-year floodplain level. Also included in its application and related to its proposal to elevate the site above the floodplain, WTI provided information on how the facility, including the proposed fill, would be designed to provide protection against a washout of hazardous wastes by a 100-year flood. One of those design specifications was that the resulting load-bearing capacity would be at least 3,000 pounds per square foot. The EPA file on the WTI permit contained little documentation related specifically to the load-bearing capacity requirement, but in its June 1983 Response to Comments on the original application and EPA's draft permit, EPA indicated that (1) this permit condition as well as the other specific requirements related to the floodplain had been inserted into the permit from the permit application,

(2) these requirements were based on good engineering practice, and (3) the Corps of Engineers had found them to be acceptable.

The Ohio hazardous waste facility permit issued to WTI contained the same load-bearing capacity requirement. In addition, the Ohio hazardous waste facility permit also required WTI to provide an engineering certification that this requirement, as well as a requirement that the site be elevated to the 500-year floodplain level, had been met before beginning construction of the facility. An engineering study done for WTI and submitted to Ohio EPA in November 1990 showed that the load-bearing capacity was not 3,000 pounds per square foot across the entire site. In January 1991, the Ohio EPA notified WTI that it was in violation of the state permit because it had not met the certification requirements. In responding to this notice, WTI contended that the load-bearing capacity requirement pertained only to the fill and that it was the underlying soil, not the fill, that did not meet the 3,000 pounds per square foot load-bearing capacity requirement.

After meeting with Ohio EPA officials, however, WTI requested and obtained approval from Ohio EPA for a permit change to substitute a geotechnical study of the site for the 3,000 pounds per square foot load-bearing capacity requirement. When Ohio EPA approved this change in December 1991, it stated that the purpose of the original load-bearing capacity requirement was to ensure that the WTI facility would have adequate foundational support for the proposed construction. It also stated that when the geology of a site did not provide adequate load-bearing capacity, such as was the case at the WTI site, alternative engineering techniques, such as driven piles or spread footers, are typically used to provide adequate foundational support. It stated further that the agency had reviewed the geotechnical report and data on foundational support for the structures and the roadways at the facility that WTI had provided and found that adequate measures had been taken to provide for proper structural support throughout the facility. Also according to Ohio EPA, although unlikely, a potential does exist for lateral shifting of the underlying soils at the site as a result of the pressure from denser fill material. Thus, Ohio EPA also added a new permit condition to require WTI to conduct monthly inspections and periodic surveys of the river bank area to verify that no movement is occurring and to take any necessary corrective action should movement occur.

WTI, however, did not request that EPA change the load-bearing capacity requirement in its federal permit when it requested the Ohio EPA to modify the state permit. Thus, the 3,000 pounds per square foot load-bearing

capacity remained a requirement of WTI's RCRA permit. Even though WTI did not request that EPA modify its federal permit, EPA did receive and respond to comments on the load-bearing capacity issue during the public comment period provided for WTI's RCRA permit modification request to add a piece of pollution control equipment—a spray dryer—to its incineration system. In response to one of those comments, EPA said that it agreed that the change from a specific load-bearing capacity requirement to a performance-based condition based on the results of a geotechnical study was a reasonable approach. In response to another comment, EPA said further that because RCRA had no specific regulation for this standard, the facility was allowed to use a functionally equivalent method to show compliance with this condition "with the Agency's approval." However, although EPA may have approved of the change, it did not change the load-bearing capacity requirement in WTI's RCRA permit.

In early July 1993, we met with EPA regional officials to discuss this difference in the state and federal permits and ask whether WTI was in violation of the load-bearing capacity requirement in its RCRA permit. Later that month, WTI requested EPA to change the load-bearing capacity requirement in its federal permit. In its request, WTI referred to EPA's February 1992 Response to Comments and stated that in issuing the permit modification, EPA had omitted the change. Thus, WTI proposed a Class 1 permit modification to correct what it characterized as a typographical error. In a September 1993 letter to WTI, EPA Region V stated that it did not agree that the record clearly shows that EPA had intended to make this change in the February 1992 permit modification. It further stated that EPA had determined that a Class 1 permit modification was not appropriate because it could potentially deny appeal rights to those members of the community interested in this issue. Finally, EPA stated that the proposed permit modification should be handled through a Class 2 permit modification to properly allow for public comment and appeal rights. WTI, however, did not resubmit a request to modify the load-bearing capacity requirement contained in its RCRA permit.

On April 29, 1994, EPA announced that it had evaluated a number of possible inconsistencies between WTI's federal RCRA permit and its Ohio hazardous waste facilities permit, including the load-bearing capacity issue. With respect to that issue, EPA stated that the compacted fill at the WTI site met the engineering specification of 3,000 pounds per square foot and thus met its federal permit requirement. In the announcement, EPA also addressed the information it provided in its response to comments on

the spray dryer and said that its response did not address the issue of whether a RCRA permit modification was needed.

EPA stated that to resolve the apparent inconsistency between the federal and state permits, it was proposing that WTI pursue a Class 1 permit modification with prior EPA approval. This modification would add language to its federal RCRA permit incorporating requirements relating to the geotechnical study and certification that the facility is designed in accordance with the study, but would not change the permit requirement for the recompacted fill to meet the 3,000 pounds per square foot specification. EPA further stated that it considered this change to be administrative (i.e., a Class 1 modification) because EPA has already reviewed the location and design of the facility in the original permit and a geotechnical study and certification have already been submitted to the Ohio EPA pursuant to the requirements of WTI's state permit. According to an EPA official who was involved in preparing EPA's proposal, as a result of the agency's evaluation of the apparent inconsistency between the federal and state permits with respect to the load-bearing capacity issue, EPA had also concluded that a Class 2 modification was not necessary because its proposal for a Class 1 modification (to add the requirement for a geotechnical study to the federal permit and a certification that the facility is designed in accordance with that study) would be an addition to the permit and not a substitution of one requirement for another as envisioned in September 1993.

Discretion Allowed by Regulations May Result in Inconsistent Opportunities for Public Participation

Throughout the permitting process, opponents of the WTI facility have expressed concern about the level of public involvement that has been provided. We found that with one exception—which EPA corrected before WTI's permit became effective in January 1985—Region V has followed the regulatory requirements. In instances when the regulations do not provide specific guidance, the Regional Administrator has discretion in providing opportunities for public participation in the permitting process. We found that, on two occasions, the Regional Administrator exercised his discretion to provide an increased level of public participation in WTI permit decisions involving changes in ownership and operational control. On another occasion, however, the Regional Administrator exercised his discretion and did not provide an opportunity for public participation during the permit decision-making process. In this case, he initially decided not to obtain public comment on updated plans WTI submitted to the region as required by its RCRA permit. Subsequently, after EPA Region V had approved the updated plans and in response to public concern, the

Regional Administrator decided to provide the public with an opportunity to comment on these updated plans.

As part of a new strategy to strengthen federal controls over hazardous waste incinerators and industrial furnaces, EPA is considering options to increase opportunities for public participation. One of these options addresses some of the specific concerns expressed about the WTI permitting process. However, additional opportunities exist for public participation in the process.

Region V Has Generally Followed RCRA's Requirements for Public Participation

Under RCRA regulations, opportunities for public participation are required under two circumstances—once before EPA makes a final decision on whether to issue the permit and then subsequently only when the permittee proposes to modify the permit in a way that could (1) alter the conditions in the permit or (2) affect the facility's ability to protect human health and the environment. RCRA regulations refer to these as either Class 2 or Class 3 modifications. Although certain types of modifications (Class 1), such as replacement of equipment with equal or upgraded components or minor administrative and informational changes, do not require opportunities for public participation, the public must be notified of all changes made in the permit, and anyone may request that the EPA Regional Administrator review the action. Additionally, the regulations provide the regional administrator with the discretion to increase the level of public participation on a proposed action on the basis of expressed public interest.

Since WTI obtained its RCRA permit, it has requested EPA to approve five Class 2 or Class 3 modifications of that permit. Under RCRA regulations, public participation in the form of a public comment period and, if requested, either a public meeting conducted by the permittee or a public hearing conducted by EPA is required before a permit is issued and before a major modification is approved. Because four of WTI's five requested modifications were considered simultaneously, the regulatory requirements for public participation in EPA's decisions to award a permit and to approve a modification to WTI's permit have applied on three occasions.

Although the region otherwise has generally followed the RCRA public participation requirements, the EPA Administrator determined that Region V made a procedural error in 1982 when it did not provide a copy of the permit application, draft permit, and fact sheet to the state of West Virginia

during the 45-day public comment period on the original application. In that case, after the state of West Virginia appealed the Regional Administrator's published intent to issue the permit, the public comment period was reopened for the purpose of obtaining the state's comments. Subsequently, the Regional Administrator determined after reviewing the comments that no changes to the permit were necessary, and WTI's permit became effective in January 1985.

The second occasion on which the RCRA public participation requirements applied was WTI's October 1990 request to add a spray dryer to the incinerator. As required by the regulations, WTI published a public notice, established a public comment period, and held a public information meeting on the proposed modification. As provided for in the regulations, at least partly on the basis of the expressed public interest in this modification, EPA elevated WTI's request from a Class 2 modification to a Class 3 modification. This action increased the level of public participation in the EPA decision-making process in that EPA prepared a draft permit revision, provided an additional public comment period, and attempted to hold a formal public hearing on the proposed revision before making a decision. Although the action was not required by the regulations, EPA Region V and Ohio EPA officials held a jointly sponsored public meeting on the day before the scheduled public hearing on the spray dryer, at which time various federal and state officials were available to answer questions on the proposed changes.

The purpose of the public hearing was to obtain public comments on both WTI's spray dryer proposal and EPA's proposed permit changes. The scheduled hearing was canceled soon after it began because opponents to the proposed changes disrupted the hearing. All persons attending the hearing, however, were invited to submit their written comments on the proposed change to EPA during the accompanying public comment period. The Regional Administrator's February 1992 decision to approve the modification was appealed to the Environmental Appeals Board for various reasons. In July 1992, the Environmental Appeals Board denied the petitions for review of Region V's decision to approve the spray dryer modification.

On the third occasion, during June and July 1993 WTI requested four additional Class 2 permit modifications. These modifications were to (1) add an enhanced carbon injection system, (2) modify the approved trial burn plan to allow WTI to conduct a new test condition similar to the condition it did not pass during the original trial burn, (3) update the waste

analysis plan, and (4) add additional types of wastes to those it is approved to burn. As required, WTI published a public notice of these changes, established a public comment period, and held a public information meeting on the requested modifications on July 27, 1993. Also as required by the regulations, EPA prepared a response to comments, which it issued with its October 28, 1993, decision to approve three of the four modifications. According to EPA, it did not take any action on the requested modification to update the waste analysis plan because the request involved issues that remained to be resolved.

Several of those who commented on the proposed permit modifications expressed concern that the WTI public meeting held in July 1993 did not meet the procedural requirements of the regulations. Instead of a traditional public meeting format, in which presentations are made to the audience and members of the audience can ask questions and receive answers that are heard by all, WTI set up four booths that interested parties could visit. EPA addressed the concerns about whether the WTI meeting met the regulatory requirements in its October 1993 Response to Comments. According to EPA, the preamble to the permit modification regulations states that the purpose of the public meeting is to allow the permittee and the public to exchange views and, to the extent possible, resolve any issues raised by the permit modification request. The regulations do not establish a prescribed format for the public meeting. In its Response to Comments, EPA stated that it found the meeting to be consistent with the intention expressed in the preamble and thus met the regulation's conditions.

Regional Administrator Has Exercised Discretion to Provide Additional Opportunities for Public Participation

RCRA regulations and EPA's guidance provide permitting officials with discretion in determining whether to provide opportunities for public participation in certain permitting decisions. Although EPA's guidance encourages providing maximum opportunities for public participation, specifically for issues involving a high degree of expressed public interest or concern, the regulations do not ensure that opportunities for public comment will be provided for all information required as a result of a RCRA permit. For the WTI permit, the Regional Administrator generally has exercised his discretion to provide opportunities for public comment. The public, however, was not provided with an opportunity to comment before the agency approved updated plans that WTI submitted as required by its RCRA permit. In response to expressed public concern, the agency is now providing a public comment period on those plans.

On two occasions, the region decided to obtain public comments before deciding whether to approve a WTI request for Class 1 modifications—changes that would not require obtaining public comments under the regulations. On the first occasion, the Regional Administrator decided that EPA would provide a 30-day period for the purpose of obtaining public comment in response to WTI's request to add Von Roll (Ohio), Inc., as an operator to the permit. As discussed in chapter 2, under the regulations, if EPA is notified of changes in the facility operator 90 days in advance of the change and approves the change, this change would have been considered a Class 1 modification requiring only public notification. However, WTI did not apply for the permit change until after WTI had entered into a contract with Von Roll (Ohio), Inc., which in EPA's view assigned Von Roll (Ohio), Inc., substantial independent operational control of the facility. Because WTI failed to notify EPA 90 days before naming Von Roll (Ohio), Inc., as operator and because EPA believed that public involvement was warranted, the Regional Administrator exercised discretion by providing a 30-day public comment period on the proposed change. On the second occasion, EPA determined that it would establish a 30-day comment period in response to WTI's August 1993 request to add Von Roll America, Inc., as an owner to its permit. In August 1993, EPA Region V decided to allow the addition of Von Roll (Ohio), Inc., as an operator on the permit. The request to add Von Roll America, Inc., as an owner on the permit is still under consideration.

In another instance, Region V did not allow an opportunity for public participation before it approved various plans that WTI was required by its permit to update. As a condition of its permit that became effective in 1985, among other things, WTI was required to provide an updated waste analysis plan and an updated personnel training program to EPA at least 6 months before operation was planned to begin. Additionally, at least 60 days before WTI could receive hazardous wastes at the facility, it was required to provide EPA with an updated contingency plan and instruments for financial assurance for closure. The permit also required that all updated plans WTI submitted be approved by the Regional Administrator before operations could begin. The permit did not specify, however, whether these updated plans would be subject to any public participation requirements.

Under RCRA regulations, if the permittee requests a change to any existing plans that are a part of the permit, the change is subject to the public notice and public participation requirements of the regulations applicable to the nature and scope of the change being requested. In responding to

appeals of its 1983 decision to approve WTI's RCRA permit, EPA Region V stated that it had reviewed the closure, contingency, training, and waste analysis plans submitted by the applicant and had determined that they met or exceeded the regulatory requirements. Recognizing, however, that WTI was a new facility and detailed plans and specifications had not yet been prepared, the region included as a condition of the permit that WTI update and obtain approval of these specific plans and provide financial responsibility documents before either accepting hazardous waste at the site or beginning operations. The regulations, however, do not provide any guidance on whether additional information required to be submitted by the applicant at a later date should be subject to public participation requirements.

EPA Region V officials told us that because WTI was required to submit the updated information as a condition of the permit and this action was not a result of a WTI request to change the permit, no provision for public participation in the EPA decision-making process was provided. This position differed, however, from the position EPA took in its August 1984 Response to Comments by the state of West Virginia. Specifically, with respect to the updated contingency plan requirement, EPA Region V stated in those comments that because the contingency plan is an attachment to the permit, the revised contingency plan would be treated as a major modification and would be subject to the public participation requirements of the regulations. In another response, it stated that any change to an attachment to the permit, such as an updated waste analysis plan, would be subject to the public notification procedures required by the regulations. Thus, when EPA prepared those response to comments in 1984, it appears that the agency expected that the updated plans would be considered as major modifications to the permit and subject to the public notice and public participation requirements in effect at that time. Regional officials recognized that this position differed from the position it took when the updated plans were submitted and reconsidered the position.

In April 1994, the Regional Administrator announced a 60-day comment period to give members of the public an opportunity to provide their views on the adequacy of the updated plans which are attachments to WTI's RCRA permit and the need for revisions. These plans include (1) the closure plan, (2) the contingency plan, (3) the waste analysis plan, and (4) the employee training plan. In the announcement, EPA Region V stated that it would evaluate the information provided to determine whether cause exists for a permit modification. It pointed out, however, that the regulations provide

EPA with the authority to modify the permit only under certain circumstances, such as obtaining information not available at the time of permit issuance that would have justified different permit conditions at the time of issuance. The announcement stated further that EPA was taking this action in response to expressed public concern and to be consistent with the commitment it made in its August 1984 Response to Comments. It also pointed out that providing the comment period is consistent with the agency's May 1993 draft combustion strategy.

Agency Considers Expanding Opportunities for Public Participation

The permitting process, as it currently exists, provides for public involvement at the end of the initial permitting process and at the time the permittee requests a permit modification. In the initial permit approval process, public participation is provided only after EPA has reviewed the information the applicant provided and made a tentative decision to approve it. The fact that the opportunity for public involvement is provided only after EPA has made a tentative decision to approve it may give the appearance that EPA is unlikely to give due consideration to other views or that EPA and the applicant are jointly defending the agency's tentative decision to approve the permit.

In May 1993, the EPA Administrator announced a new draft strategy for strengthening federal controls governing hazardous waste incinerators and boilers and industrial furnaces. One of the actions indicated in this strategy is to provide for greater public involvement opportunities in the RCRA permitting process for these facilities. As part of a rule-making process, EPA is evaluating possible proposals to expand public participation in areas such as application submittal, draft trial burn plan, and draft risk assessment. In addition to this proposal, in September 1993 EPA issued a RCRA public involvement manual that provides information on how to carry out required public involvement activities and describes other techniques beyond the requirements that staff can use to more effectively involve the public in the RCRA permitting process.

Critics of the WTI permitting process have said that EPA considers WTI its client and that EPA has defended WTI's position in approving the permit. Thus, the proposal to provide for public participation at the time an application is submitted could reduce the impression that the agency and the applicant are jointly defending the application. Neither the proposal nor existing regulations, however, currently include guidance on the level of public participation that should be provided when either the permittee does not follow the regulatory requirements for permit modifications or

updated information is required to be submitted later as a condition of the permit.

EPA Region V Followed Regulations in Processing Spray Dryer Modification

In October 1990, just before beginning construction, WTI requested a Class 2 permit modification to add a spray dryer—a piece of pollution control equipment—to its incineration system. Partly on the basis of the amount of public interest expressed in the proposed modification, EPA later elevated WTI's permit modification request to a Class 3 modification, requiring EPA to prepare a draft permit showing the changes that would be required in the permit and obtaining public comment on both the permittee's proposed modification and the agency's draft permit. In February 1992, EPA Region V approved the modification. Because the decision was appealed by several individuals, environmental groups, the state of West Virginia, and the city of Pittsburgh, the matter was referred to the Environmental Appeals Board for resolution. On July 24, 1992, the Environmental Appeals Board upheld the region's decision to issue the spray dryer modification.

Several issues were raised about this permit modification and EPA's processing of it. First, some critics claim that EPA did not make clear the extent to which the addition of the spray dryer required changes to be made in the entire incineration system. Second, some claim that EPA accepted information provided by WTI on the spray dryer's potential impact on emissions without doing any independent analyses. Finally, some stated that EPA did not fully consider the testimony and comments provided by experts on the potential for the spray dryer to result in increased emissions of mercury and dioxins, among others.

EPA Determined That Addition of Spray Dryer Is a Major Permit Modification

Critics of EPA's processing of the permit modification to add a spray dryer to its incineration system have said that neither WTI nor EPA made clear that the addition of the spray dryer would require the entire system to be redesigned and reengineered. In addition, some have said that because the system with the spray dryer added was so different from the one originally permitted, the entire permit should have been reopened and evaluated.

RCRA regulations establish certain conditions under which a permit may be revoked, but the extent of permit modification is not a condition addressed. According to EPA Region V officials, they were not aware of any instances in which the extent of a proposed permit modification had ever been used as a basis to revoke a permit. The regulations, however, do

establish classes of permit modifications on the basis of the extent of changes being requested.

Before formally submitting its request for a permit modification, WTI had corresponded with EPA about the possibility of adding a spray dryer to its permitted incinerator system. On the basis of information WTI had submitted to EPA earlier that year, EPA Region V informed the WTI Project Manager in August 1990 that because the addition of a spray dryer to the incineration system causes gas flow rate and temperature changes throughout the entire incineration system, the addition would be considered a major permit modification, that is, either a Class 2 or Class 3 modification.

On October 29, 1990, WTI formally submitted its permit modification request to add the spray dryer to the incinerator's pollution control equipment. According to WTI, the purpose of the spray dryer was to reduce the contaminated liquid to a dry salt, making it much easier and safer to handle. It stated that the only result would be an increase in the amount of water vapor in the flue gas that exits the stack. It further stated that the spray dryer would not result in any changes either in the waste that can be processed at the facility or the performance of the facility. According to WTI, permitted contaminant emissions from the incinerator would not increase and the incinerator would continue to meet permitted emissions limits. Because the requested changes would have no effect on the wastes processed, the performance of the facility, or permitted contaminant emissions, WTI requested that it be considered a Class 2 modification. As required by RCRA regulations, WTI announced and provided a 60-day public comment period between November 2, 1990, and January 2, 1991, and also held a public meeting on November 19, 1990.

Although WTI asked EPA to consider its request to add the spray dryer as a Class 2 modification, after WTI had held the public information meeting and the public comment period as required for Class 2 modifications, EPA Region V advised WTI in February 1991 that on the basis of expressed public interest in the proposed modification, the agency was considering elevating WTI's request to a Class 3 modification, which it later did. This classification is used for processing major permit modifications and provides the highest level of public participation in the EPA decision-making process. According to the August 1991 EPA fact sheet on the proposed modification, the purpose of the Class 3 modification process was to provide interested parties an opportunity to evaluate the permittee's ability to comply with the applicable regulations on the

modified portions of the permit. Also as required by the regulations, EPA provided a 60-day public comment period and set a date for a public hearing on the proposed modification.

We found that in processing WTI's request to add the spray dryer to its incineration system, EPA followed its regulations on the information it provided to the public. As required for a Class 3 modification, EPA prepared a draft permit showing changes, including both new permit conditions and modifications to existing permit conditions, that EPA was proposing if the requested modification was approved. EPA, however, did not make public all information related to the spray dryer modification. EPA determined at WTI's request that certain details on the modification, such as process flow diagrams, were confidential business information because they involved trade secrets. We reviewed EPA's Region V approval of WTI's requests for confidentiality and found that EPA Region V had followed the agency's procedures for making such determinations.

EPA Requires That Spray Dryer Addition Not Adversely Affect Emission Limits

Some critics stated that EPA Region V did not fully or properly analyze the spray dryer's impact on emissions. RCRA regulations require that an incinerator be designed, constructed, and maintained so that it will meet specific performance standards, such as the 99.99 percent destruction and removal efficiency for certain waste components. The regulations do not require EPA to do an independent analysis of the information provided by the permittee. According to EPA regional officials who were involved in processing the permit modification to add the spray dryer, the information WTI provided was reviewed and determined to be reasonable on the basis of the regional officials' professional engineering judgment. They pointed out, however, that ultimately WTI would have to prove through the trial burn that the incinerator's technology could meet EPA's performance standards, as stated in the RCRA permit.

Because the regulatory requirements for hazardous waste incinerators are performance-based, EPA reviews the expected performance of the system as a whole rather than as individual pieces of equipment. Thus, when Region V reviewed the proposed addition of the spray dryer to the incineration system, it considered the effect of the spray dryer together with the other equipment. In its February 1992 response to public comments on the permit modification to add the spray dryer, EPA Region V stated that it had reviewed the permit modification request and determined that although the spray dryer could increase emissions if operating conditions for the air pollution control equipment remain

unchanged, WTI could control other emissions so that the spray dryer's overall impact on emissions would be negligible. It stated, however, that this determination would be verified by the trial burn.

EPA Considered Testimony of Expert Witnesses

Some critics of EPA's approval of the permit modification to add the spray dryer have also said that the agency did not fully consider the testimony of witnesses who claimed that the addition of the spray dryer would increase emissions, particularly of mercury and dioxin. Our review of EPA's February 1992 Response to Comments shows that EPA did respond to comments on the potential for the spray dryer to increase emissions.

The expert witnesses of the opponents concluded that because of the "closed loop" nature of the proposed spray dryer's design and operation, once the scrubber water has become concentrated with condensable organics and metals to a breakthrough point (equilibrium or steady state), the stack emissions would increase. In its February 1992 Response to Comments, EPA did not dispute that the spray dryer's use of scrubber water would potentially increase the dust and organic loadings into the air pollution control system and subsequently into the stack emissions.

EPA further stated, however, that the issue was whether the total emissions through the stack will be at the level allowed by WTI's permit. EPA said that to determine total emissions, other factors must be considered. These factors include waste feed rates; incinerator operating conditions, such as pressure and temperature; and waste feed characteristics, such as ash and metal content, physical and chemical properties, and heating value; and air pollution control equipment operating conditions. Finally, EPA stated that WTI must comply with the more stringent emissions requirements stipulated in the modified permit. To determine this, the facility would have to conduct emissions testing under steady-state conditions with maximum feed rates, as required by an approved trial burn plan. Specifically, EPA stated that the organic and mercury conditions under steady state would be measured during the trial burn to determine the effectiveness of constituent removal and whether the emissions exceed the regulatory limit. It stated that under no circumstances would emissions be allowed to pose a threat to human health and the environment. It further stated that, for example, if the trial burn results showed that the regulatory limits for mercury were exceeded, mercury input into the incinerator could be restricted as one of the permit conditions. (Mercury and dioxin emissions resulting from the trial burn are discussed in chapter 5.)

RCRA Permit's Expiration Date

Concern has been raised about the correct expiration date for WTI's federal RCRA permit. The confusion over the correct date was caused by appeals of the permit after it was initially issued and actions taken by WTI's attorney.

WTI's federal RCRA permit expires on January 25, 1995. The permit was originally issued by EPA on June 24, 1983. Under EPA's regulations, the effective date of the permit is 30 days later, unless the permit is appealed. In this case, the permit was appealed, staying its effective date. The Administrator of EPA denied all of the appeals on December 17, 1984, and directed Region V to issue a final permit decision. On January 25, 1985, the Regional Administrator sent a letter to WTI stating that the permit was effective on that date. The permit specifies that it is effective for 10 years, the maximum period under RCRA regulations.

WTI's attorney wrote to EPA stating that EPA had not changed the date on the permit cover sheet to reflect the correct issuance and termination dates and requested EPA's confirmation of the correct termination date. EPA responded that such a change needed to be done as a Class 1 modification. Although WTI subsequently applied for a Class 1 modification, EPA did not process the modification because its advice that a Class 1 modification was required had been incorrect.

In WTI's June 17, 1991, request for the modification, its attorney "whited out" the effective and expiration dates on the cover sheet of the permit and changed them to the January 1985 and 1995 dates. The attorney sent the cover sheet to EPA with a letter explaining that he had followed the RCRA regulation's procedures for Class 1 modifications. According to EPA, the attorney's letter is not part of either the administrative record or the permit. The modification of the permit was accomplished by the Regional Administrator's January 25, 1985, letter, which should have been accompanied by a new cover sheet. Accordingly, the attorney's letter has no legal effect. On February 3, 1992, a new cover page was issued by Region V. We agree with EPA that the "whited out" changes made to the cover sheet by WTI's attorney had no legal effect on the permit.

Ohio EPA Considers Effects of Construction on Existing Site Contamination

Evidence shows that the soil and groundwater on a portion of the WTI site is contaminated with various hazardous wastes, as a result of spills that allegedly occurred there in 1983 and 1984 when the property was used by another company.

In 1990, individual citizens, citizens' organizations, and others began to express concern that the construction activities or techniques used at the WTI site would result in the contaminants being released, adversely affecting human health and the environment. Specifically, those concerns were that grading and excavation on the site could result in contaminants being released into the air and the Ohio River and that piles used to support structures being built on the site and driven to bedrock in areas where contaminants were detected could provide a pathway for downward contaminant migration, particularly into the aquifers running beneath the site.

Because the contamination did not occur until after WTI's application had been submitted to EPA and Ohio EPA and both agencies had held public hearings on the proposed application, these concerns were not an issue and thus were not addressed by either the federal or state permitting agencies during the permitting process.

These concerns were addressed in 1990, however, by the Ohio EPA Division of Emergency and Remedial Response. The division conducted a preliminary investigation of the site, reviewed the information and data obtained from all investigations at the site, and concluded that the release of hazardous constituents from the site did not present an imminent threat requiring the agency to take an emergency action and that no evidence was found that WTI's planned construction would contribute to any additional release of contaminants into the groundwater or the Ohio River. It also concluded that the planned development of the site would not preclude the installation, operation, and maintenance of an adequate groundwater remediation system at the site.

Site Was Contaminated by a Bulk Storage and Transfer Facility

When WTI submitted its original applications to the federal and state EPAs in 1981, a portion of the land on which it was proposing to build its hazardous waste incinerator was being leased by the Columbiana County Port Authority to Charter International Oil Company (Charter Oil), which operated a bulk storage and transfer facility on the site. During its operations, Charter Oil received solvents, including acetone, toluene, xylene, and "mineral spirits," which were transferred from river transport ships to storage tanks and then into tanker trucks for distribution. Charter Oil continued to lease the property from the Port Authority until May 1984. Later that year, the storage tanks and the transfer pipeline were dismantled and removed.

The exact date when the site first became contaminated is not known, but the federal and state EPAs became aware of potential contamination at the site in June 1984. In that month, a federal investigation of an alleged theft of 200,000 gallons of solvent from the facility revealed that the pipelines leading from the storage tanks to the truck loading area were severely corroded, indicating the possibility of numerous spills. In addition, during that investigation, a former site manager for Charter Oil told investigators that in the spring of 1983 about 19,000 gallons of xylene had been released into the environment when a crack developed in a xylene storage tank.

After receiving notice of the alleged release, EPA Region V and the Ohio EPA conducted a preliminary site investigation at the Charter Oil facility in July 1984. Analysis of groundwater taken from a well drilled near the former xylene storage tank at the facility during this investigation indicated the presence of xylene and toluene. The investigation also revealed that although an earthen dike which surrounded the 10 above-ground storage tanks was able to prevent a direct discharge into the Ohio River, it was not sufficiently impervious to prevent the migration of chemicals released onto the ground. Finally, on the basis of a December 1984 investigation, an EPA consultant stated in an April 1985 site assessment report that a leak had resulted in a suspected release of about 33,000 gallons of mineral spirits into the environment in the spring of 1984.

Subsequent site investigations further delineated the nature and scope of contamination at the site. Monitoring wells installed at the facility in 1985 and 1987 indicated both groundwater and soil contamination as well as contaminants floating on the groundwater. In addition to the xylene and toluene identified by the Ohio EPA investigation, the subsequent investigations also found other contaminants, including benzene, ethylbenzene, and acetone in groundwater and soil samples collected at the site. These contaminants are considered to be industrial wastes, hazardous wastes, or hazardous substances under either federal or state law.

Studies Define Nature and Scope of Site Contamination and Recommend Remedial Action

Studies of the site conducted between 1985 and 1990 show that the site is underlain by two relatively distinct units of river soils. The first unit, nearest the surface, consists of dense silt and sand. Beneath this unit is a sand-and-gravel unit, followed by sandstone bedrock.

Groundwater occurs in both the silt-and-sand and sand-and-gravel units. Groundwater movement in the silt-and-sand unit is generally downward

into the sand-and-gravel unit. Groundwater movement in the sand-and-gravel unit is generally toward the Ohio River, and during most of the year this groundwater discharges to the river. The groundwater found in this layer is also referred to as the sand-and-gravel aquifer. Another aquifer is found in the sandstone bedrock.

A December 1985 study of the hydrogeologic and groundwater quality conditions at the proposed WTI facility, which was done for one of the WTI partners, found toluene, xylene, ethylbenzene, and other unspecified petroleum distillates in the groundwater obtained from monitoring wells drilled around the tank farm of the Charter Oil facility. This study identified contaminants floating on the groundwater and dissolved contaminants in the sandy soil, but the study stated that the information obtained was not sufficient to fully delineate the contamination present. It did state, however, that further contaminant migration could be prevented if a remedial strategy were implemented at the site.

A March 1990 study was done for WTI by a private contractor to develop a plan for removing the contamination. The study, which was based on May 1987 sampling at the site, further delineated the contamination. The study found that xylene and ethylbenzene were the most prevalent compounds, accounting for more than 75 percent of the compounds detected. Benzene, a known carcinogen, was detected at low levels in 3 of the most heavily contaminated wells of the 23 monitoring wells at the site. In addition, localized concentrations of acetone were also reported.

The 1990 study estimated the total volume of contaminants to be about 8,500 gallons. It found that the contamination consisted of (1) free product floating on the groundwater, (2) dissolved hydrocarbons in the groundwater, and (3) hydrocarbons in liquid, vapor, and adsorbed phases in the soil. The study estimated that 5,510 gallons, about 61 percent, of the total site contamination existed in a thin (from a trace to less than 4 inches) free-product layer floating on the groundwater. The study found that about 105 gallons, or less than 1 percent of the site contamination, was in the form of dissolved hydrocarbon contamination. Finally, it estimated that the volume of petroleum products contained in the soils was 3,225 gallons, or about 38 percent of the contamination.

The contractor who prepared the March 1990 study also carried out a site investigation in March 1990. The results of this investigation, included as a May 1990 addendum to the March 1990 study, showed that groundwater contamination had diminished since the 1987 sampling was done. It also

reported that no detectable concentrations were found in the deeper monitoring wells, indicating that the contamination occurs mainly in the shallow sediments. According to the report, these data indicate that natural flushing processes are working to remove the groundwater contamination at the site. Because the groundwater discharges to the Ohio River, this flushing process includes discharges into the Ohio River.

The addendum also compared the concentration of four contaminants—benzene, toluene, ethylbenzene, and xylene—found in this sampling with EPA's drinking water standards for these contaminants and found that the groundwater samples in 4 of the 22 monitoring wells sampled, all in the vicinity of the former tank farm, exceeded the standards. In addition to the above four contaminants, acetone, trimethylbenzene, and trichloroethylene were also found in the groundwater samples.

In addition, the March 1990 study recommended a site remediation plan and recommended that remediation focus on cleanup of the groundwater at the site and that the soils not be actively remediated because of WTI's planned construction activities. It also reported that the construction of the remedial action system should impose few constraints on site development. Specifically, the study's proposed remediation objectives included (1) removing the free product floating on the groundwater, (2) reducing the dissolved contaminant concentrations to below 10 parts per million, and (3) minimizing the off-site migration of contaminated groundwater. The study estimated that removing the free product would take about 2 years and removing the dissolved contaminant would take about 4 years after design and construction of the system was complete. By removing the free product and reducing the dissolved contaminant concentrations, the off-site migration of the contaminated groundwater will be minimized. It estimated that remediation of the site—including the design, construction, and testing of the system—could be completed in about 50 months and that post-remediation monitoring at the site would continue for an additional 10 years.

Potential Effects of WTI Construction on Spread of Contamination and Future Remediation Considered by Ohio EPA

Although the site contamination was not considered by the federal and state agencies during the permitting process, the Ohio EPA Division of Emergency and Remedial Response did consider whether the construction activities and techniques planned at the site could cause the contamination to spread to other unaffected areas. The division had been involved in evaluating the site since the alleged spills were reported in

June 1984. Thus, at the time that WTI was ready to begin constructing the facility in 1990, the division had conducted a site investigation that confirmed the groundwater contamination; completed a preliminary assessment of the site; requested the Port Authority to carry out a site investigation to determine the nature and extent of the contamination; and had begun negotiating with the Port Authority and WTI for remediation of the site.

A May 1990 Ohio EPA report stated that all site investigations had shown that the site is contaminated with organic hazardous constituents. However, the report stated that it had not found any evidence or reason to assume that the construction activities planned for the WTI site would contribute to an additional release of contaminants to the groundwater or the Ohio River. According to the report, the placement of fill material and the installation of concrete pads and containment structures planned at the facility would reduce the rate of precipitation infiltration and runoff into the contaminated groundwater, thereby potentially reducing the rate of contaminants migrating to the Ohio River. It also concluded that the construction activities would not preclude or hinder the implementation of remedial activities at the site.

With respect to the concern that pile driving to bedrock in areas where contaminants were detected could provide a pathway for contaminant migration as the pilings are pushed downward, the March 1990 study done for WTI stated that these piles may offer a limited migration path but that contaminants had already been detected in the lower parts of the aquifer and the pile driving was not likely either to increase the contaminant levels or to introduce any new types of contaminants. According to an Ohio EPA official, they had reviewed the information contained in this report and determined that because of the nature of most of the contaminants identified at the site (that is, they are lighter than water and thus float in free form on top of the groundwater), the pilings driven to bedrock would not increase the level of contamination in the groundwater. This official also said that although monitoring done at the site since 1987 has identified contamination in the shallower aquifer beneath the site, no contamination of the deeper aquifer located in the sandstone bedrock beneath the site has been found either during initial site investigations or in the groundwater monitoring reports that are required by WTI's state hazardous waste facility permit.

With respect to the allegation that the contamination represented an imminent threat to human health and the environment, the May 1990

report stated that because groundwater data from the site indicate that groundwater flow and contaminant migration is toward the Ohio River, contaminant release to the river was likely. It reported that contamination of the groundwater at the WTI site represented a release of hazardous constituents to the waters of the state subject to state law. (Unpermitted discharges of such hazardous constituents to waters of the state are a violation of state law.) The report also stated that although an ongoing, unquantifiable release of hazardous constituents to the Ohio River is highly probable, no evidence was available to indicate that either any violation of state water quality standards or drinking water standards in any public water supply had occurred. It also reported that no known water supply wells used the affected aquifer and that the exposure of nearby populations to either the contaminated soil or groundwater was minimal. Finally, the report stated that the presence of hazardous constituents in the groundwater and soils at the site represented a condition subject to the remediation requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and that the Port Authority and WTI's remediation proposal appeared to be a reasonable response to the risks associated with the site.

During the remainder of 1990, the division reviewed the studies submitted by the Port Authority and WTI to determine whether proper data collection and analytical methods were used to assess the nature and extent of contamination at the site. In January 1991, it reported that as a result of its preliminary review, it had determined that the contamination was not an imminent threat requiring emergency action by Ohio EPA. It stated further that construction of the WTI facility would not preclude the installation and maintenance of a groundwater remediation system at the site and that the agency was in the process of negotiating a cooperative consent agreement with the Port Authority and WTI. The final agreement between Ohio EPA and the Port Authority became effective in November 1991. Although Ohio EPA approved a workplan for the site remediation in March 1992, as of October 1993 WTI has not received approval of a required wastewater discharge permit from the Ohio EPA, and thus remediation work has not begun.

Conclusions

EPA generally followed the RCRA requirements, but in some cases it did not follow its own regulations and procedures: (1) It issued WTI's permit without obtaining the landowner's signature; (2) EPA Region V did not provide the state of West Virginia with proper information during a public comment period on WTI's original application; and (3) EPA Region V did not

require WTI's permit application to include an engineering analysis to show that the facility and its flood protection devices could withstand the forces of a flood. In addition, EPA's regulations do not include executive order floodplain requirements. Finally, in those cases in which the regulations do not provide specific guidance, EPA Region V has not consistently provided opportunities for public participation in the permit decision-making process. RCRA regulations do not ensure that the public will have an opportunity to participate in EPA permitting decisions that could affect them and are not consistent with certain floodplain requirements in the federal executive order. None of these conditions, however, would require EPA to terminate WTI's permit.

RCRA regulations do not provide guidance on whether opportunities for public participation should be provided under certain circumstances that the region has encountered. In the absence of regulatory guidance, the Regional Administrator has discretion in deciding whether to provide an opportunity for public comment. Generally, under those circumstances, Region V has provided opportunities for public participation. For example, Region V did provide an opportunity for public comment when WTI failed to give EPA 90 days' advance notice, as required by regulation, of what EPA considered a change in the facility operator. In another case, however, EPA did not provide an opportunity for public participation before it approved updated trial burn, waste analysis, and contingency plans WTI was required to submit as a condition of its permit. In response to public concern, EPA is now providing a comment period for all plans that are part of WTI's permit.

As part of EPA's present efforts to provide for greater public involvement opportunities in the RCRA permitting process for hazardous waste incinerators, we endorse a proposal being considered as part of the agency's draft combustion strategy to obtain public comments when the permit application is first submitted to the agency for review. However, this proposal does not include providing opportunities for public participation when either the applicant fails to follow the procedures prescribed in the regulations or when significant updated information, such as the various plans included in a permit, is required to be submitted as a condition of the permit after it is issued.

With respect to the floodplain issue, EPA did not evaluate whether the WTI facility could have been located outside the floodplain. Moreover, RCRA regulations do not include the federal executive order requirement to conduct a practicable alternative analysis. Although EPA considered the executive order when it was developing its RCRA regulations, it decided not

to include the practicable alternative analysis on the basis of policy considerations. EPA determined that its regulations satisfied RCRA, while being consistent with the executive order. EPA did not, however, address whether its regulation fully satisfied the executive order's requirement or its obligation under the executive order to include a practicable alternative analysis. By not incorporating this requirement into its regulations, EPA missed the clear preference of the executive order to avoid floodplain development. In addition, the practicable alternative analysis would not have limited EPA's discretion to determine that a proposed location was the only practicable alternative for a hazardous waste facility. Thus, EPA should reconsider the need for including a practicable alternative analysis in its RCRA floodplain regulations.

In addition, the level of flood protection that is required under the RCRA regulations is not consistent with the guidance for implementing the executive order. That guidance states that for critical federal actions, which include hazardous waste activities, the 500-year floodplain should be used instead of the base, or 100-year, floodplain.

In October 1993, EPA announced plans to issue a notice of proposed rule-making on new location standards. The announcement states that EPA's goals for the standards is to ensure siting of new hazardous waste treatment, storage, and disposal facilities in the most suitable locations. This rule-making effort provides EPA with an opportunity to strengthen its existing floodplain regulations.

Recommendations

We recommend that the EPA Administrator amend the RCRA regulations to (1) incorporate the alternative site analysis requirement of Executive Order 11988 and (2) require that the 500-year floodplain be used instead of the 100-year floodplain.

In addition, we recommend that the EPA Administrator request that the EPA staff who are currently developing proposals as part of the agency's draft combustion strategy establish guidance on conditions or circumstances for which opportunities for public participation should be provided beyond the present regulatory requirements, including situations in which the permittee does not follow the RCRA permit modification requirements and when significant updated information is required to be submitted as a condition of the permit after the permit is issued.

Agency Comments

EPA agreed with our recommendations that it amend the RCRA regulations to require that (1) an alternative site analysis be conducted during the permitting process consistent with Executive Order 11988 and (2) the 500-year floodplain be used instead of the 100-year floodplain. EPA further states in its comments on a draft of this report that efforts are under way to evaluate an array of siting restrictions in geologically sensitive areas.

EPA agreed with our recommendation that it establish guidance on the conditions or circumstances for which opportunities for public participation should be provided beyond the present regulatory requirements. In commenting on a draft of this report, EPA stated that it has taken substantial steps toward ensuring full public participation in the RCRA permitting process, including the specific cases we cited. EPA also stated that it will prepare additional guidance for its regional offices and authorized states to identify specific situations in which additional opportunities for public participation may be desirable as a result of changed circumstances during the life of the permit.

No Unresolved Concerns About WTI's Air and Water Permits Uncovered

The state of Ohio processed, approved, and issued the air and water permits for WTI's hazardous waste incinerator. U.S. EPA's oversight of these air and water permits was limited because Ohio EPA classified WTI as a minor source of air pollution emissions and a minor water discharger. In recent years, concerns have been raised about whether WTI was correctly classified as a minor source of air pollution emissions and whether its air permit was valid. We determined that the air permit issued by Ohio EPA was valid. Concerns also have been raised about the amount of lead emissions allowed in the air permit, but because WTI's RCRA permit also sets lead emissions limits, and at much lower levels, the facility will have to adhere to this more stringent standard. Additionally, changes in WTI's water collection and treatment techniques have eliminated the need for treating and discharging contaminated water off-site.

Issues Relating to the Air Permit Appear to Be Resolved

Ohio, which was approved in 1980 by EPA to issue and administer its air permits program, has issued two air permits to WTI. The first was a 1983 permit-to-install, which was required to begin construction of the plant. The second was a 1992 permit-to-operate, allowing initial limited operation of the plant.

For purposes of its air permit, WTI was classified by Ohio as a minor source of pollution emissions. A source is considered "minor" if its emissions are projected to be less than certain limits. The threshold limits depend on whether or not the air quality in the county in which the construction is proposed meets National Ambient Air Quality Standards, for any of the six criteria pollutants (particulate matter, sulfur dioxide, carbon monoxide, ozone, nitrogen dioxide, and lead). A hazardous waste incinerator is a major emitter if it has the potential to emit more than 250 tons per year of any criteria pollutant whose levels in the county do not exceed air quality standards, or 100 tons per year for those pollutants whose levels exceed standards.

As part of its responsibility to oversee Ohio's air program, EPA Region V receives copies of all permits issued by Ohio for review but does not review all permits in depth because of the large number of permits that are issued. EPA's permit reviewers concentrate on major sources and certain categories of minor emitters. EPA maintains limited oversight of Ohio's air permits issued to minor sources. From 1983 to early 1988, EPA relied on its yearly audits performed at various Ohio state offices to review minor permits. EPA no longer conducts on-site audits and instead now requires states to send in additional information to enable it to more thoroughly

review the draft permits. However, EPA still relies on the states to issue and manage most of the minor permits.

Concerns have been raised by opponents of the incinerator and by EPA about whether WTI's classification by Ohio EPA as a minor source was correct and whether its air permit-to-install was valid. If WTI was a major source, it would not have been allowed to be constructed in the East Liverpool area because the county exceeded federal air quality standards and was under a federal construction ban. Additionally, opponents are concerned about the amount of permitted lead emissions and the potential health hazard that the lead emissions may pose to the community.

WTI Is a Minor Source of Air Pollution, and Its Permit-To-Install Is Valid

One of the principal supports for opponents' contention that WTI's permit-to-install is not valid is a 1987 letter from an EPA Region V official to Ohio EPA stating his opinion that WTI was not a minor source and that its permit was invalid. Although Ohio EPA had earlier determined that WTI was a minor source, in 1987 EPA determined that because the emissions limits set in the permit were annual, they could not be monitored on a short-term basis and were therefore not "federally enforceable." EPA consequently recalculated emissions levels in the 1983 permit on the basis of continual operation, which then resulted in certain emissions rising above the limits allowed for minor sources. EPA therefore concluded that the 1983 permit was not valid because it would result in the source being a major source and would allow a major source to be constructed in violation of the federal construction ban that was in effect in East Liverpool. However, EPA made some errors in its 1987 calculations and used criteria that were not in effect at the time the permit-to-install was issued in 1983. Subsequently, EPA agreed with Ohio EPA that EPA had made errors in its 1987 calculations, that WTI was a minor source, and that WTI's 1983 permit was valid.

In 1983, Columbiana County did not meet the National Ambient Air Quality Standards for particulate matter, sulfur dioxide, and ozone. In addition, the area was under a federal ban on construction of new major sources, imposed by EPA, because Ohio did not have an approved plan demonstrating how the standard for particulate matter would be attained. Ohio EPA determined that WTI was a minor source on the basis of conditions in the permit limiting the annual emissions below the threshold level that would make the facility a major source. The emissions limits for particulates and sulfur dioxide were set at 78.7 and 99.8 tons per year, respectively, and the permitted limits for the other criteria pollutants were below 250 tons per year. Since ozone is not emitted, but formed from the

interaction of compounds in the atmosphere, it is not directly controlled by permit.

Ohio EPA approved WTI's air permit-to-install in 1983, limiting the incinerator's operations to a maximum of 8,100 hours per year (about 92 percent of the year), allowing for downtime for maintenance and repair. An Ohio EPA official stated that the agency set the operating hour limitation in 1983 at 8,100 hours per year on the basis of industry standards. In November 1982, EPA had provided comments to Ohio EPA on the draft permit-to-install and recommended that Ohio approve the permit-to-install. Although EPA was late in responding, its comments included asking for more clarification of emissions limitations for sulfur dioxide, questioning the use of 30-day rolling averages for measuring sulfur dioxide emissions, and a discussion of the modeling analysis that had been submitted. Ohio EPA responded to all of EPA's comments in February 1983, and no changes were made to the permit-to-install. EPA did not comment on the permit-to-install again until 1987.

At the request of a potential buyer for the WTI facility, EPA reviewed the air permit-to-install in 1987. In evaluating the permit-to-install, EPA used its current and proposed guidance on limiting a source's potential to emit. According to the guidance, annual emissions limits, such as those in WTI's permit, are not "federally enforceable" as required, because they are not capable of being monitored on a short-term basis. Thus, the annual emissions limits were not acceptable for limiting the facility's potential to emit. The proposed guidance, which was adopted in 1989, stated that when a permit contains no limits on hours of operation that can be monitored, the emissions limits must be based on a plant operating 24 hours a day for 365 days a year (8,760 hours). EPA therefore recalculated WTI's potential emissions using the same hourly emissions rates, but assuming that the facility would operate 8,760 hours a year rather than 8,100. EPA's new calculations showed that for several pollutants (total suspended particulates, sulfur dioxide, and nitrogen oxides), WTI could exceed the threshold limits for minor sources.

Accordingly, EPA informed Ohio EPA in 1987 that the permit was not valid for the construction of a minor source. EPA stated that for the permit to be valid as a minor source, the emissions rates must be reduced and/or the hours of operation must be lowered so that, when computed over the course of 1 year, the required rate of emissions multiplied by the permitted annual hours of operation result in total emissions less than the threshold level for a major source. Furthermore, the permit limitations must be

capable of being monitored in time periods which allow them to be federally enforceable. EPA stated that the appropriate unit of time for purposes of federal enforcement in this situation would be 1 week.

Ohio EPA officials found errors in EPA's calculations. These officials stated that they informed EPA of the errors in a September 1987 letter and that the emissions limits were in compliance with the 1983 permit-tc-install. In addition, although EPA was concerned about the federal enforceability of the permit-to-install, Ohio EPA pointed out that it was a valid Ohio permit and fully enforceable by Ohio EPA. Ohio EPA also pointed out that because there were no approved federal requirements or guidelines requiring the use of 8,760 operating hours per year in 1983, Ohio EPA had complied with existing federal guidelines and Ohio law. After receiving no further response from EPA that WTI's permit-to-install was invalid, Ohio EPA considered the matter to be resolved and made no changes to the permit-to-install.

It was not until 1991 that EPA reexamined the permit-to-install and again questioned its validity for the same reasons stated in its 1987 letter to Ohio EPA. Ohio EPA restated its 1987 position with respect to the lack of federal guidelines in 1983 and that EPA had made errors in calculating the emissions. However, in 1992 Ohio EPA modified the air permit-to-install to, among other things, incorporate the 1989 federal guidance changes in total operating hours by reducing the hourly emissions rates, and to require continuous emissions monitoring. The permitted operating hours, however, remained at the 1983 level of 8,100 hours per year. The reduction in hourly emissions rates effectively reduced the permitted emissions for sulfur dioxide and nitrogen oxides an additional 8 percent. EPA officials acknowledged their mistakes and agreed with Ohio EPA that the particulate rate could remain the same.

Despite the changes to the permit, EPA officials agreed that because the guidelines that they used to evaluate the permit-to-install in 1987 had not been in effect in 1983, the permit remained valid. EPA officials also agreed that they had made some errors in recalculating WTI's permitted emissions, which were pointed out by the Ohio EPA.

Even if the guidelines could apply retroactively, EPA Region V officials stated that EPA could not have successfully challenged WTI's permitted operating hours in 1987. EPA stated that its regulation governing permits issued pursuant to delegated programs provide specific guidance for challenging conditions of permits. This regulation, governing prevention of

significant deterioration (PSD) permits, provides that within 30 days after a final PSD permit is issued, any person who filed comments on that draft permit or participated in the public hearing may petition the EPA Administrator or, in delegated programs, the head of the state agency to review any condition of the permit decision. EPA officials stated that although the permit issued to WTI was not a PSD permit, the same requirement of a timely appeal would presumably apply in the case of WTI because Ohio's authority to issue the permit was based on EPA's delegation of its PSD program to Ohio.

EPA cited as precedent a federal district court case, Greater Detroit Resource Recovery Authority (GDRRA) and Combustion Engineering, Inc. v. Adamkus, No. 86-CV-72910-DT (E.D. Michigan, October 21, 1986). In GDRRA, the state issued a permit to a source pursuant to a delegation by EPA, as in the WTI case. The court held that when there was neither fraud in the application for the permit nor violation of the terms of the permit, EPA had no authority to revoke a permit to which it failed to object during the 30-day public comment period. EPA stated that following the precedent of GDRRA, "EPA would not have prevailed in 1987 in an action against WTI to revoke a permit issued in 1983, on the ground that the permit failed to incorporate guidance issued after 1983." Thus, EPA could not have forced changes in WTI's air permit-to-install for new guidance issued after the permit had been issued.

EPA officials could not specifically state why these particular issues raised in 1987 were not resolved until 1992. They said that it was probably because of the large number of permits they process, the lack of staff, and the lack of a formal policy to refer potential violations to EPA's enforcement section. However, they stated that their current practice is to refer all potential violations to the enforcement group for action.

After reviewing agency files and interviewing officials at EPA, Ohio EPA, North Ohio Valley Air Authority, and WTI, we agree with EPA that WTI's 1983 permit-to-install as a minor source was valid.

Air Permit Limits on Lead Emissions Superseded by More Stringent RCRA Limits

Some residents of East Liverpool and the health community have expressed concerns about the amount of lead that the WTI incinerator is permitted to release under its air permit. We found that the original air permit's lead limits were not clearly written and could be misinterpreted and that the limits on lead emissions in WTI's RCRA permit are expected to be significantly more stringent than the limits in the current air

permit-to-install. EPA indicated that WTI is required to meet the lower of the two emissions limits.

WTI's 1983 air permit-to-install set lead emissions limits at a maximum of 4.7 tons per year for the two planned incinerators. In reviewing the permit-to-install, we determined that its language could be interpreted to mean that one incinerator could emit up to 4.7 tons of lead per year or that each incinerator could be limited to a total of 2.35 tons per year.

Ohio EPA officials acknowledged that the original permit-to-install may be subject to differing interpretations. However, they pointed out that the permit-to-install limits were completely understood by EPA, Ohio EPA, and WTI officials as limiting each incinerator to lead emissions of 2.35 tons per year; these officials confirmed Ohio EPA's account. Officials pointed out that this was Ohio EPA's first air permit-to-install for a hazardous waste incinerator and that they were not experienced at writing these types of permits.

WTI's November 1992 air permit-to-operate, issued by the Ohio EPA, is specific about the amount of lead emissions allowed for the currently built incinerator, at 1.07 tons per 180 days (approximately 2.14 tons per year). However, lead is actually controlled by two permits, the Ohio air permit-to-operate and the federal RCRA permit, and the emissions limits differ in each.

Although the state air permit-to-operate limits WTI's lead emissions to a maximum of 1.07 tons per 180 days, actual emissions will be more strictly limited by the federal RCRA permit. An EPA Region V official stated that EPA expects to limit WTI's lead emissions for the existing incinerator to a maximum of 412 pounds per year, or about 10 percent of the maximum allowed under the air permit. However, EPA has indicated that the final lead emissions limit for WTI will be established on the basis of the Phase II risk assessment and other relevant information. Finally, WTI is required to meet the lower of the emissions limits established by the two permits.

During the trial burn, EPA restricted WTI to burning waste containing 100.4 pounds of lead per hour. EPA found that the incinerator was able to remove the lead so well that only .0097 pounds of lead per hour was emitted from the stack during the trial burn, or about 2 percent of the maximum allowable under the air permit. However, an EPA official stated that EPA may revise the lead emissions limits in the permit after it sees the results of the Phase II risk assessment.

Finally, EPA has been evaluating whether to reduce the National Ambient Air Quality Standards for lead for several years to further improve air quality and meet or remain within acceptable standards. However, an EPA official stated that because of significant decreases—up to 98 percent—in levels of lead in the air, they do not plan to change the current standards.

Changes in WTI's Operations Eliminated Need for Discharging Waste Water

Ohio EPA, which has had authority to issue and enforce federal water discharge permits since 1974, issued two water permits to WTI. The first permit was issued in 1983 as part of the air permit-to-install, and the second was issued as a separate permit allowing the initial limited operation. However, changes in WTI's water collection and treatment techniques since the first permit was issued have generally eliminated the need for treating and discharging contaminated water off-site. In addition, WTI has applied for water permits as a first step in the remediation of a spill at the WTI site caused by a previous tenant, as discussed earlier.

EPA Region V maintains limited oversight of Ohio's water discharge permits, especially when they are issued to minor dischargers. While Region V receives copies of all permits for review, it does not do in-depth review of all permits because of the large number of permits that are issued. EPA spends most of its permit review manpower on the major dischargers. According to a Region V official, they usually review minor permits on a sample basis during audits of the state program.

Because WTI was planning to discharge its waste water into the East Liverpool sewage system, Ohio EPA considered but determined that a separate water discharge permit-to-install was not necessary. Instead, the agency decided that WTI only had to meet pretreatment standards for its wastewater, and thus Ohio EPA included these terms and conditions as part of the February 2, 1983, air permit-to-install.

WTI was issued the second water permit, a final water discharge permit (permit-to-operate), on October 30, 1991, allowing for the discharge of noncontact water (water that has not been in contact with hazardous waste) and rainwater into the Ohio River. WTI segregates rainwater into three categories (A, B, and C) through the use of curbs, dikes and ramps that are a feature of the facility's design and construction. "A" water consists of storm water from the roofs of buildings, grassy areas, and the employees' parking lot. "A" water and noncontact cooling water are discharged directly to the National Pollutant Discharge Elimination System (NPDES) permitted outfall into the Ohio River. "B" water consists of

storm water from nonactive process areas such as roadways and the storm water storage area. "B" water is discharged through the NPDES permitted outfall only after sample and analysis of the "B" water tank's contents. WTI initially planned to discharge all "B" water after treatment. However, it now plans to use and evaporate some of this water in the incineration process. "C" water is that rainwater that has fallen into hazardous waste processing areas and some waste water from on-site operations. "C" water will not be discharged to the NPDES outfall but is going to be used and evaporated in the WTI incinerator.

WTI has applied for two additional water permits in the remediation of a xylene spill, as discussed earlier, at the WTI site by a previous tenant. The first is a permit-to-install to allow installation of the remediation equipment, and the second is an NPDES permit to discharge treated water into the Ohio River once the remediation has begun. Ohio EPA is expected to rule on these permits once the application process is completed.

Activities to Ensure That Human Health and the Environment Are Protected From WTI's Operations

During the past several years, concerns have been raised about the potential adverse effects that WTI's operations might have on the residents and the environment of the East Liverpool area. In addition, some question EPA's ability to require stringent operating conditions and standards and to enforce compliance with the requirements of the incinerator's air emissions and water discharge permits. EPA has required WTI to conduct a trial burn to make sure that the incinerator meets the required performance standards; has implemented a monitoring, inspection, and enforcement program to ensure that the incinerator is operating in compliance with its permit; and is conducting a risk assessment to determine the potential health effects of WTI's operations on the community. In addition, the Ohio Department of Health has initiated a study to provide baseline information that the department can use to compare data before and after the full-scale operation of the WTI facility.

If the above activities are properly developed, implemented, and monitored, they should go a long way to ensure that WTI's operations will not adversely affect the community's health or environment.

In instances where WTI's trial burn test results did not meet the required or expected emissions limits, operating conditions were changed. Also, EPA and Ohio EPA have found compliance violations during WTI facility inspections that, in most cases, were corrected by WTI. EPA and Ohio EPA have taken or are considering enforcement actions against WTI.

Trial Burn Used to Evaluate Incinerator's Risks

A trial burn tests the incinerator's ability to meet all applicable performance standards when burning a waste under specific operating conditions. The operating conditions include such things as the rate and composition of the waste feed, the temperature that must be maintained in various areas of the incinerator, and the gas flow rate. To obtain a final operating permit, the trial burn results must demonstrate that the incinerator can meet the performance standards contained in its permit. The trial burn results are also used to establish the final operating conditions that will be included as part of the facility's permit.

The WTI trial burn was conducted in March 1993. During WTI's trial burn, a total of nine runs were conducted—three sampling runs under three operating conditions. The results of the trial burn showed that the incinerator failed to meet the required performance standard for one of the four hazardous constituents—carbon tetrachloride—being tested during two runs of one condition. In addition, the results showed that the

incinerator did not achieve the expected efficiency in removing mercury during another condition and exceeded the expected levels for emissions of dioxins.[1] In each case, EPA responded to the trial burn results by changing the operating conditions under which the incinerator could continue to operate in order for emissions to stay within the levels allowed by its permit.

EPA's Approach to Ensuring the Safety of Incinerator's Operations

All incinerators emit gases through a stack as the final step in the incineration process. These gases are composed primarily of two harmless constituents, carbon dioxide and water vapor, but they generally also contain small quantities of pollutants, some of which are harmful. Among the pollutants that may be released from the stack are trace quantities of the organic wastes being burned; carbon monoxide; nitrogen oxides; acid gases such as hydrogen chloride; products of incomplete combustion such as dioxins; and metals such as mercury, lead, and chromium that either adhere to or combine with small particles of ash called particulate matter. In order to obtain a permit, an incinerator must be able to burn wastes and cleanse combustion gases so that only small quantities of pollutants are emitted from its stack.

According to EPA, its performance standards for hazardous waste incinerators were designed to make sure that incineration is carried out in a safe manner and poses no unacceptable threat to either the surrounding environment or the health of people living or working nearby. These standards were set on the basis of analyses of potential risks to health or the environment and the levels of performance that have been measured for properly operated, well-designed incinerators. EPA's principal measure of incinerator performance is destruction and removal efficiency. Destruction refers to the combustion of the waste, while removal refers to the cleansing of pollutants from the combustion gases before they are released from the stack.

EPA has stated that because it is not technically feasible to monitor the destruction and removal efficiency for all organic compounds that may be contained in the waste feed, a facility must demonstrate that it can achieve the performance standards for selected hazardous compounds, called principal organic hazardous constituents, which the permitting agency designates in the permit. These principal organic hazardous constituents are generally selected from among the wastes the applicant is seeking

[1]For the purpose of this report, the general term "dioxin" is used to denote polychlorinated dibenzodioxins and dibenzofurans.

approval to burn on the basis of their high concentration in the waste feed and their difficulty to burn in comparison with other organic compounds in the waste feed. According to the theory of incineration followed by EPA, if the incinerator achieves the required destruction and removal efficiencies for the principal organic hazardous constituents, then the incinerator should achieve the same or better destruction and removal efficiencies for organic compounds that are easier to incinerate.

The performance standards in the RCRA regulations include emissions of the designated organic compounds, hydrogen chloride, and particulate matter. Specifically, those performance standards require (1) a minimum destruction and removal efficiency of 99.99 percent for organic compounds designated in the permit as principal organic hazardous constituents; (2) removal of 99 percent of hydrogen chloride gas from the incinerator's emissions unless the quantity emitted is less than 4 pounds per hour; and (3) a limit of 180 milligrams of particulate matter per dry standard cubic meter of gas emitted through the stack. EPA also has discretion to set operating conditions for any parameter it considers necessary to ensure that the incinerator meets the performance standards.

Through the trial burn, the incinerator must demonstrate that it can meet the performance standards under at least one set of the operating conditions tested before EPA will issue a final operating permit. If the trial burn results indicate compliance with the performance standards under some, but not all, tested operating conditions, the existing permit is modified to include only the conditions demonstrated as meeting the performance standards during the trial burn.

In addition, the trial burn results are used to establish the final operating conditions that will be included as part of a permit. Because the trial burn involves the measurement of the incinerator's performance under different sets of operating conditions, the trial burn results verify the incinerator's ability to meet the performance standards under one or more of these conditions and thus can be used to determine what is an acceptable range of operating conditions for the final permit. The final operating permit specifies only those operating conditions that have been proven to result in the incinerator's meeting the performance standards. These operating conditions are important because it is not technically feasible to directly and continuously measure certain aspects of performance, such as destruction and removal efficiency, and certain emissions. On the basis of the results of the trial burn, the permit may specify different operating conditions for different types of waste feeds or specify ranges or minimum

or maximum levels for different parameters, such as temperature. Under the RCRA regulatory approach, as long as the incinerator operates within these ranges, it is assumed to be operating under the same conditions as during the successful trial burn and thus to be in compliance with the environmental performance standards.

To make sure that trial burns will be properly planned and executed, the RCRA regulations require that the owner and/or operator of a new incinerator develop a detailed trial burn plan. This trial burn plan is prepared as a component of the permit application. The plan proposes operating conditions for the trial burn, provides a description of all emissions control equipment to be used, and explains the procedures for stopping the waste feed, shutting down the incinerator, and controlling emissions in the event of any problems. EPA does not approve a trial burn plan unless it has judged that the incinerator is likely to meet all performance standards throughout the trial burn and that any departure from this expected level of performance will not pose an imminent hazard to health and the environment. When an incinerator does fail to meet the performance standards, EPA considers the potential risks to human health and the environment to be minimal because of the short duration of these tests.

WTI's Trial Burn Plan Exceeded Regulatory Requirements

WTI's trial burn plan contained several provisions that were not required by the RCRA regulations but were included on the basis of the Regional Administrator's discretionary authority to test other parameters during the trial burn. Among those things that were not normally required but were tested during the WTI trial burn were obtaining destruction and removal efficiency data for additional principal organic hazardous constituents and testing for specific metals and products of incomplete combustion.

The RCRA regulations do not specify the exact number of principal organic hazardous constituents that will be tested during the trial burn. An EPA Region V official said that although many facilities test two principal organic hazardous constituents during the trial burn, four principal organic hazardous constituents were selected for the WTI trial burn. According to this official, primarily because there is not agreement about whether an index of heat of combustion or an index of thermal stability at low oxygen concentration is the most appropriate to use in selecting the principal organic hazardous constituents, the region decided to select two hazardous constituents from each of the two indices. Carbon tetrachloride and trichloroethylene were selected using the heat-of-combustion index,

and monochlorobenzene and 1,2,4-trichlorobenzene were selected using the thermal-stability-at-low-oxygen-concentrations index.

EPA also required WTI to test for certain metals and products of incomplete combustion during the trial burn. Because of the lack of technology, neither emissions of metals nor products of incomplete combustion can be directly and continuously monitored during normal incinerator operations, and until recently these emissions generally were not considered or measured during the trial burn. Although testing for products of incomplete combustion during a trial burn is not required under RCRA and Clean Air Act regulations, WTI's trial burn included testing for certain products of incomplete combustion, including dioxins, during all three trial burn conditions. EPA included testing of these emissions during the trial burn because of the expressed public interest in them and the need for information on these emissions for the second phase of the risk assessment being done at WTI. (Phase II risk assessment is discussed later in this chapter.)

The requirement that WTI test for certain metal emissions during the trial burn was based on national guidance and requirements contained in EPA's 1991 boiler and industrial furnace rules and added to WTI's permit in 1992 when it was amended to add the spray dryer. EPA's February 1991 rules for boilers and industrial furnaces, among other things, established limits that were intended to control the emissions of 10 toxic metals, 4 of which are carcinogenic. Specifically, the rules established limits on the emissions of those metals and required permittees who wanted to burn more than the allowed emissions limit for any of those metals to test the system's ability to remove those metals during the trial burn. WTI's trial burn plan included emissions testing for 7 of those 10 metals; the remaining 3 metals were not tested because WTI would not burn more than the allowed emissions limits.

Finally, the approved trial burn plan required WTI to cease feeding hazardous waste after the trial burn was completed until WTI could certify compliance with limits on the emissions of stack gas particulate and carbon monoxide. Normally, a facility would be allowed to move directly into limited post-trial burn operations after completing the trial burn testing.

After much negotiation, on January 8, 1993, EPA approved WTI's trial burn plan.

WTI Did Not Achieve All Performance Standards or Expected Emissions Levels During the Original Trial Burn

WTI conducted its initial trial burn, following its approved trial burn plan, from March 10 to March 18 and on March 30, 1993. The trial burn was designed to demonstrate compliance with all relevant RCRA, EPA, and Ohio EPA performance standards and permit limitations. To demonstrate compliance with the performance standards, it was conducted under three operating conditions. Three sampling runs were done for each one of the three test conditions.

The WTI facility's overall trial burn was designed to demonstrate the following performance-related parameters:

- Destruction and removal efficiency for four principal organic hazardous constituents (carbon tetrachloride, monochlorobenzene, trichloroethylene, and 1,2,4-trichlorobenzene).
- Particulate matter emissions rate.
- Emissions levels and system removal efficiencies for seven metals (antimony, arsenic, beryllium, cadmium, total chromium, hexavalent chromium, lead, and mercury).
- Emissions levels for hydrogen chloride, chlorine, and system removal efficiency for hydrogen chloride.
- Emissions levels for carbon monoxide, sulfur dioxide, oxides of nitrogen, and total hydrocarbons.

EPA's analysis of WTI's trial burn results showed that the incinerator met all other conditions, including the stack gas particulate and carbon monoxide emissions limits but (1) failed to achieve the 99.99 percent destruction and removal efficiency for one of the conditions of the trial burn for carbon tetrachloride, as required under RCRA; (2) emitted approximately 4.5 times more mercury than permitted; and (3) emitted dioxin, on average, at levels 2.8 times higher than the levels expected and included in the Phase I risk assessment (discussed later in the chapter).

Carbon Tetrachloride Did Not Meet Performance Standards

On April 2, 1993, WTI notified EPA that the incinerator failed to achieve the required destruction removal efficiency for carbon tetrachloride during two of the three runs of one condition. On April 12, 1993, EPA imposed restrictions on WTI, precluding it from operating under the conditions maintained during the two failed test burn runs.

Through analysis of the trial burn results, EPA determined that the WTI incinerator failed to demonstrate adequate destruction and removal efficiency for carbon tetrachloride during one condition of the March 1993 trial burn because the incinerator was unable to adequately destroy the

watery wastes that were fed into the secondary combustion chamber. It also stated that the lower temperatures in the secondary combustion chamber and the greater difficulty in destroying watery wastes contributed to this failure.

In order to repeat its failed trial burn, on July 1, 1993, WTI requested a Class 2 permit modification for, among other things, a modified trial burn plan to carry out a new test similar to the condition of the original trial burn and held a public meeting on this request on July 27, 1993. According to EPA, the only proposed change to the test protocol, which EPA had previously approved, was the elimination of aqueous (watery) waste feed to the secondary combustion chamber.

Because WTI's proposed permit modification eliminated aqueous feed to the secondary combustion chamber, EPA determined that the modified test should meet the destruction removal efficiency performance requirement and that stack emissions should be slightly less than those observed during the March 1993 trial burn test. After receiving no public comments on the modified trial burn plan, EPA approved WTI's request for a modified trial burn test for one condition in October 1993. WTI conducted this test in February 1994 and submitted its report of the results to EPA in April 1994. According to EPA, the results showed that the facility met the performance standards.

Mercury Emissions Exceeded Permit Limits

On April 26, 1993, WTI notified both EPA and Ohio EPA that preliminary data from the trial burn indicated that the metal emissions rates for mercury exceeded the permitted limits. It reported average metal system removal efficiency for mercury during all three runs of one condition at 6.69 percent and thus estimated mercury emissions of 9.2 pounds on March 10 and 19.4 pounds on March 11. It further stated that the mercury emissions were higher than expected because the mercury that was added to the neutralization system before and during condition-one runs, as imposed by EPA in its January 1993 letter approving the trial burn plan. As a result, WTI reported that it ceased feeding hazardous waste and requested that a 1,600-gram-per-day feed limit, which was equal to its emissions limit for mercury, be imposed immediately so that it could resume operations. Subsequently, on May 4, 1993, WTI requested that EPA change the maximum feed rates for the other nine regulated metals on the basis of the results of the trial burn.

In response to this request, on May 7, 1993, EPA issued revised interim stack emissions limits and waste feed rates for all 10 regulated metals. The

only change reflected in these revised limits, however, was a reduction in the interim maximum feed rate for mercury, which, as requested by WTI, was reduced from 2.1 pounds per hour to .42 pounds per hour. The .42 pounds per hour is equal to the interim maximum stack emissions level for mercury. Thus, the new feed rate assumed that no mercury would be removed from the waste during incineration. Subsequently, in October 1993 EPA issued revised interim metals feed rates based on actual emissions demonstrated during WTI's trial burn. As part of that action, EPA revised the mercury feed rate from .42 pounds per hour to .146 pounds per hour. WTI had requested this change to be consistent with the mercury emissions limits contained in its air permit.

Dioxin Exceeded Expected Levels

Finally, during EPA's review of WTI's trial burn results—submitted to EPA on May 8, 1993—the agency found that dioxin levels were higher than had been expected. On June 16, 1993, EPA sent a letter to WTI expressing concern about dioxin levels in the trial burn report and requesting details of how WTI would lower dioxin emissions, a by-product of the combustion process often associated with the burning of chlorine waste. In this letter, EPA requested WTI to burn only low chlorine wastes until the matter was resolved. After failing to reach agreement with WTI on a plan for reducing chlorine, EPA requested that WTI not go back into operation until it was able to discuss the changes at a meeting between EPA and WTI on June 24, 1993. On June 25, 1993, WTI submitted a Class 2 modification to allow installation, testing, and operation of an enhanced carbon injection system to reduce the dioxin emissions.

On June 28, 1993, WTI followed up with a request for a temporary authorization to install, test, and operate the enhanced carbon injection system. EPA approved the request on July 8, 1993, primarily because it anticipated the system would reduce dioxin emissions. In addition, EPA indicated that it would be able to make a more informed final decision on the system if it were tested in advance. Thus, according to EPA, had the system not demonstrated adequate control of dioxins, the proposed modification could have been denied.

The temporary authorization allowed WTI to install, perform shakedown operations, carry out performance testing, and, based on testing results, operate the enhanced carbon injection system. The enhanced carbon injection system performance test comprised a series of stack emissions test runs to demonstrate that the incineration system, with the enhanced system operating, achieved the designated emissions limits for dioxins and for particulate matter. The designated emissions limit was a stack

emissions rate not to exceed 30 nanograms per dry standard cubic meter total dioxins, averaged over all runs of the test.[2]

WTI carried out performance testing of the enhanced carbon injection system in August 1993. EPA's analysis of those results showed that stack emissions improved considerably, averaging 13 nanograms per dry standard cubic meter during the performance test compared to an average of 130 nanograms per dry standard cubic meter during the March 1993 trial burn. In addition, particulate testing conducted during the performance test showed no reduction in the incinerator's particulate collection efficiency.

EPA approved the addition of the enhanced carbon injection system to the permit on October 28, 1993. In response to citizens' expressed concerns about the deleterious health effects of public exposure to continuous small amounts of dioxins and heavy metals, EPA stated in its Response to Comments accompanying its approval of the enhanced carbon injection system that the potential effects from such emissions are an important concern and that EPA's Phase II risk assessment is being done to better evaluate the potentially negative effects of such emissions and to determine whether additional restrictions are needed. The response stated further that after the results of this assessment had been prepared and peer-reviewed, WTI's permit for operating conditions would be adjusted to make sure that emissions of persistent and bioaccumulative contaminants, such as dioxins and heavy metals, fell below health-based risk levels.

Along with the approval, it also included an additional attachment to the permit that specified operational limitations and test requirements for the system. Among the permit conditions contained in that attachment are requirements that (1) the incineration system be tested quarterly following the approved performance test plan for the first year after the permit modification becomes effective and then annually; (2) the enhanced carbon injection system be operated at all times whenever hazardous wastes are being burned; and (3) if new information becomes available which indicates that operation of the enhanced carbon injection system may interfere with the incineration system's ability to comply with any EPA or Ohio EPA standards or that emissions are increasing as a function of time, then the Regional Administrator can require WTI to perform additional testing or take additional measures necessary to make sure that

[2]This is a technology-based standard that was proposed in EPA's 1993 Draft Hazardous Waste Minimization and Combustion Strategy. Later guidance provided by EPA headquarters suggested that this standard was only a goal and that specific limits contained in a facility's permit should be based on a site-specific risk assessment.

all standards are met and human health and the environment are protected.[3]

Monitoring, Inspection, and Enforcement at the WTI Facility

The RCRA permit specifies conditions for operations that help to make sure that the incinerator will meet all applicable RCRA standards. Once the permit is issued, the permittee is legally bound to operate according to the conditions specified in its permit. To make sure that the permittee operates the facility as specified in the permit, EPA requires permittees to record operating information, conduct inspections, and provide periodic reports to the agency. EPA also, along with the state, conducts both announced and unannounced periodic inspections.

Similarly, ensuring that the emissions from incinerators do not exceed the permitted limits and that the air and water qualities stay within prescribed health and safety standards are the responsibilities of the emitters and of the federal and state EPAs. WTI has the principal responsibility for controlling its operations to ensure that it does not exceed the permitted limits. The Ohio EPA also has prime responsibility for inspecting, monitoring, and enforcing state regulations established under the Clean Air Act and the Clean Water Act.

RCRA Requirement for Monitoring, Inspection, and Enforcement

The RCRA regulations and the facility permit require that the permittee (1) maintain records of all critical aspects of the operation; (2) make periodic reports to the permitting agency; and (3) inspect monitoring equipment, safety and emergency equipment, and operating and structural equipment which prevents, detects, or responds to spills or releases, according to a written schedule that is submitted with the permit application and is incorporated by reference into the permit.

RCRA regulations require the permittee to keep a written operating record at the facility. This information must be recorded as it becomes available and maintained at the facility until closure. This operating record must include items such as (1) a description and the quantity of each hazardous waste received and the methods and dates of its storage, treatment, and disposal; (2) the location of each hazardous waste within the facility and the quantity at each location; (3) the records and results of any waste analyses done at the facility; (4) summary reports and details of all incidents that require implementation of the contingency plan; (5) records and results of all required inspections; and (6) monitoring, testing, or

[3]See appendix VII for additional information provided by WTI on its dioxin emissions.

analytical data required and associated with tanks, containment and detection systems, the incinerator system, and associated equipment. All records, including plans, must be made available for any inspections by EPA or its representatives.

In addition, the permittee must prepare and submit a biennial report to the EPA regional administrator by March 1 of each even-numbered year showing the facility's activities during the previous calendar year. At the time of our review, WTI had not submitted a biennial report since it was not in operation at the time the last report was required. As required by RCRA regulations, WTI's permit also requires it to report any noncompliance with permit conditions that could endanger health or the environment within 24 hours from the time the permittee becomes aware of the circumstances.

Generally, loading and unloading areas, tank systems, and other areas where spills may occur must be inspected daily by the permittee. Container storage areas must be inspected at least weekly for leaking and deteriorating containers. The data from monitoring and leak detection equipment must be reviewed daily. Deterioration or malfunctions must be remedied immediately if a hazard is imminent or already exists. If an existing hazard is not imminent, the situation must be remedied on a schedule that ensures that no harm is done to nearby residents or to the environment.

During operations, the permit also requires continuous monitoring of certain parameters, such as combustion temperature, to make sure that they are within the ranges specified by the permit. If parameters deviate from these ranges, a sensor triggers an automatic waste feed shut-off system, which is required in all permitted incinerators. This system promptly cuts off the feeding of wastes into the incinerator and will not resume until the required operating conditions have been restored. The system must be tested periodically to ensure that it is operating properly. All monitoring and inspections done by the permittee must be recorded, and the records must be placed in the facility's operating log for EPA's inspection.

RCRA Inspections and Enforcement Actions by Federal and State EPAs

RCRA requires that all hazardous waste management facilities be inspected at least once every 2 years. The permitting agency—in this case both the federal and Ohio EPAs—must make sure that the facility complies with all permit conditions. Facility inspections are the main tool by which these agencies monitor for compliance. An inspector reviews records, takes

samples, and observes facility operations. If the permittee is found during the inspection to have failed to meet any of the requirements of its permit, the permittee is subject to a broad range of civil or criminal enforcement actions, including penalties or suspension or revocation of the permit.

Historically, EPA generally has not suspended or revoked RCRA permits; rather, it has taken the approach of trying to get the permittee back into compliance by using other enforcement actions. As we have previously reported[4] and EPA recognized in a 1990 study, penalties imposed as a result of enforcement actions are an important deterrent to future violations. Generally, the type of enforcement action taken depends on the severity of the violation. The degree of severity is determined by the likelihood that the violation will pose a threat to human health or the environment. For example, some recordkeeping violations would be judged less severe than operating violations that affect an incinerator's performance. EPA regional offices generally have broad discretion in these matters.

Although RCRA requires an inspection at least once every 2 years, during 1993 Ohio EPA maintained a full-time inspector at the WTI site to make sure that only wastes approved under WTI's hazardous waste facility permit were accepted and to carry out random inspections of other WTI operations. In addition to the full-time inspector generally inspecting the facility several times a week, Ohio EPA inspectors have conducted two comprehensive compliance evaluation inspections and three reviews of WTI's financial records. On the basis of its inspections, as of November 1993 the Ohio EPA had found 18 violations, 15 of which the state believes WTI has adequately responded to and thereby returned to compliance with the hazardous waste rules. The remaining three violations are outstanding and have been included in an administrative consent order sent to WTI.[5] The 18 violations included failure to (1) keep hazardous waste containers closed when not being used, (2) take precautions to prevent accidental ignition of an ignitable waste, (3) properly label and date hazardous waste containers, and (4) properly maintain a written operating record.

In letters dated September 30, 1993, to four commercial hazardous waste facilities in Ohio, including WTI, the Ohio EPA invited managers at each

[4]Hazardous Waste: A North Carolina Incinerator's Noncompliance With EPA and OSHA Requirements (GAO/RCED-92-78, June 30, 1992).

[5]In commenting on a draft of this report in June 1994, Ohio EPA stated that it found additional violations at the WTI facility during inspections in November and December 1993 and March 1994. Ohio EPA also stated that it sent WTI a proposed administrative consent order in June 1994 that addresses violations of air and hazardous waste regulatory requirements and includes a $182,200 civil penalty settlement payment ($73,200 for hazardous waste violations and $109,000 for air violations).

facility to enter into an agreement with the Ohio EPA to provide funding to implement a compliance monitoring program. According to Ohio EPA, as of June 1994 an agreement in principle had been reached between the Ohio EPA and WTI to fund three full-time, dedicated Ohio EPA inspectors at the WTI facility.

As of September 1993, EPA inspected the WTI facility five times during April, May, and June 1993. Ohio EPA inspectors participated in two of the five inspections but were invited to accompany the federal EPA inspectors on all inspections. The facility was burning hazardous wastes during one of the five inspections. On three occasions, the incinerator was burning natural gas or natural gas and coal spray. On the final occasion, the incinerator was not in operation.

Each inspection included both a walk-through inspection of specific areas of the facility and a review of specific operating data. Each inspection also included a review of the operating data for the automatic waste feed cut-off system for the period between each inspection. Over the 7-week period covered by the inspections, WTI's records indicated that its automatic waste feed cut-off system, which is activated when temperature, pressure, carbon monoxide, and oxygen levels are outside of specified parameters, shut off the waste feed a total of 69 times. A check of kiln temperature operating records during one of the above inspections showed that the automatic waste feed cut-off system had functioned when the temperatures were outside the ranges specified in the permit. According to an EPA regional official, although there are no standards for a reasonable number of times that the automatic waste feed shut-off system should be activated, frequent activation of the system should be evaluated. According to another EPA official, frequent activation of automatic waste feed cut-off systems could be indicative of other problems, such as not conducting proper waste analyses. Nationally, EPA's Office of Research and Development has done some research on the impact of automatic waste feed cut-off systems, but according to EPA officials, the research is not conclusive.

The April inspection also found hazardous waste storage violations. These storage violations involved improper labeling and marking of accumulation dates as well as uncovered containers of hazardous waste in the bulk unloading area. WTI corrected these violations immediately after EPA inspectors brought them to WTI officials' attention. In August 1993, EPA announced that it was seeking penalties of $14,950 for these violations. EPA

has not yet taken any other enforcement actions on the basis of the other inspections.

Other Enforcement Actions

In addition to those actions related to WTI's permit conditions, EPA issued notices and has taken enforcement actions against WTI for other types of violations. In September 1988, EPA requested that WTI fill out and return a National Survey of Hazardous Waste Treatment, Storage, Disposal and Recycling Facilities within 15 days. WTI did not respond to the requested information because it was not yet operating and thus did not believe the survey applied to it. As a result, EPA issued a Complaint and Compliance Order against WTI in August 1989. After negotiations between EPA and WTI, WTI submitted the survey and agreed in April 1990 to pay a fine of $9,500.

On December 20, 1991, EPA notified WTI that RCRA does not allow for construction of a unit—in this case the spray dryer—until the permit modification is approved. On December 23, 1991, WTI responded, stating that the company believed construction could begin before EPA's final decision on its permit modification request and indicated that, in fact, construction activities had begun. Subsequently, on January 2, 1992, EPA conducted an inspection at the WTI facility and observed that construction and installation of the spray dryer was under way. In subsequent discussions between WTI and EPA officials, the WTI official indicated that construction and installation of the spray dryer had begun on December 18, 1991. On January 9, 1992, EPA ordered WTI to cease all construction and installation activities associated with the spray dryer until EPA had made a final decision on the permit modification. It also proposed a $156,250 civil penalty against WTI. As agreed with EPA, on February 24, 1992, WTI paid a $129,000 civil penalty for the above violation.

On August 24, 1993, EPA issued a civil administrative complaint against WTI seeking penalties of $64,950 for WTI's failure to notify EPA and to obtain a permit modification to name Von Roll (Ohio), Inc., as an additional operator of the WTI facility.

Finally, EPA Region V notified WTI on January 3, 1994, that EPA had determined that WTI had violated two conditions of its permit when an incident involving a fugitive emission of fine particulate ash was released at the WTI facility on December 10, 1993. The permit conditions violated were that (1) WTI failed to maintain below-atmospheric pressure in the secondary combustion chamber and (2) WTI failed to provide an oral report of the incident to EPA within 24 hours of the incident. No penalties were

assessed against WTI for these violations, but EPA did require WTI to provide EPA with, among other things, a plan to change the computer logic of the incinerator control system to ensure that similar incidents did not occur in the future. As of July 1994, EPA was waiting for information to demonstrate that the changes to the computer logic will ensure future compliance with the applicable permit conditions.

WTI's Monitoring and Inspection Under the Clean Air Permit

The air permit issued to WTI required it to install and maintain continuous emissions monitoring equipment in the stack and ducts to monitor particulate matter (opacity), sulfur dioxide, nitrogen oxide, hydrogen chloride, and carbon monoxide. WTI also is required to install a continuous pH measurement on the scrubber in order to determine its effectiveness in controlling sulfur dioxide emissions. In addition to the requirements under the air permit, WTI is also doing continuous emissions monitoring of oxygen in the stack gas and monitoring for operating conditions, such as temperature and air flow rate.

These emissions monitors are connected to WTI's computer system that records the results and allows "real-time" on-screen visibility in WTI's control room of how the plant is operating. The control room is manned 24 hour a day while the system is operating. Additionally, WTI's system is set up to automatically stop the waste fed into the kiln, where burning takes place, if any of the emissions levels[6] measured by the monitoring equipment in the stack reach a "trip point." The trip points, levels set below the permitted emissions limits, will allow WTI to stop and correct the system before exceeding the emissions limits. However, a WTI official explained that even though the waste feed is stopped and WTI begins a controlled shutdown, the facility may exceed the emissions limits for a short period of time. This may happen because the remaining waste that has triggered the problem is still burning in the kiln and the system does not immediately stop stack emissions. Once the system begins a controlled shutdown, WTI will attempt to identify and correct the problems. For example, if sulfur dioxide emissions get too close to the 11.3 pounds per hour allowed in the air permit-to-operate, the system will shut down the waste feed automatically. The system operator and/or plant manager will try to identify and correct the problems causing the sulfur emissions. Some of the options available include adjusting the operating temperature or burner efficiency, reducing the waste feed rate, or reducing the amount of the waste feed containing sulfur.

[6]The emissions monitored by the stack monitoring equipment include carbon monoxide, hydrocarbons, hydrogen chloride, sulfur dioxide, nitrogen oxides, oxygen, and carbon dioxide.

The computer system will automatically record the exceedances, which are included in a quarterly report to the Ohio EPA, as required by the air permit. For example, for sulfur dioxide and nitrogen oxide the report would include all hourly readings above the applicable emissions limitations. The report must include the date, magnitude (lb./hr.), reason (if known), and corrective action taken (if any) for each exceedance. Any monitoring equipment downtime while WTI is on-line must be documented and included in the report along with any corrective action(s) taken. WTI is also supposed to include in the quarterly report the sum total of sulfur dioxide emissions in tons.

As of December 1993, WTI had submitted two quarterly reports of excess emissions covering the period since WTI began limited burning in April 1993. These reports cover the period from April through September 1993. WTI reported for the quarter ending June 1993 that it had exceeded emissions limits in several cases, including total hydrocarbons and carbon monoxide. WTI reported for the quarter ending September 1993 that it had exceeded emissions limits for carbon monoxide. The reports indicate that some of the carbon monoxide exceedances were associated with startup and/or the firing of natural gas into a cold combustor. Corrective actions taken included replacing the burners, adjusting the burner temperatures, and adding more outside air to the kiln to increase the oxygen and thus improve the efficiency of the burn. The exceedances of total hydrocarbons were associated with startup and the use of recycled water, which contained a high level of organics in the scrubber. WTI corrected the problem by switching to city water for use in the scrubber.

The quarterly reports also give the results of the quarterly testing of the continuous monitoring equipment using known test gases and indicate instances of monitor downtime when continuous monitoring equipment is not working during normal operations. The required quarterly testing is to ensure the accuracy and dependability of the monitoring equipment. Both reports indicated that the equipment was operating accurately during the tests. The reports indicated some monitor downtime for total hydrocarbons, hydrogen chloride, nitrous oxides, sulfur dioxide, carbon monoxide, and opacity. The downtimes ranged from 1 minute to 4 days. A WTI official explained that, for example, if the carbon monoxide or oxygen monitoring equipment was not working, the incineration system would automatically shut down.

EPA's Oversight and Ohio EPA's Monitoring, Inspection, and Enforcement Under the Air Permit

EPA delegated its primary monitoring, inspection, and enforcement responsibility for the Clean Air Act to Ohio EPA in 1980 when it approved Ohio's State Implementation Plan. EPA normally relies on the states that have approved plans to perform their own monitoring, inspection, and enforcement, especially in the case of minor emitters such as WTI. EPA performs these actions only when problems are detected, when problems are reported by the state EPA offices, or when it receives a special congressional request. As of December 1993, EPA had not conducted air monitoring and air inspection activities at WTI except for taking part in the trial burn. The Ohio EPA manages the air program according to the conditions established in its annual agreement with EPA, from which it also receives annual grant funds.

The Ohio EPA and its agent, the North Ohio Valley Air Authority (NOVAA), monitor and inspect WTI's operations routinely to ensure that the plant is operating properly and is within air permit limits. Generally, monitoring is done through the use of continuous emissions monitoring equipment. Monitoring can be done remotely by the Ohio EPA and NOVAA or directly during site visits at the plant. NOVAA is required, through its grant with the Ohio EPA, to perform one annual physical inspection of the plant.

Ohio EPA and NOVAA have access to WTI's continuous monitoring system by modem 24 hours a day to address Ohio's air permit requirements. EPA Region V has requested remote access to WTI's continuous monitoring system, but as of June 1994, WTI indicated that it is not physically able to provide additional remote access.

NOVAA's responsibilities include reviewing emissions monitoring data, making physical inspections, and verifying WTI's tests of the system's equipment and emissions. NOVAA monitors WTI's monitoring data via the modem at least three times a week. A NOVAA official stated that NOVAA personnel visit WTI at least twice a month to perform a variety of inspections, including visual inspections of the continuous emissions monitoring equipment, and to investigate citizens' complaints. NOVAA also observes and verifies (1) the accuracy of quarterly stack tests, required in the air permit, of lead and particulate emissions and (2) the quarterly testing of the monitoring equipment to insure its accuracy. To help perform these inspections, NOVAA has received additional funding from the state and has hired another engineer who spends approximately 50 percent of his time monitoring and inspecting WTI. In addition to monitoring and inspection, Ohio EPA relies on NOVAA to take minor enforcement actions against WTI. For example, when NOVAA becomes aware

of a violation, it will send a warning letter to the violator. However, if the violation is chronic, poses a health threat, or is not corrected within 30 days, Ohio EPA is responsible for pursuing enforcement actions, including claims for civil penalties. Ohio EPA also accesses WTI's monitoring data via the modem on a random basis to check on WTI's operations.

NOVAA has accessed WTI's system many times and has found no exceedances other than those indicated in WTI's quarterly reports on excess emissions. NOVAA and Ohio EPA officials are concerned, however, with WTI's two quarterly reports on excess emissions, because WTI did not completely describe the causes of the excess emissions, the remedial actions taken, and the number of excess emissions occurring during startup of the kiln. The officials have asked WTI to improve future reports and give more information about the excess emissions.

Ohio's laws and regulations authorize various enforcement actions, including revocation of the violator's permit and the assessment of civil and criminal penalties. The maximum civil penalty for an air violation is $25,000 per day. The maximum criminal penalty is $25,000 per day, or 1 year in prison, or both. However, Ohio EPA's first priority is to resolve identified problems, working cooperatively with a violator. Ohio EPA's general policy is to pursue enforcement action to seek civil penalties if the violation is not corrected within 30 days after a notice of violation is issued or if the violations are chronic or pose a health threat.

As of June 1994, Ohio EPA was in the process of taking an enforcement action against WTI (see footnote 4 in this chapter). Some of the issues that Ohio EPA is addressing include the excess mercury emissions that were released during the trial burn, failure to report within the required period a lime spill caused by an incorrectly positioned valve, and failure to submit the excess emissions report from the monitoring system within the required period.[7]

WTI's Monitoring Requirements and Actions Under the Clean Water Permit

WTI also is responsible for ensuring that it is complying with the Clean Water Act and meeting the conditions established in its water discharge permit. The permit specifies the following monitoring requirements: (1) daily observation of color, odor, and turbidity; (2) daily estimate of discharge flow rate; (3) daily measurement of the maximum value of water temperature; and (4) daily sample of total organic carbon. This

[7]WTI failed to submit to Ohio EPA the fourth quarter 1992 report within 30 days following the end of the calendar quarter, as required.

information is to be obtained from three required on-site sampling stations. The data gathered by WTI from these sites are submitted to Ohio EPA in monthly operating reports.

EPA's Oversight and Ohio EPA's Monitoring, Inspection, and Enforcement of the Water Permit

Because WTI was going to discharge pollutants into the Ohio River, it was required to obtain a water discharge permit from Ohio EPA. EPA has oversight responsibilities for Ohio's program; however, EPA officials stated that they do not systematically oversee WTI's permit since the facility is considered a minor discharger.[8] EPA Region V concentrates on major dischargers because of the large volume of water discharge permits it receives. Unless Region V is notified of unusual circumstances or specific congressional requests come forward, Region V plans only to review Ohio EPA's paperwork on minor dischargers periodically and, in a rare instance, may visit a minor discharge facility.

Ohio EPA has full responsibility for all monitoring, inspection, and enforcement of WTI's water discharge permit. Ohio EPA is funded in part for the entire water program by an EPA grant to the state. Ohio EPA has no written guidelines on when to inspect minor water discharge facilities, such as WTI. However, Ohio EPA can make a surprise inspection at WTI at any time, should it be necessary. WTI is considered to be a minor industrial risk because it emits only noncontact cooling water. As of September 1993, Ohio EPA had not conducted any water-related inspections.

Ohio EPA monitors WTI's monthly operating reports of water discharges to identify problems. Once Ohio EPA has analyzed data collected over the first year of incinerator operation, a revision of the water permit will be considered to adjust the discharge limits to more closely conform to WTI's actual water discharges.

Ohio's Revised Code provides a variety of criminal penalties for water violations. Depending on the type of violation, the maximum penalty could be either $25,000 per violation or $10,000 per day. The criminal penalties include either the monetary penalty or imprisonment up to 1 year, or both. The maximum civil penalty is $25,000 per day.

As of October 1993, Ohio EPA officials said that WTI has submitted all the required monthly operating reports for water discharges. Ohio EPA has

[8]EPA's distinction between a major and minor water discharger is a matter of policy. EPA uses a number of factors, such as toxic pollutant potential, flow volume, public health impact, and water quality, to determine whether a water discharger is major or minor.

been reviewing the reports for compliance with the water permit and has found only one monthly report that showed an exceedance. This exceedance was for the pH level of the water. However, after examination, Ohio EPA found that the exceedance was the result of high calcium carbonate levels coming off of newly poured concrete used in the construction of the plant. No action was deemed necessary, and all samples taken since have been within permitted limits.

Risk Assessments at WTI

Although RCRA regulations did not require WTI to conduct a risk assessment during the permitting process, WTI conducted a risk analysis in 1983 as a routine procedure in the design of an incinerator. The results indicated that the health risk fell within EPA's acceptable limits.

In 1991, however, because of concerns raised by Members of Congress and the general public, EPA Region V initiated a two-phased risk assessment. The first phase, a screening document based on conservative assumptions about the risks associated with inhalation of stack emissions, was completed in July 1992. The results indicated that the stack emissions from the incinerator should not present an unreasonable risk to human health. For lead, the exposure level slightly exceeded the threshold under a worst-case scenario but was considered safe by EPA. The second phase, considered to be a more comprehensive assessment of risks to human health posed by inhalation, skin exposure, soil ingestion, and food chain pathways, is ongoing with no projected completion date available.

Early Risk Analysis Done by WTI

WTI's risk analysis was conducted in 1983 by a contractor using very conservative assumptions. According to a Von Roll official, the results of the analysis showed that the risk related to WTI emissions fell well within EPA's requirements of between 1 in 1 million and 1 in 10,000. WTI's analysis stated that there were uncertainties in all of the parameters when calculating the risks. However, according to Von Roll, in each case the maximum level of the range of uncertainty had been used in the calculations to provide a conservative estimate.

EPA's Two-Phase Risk Assessment

In permitting hazardous waste incinerators, RCRA does not require EPA or an authorized state to perform risk assessments. However, for those instances in which EPA deems it appropriate to conduct a risk assessment, the agency developed assessment guidelines in September 1986. The guidelines, which relate to areas such as estimating exposure and

determining carcinogenicity, were developed to promote high technical quality and agencywide consistency in the risk assessment process.

EPA decided to conduct a risk assessment of the WTI facility to determine its potential health effects on the community. In July 1992, EPA Region V completed the first of a two-phased risk assessment. Phase I of the assessment was a preliminary screening to determine the risk of exposure from inhalation. It is important to note that while inhalation is the most direct route of exposure, it is not the only potential pathway. The first phase considered only inhalation, but the second, more complete phase will evaluate indirect pathways as well as inhalation.

Phase I Risk Assessment

The objective of the Phase I assessment was to determine the extent and likelihood of harm to public health resulting from smokestack emissions. Both cancer risk and the potential for noncarcinogenic effects, such as decreased fetal birth weight or decreased red blood cell count, were assessed. Average- and worst-case emissions were used to evaluate the risk to a hypothetical individual who had received maximum exposure—a person assumed to have spent 70 years at the point of maximum concentration. It is important to note that because of this assumption, the average case overestimates inhalation risk to the population as a whole. The estimates of average emissions were based on mean values reported at similar facilities. The estimates of worst-case emissions were based on the limits set by the Ohio EPA's air permit. The facility is required to keep emissions at or below these permitted levels.

The Phase I assessment consisted of four steps: (1) the identification of chemicals of concern potentially released from the incinerator; (2) a toxicity assessment for the chemicals of concern; (3) an exposure assessment of the individual with maximum exposure to incinerator emissions; and (4) a risk characterization, including a discussion of the uncertainties underlying the quantitative risk estimates. Conservative approaches were undertaken in the characterization of chemicals and estimation of emissions rates from the incinerator stack because the facility was not yet in operation.

The risk assessment evaluated three broad classes of chemicals that may be present in the WTI incinerator's emissions: organic (carbon-based) compounds, metals, and acid gases. The list of individual chemicals included in the assessment is from EPA's literature and from emissions reports from similar incinerators in the United States and abroad.

Chemicals likely to be of concern at an incinerator such as WTI's were used in the preliminary screening. EPA has already conducted toxicity assessments for this group of chemicals, and EPA-verified toxicity values (that is, cancer potency factors for carcinogens and reference doses for noncarcinogenic toxicants) are available for most of them. In some cases, the health-based National Ambient Air Quality Standards were used as the levels of concern.

Regional meteorological data and estimates of average- and worst-case emissions were used to assess the potential exposure of a maximum-exposed individual. The risk characterization compared the projected levels of exposure with levels of concern to reach conclusions about the potential for toxic effects from exposure to the incinerator's emissions.

Results. Results indicate that the stack emissions from the incinerator should not present an unreasonable risk to human health, provided the facility complies with all emissions standards imposed by Region V. Again, the assessment assumed that over a 70-year lifetime, an individual with a body weight of 70 kilograms and an inhalation rate of 20 cubic meters per day has been exposed to chemical emissions from the WTI incinerator.

For lead and 11 other metals, such as chromium and beryllium, the cumulative hazard index—a measure of the toxicity of all metals added together—is below 1 (0.14 and 0.51 at average- and worst-case concentrations), indicating that adverse effects are not expected in humans.

For lead, which is known to cause cancer in animals, the exposure threshold level was slightly exceeded in the worst case contemplated in the screening. This exposure was calculated to be 11 percent of the national air quality standard. EPA's standard for individual incineration facilities is 10 percent. EPA indicated that, at the 11-percent exposure level, there is a significant margin of safety between predicted exposures and the level of concern for health.

For metals that are known or suspected to cause cancer in humans—for example, arsenic and chromium—the cumulative lifetime excess cancer risk was .88 in 1 million people in the average case and 1.4 in 1 million in the worst case. These risks are below EPA's guidance from the Boiler and Industrial Furnace rule standard of a 1 in 100,000 incremental cancer risk by the inhalation route to the maximally exposed individual.

For organic chemicals causing toxicity, such as carbon tetrachloride, the cumulative hazard index is less than 1. The average- and worst-case hazard indices are 0.0023 and 0.013, respectively. For those organic chemicals, such as vinyl chloride, that are known or suspected to cause cancer, the cumulative lifetime cancer risk for a maximum-exposed individual was 1.1 in 1 million and 3.4 in 1 million, respectively, for average and reasonable worst cases. This is below EPA's guidance from the boiler rule standard of a 1 in 100,000 incremental cancer risk by the inhalation route to the maximally exposed individual.

For acid gases, such as nitrogen oxides, the predicted level of exposure was below the national air quality standard (0.037 and 0.28 for the average and worst cases, respectively); therefore, adverse effects are not expected.

Included in EPA's June 1994 letter to us commenting on a draft of this report is a discussion of a 1993 screening level analysis of cancer risk due to exposure to emissions of dioxin compounds from WTI and the status of EPA's update of that analysis. (See app. III for this discussion.)

Phase II Risk Assessment

During the implementation of the Phase I risk assessment, Region V concluded that it would be necessary to conduct a second phase of the risk assessment to more precisely estimate the impact of the incinerator on human health. The Phase II risk assessment will assess risks to human health posed by direct (inhalation) and indirect (skin exposure, soil ingestion, and foodchain pathways) exposure to stack emissions from the WTI incinerator. The evaluation will be based on the results of the March 1993 trial burn and additional incinerator performance tests that were performed in August 1993; meteorological data collected at the WTI site over a 1-year period; and exposure data specific to the population surrounding the WTI facility, such as locations of home gardens, schools, and farms.

The risk assessment process used by federal regulatory agencies and proposed for this assessment is essentially that described by the National Research Council and consists of the following four components:

1. Hazard identification, in which the chemical substances of concern in emissions from the facility are identified and data relevant to the toxic properties of these substances are compiled, reviewed, and evaluated.

2. Dose-response evaluation, in which the relationship between dose and response is evaluated for each chemical of potential concern to derive

toxicity values that can be used to estimate the incidence of adverse effects occurring at different exposure levels.

3. Exposure assessment, in which potential exposure pathways are identified and measures of chemical exposure are estimated for the potential exposure pathways, on the basis of various exposure assumptions and the characteristics of the population receiving the exposure.

4. Risk characterization, in which numerical estimates of risk are calculated for each substance by each potential route of exposure using the toxicity information and the exposure estimates.

The primary source of EPA's guidance for conducting risk assessments of hazardous waste incinerators is the Methodology for Assessing Health Risks Associated with Indirect Exposure to Combustor Emissions, Interim Final (USEPA 1990a). Other guidance that will be relied upon to complete this risk assessment includes recently developed EPA guidance documents, such as Guidance on Risk Characterization for Risk Managers and Risk Assessors (USEPA 1992b), and the Guidelines for Exposure Assessment (57 Fed. Reg. 22887-22938), which were developed by EPA to clarify and refocus the requirements for a complete and balanced risk assessment.

The first step in the risk assessment process is to characterize the nature and magnitude of chemical emissions from the WTI facility. This involves identifying potential emission sources and substances of concern in these emissions and the developing contaminant emissions rates.

The hazard identification portion of the risk assessment involves the analysis of facilities' potential sources of emissions and the review and critical evaluation of data relevant to the toxic properties of substances of concern in these emissions. The primary objectives of this step of the risk assessment process are to identify the types of toxic effects associated with each substance of concern and the conditions of exposure under which these effects might occur.

In the dose-response evaluation, the relationship between the magnitude of human exposure and the extent of adverse health effects is determined. This relationship is represented through the use of toxicity values relating to cancer or noncancer health endpoints.

Exposure assessment involves identifying the potentially exposed population and measuring or estimating the magnitude of exposure for individuals in that population. This process comprises several steps that include (1) defining the study area; (2) identifying the exposed population and exposure pathways; (3) modeling the concentrations of chemicals in various environmental media; and (4) estimating the dose of chemicals from each medium to individuals in the study area.

Risk characterization is the final step of the risk assessment process. In this step, the chemical toxicity values are used in conjunction with the doses estimated for each of the various exposure pathways and population subgroups to estimate quantitatively both carcinogenic risks and the potential for noncarcinogenic health effects. In the Phase II Risk Assessment, individual risk will be estimated and population risks will be evaluated, if sufficient data are available.

EPA initially estimated the Phase II Risk Assessment completion date to be December 1993. However, by September 1993 EPA had encountered several complications in the process that delayed the results of the Phase II assessment. First, EPA experienced delays in finalizing contractual relations with A.T. Kearney to do the assessment. Second, WTI added a carbon injection system in July 1993 to further reduce its dioxin[9] emissions. Region V staff waited for the results from the testing of the carbon injection system so that they may be included in the data set of the risk assessment. Third, EPA Region V and headquarters are working on a new meteorological model that may be used in the Phase II assessment. Fourth, EPA headquarters decided to have both the Phase II assessment project plan and final products peer-reviewed by non-EPA experts.

The Phase II assessment project plan was completed in November 1993 and submitted for peer review in early December 1993. EPA asked the peer reviewers to concentrate on technical issues concerning the science, methods, expected uncertainty, and inferences and to suggest immediate and long-term recommendations. Region V officials received the results of the peer review in February 1994, and EPA indicated that it will develop a risk assessment reflecting the changes recommended to improve the draft project plan. Once the plan is completed, it will be executed. Region V officials plan to have a draft final report to submit for peer review in the spring of 1995 and subsequently issue the final report.

[9]See appendix II for a discussion of dioxin as a toxin and EPA's present dioxin reassessment effort. While the reassessment results may not be used in WTI's risk assessment, they could be used by the regulatory agency when renewing WTI's RCRA permit in the future.

East Liverpool's Health Baseline Study

In mid-1991, citizens of the East Liverpool community who were opposed to the WTI facility and were greatly concerned about the construction and impending operation of the WTI incinerator, met with officials of the Ohio Department of Health to discuss their concern for the health of their families and friends. They brought to the meeting four areas of concern: (1) lead poisoning; (2) mercury; (3) dioxin; and (4) the long-term effects of incineration on respiration. Ohio Department of Health officials heard the citizens and responded to them by initiating a health baseline study. This study done after department officials reviewed the area's atmospheric conditions and the facility's proposed emissions. From this review, Ohio Department of Health officials were able to conclude that the potential for health risks does, in fact, exist and that the public has not necessarily overreacted to perceptions of health risks.

The purpose of the Ohio Department of Health's study is to determine if exposures to emissions from the WTI incinerator are associated with a prospective increase in levels of lead in the blood or mercury in the urine of children. The study, in its initial phases, will provide baseline information by which department officials can compare data before and after the full-scale operation of the WTI facility. The department officials will be able to show trends between the beginning data and the subsequent sets of data. Data will be collected on air quality, soil lead content, cancer incidence, and possible respiratory effects, as determined necessary and constructive for the outcome of the study. The department plans on collecting data on lead and mercury levels at 6-month intervals. The first testing was conducted between September and November 1992. The second and third data collections took place between March and May 1993 and September and November 1993, respectively. According to the Ohio Department of Health, the lead and mercury study will be completed by December 1994. The department has committed to funding the baseline study through December 31, 1994.

The study will not address citizens' concerns such as those raised about dioxin. Department officials decided that costs prohibited dioxin testing and that the methods currently available to measure dioxin would not necessarily detect the trace amounts WTI is expected to emit, much less enable the department to draw conclusions about any related health risks.

Lead and mercury were the metals chosen for the study for two reasons: (1) Mercury and lead were expected to be the two metals released in the greatest amounts by the incinerator and (2) the health effects of exposure to these metals are relatively well-defined. Children were determined to be

the group of interest because they are more likely to ingest things contaminated with heavy metals—for example, dirt—and because lower levels of lead affect them more adversely than they do adults. Since the emissions from WTI will be in the form of gases emitted from the stack, inhaled mercury vapor is a main concern, as is exposure to lead through direct ingestion.

Study Implementation

Ohio Department of Health officials signed a Memorandum of Agreement with Ohio EPA officials on November 25, 1991, for a health and environmental study related to the WTI incinerator. The study is being managed by the Ohio Department of Health but is primarily funded by Ohio EPA. The Ohio Department of Health delegated most of the study implementation to the East Liverpool Department of Health. Through a grant from the Ohio Department of Health awarded on March 17, 1992, the East Liverpool Department of Health hired two health educators, as employees, to coordinate and implement the testing. The East Liverpool Health Department has carried out the bulk of the work, performing the blood lead and urine mercury testing and following up on study participants. All laboratory analysis is conducted by the Ohio Department of Health.

The study consists of six components: (1) measurement of blood lead in children; (2) measurement of urine mercury in children; (3) air monitoring; (4) soil sampling; (5) cancer incidence surveillance; and (6) a respiratory study[10]. An adult blood screening was also conducted, but results were not used in the baseline study. The East Liverpool Department of Health, with the assistance of Ohio Department of Health representatives, administered the blood and urine testing, the adult blood screening, and the soil sampling. Ohio Department of Health representatives handled the cancer incidence surveillance, and Ohio EPA and the NOVAA conducted air monitoring.

Study Results

Lead. Parents of school age children in East Liverpool permitted 427 children to participate in free screening for blood lead. The Ohio Department of Health estimated that 222 children were required for the study to be scientifically defensible. Of the 427 children tested during the initial screening period, results showed that 16 had high levels of lead in their blood.

[10]In commenting on a draft of this report in June 1994, the Ohio Department of Health stated that the respiratory study was canceled because of inadequate community participation.

According to the Ohio Department of Health and Centers for Disease Control guidelines, a blood lead level of 15 micrograms per deciliter or greater in a child requires follow-up at 3-month intervals and a home assessment for lead. All 16 of the children identified had an assessment of their homes for lead. The Ohio Department of Health identified sources of lead in all of the homes except one. The child in this home also spent a great deal of time at the grandparent's house, but the department personnel were not permitted to perform an assessment there. Since that time, this child has moved out of the East Liverpool area.

The 16 children with elevated blood lead levels were encouraged to participate in screening at 3 months and 6 months after the initial screening. All of the 427 children were encouraged to participate in screening 6 months after the initial screening, as part of the study. However, only 250 participated. Only 5 of the 16 children with elevated blood lead values returned for this round of screening; 2 of the children still had elevated levels. Two children were newly identified as having blood lead levels above 15 micrograms per deciliter. According to an Ohio Department of Health official, these children received home assessments to determine the possible origin of their elevated lead levels. Lead paint was found in their homes.

Mercury. One hundred and fifty-two children participated in the baseline mercury test. According to Ohio Department of Health officials, a mercury level of 40 micrograms per liter or greater is cause for concern. None of the children had a level greater than 25 micrograms per liter. Ninety percent of the children had mercury levels in urine for the baseline measurement between 0 and 4 micrograms per liter.

The procedures by which the laboratory tested and/or reported mercury levels changed between the baseline and subsequent follow-up tests. The baseline test results are presented in three categories; 0-4 micrograms per liter, 5-14 micrograms per liter, and 15 and above micrograms per liter. In the subsequent follow-up tests, the level of mercury detection was increased to units of 1 microgram of mercury per liter.

In March 1993, 88 children participated in the first follow-up urine mercury test. Ninety-four percent of the children had urine mercury levels between 0 and 4 micrograms per liter. Two children had levels of 25 micrograms per liter or over. These two children were referred to their physicians for medical follow-up and repeat urine mercury testing. In September 1993, 92 children participated in the second follow-up urine mercury test.

Ninety-five percent of the children had mercury levels between 0 and 4 micrograms per liter. None of the 92 children tested had a level greater than 10 micrograms per liter.

We were able to analyze the mercury levels for 66 children tested in both March and September 1993 because the measurement procedures used in these follow-up tests were the same. We found that about 26 percent of the children showed no change in mercury levels, about 17 percent showed decreased levels, and 58 percent showed increased levels. For those children showing decreased mercury levels, the average decreased from 2.3 to 0.6 micrograms per liter of urine, a decrease of about 1.6 micrograms. For those children showing increased mercury levels, the average increased from 0.3 to 2.5 micrograms per liter of urine, an increase of 2.2 micrograms.

In March 1994, the third follow-up urine mercury test was done. As of May 1994, the Ohio Department of Health had not completed its analysis of the results from the test.

Air Quality Monitoring. The Ohio Department of Health requested the assistance of the Ohio EPA to carry out the air quality monitoring portion of the health baseline study. In order to study the effects of WTI emissions on respiration, the Ohio Department of Health officials needed data on certain emissions for which the Ohio EPA was not routinely monitoring. Therefore, the Ohio Department of Health and Ohio EPA, in their Memorandum of Agreement, formalized the duties and obligations of both parties in the implementation of the health baseline study. Ohio EPA agreed to furnish the Ohio Department of Health with data on the results from computer simulations that model potential releases from the incinerator; test burns conducted, which shall include the results of stack monitoring, air concentrations of contaminants during the burn, background measurements, and relevant meteorological information; and the operation of the facility, which shall include stack monitoring and the sampling of ambient concentrations of chemicals released from the facility that are present in the community. The Ohio Department of Health will consult with Ohio EPA as necessary on the interpretation of environmental monitoring data. Ohio EPA, through a contract with the NOVAA, is collecting data on certain pollutants, such as lead and mercury, in the air in East Liverpool. In February 1994, the Ohio Department of Health indicated that on the basis of samples collected in 1992 and 1993, the levels of lead and mercury in East Liverpool air were close to 0.05 ugm/m^3 for lead and

0.0002 ugm/m^3 for mercury. The National Ambient Air Quality Standard for lead is 1.5 ugm/m^3; there is no ambient air standard for mercury.

Soil Lead Testing. The Ohio Department of Health included soil lead testing in the study to establish a baseline level of soil lead content for which a comparison may be made after the WTI facility is in operation. Department officials were also aware that East Liverpool formerly had a large pottery industry and there was concern that widespread soil lead contamination could exist. The soil lead testing would determine if, in fact, this is the case. The Ohio Department of Health and the East Liverpool Health Department sampled sites in East Liverpool—the local schools and playgrounds—where large numbers of children had exposure to the soil. The Ohio Department of Health officials said that the soil results are within expectations for an urban, industrial area. Two soil samples at an elementary school yard had values considered to be above normal. The exact cause of the above normal lead levels is not known, but Ohio Department of Health officials suggested that it could be due to old playground equipment covered with lead-based paint. The soil at these sites has been turned over, and access has been limited through the planting of vegetation.

Cancer Incidence Surveillance. The Cancer Incidence Surveillance is a physicians' reporting system that compiles the number of deaths from different types of cancer as well as new cases of cancer in a particular geographic location. The reporting system covers the entire state, and data are collected through the physicians themselves, who report statistics to the Ohio Department of Health. Although these data will be considered in analyzing other data collected for the baseline study, department officials stressed that it would not be possible to attribute any cancer deaths in East Liverpool to the WTI facility during the initial phases of the study because a long latency period is characteristic of the disease. An Ohio Department of Health official indicated that the department will continue to monitor cancer incidence using the surveillance system after the baseline study funding expires in December 1994.

Conclusions

EPA has carried out a number of activities at the WTI facility, including overseeing a trial burn, monitoring and inspecting the facility's operations, and conducting a risk assessment to help ensure that the WTI facility will not adversely affect the health and the environment of those who live in the East Liverpool area. The level of effort in all of these areas has exceeded that which is currently required by the regulations. This effort

should provide additional protection to the community. In addition, the East Liverpool baseline study being done by the state of Ohio has the potential to provide its residents with information to compare data before and after the full-scale operation of the WTI facility.

WTI's trial burn met or exceeded the normal RCRA requirements in a number of areas, such as dioxin testing. The trial burn results showed that most, but not all, of the performance standards and expected levels for emissions were met. In instances in which WTI did not meet the required or expected emissions limits, either WTI made incinerator design changes or EPA changed the conditions under which the incinerator could operate.

EPA and Ohio EPA have met or exceeded their monitoring, inspection, and enforcement requirements for the WTI facility. The installation of WTI's continuous monitoring system, to which Ohio EPA has 24-hour direct access, should provide for better monitoring of the incinerator's operations by the agency. Also, EPA and Ohio EPA inspected the WTI facility several times during 1993, exceeding the required frequency of inspections. In addition, Ohio EPA maintained a full-time inspector at the WTI site to monitor wastes being accepted and inspect its operations several times a week. EPA and Ohio EPA found numerous violations during their RCRA and air inspections, and while most of the violations were corrected by WTI immediately after inspectors brought them to WTI's attention, both EPA and Ohio EPA have taken or are considering enforcement actions against WTI. None of these violations appeared to create an imminent danger to WTI's workers and the community.

If and when the WTI facility goes into full operation, the regulatory agencies will need to continue to closely monitor the operations, to perform thorough and complete inspections, and to take timely and appropriate enforcement actions.

The risk assessment being planned by EPA for the WTI facility, if properly implemented, should result in more precise estimates of the incinerator's impact on human health in the community than are presently known. EPA, with these results, could shut down operations or adjust the operating conditions at WTI, whichever is appropriate, to ensure that emissions are below health-based risk levels.

RCRA, Clean Air Act, and Clean Water Act Requirements for Hazardous Waste Incinerators

RCRA Requirements

The Resource Conservation and Recovery Act (RCRA), the major law for hazardous waste incineration, requires owners and operators of treatment, storage, and disposal facilities to obtain an operating permit and requires the Environmental Protection Agency (EPA) to establish regulations governing the handling of hazardous wastes. Key requirements for incinerators are discussed below.

Permits. RCRA regulations require that a RCRA permit establish appropriate operating requirements, including allowable waste feeds and operating conditions. The owner/operator may burn only those wastes specified in the permit and only under operating conditions specified for those wastes. In addition, the permit may include other conditions, such as additional performance standards, that the enforcement authority determines to be necessary to protect human health and the environment.

Waste Analysis. The owner/operator must submit sufficient data about the waste to be burned to satisfy requirements for a trial burn plan or a RCRA permit application. These data would include heating value, viscosity or physical form, and identification and quantification of hazardous constituents. The owner/operator must conduct sufficient waste analysis throughout normal operation to verify that waste being burned is consistent with permit specifications.

Performance Standards. The incinerator must achieve 99.99 percent destruction and removal efficiency for the principal organic hazardous constituents designated for each waste feed. Hydrogen chloride emissions are limited to the larger of 4 pounds per hour or 1 percent of stack gas prior to pollution control equipment. In addition, particulate emissions are limited to 180 milligrams per dry standard cubic meter when corrected for oxygen in stack gas.

Trial Burn. RCRA permit applicants must submit a trial burn plan or the results of a trial burn demonstrating compliance with RCRA's performance standards or submit detailed information demonstrating that the facility can incinerate the waste with the same results as other acceptable trial burns. The trial burn plan must include an analysis of the waste, a detailed engineering description of the incinerator, a detailed description of sampling and monitoring procedures, a detailed test schedule, a description of and planned operating procedures for emissions control equipment, and procedures for rapidly stopping waste feed and shutting down the incinerator. The trial burn must enable the enforcement authority to make all appropriate determinations to confirm compliance

with performance standards and to establish operating conditions. After conducting the trial burn and analyzing the results, the owner/operator must provide all data to the enforcement authority.

Operating Requirements. Operating requirements will be specified in each permit on a case-by-case basis as demonstrated in a trial burn (or with alternate data) to be sufficient to comply with the performance standards. Requirements will specify the composition of the waste feed and acceptable operating limits, including carbon monoxide content of stack gas, waste feed rate, combustion temperature, and variations in incinerator design and operation. In addition, hazardous wastes must not be fed during startup or shutdown unless the incinerator is operating within the permit conditions. Finally, the facility must be able to automatically cut off waste feed to the incinerator if operating conditions deviate from permit requirements and also must cease operations when changes in waste feed, incinerator design, or operating conditions exceed permit limits.

Monitoring and Inspection. The owner/operator must continuously monitor combustion temperature, waste feed rate, and combustion gas velocity; continuously monitor carbon monoxide emissions; sample and analyze waste and exhaust upon request by the enforcement authority; conduct a thorough visual inspection of the incinerator and associated equipment daily; and test emergency cutoff systems and alarms weekly. Monitoring and inspection records must be kept and placed in operating logs.

Clean Air Act Requirements

Incinerators must comply with federal air quality and emissions standards established by EPA under the Clean Air Act. The Clean Air Act provides for a federal-state partnership in addressing air pollution. The act requires EPA to set National Ambient Air Quality Standards (NAAQS) and provides for states and localities to assume the responsibility of designing and implementing control strategies to meet these standards. The NAAQS were established by EPA for six priority or criteria pollutants: sulfur dioxide, particulate matter, carbon monoxide, ozone, nitrogen oxides, and lead. The control strategies to meet the NAAQS are documented in each state's State Implementation Plan (SIP). An essential component of SIPs is the issuance of permits specifying emissions limits that owners and operators of stationary sources, including incinerators, must meet. EPA is responsible for reviewing and approving the SIPs to ensure that they are adequate to

attain and maintain compliance with NAAQS and for overseeing state and local implementation of these plans.

Ohio received approval from EPA to issue and administer its air permits program in 1980. Under Ohio law, stationary sources of air pollution, such as incinerators, must obtain from Ohio EPA an air pollution permit-to-install, which is required to begin construction of a facility, and a permit-to-operate the facility. A first step in the permitting process is to determine whether the facility is a "major" or "minor" source within the meaning of the Clean Air Act. A source is considered "major" if its emissions will exceed (referred to as "potential to emit") certain threshold levels and "minor" if its potential to emit is less than the limits. The threshold limits depend on whether the air quality in the county in which the construction is proposed meets the NAAQS. An incinerator is a major emitter if it has the potential to emit more than 250 tons per year of a criteria pollutant whose levels in the county are at or below the NAAQS, or 100 tons per year for those pollutants whose levels exceed the NAAQS.

Ohio law also requires the source to meet EPA's emissions standards for hazardous pollutants. At the time that Waste Technologies Industries (WTI) applied for and obtained its permit, new stationary sources were required to comply with EPA's emissions standards for the following hazardous pollutants: arsenic, asbestos, benzene, beryllium, mercury, radionuclides, and vinyl chloride.

In 1990, the Clean Air Act was amended to require EPA to establish emissions standards for 189 hazardous air pollutants, according to a 10-year schedule prescribed in the act. States are required to implement these standards or establish their own standards that are equal to or more stringent than EPA's standards.

Clean Water Act Requirements

Under the Clean Water Act, any person responsible for the discharge of a pollutant into any navigable waters of the United States from any point source must apply for and obtain a discharge permit. Because it discharges pollutants into the Ohio River, the WTI incinerator required such a permit. These permits are issued and enforced primarily by states, such as Ohio, that have been authorized by EPA. The permit establishes specific levels of performance, or discharge limits, the discharger must maintain. It also requires the discharger to report failures to meet those levels to the appropriate regulatory agency.

Dioxin as a Toxin and EPA's Dioxin Reassessment Effort

Dioxin as a Toxin

According to EPA, dioxin is a highly toxic environmental contaminant which is found worldwide. Dioxin is not a chemical used for any industrial or commercial purpose but is a byproduct of high-temperature combustion processes, such as incineration, involving chlorinated phenolic products. Highly chlorinated dioxin and furans persist in the environment because of their resistance to chemical, physical, and biological degradation. This persistence results in their bioaccumulation in the food chain.

Dioxin is known to cause death in animals if the dose is high enough. EPA studies show that animals can lose as much as half of their body weight before death occurs. Atrophy of lymphoid tissues and of the testes is a result of sublethal, but still highly toxic, doses of dioxin. The liver is a target organ for dioxin toxicity in many, but not all, species, as is the stomach, urinary tract, and sebaceous glands. Dioxin causes birth defects, skin lesions, immunotoxicity, and cancer in many species, both in the laboratory and in the wild. For example, the inability of lake trout to reproduce in Lake Ontario has been attributed to dioxin contamination. In addition, dioxin is a carcinogen in all species examined. According to EPA experts, all of the 17 studies in both sexes of rats, mice, and hamsters are positive. Tumors have been observed on these animals following low levels of exposure. In addition, dioxin has been shown to cause multiple tumors with short latency and high potency in fish.

According to EPA, until recently, the only response that had been documented in people as a result of exposure to dioxin was chloracne.[1] It is now clear that chloracne is a response to very high levels of dioxin and that individuals vary greatly in their degree of sensitivity to dioxin. While the presence of chloracne is absolute evidence that exposure to dioxin or a related chemical has occurred, the absence of chloracne in no way proves that no exposure has occurred. Examination of more sensitive effects has revealed that humans display sensitivity to the effects of dioxin similar to that of experimental animals.

For many years, the epidemiological studies were inconclusive in providing a link between dioxin and cancer in humans. However, an EPA expert has stated that in the past few years several studies involving people exposed to dioxin in an occupational setting, both in the United States and in Europe, have provided strong support for an association between exposure to dioxin and cancer. In commenting on a draft of this report in June 1994, EPA stated its position that although recent studies

[1]Chloracne is a severe form of cystic acne of the skin. Chloracne occurs following either dermal or systemic exposure in sensitive species, including humans. The condition is extremely persistent, in some cases lasting over 30 years following the initial exposure.

have provided additional support to conclude that dioxin is a probable human carcinogen, the studies are still insufficient to conclude that dioxin is a known human carcinogen.

EPA's Dioxin Reassessment Study

Currently, EPA's Office of Research and Development is undertaking a major reassessment of the toxic properties of dioxin and the related family of dioxin-like compounds. The reassessment is looking at the toxic effects of a whole family of dioxin-like compounds. This family includes both polychlorinated and polybrominated dibenzo-p-dioxin and dibenzo-furans and co-planar PCPs. The reassessment is looking at the full range of toxic effects of these compounds.

The reassessment involves conducting both new laboratory studies as well as a careful review and evaluation of all published dioxin literature. Drafts of several chapters of the reassessment have been published and were the subject of public workshops held in September 1992. Each of these chapters has been revised, in part, on the basis of discussions at these workshops. In addition, a new chapter on risk characterization pulls together the findings of the other chapters into an integrated whole. The full draft report will be made available for public comment and will be submitted to the EPA Science Advisory Board for peer review. A final two-volume document should be issued in the spring of 1995.

According to EPA, the dioxin reassessment is being conducted using a new scientific approach that focuses on identifying and understanding the specific biological mechanisms by which dioxin compounds generate their toxic effects. The reassessment is at the cutting edge of toxicological science, and through this approach EPA is gaining significant new insight into the toxicological complexities of the dioxin-like compounds.

Comments From the U.S. Environmental Protection Agency

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUL 14 1994

OFFICE OF
THE ADMINISTRATOR

Ms. Bernice Steinhardt
Associate Director, Environmental
Protection Issues
Resources, Community, and Economic
Development Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Ms. Steinhardt:

EPA appreciates the opportunity to comment on GAO's draft report (GAO/RCED-94-101) on EPA's handling of the Waste Technologies Industries ("WTI") hazardous waste incinerator. We recognize the difficult issues presented and commend GAO for a comprehensive and insightful report.

EPA believes that the draft report offers a balanced and fair assessment of the activities undertaken with regard to this facility. EPA offers the following comments in order to: (1) summarize the Agency's activities at the WTI facility; (2) formally articulate the Agency's response to GAO's regulatory recommendations and; (3) provide necessary clarification with respect to a few technical points.

EPA's greatest concern is the health and safety of the people living in the community near the incinerator. Despite the complex nature of the issues, we remain committed to ensuring the health and safety of that community at all times. With that in mind, we provide the following in response to GAO's report.

A. Overview of EPA Activities at the Facility

As the report indicates, and as discussed further below, EPA has ensured that no unreasonable risk to human health or the environment will accrue to the WTI community during the limited period of commercial operation afforded the facility pending EPA's completion of a complete indirect risk assessment. In addition to undertaking state-of-the-art risk assessment activities, the report recognizes that EPA has imposed very stringent technical requirements on the WTI facility to ensure that risks to the affected community are minimized.

The report also notes that EPA evaluated complex legal issues associated with the entities that owned or exercised operational control over WTI. The Agency concluded that the permit remained in effect despite the various changes in corporate structure and EPA is pleased that GAO has agreed with our analysis.

Finally, EPA has imposed a full array of technical, regulatory requirements on the facility in accordance with existing regulatory requirements. Where necessary, the Agency exercised its enforcement authority to impose administrative penalties on the facility where relatively minor permit deviations were detected.

B. EPA's Response to GAO's Regulatory Recommendations

1. Floodplains

The draft report recommends that EPA amend the RCRA permit regulations as they apply to facilities sited in floodplains to: (1) require an alternative site analysis through the permitting process consistent with the 1978 Executive Order 11988 and; (2) extend floodplain restrictions to facilities located in 500-year floodplains.

Although the WTI facility was built above the 500 year floodplain, EPA agrees with GAO's recommendation and recognizes the importance of stringent floodplain siting requirements for hazardous waste facilities. In fact, serious efforts in this direction are already underway through the formation of a RCRA Siting Work Group. In addition to evaluating an array of siting restrictions in geologically sensitive areas, including floodplains, this Workgroup is also evaluating the propriety of establishing standards on a national level to protect sensitive population groups from exposure to hazards through RCRA permitting decisions. The Workgroup is scheduled to make its recommendations to the Assistant Administrator in the Fall of 1994.

2. Public participation in permitting process

GAO recommends that EPA "establish guidance on conditions or circumstances for which opportunities for public participation should be provided beyond the present regulatory requirements." As examples of cases where expanded public participation would be appropriate, GAO particularly points to "situations in which the permittee does not follow the RCRA permit modification requirements and when significant updated information is required to be submitted as a condition of the permit after the permit is issued."

In essence, the report recognizes that facts and conditions often change during the life of a RCRA permit, which often has a 10 year term. The report emphasizes that the public should be both apprised of these changes and afforded the ability to affect any agency decisions regarding such changes. GAO recommends that opportunities for increased public participation be incorporated into the combustion permitting process.

EPA agrees with this recommendation and has taken substantial steps towards to ensure full public participation in the RCRA permitting process, including in the specific cases cited by GAO. EPA's recent proposed rule on public participation, which was published on June 2, 1994, would significantly expand existing opportunities for public involvement. See 59 Fed. Reg. 28680 (June 2, 1994). This wide-ranging proposal would provide, among other things, that facilities must hold pre-application public meetings; that EPA must issue a public notice announcing receipt of a permit application; that EPA may require facilities to maintain public information repositories; that EPA must conduct public participation activities so as to assure the opportunity for meaningful participation by all segments of the community; and that EPA must publish notices announcing the scheduled commencement and completion dates for trial burns at combustion facilities.

In response to GAO's specific recommendation, the Office of Solid Waste and Emergency Response will prepare additional guidance for the EPA Regions and authorized States which will in addition, identify specific situations where additional opportunities for public participation may be desirable as a result of changed circumstances during the life of the permit.

C. EPA Comments on Risk Issues

1. Screening risk assessment activities

The GAO report omits reference to EPA's initial screening level risk analysis and the update to that analysis currently underway. This analysis is important because it represents an important aspect of the basis for EPA's conclusion that no unreasonable risks will accrue during the period of limited operation of the facility while the Phase II risk assessment is underway. A summary of the activities related to the initial screening level analysis follows:

See comment 1.

In February 1993, EPA conducted an initial screening level analysis of cancer risks due to long-term, multi-pathway exposure to emissions of dioxin/furan compounds from WTI to determine whether the facility was safe to operate for a period of limited commercial operation pending completion of the Phase II risk assessment. The Phase II risk assessment

focused on potential indirect exposure effects. The analysis covered the first year of operation of the WTI incinerator, assuming continuous operation. Because the trial burn had not yet occurred, air concentrations from the Phase I risk assessment, which focused on direct exposure effects, were used in the analysis.

Four hypothetical and high risk exposure scenarios were evaluated in the analysis: one covered a subsistence farmer who ate only beef from cattle raised on his or her farm; one covered a farmer who ate beef raised on his or her farm while also obtaining beef from other sources; one covered a resident with a home garden; and one covered a child's schoolyard exposures. Based on this analysis, the Agency concluded that one year of operation of the WTI incinerator would not result in unreasonable risk to the population within the environs of the facility.

Recently, the Agency decided to update the screening level analysis because the Phase II risk assessment will take longer to complete than originally expected. The updated screening analysis will incorporate newly acquired site-specific data and will reflect recent refinements to the fate and transport modelling of dioxins. The update will evaluate dioxin risks from the start of limited commercial operations to the completion of the Phase II risk assessment. The updated analysis is expected to be completed this summer.

2. Health studies

Now on pp. 104-105. See comment 2.

The draft report on pp. 138 and 140 describes several health studies conducted near the facility but fails to indicate that those studies were not designed to draw any specific correlation between any observable health effects and actual exposure to emissions from the WTI facility. The report should be accordingly clarified to prevent the inference of inappropriate conclusions.

3. Carcinogenicity of dioxin

Now on p. 113. See comment 3.

On p. 152, the report states that an EPA expert has stated that recent studies provide strong support for an association between exposure to dioxin and cancer. In fact, although recent studies have provided additional support to conclude that dioxin is a probable human carcinogen, they are still insufficient to conclude that dioxin is a known human carcinogen.

D. Conclusion

The comprehensive activities that EPA has engaged in at the WTI facility reflect the Agency's broader commitment to ensuring

that hazardous waste incineration is carried out in both a safe as well as an effective manner.

In May 1993, EPA Administrator Browner issued the Agency's draft hazardous waste minimization and combustion strategy. The draft strategy recommends: (1) both direct and indirect risk assessments at every hazardous waste combustion facility for which a new permit would be issued; (2) the imposition of more stringent permit controls for dioxins and furans as well as other pollutants of concern where determined to be necessary to protect human health and the environment; (3) giving a higher priority to making permitting decisions for existing interim status facilities to ensure that all facilities are in compliance with the more stringent permit controls; (4) strong and aggressive enforcement measures where appropriate at all hazardous waste combustion facilities.

Using the combustion strategy to ensure the health and safety of communities located near these facilities is one of the Agency's highest priorities. EPA's treatment of the issues pertaining to the WTI facility is intended to be consistent with the direction of this policy. We sincerely appreciate the exhaustive investigation and helpful recommendations made by the GAO report and will endeavor to implement those suggestions expeditiously as the Agency continues its combustion regulatory initiatives.

Sincerely,

Robert M. Sussman
Deputy Administrator

The following are GAO's comments on the Environmental Protection Agency's letter dated July 14, 1994.

GAO Comments

1. On the basis of our interviews with and the documentation received from EPA officials in 1993, we originally concluded that the screening level risk analysis was a short-term analysis designed only to assess the risks of WTI's test burn and a period of limited commercial operation, assumed by EPA to be a total of 12 months. Thus, we did not include a discussion of the analysis. Now, however, because the Phase II Risk Assessment has been delayed at least a year, the screening level risk analysis and its ongoing update have taken on added significance to support EPA's conclusion that no unreasonable risks from WTI's emissions of dioxin compounds will be accrued to the community in the interim. We have revised chapter 5 to acknowledge the presence of the screening level risk analysis.

2. We do not believe that chapter 5 of the report should state what the Ohio baseline study was not designed to do. We believe that the report clearly states that the purpose of the Ohio Department of Health's study is to determine if exposure to emissions from the WTI incinerator are associated with a prospective increase in levels of lead in the blood or mercury in the urine of children.

3. We revised appendix II to reflect EPA's position that current studies are insufficient to conclude that dioxin is a known human carcinogen.

Comments From the Ohio Environmental Protection Agency

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

OhioEPA
State of Ohio Environmental Protection Agency

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Columbus, Ohio 43266-0149
(614) 644-3020
FAX (614) 644-2329

George V. Voinovich
Governor

June 28, 1994

BY TELEFAX AND
EXPRESS MAIL DELIVERY

Bernice Steinhardt
Associate Director
Environmental Protection Issues
Resources, Community, and Economic Development Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Ms. Steinhardt:

On behalf of Donald R. Schregardus, Director, Ohio EPA, I would like to thank you for the opportunity to review and comment on pertinent sections of the General Accounting Office draft report entitled Hazardous Waste: Issues Pertaining to an Incinerator in East Liverpool, Ohio (GAO/RCED-94-101). These pertinent sections were transmitted to Ohio EPA via your letter to Director Schregardus of June 13, 1994. The written comments below supplement preliminary comments conveyed by telephone to Gerald Killian of your staff by Mark Navarre, Supervising Attorney and Linda Welch, Chief of Ohio EPA's Division of Hazardous Waste Management on June 22, 1994. In addition to the Division of Hazardous Waste Management, the following Ohio EPA divisions participated in the Agency's review of this document: the Division of Emergency and Remedial Response, the Division of Surface Water, and the Division of Air Pollution Control. The Agency's comments are provided below, and are supplemented on the attached annotated pages. We have included explanatory comments in italics after our suggested changes. Page numbers referenced in our comments correspond to the page numbers of your June 13 transmittal.

DIVISION OF AIR POLLUTION CONTROL

This division had no comments on the pertinent sections of your report.

DIVISION OF SURFACE WATER

Page 16, Paragraph 2, third to last sentence - We suggest that this sentence be changed to read as follows: **However, it now plans to use and evaporate some of this water in the incineration process, if the effluent measured at internal monitoring station 602 is above 168 micrograms per liter for Total Organic Carbon.**

Now on p. 78.
See comment 1.

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EPA 1613 (1/91)

Bernice Steinhardt
U.S. General Accounting Office
Page Two
June 28, 1994

DIVISION OF HAZARDOUS WASTE MANAGEMENT

Now on p. 14.

See comment 2.

Page (1), paragraph (1), sentence (2)

Consequently, WTI filed ~~two~~ applications in September 1981--~~one~~ with the state of Ohio for an air permit-to-install, a water permit, and a hazardous waste permit, and ~~the other~~ with EPA for a permit to construct and operate a hazardous waste facility under the Resource Conservation and Recovery Act (RCRA) of 1976, as amended.

Now on p. 14.

See comment 3.

Page (1), paragraph (1), sentence (6-7)

As a result of this authorization, when its federal permit expires in 1995, WTI will continue to operate under the federal permit until a new RCRA permit is issued ~~by Ohio EPA. At that time, WTI will operate only under the new Ohio permit.~~

NOTE: *IT IS NOT CLEAR AT THIS TIME WHETHER THE OHIO HAZARDOUS WASTE PERMIT WILL BE REISSUED AS A RCRA PERMIT BEFORE THE FEDERAL RCRA PERMIT EXPIRES IN 1995. THE 5-YEAR TERM OF THE OHIO HAZARDOUS WASTE PERMIT HAS NOT YET COMMENCED, AND WILL NOT COMMENCE UNTIL THE ESTABLISHMENT OF OPERATING PERMIT CONDITIONS BASED UPON EVALUATION OF THE TRIAL BURN RESULTS.*

Now on p. 47.

See comment 4.

Page (2), paragraph (3), sentence (1)

In its application for both the federal and state permits, WTI proposed filling in the site to elevate it ~~above the 100 year~~ **to the 500-year** floodplain.

Now on p. 48.

See comment 5.

Page (2), paragraph (4), sentence (2)

In addition to including the specific load-bearing requirement, the Ohio hazardous waste facility permit also required WTI to provide an engineering certification that this requirement, as well as a requirement that the site be elevated ~~above the 100-year~~ **to the 500-year** floodplain, had been met prior to beginning construction of the facility.

NOTE: *THE OHIO HAZARDOUS WASTE FACILITY BOARD (HWFB) "WRITTEN ORDER AND FINAL OPINION," 4/27/84, PAGE 62, STATES: "PORTIONS OF THE PROPOSED SITE ARE PRESENTLY LOCATED WITHIN THE 100 YEAR FLOOD PLAIN AT 689 FEET ABOVE SEA LEVEL. PRIOR TO CONSTRUCTION OF THE FACILITY, THE SITE WILL BE RAISED AND GRADED BY THE PORT AUTHORITY. THE FINAL FACILITY ELEVATION WILL BE AT LEAST 695 FEET ABOVE SEA LEVEL, WHICH IS AT THE 500-YEAR FLOOD PLAIN LEVEL.*

ALSO NOTE: *PERMIT CONDITION B.33 REQUIRES THAT "THE FACILITY SHALL BE DESIGNED, CONSTRUCTED, OPERATED AND MAINTAINED TO PREVENT WASHOUT OF ANY HAZARDOUS WASTE BY A 100-YEAR FLOOD. THE ACTIVE PORTION OF THE SITE SHALL BE ELEVATED TO A LEVEL OF 695 FEET ABOVE MEAN SEA LEVEL."*

Now on p. 90.

Page (18), paragraph (2), sentence (3)

With regards to this sentence:

See comment 6.

NOTE: A 12/22/93 NOTICE OF VIOLATION (NOV) SUMMARIZED VIOLATIONS NOTED IN A 11/22/93 HAZARDOUS WASTE INSPECTION. A 1/20/94 NOV SUMMARIZED A VIOLATION DOCUMENTED 12/15/93. A 5/3/94 NOV SUMMARIZED A VIOLATION NOTED IN A 3/21/94 HAZARDOUS WASTE INSPECTION.

Now on p. 90.

Page (18), paragraph (2), sentence (6)

~~As of early December 1993, Ohio EPA had not assessed any penalties against WTI.~~

See comment 7.

NOTE: IN GENERAL, OHIO EPA DOES NOT "ASSESS" PENALTIES, HOWEVER, OHIO EPA DOES NEGOTIATE ADMINISTRATIVE CONSENT ORDERS WHICH OFTEN INCLUDE CIVIL PENALTY SETTLEMENT PAYMENTS.

BY LETTER DATED 6/1/94, OHIO EPA SENT TO WTI A PROPOSED ADMINISTRATIVE CONSENT ORDER WHICH WOULD ADDRESS VIOLATIONS OF AIR AND HAZARDOUS WASTE REGULATORY REQUIREMENTS, AND WOULD INCLUDE A $182,200 CIVIL PENALTY SETTLEMENT PAYMENT ($109,000/AIR AND $73,200/HAZARDOUS WASTE).

Now on p. 91.

Page (19), paragraph (1), sentence (1)

See comment 8.

As of ~~December 1993, no agreement~~ **June 1994, an agreement in principle** had been reached between the Ohio EPA and WTI **to fund three (3) on-site Ohio EPA inspectors at the WTI facility.**

NOTE: THE AGREEMENT IS PRESENTLY IN CIRCULATION FOR FINAL APPROVAL AND SIGNATURES.

Now on p. 96.

See comment 9.

Now on p. 97.

See comment 10.

Bernice Steinhardt
U.S. General Accounting Office
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Page (23), paragraph (3), sentence (1-3)

As of ~~April 14,~~ **June**, 1994, the Ohio EPA was in the process of taking an enforcement action against WTI. ~~An Ohio EPA official said that the agency had issued a draft "Administrative Findings and Orders" against WTI for violating its air permit. Because it was in draft form, the official would not discuss all of the issues.~~

NOTE: *SEE COMMENT REGARDING PAGE 18 PARAGRAPH 2, SENTENCE 3 AND OHIO EPA'S 6/1/94 LETTER AND PROPOSED ADMINISTRATIVE CONSENT ORDER.*

Page (25), paragraph (1), sentence (5)

~~No enforcement action have been taken by Ohio EPA against WTI.~~

~~NOTE: THE NEGOTIATION OF AN ADMINISTRATIVE CONSENT ORDER IS AN "ENFORCEMENT ACTION" BY OHIO EPA.~~

DIVISION OF EMERGENCY AND REMEDIAL RESPONSE

This division had no comments on the pertinent sections of your report.

Ohio EPA appreciates the opportunity to comment on the pertinent sections of your report. If you have any questions, please contact Mark Navarre at (614) 644-2037.

Sincerely,

Jennifer Tiell
Deputy Director for Programs
Ohio Environmental Protection Agency

cc: Linda Welch, Chief, DHWM
Mark Navarre, Legal
Bob Hodanbosi, DAPC
Jeanne Mallett, Legal
Gary Martin, DSW
Jan Carlson, DERR
Gerald Killian, GAO

The following are GAO's comments on the Ohio Environmental Protection Agency's (Ohio EPA) letter dated June 28, 1994.

GAO Comments

1. We revised chapter 4 to state that WTI plans to use and evaporate some of the "B" water in the incineration process.

2. We revised chapter 1 to clarify the report's discussion on WTI's filing of applications for permits.

3. In chapter 1, we deleted the sentence that Ohio EPA suggested be deleted and revised the section to reflect the EPA regulations, 40 C.F.R. 270.51, that state that if a permittee in a state with an authorized RCRA program has submitted a timely and complete application under applicable state law and regulations, the terms and conditions of an EPA-issued RCRA permit continue in force beyond the expiration date of the permit until the effective date of the state's issuance or denial of a state RCRA permit.

Whether or not Ohio EPA reissues its hazardous waste permit as a RCRA permit before 1995 is a decision for Ohio EPA. However, this decision will not change Ohio EPA's responsibility, as a state with an authorized RCRA program, to issue or deny a RCRA permit to WTI.

4. We revised chapter 3 to indicate that WTI's permit applications to the federal and state agencies proposed to fill the site to elevate it to the 500-year floodplain level.

5. We revised chapter 3 to indicate that the state permit issued to WTI required that the site be elevated to the 500-year floodplain level.

6. We revised chapter 5 to update information on Ohio EPA's inspection and enforcement efforts.

7. We revised chapter 5 to update information on Ohio EPA's proposed administrative consent order.

8. Chapter 5 was revised to reflect a recent agreement in principle between Ohio EPA and WTI concerning the funding of three dedicated, full-time state inspectors at the WTI facility.

9. As mentioned above, chapter 5 was changed to update the status of Ohio EPA's administrative consent order that was sent to WTI.

10. We deleted the sentence stating that no enforcement actions were taken against WTI under the water program because earlier in the report we indicated that Ohio EPA had not conducted any water-related inspections. Thus, no violations and enforcement actions should have been expected.

Comments From the Ohio Department of Health

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

OHIO DEPARTMENT OF HEALTH

246 N. HIGH STREET
Post Office Box 118
Columbus, Ohio 43266-0118

Telephone: (614) 466-3543

GEORGE V. VOINOVICH
Governor

PETER SOMANI, M.D., Ph.D.
Director of Health

June 29, 1994

Bernice Steinhardt
Associate Director,
Environmental Protection Issues
United States General Accounting Office
Washington, D.C. 20548

Dear Ms. Steinhardt:

I appreciate the opportunity to comment on the draft that you have prepared. Below are the notes and comments that we are making on the draft report entitled Hazardous Waste: Issues Pertaining To An Incinerator In East Liverpool, Ohio:

Now on pp. 104-105.

Page 2

See comment 1.

End of first paragraph - "June 30, 1995"

> The grant to the East Liverpool Health Department will expire on 12/31/94. At that time the lead and mercury study will be complete. The respiratory study has been canceled because of inadequate community participation. However, we will continue to monitor cancer incidence using the Ohio Cancer Incidence Surveillance System.

See comment 2.

Second paragraph - "All of the citizen concerns"

> While it would be nice to think we have addressed all of the concerns. Other concerns have been raised, as identified by an East Liverpool Health Department survey; these included VOCs and other heavy metals. However, we believe we have addressed the primary concerns which could be scientifically addressed.

See comment 3.

Third paragraph, last sentence "Since emissions from WTI will be in the form of gases emitted from the stack, inhaled lead and mercury vapor are the main concern."

> The main concern with lead is not inhalation but ingestion. Although the lead may be discharged into the air, the pathway of exposure that causes the preponderance of the concern is ingestion. The lead dust settles out and is ingested, generally through hand to mouth contact. This has been borne out from studies of lead uptake in populations near smelters. This statement is accurate with regard to mercury; mercury inhalation is the primary concern.

Now on p. 105.

Page 3

See comment 4.

First paragraph "..... hired two health educators as consultants"

> The two health educators were hired by the East Liverpool Health Department as employees and not as consultants.

1

See comment 5.

Now on p. 106.

See comment 6.

Now on p. 107.

See comment 7.

See comment 8.

Now on pp. 107-108.

See comment 9.

Third paragraph "... had high levels of lead in their blood."

Please add "at the first screening period".

Page 4

Second paragraph, last sentence - "These children are being scheduled for home lead assessments."

These children received home assessments. Lead paint was found in both of these children's homes.

Page 5

Second paragraph - ".....and 58 percent showed increased levels. Note: maybe only children with initially higher levels came back for follow-up!

Second paragraph, last sentence - "..... the average increased from 0.3 to 2.5 micrograms per liter of urine, an increase of 2.2 micrograms. - Note: so? conclusion?

Page 6

First paragraph - "These data have not yet been analyzed and reported..."

I have enclosed analysis of the data available to date.

Again I appreciate the opportunity of commenting on your draft. If the Department can be of further assistance, please contact us.

Cordially,

Peter Somani

Peter Somani, MD, PhD
Director
Ohio Department of Health
246 N High St
Columbus, Ohio 43266-0118

2

The following are GAO's comments on the Ohio Department of Health's letter dated June 29, 1994.

GAO Comments

1. We revised chapter 5 to reflect the current status of the baseline study.

2. We modified chapter 5 to indicate that the study will not address all of the citizens' concerns.

3. As part of the report's discussion on concerns about lead emissions, we revised chapter 5 to emphasize the ingestion of lead as a main concern of exposure.

4. We revised chapter 5 to drop the reference that the two health educators were hired by East Liverpool Health Department as consultants.

5. We revised chapter 5 to indicate that of 427 children tested during the initial screening period, results showed that 16 had high levels of lead in their blood.

6. We revised chapter 5 to reflect information provided by the Ohio Department of Health on home lead assessments for the two children found to have elevated levels of lead.

7. We did not attempt to determine what might have accounted for any changes in lead levels between the initial baseline tests and subsequent follow-up tests.

8. We did not attempt to draw a conclusion from our analysis. However, none of the 66 children tested in both the March and September 1993 follow-up tests had mercury levels in their urine greater than 10 micrograms per liter, which is well below the 40 microgram level of concern, as expressed by Ohio Department of Health officials.

9. We revised chapter 5 to reflect the reported data on lead and mercury in the air in East Liverpool.

Comments From the Attorney General of Ohio

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

Attorney General
Lee Fisher

June 15, 1994

Bernice Steinhardt
Associate Director
Environmental Protection Issues
United States General Accounting Offices
Resources, Community, and Economic
Development Division
Washington, D.C. 20548

Dear Ms. Steinhardt:

Thank you for the opportunity to review your draft report entitled Hazardous Waste: Issues Pertaining To An Incinerator In East Liverpool, Ohio.

I have read the excerpts from your draft report. For the most part, they appear to be accurate. Note that I have not double checked all of the intricate details about company names and corporate transfer events, but have assumed that you closely followed our background report in putting this information together. I confined my review to the general facts and conclusions in your report.

Now on p. 26.

See comment 1.

My only comments concern page 29 of the draft. The Attorney General did not rely on WTI's partnership agreement to determine whether a change in ownership had occurred. In Ohio, the partnership agreement cannot maintain the existence of an old partnership when new partners have been added to the partnership or old partners have been deleted. When the identity of the partners has changed, the partnership is dissolved and, if the partnership agreement provides for continued existence of the business venture, a new partnership is formed. Therefore, we relied on the provisions of Ohio law, not the partnership agreement, to decide the question about change in ownership. Although I do not believe that your language on page 29 was intended to state otherwise, you may want to change the wording of that sentence slightly to avoid any implications that we turned to "WTI's partnership agreement" to determine whether the facility was transferred to a new owner.

Now on p. 26.

With regard to the same sentence on page 29, you should note that it was not only Ohio partnership law which led to the conclusion that the facility had been transferred to a new owner, requiring the permit to be modified. It is true that a

Now on p. 26.

State Office Tower / 30 East Broad Street / Columbus, Ohio 43215-3428

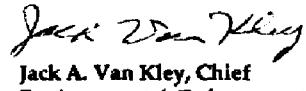
See comment 2.

Now on p. 26.

transfer in ownership occurs if a facility is turned over to "another person", such as a new partnership. However, our inquiry about the necessity for modifying the permit could not end with a determination about the facility's change in ownership, since the permit must be modified even in the absence of a transfer to "another person" under the circumstances spelled out in the hazardous waste rules. For more details on this point, see the analysis in the background report starting in the last paragraph on page 87, the last paragraph on page 92, the last paragraph on page 95, the last sentence on 96, and the last paragraph on page 100. Because I do not have the context in which your excerpted sentence on page 29 appears in your report, I cannot tell whether this comment is relevant to your sentence in its particular context. I just want to make sure that you understand that the determination of the necessity to modify the permit does not end with an examination of Ohio partnership law, but that the permit in this case needs to be modified whether or not the original partnership dissolved.

Pursuant to your letter, I am returning to you the draft excerpts from your report. Thank you again for the opportunity to comment.

Sincerely yours,



Jack A. Van Kley, Chief
Environmental Enforcement Section
(614) 466-2766

JVK:lj

The following are GAO's comments on the letter from the Attorney General of Ohio, dated June 15, 1994.

GAO Comments

1. We revised chapter 2 to avoid the implication that the Ohio Attorney General relied on the partnership agreement.

2. We recognize that the Ohio Attorney General's conclusion was based on more than Ohio partnership law. As we state later in chapter 2 of the report, the Attorney General found that WTI had violated Ohio's hazardous waste law in not applying for or receiving a revision or modification of its permit. We made a minor revision to the text to clarify this point.

Comments From Waste Technologies Industries

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

SWIDLER & BERLIN
CHARTERED

ROBERT S. TAYLOR
ATTORNEY-AT-LAW

DIRECT DIAL
(202)424-7520

June 27, 1994

VIA HAND DELIVERY
Ms. Bernice Steinhardt
Associate Director
Environmental Protection Issues
United States General Accounting Office
800 K Street, N.W.
Techworld Plaza, Suite 200
Washington, DC 20001

Dear Ms. Steinhardt:

By letter to Rudolf Zaengerle dated June 13, 1994, you transmitted a copy of what you characterized as the pertinent sections of the GAO's draft report entitled Hazardous Waste: Issues Pertaining to an Incinerator in East Liverpool, Ohio. You requested that oral or written comments on the portions of the draft report enclosed with your letter should be provided to the GAO within 15 days from the date of your letter. This letter constitutes the comments of Waste Technologies Industries ("WTI") pursuant to your letter.

We appreciate this opportunity to provide you with comments on the portions of the draft report you enclosed with your letter. We note, however, that we received only 26 pages excerpted from a document that apparently is in excess of 133 pages. Without knowing what has been written on the remaining pages of the draft report, it is difficult to assess the context of the materials that have been provided to us. Because the context is unclear, our ability to comment on the materials provided is limited. Nonetheless, we have attempted to be helpful.

See comment 1.

Before launching into specific page-by-page comments, we have several general, overarching comments. First, the story of the East Liverpool incinerator would not be complete without a discussion of the passionate and often dishonest (or at least disingenuous) opposition that has burdened the project for the past several years. By raising distorted or even totally fabricated claims, some who oppose the project have frightened some residents in the area and put the project to enormous cost by causing unjustifiable delays. The issuance of a temporary restraining order prohibiting the conduct of the trial burn from December 1992 through March 1993, for example, was based on an

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affidavit that made absurd and totally unsubstantiated claims that the plaintiffs made no effort to support, even though the court scheduled an extraordinary Sunday session to accommodate the affiant's schedule. As a result of the opposition, there has been an enormous amount of attention paid to essentially insignificant issues. Many of the issues discussed in the GAO's draft report fall squarely in that category.

See comment 2.

Second, we see no discussion in the portion of the draft report sent to us of several of the false charges with which the project has been tarred, and in fairness we believe that these false charges should be mentioned and disposed of. For example, we see no mention of the oft-repeated false claim that the facility would emit 9,000 pounds of lead into the air each year, or of the fact that emissions of lead are many times lower. Actual operating results indicate that WTI will emit less than 76 pounds of lead per year.

See comment 3.

Third, we see no mention of the results of the testing for dioxin emissions since the installation of the enhanced carbon injection system. As reflected in the following table, the emission of dioxins and furans (expressed in terms of both total dioxins and dioxin TEQ) has fallen dramatically from the time of the initial trial burn (conducted prior to the installation of the enhanced carbon injection system) through the most recent test, conducted in April, 1994. On a total basis, average emissions (averaged over every run in a given test) have fallen from 130 ng/dscm to 3.5 ng/dscm -- a reduction of more than 97%. These dioxin data, and particularly the results of the testing conducted subsequent to the installation of the enhanced carbon injection system, fit right into a brief discussion contained in the materials sent to us, and so the need to include these dioxin data is discussed in our specific comments as well.

See comment 4.

The table appears on the following page:

Test and Date	Results (ng/dscm)	
	Total Dioxins	Dioxin TEQs
Initial Trial Burn, 3/93	130	2.52
Preliminary ECIS Tests, 7/93	10	0.14
ECIS Test, 8/93	13	0.11
Quarterly Stack Test, 2/94	5.6	0.07
Rerun of Trial Burn Condition 2, 2/94	4.6	0.07
Quarterly Stack Test, 4/94	3.5	0.03

See comment 5.

Fourth, there is no discussion of the superb performance of the enhanced carbon injection system in largely eliminating the emission of mercury. From a removal efficiency of little more than 5% during the first trial burn, the removal efficiency has increased to approximately 97% as a result of the effectiveness of the enhanced carbon injection system. This information, too, should be included in the GAO report.

See comment 6.

Fifth, there is no mention of the fact that the facility's heat recovery boiler made it unnecessary to include an emergency bypass vent. This means that the WTI facility is far less susceptible than almost every other incinerator in the country to bypasses of its extensive and highly effective air pollution control equipment. In comparing the performance of the WTI facility with that of other state-of-the-art incinerators this critical design difference needs to be taken into account. The superiority of the WTI facility's design should also be discussed in the GAO report to give the Congressional Requesters a full and accurate picture of the facility.

Our specific comments on the materials provided to us, keyed to the GAO-indicated page numbers, follow:

GAO Page #	Comment
p. 12	The real property has now been purchased by WTI, so technically it is no longer "within the 45-acre Columbiana County Port Authority."
	The sources of hazardous waste identified in the second paragraph ("chemical, rubber, paint and manufacturing plants; refineries; and pharmaceutical laboratories") are representative, but not exclusive of other sources, as the current phrasing seems to suggest. Similarly, the list of excluded wastes is representative, but not complete.
p. 13	In September, 1981, WTI actually filed three permit applications, two with Ohio (the permit to install and the hazardous waste facility permit applications) and one with U.S. EPA (the RCRA permit application).
	Two (not three) permits were issued by Ohio during 1983-84, the permit to install (which covered both air and water) and the hazardous waste facility permit.
p. 22	The assertion that "in a 1987 amendment to WTI's Joint Venture Agreement, and in a 1990 contract with WTI, Von Roll (Ohio), Inc., was assigned substantial independent operational control of the facility" is erroneous for the following reasons:
	1. With respect to the 1987 Amendment, Von Roll (Ohio) became managing partner of the project, replacing the management committee described in the original Joint Venture Agreement. That Amendment expired by its own terms (a de facto reversion to the original Joint Venture Agreement) in June 1989, before any "facility" was constructed, let alone operated. As you know, "operator" is defined in 40 CFR 260.10 as "the person responsible for the overall operation of a facility," while "facility" means "all contiguous land and structures, other appurtenances and improvements on the land, used for treating, storing or disposing of hazardous waste." 40 CFR 260.10. In light of these definitions the notion that Von Roll (Ohio) had "substantial independent operational

Now on pp. 12-14. See comment 7.

See comment 8.

Now on p. 14.

See comment 9.

Now on pp. 22-23.

See comment 10.

control of the facility" prior to the existence of a facility is surprising.

2. With respect to the September 1990 "Operating Contract", the grant of authority to Von Roll (Ohio) was limited under Section 1.1 (iii), wherein WTI retained operating control, and Von Roll (Ohio) was relegated to the role of "a general manager ... subject to the general supervision of an owner." Moreover, the Operating Contract stated that, other than the preparatory work such as staffing and training, Von Roll (Ohio)'s obligations to operate the facility did not begin until the "Commencement Date", defined in the Contract as "the date the trial burn for the Plant incinerator is concluded." In fact U.S. EPA was notified of the Operating Contract more than 6 months prior to the first hazardous waste coming onsite, and the request for modification of the permit to add Von Roll (Ohio) as an additional operator and a revised permit application were submitted June 18, 1992, more than 90 days prior to the first receipt of hazardous waste at the facility, and more than 9 months prior to the "Commencement Date" under the Operating Contract.

Regarding the letter of credit for closure, that was obtained on application of "Von Roll (Ohio), Inc., Managing Partner of Waste Technologies Industries" (quoting from the letter of credit). Obviously the transaction was completed with Von Roll (Ohio), Inc., acting as a general partner in a partnership on behalf of that partnership, and not by Von Roll (Ohio) on its own.

Now on p. 28.

p. 32 In addition to the distinctions between the situation in Fairway and the situation with respect to WTI that make the Fairway decision utterly irrelevant to the WTI situation, please note that the Fairway decision itself is not binding on the Ohio courts.

See comment 11.

Now on p. 31.
See comment 12.

p. 36 Not all of the officers and directors of the four corporate partners are officers and directors of Von Roll America, Inc.

Now on p. 45.

See comment 13.

Now on p. 54.

See comment 14.

Now on p. 58.

See comment 15.

Now on p. 61.

See comment 16.

Now on p. 86.

See comment 17.

p. 56 — WTI did not identify the site in its permit application as being "located in a floodplain." The term "floodplain" connotes an area regularly subject to significant flooding, which was not the case. WTI did include regulatory flood elevation information, and stated that the finished site would be at or above at least the 500-year flood elevation. Even before site fill activity, most of the site was above the regulatory 100-year flood elevation.

pp. 73-74 — The assertion that Von Roll (Ohio) received "substantial independent operational control of the facility" prior to construction of the facility is repeated. Please see the response to page 22.

pp. 79-80 — WTI counsel has no record of U.S. EPA advising WTI in August, 1990, that the spray dryer modification would be considered a "Class 2 or Class 3 modification." In any event, the draft report notes that it was not until February, 1991, that "on the basis of expressed public interest in the proposed modification, the agency was considering elevating WTI's request to a Class 3 modification, which it later did."

pp. 83-84 — WTI did apply for a Class 1 modification, which process was concluded by the notice to Region 5 enclosing the corrected permit pages (the so-called "whited-out" pages). EPA's regulations (40 CFR § 270.42(a)) call for notification of a Class 1 modification after the change is put into effect. Correction of the permit pages and notice to the Region is how a Class 1 modification is accomplished.

p. 117 — While "dioxin levels were higher than expected" by WTI, the average of the measured dioxin levels were in fact one-third lower on a TEQ basis than the dioxin emission values used by EPA in its July, 1992 direct exposure risk assessment. Presumably, then, from the perspective of EPA in 1992, the results were somewhat lower than expected, though from EPA's perspective in 1993 the results were higher than it had anticipated. In any event, the implication that dioxin levels were "high" in some absolute sense is completely misleading and wrong.

The recitation of events leading up to the issuance of the temporary authorization to install the enhanced carbon injection system leaves out the fact that WTI notified EPA of its proposal to install an enhanced carbon injection system on May 10, 1993, in order to improve the control of dioxins, well before EPA's expression of concern on June 16.

Now on p. 87.

p. 118 The results of the performance testing of the enhanced carbon injection system performed in August, 1993, and subsequent tests, have been provided to the GAO, and that information should be included in the report. The latest test results, conducted during normal commercial operation of the facility, shows total dioxin levels averaging approximately 3.5 ng/dscm, with dioxins on a TEQ basis averaging approximately 0.03 ng/dscm. These results, and the earlier test results on the enhanced carbon injection system, are superb.

See comment 18.

Now on p. 95.

p. 129 The remote access system was designed and installed to address Ohio EPA air permit requirements, and currently it is not physically able to provide additional remote access. WTI is in the process of upgrading the hardware and software to expand the capabilities of the system (which project we anticipate to be completed before the end of this year), but at this time WTI does not plan to add a separate phone line dedicated to Region 5. Even with the current system and with the current number of phone lines, Region 5 could have remote access if the Region reached an agreement with either Ohio EPA or NOVAA to share access rights.

See comment 19.

* * *

Again, we appreciate this opportunity to provide our comments to you, but again we must note that our review has been hampered by the fact that we have been shown only an apparently small portion of the draft report. If you or your staff have any questions concerning our comments, or if you would permit us to review any additional portions of the draft report, please do not hesitate to get in touch with us, at 202-424-7500.

Ms. Bernice Steinhardt
June 27, 1994
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Thank you for your consideration of these comments.

Sincerely yours,

Barry B. Direnfeld /RST

Barry B. Direnfeld
Robert S. Taylor

Charles H. Waterman /RST

Charles H. Waterman

cc: Gerald E. Killian
Rudolph Zaengerle
Charles Waterman

The following are GAO's comments on Waste Technologies Industries' (WTI) letter dated June 27, 1994.

GAO Comments

1. We understand the difficulties that WTI may have had in reviewing the pertinent sections of the report that relate to WTI's activities, and we appreciate its comments. Generally, when we provide an outside organization an opportunity to comment on a report, we provide only those pertinent sections or excerpts from the report that relate to the specific activities of that organization to ensure that we are accurate and complete in our discussions of those activities.

2. While many groups and individuals have identified many areas of concern about the WTI facility, we evaluated those issues that we considered important in responding to a request by several Senators and Members of the House of Representatives. We believe that this report meets our obligation by providing a complete, factual, and balanced presentation of these issues. Because WTI received only limited excerpts from a rather voluminous report, we recognize that WTI may not have been able to view our discussion of the issues within the broader context in which they are addressed in the report.

3. Chapter 4 discusses in some detail WTI's limits on lead emissions.

4. We discuss the results of some of the testing for dioxin emissions in chapter 5 of this report. Specifically, we discuss the results from the March 1993 initial trial burn, which required the measurement of dioxin emissions, and the August 1993 test of the enhanced carbon injection system, which EPA used to determine whether to approve WTI's installation and use of the injection system. We also state in the report that EPA's October 1993 approval of the enhanced carbon injection system included a requirement that the incineration system be tested quarterly following an approved performance test plan for the first year after the permit modification became effective and then annually. Chapter 5 has been revised to refer the reader to WTI's table that shows dioxin measurements resulting from tests that WTI conducted between March 1993 and April 1994.

5. Our draft report does not include a discussion of WTI's comment that the carbon injection system has largely eliminated the emissions of mercury because WTI has not conducted any EPA-approved testing of the incinerator system's mercury removal efficiency since the initial trial burn results

showed that mercury emissions exceeded the permitted limits. Without information on the methodology used to measure the mercury emissions, it is not possible to determine the validity of the information provided by WTI.

6. We did not evaluate the particular technology used in the WTI incinerator or compare its performance with other incinerators in this report because it was beyond the scope of our review.

7. We revised chapter 1 to reflect WTI's comment that the real property has been purchased by WTI.

8. We revised chapter 1 to indicate that the sources of hazardous waste identified and the list of excluded wastes are not complete.

9. We revised chapter 1 to reflect WTI's comment that there were two permits.

10. Chapter 2 of the report has been revised to clarify that EPA determined from a 1987 amendment to WTI's Joint Venture Agreement and a 1990 contract between WTI and Von Roll (Ohio), Inc., that operational control of WTI changed. The report's description of WTI's position on this issue has been revised to incorporate WTI's additional comments. The issue we were specifically asked to address, whether EPA had authority to modify WTI's permit after a change was made in operational control, was based on EPA's view that operational control had changed. Therefore, for purposes of discussing the issue, our analysis assumes that such a change occurred.

11. We made no change in the report text. While not binding on Ohio courts, the federal district court's opinion in Fairway applied Ohio law. We reported that Fairway was cited by the interested WTI parties to address the issue of what an Ohio State court, applying Ohio law, might do if ruling on the WTI situation.

12. We revised chapter 2 to reflect WTI's comment that not all of the officers and directors of the four partners are the same as for Von Roll America, Inc. According to WTI's counsel, one of the officers of Von Roll (Ohio), Inc., is not an officer of Von Roll America, Inc.

13. We used the term "identified" in the broad sense primarily because, as we state in the previous paragraph, which was not provided to WTI for comment, "[the] RCRA regulations require that a permit application for a

hazardous waste facility identify whether the facility is located in a 100-year floodplain," and we believe that WTI met this requirement. Additionally, the word "floodplain" as used here refers to the regulatory 100-year floodplain. On the basis of these comments, however, we have revised this sentence to more precisely state what occurred.

14. See GAO comment 10 for our response.

15. The record in question is an August 20, 1990, letter from the EPA Region V Acting Director of the Waste Management Division to the Project Manager for Waste Technologies Industries. That letter states, "Such changes are considered major permit modifications in the old (and new) permit modification rule." We added the parenthetical statement "either a Class 2 or Class 3 modification," because that is how major modifications are now classified and were classified under the permit modification rule in effect when WTI was considering adding the spray dryer to its incineration system.

16. We revised chapter 3 to recognize that WTI applied for a Class 1 modification.

17. Our draft report did not characterize the dioxin levels as high in an absolute sense. Rather, the point was that the dioxin levels measured during the trial burn were higher than EPA had expected. We based this assessment on information obtained during our review showing that average dioxin levels measured during the trial burn were 2.8 times higher that dioxin levels used in EPA's 1992 Phase I Risk Assessment, and not one-third lower as WTI suggested in its comments.

18. See our response to comment 4.

19. We revised chapter 5 to update the report's discussion of WTI's remote access system.

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