

**ECONOMIC AND POLICY IMPLICATIONS  
OF THE  
JANUARY 1988 ASHLAND OIL TANK COLLAPSE  
IN ALLEGHENY COUNTY, PENNSYLVANIA  
FINAL REPORT**

**for the**

**Allegheny County Planning Department**

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## LIST OF ACRONYMS

API	American Petroleum Institute
ATSDR	Agency for Toxic Substances & Disease Registry
BNA	Bureau of National Affairs
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act
CHMR	Center for Hazardous Materials Research
CIH	Certified Industrial Hygienist
CWA	The Clean Water Act
DBRC	Delaware Bay & River Cooperative
DCA	Department of Community Affairs
EHMM	Environmental Hazardous Materials Management
EPA	Environmental Protection Agency
EPCRA	Emergency Planning & Community Right-to-Know Act
FFOS	First Federal Official On Scene
FWPCA	Federal Water Pollution Control Act
GRIP	Group for Recycling In Pennsylvania, Inc.
HMTA	Hazardous Materials Transportation Act
LEPC	Local Emergency Planning Committee
MSDS	Material Safety Data Sheet
MSO	Marine Safety Office
NEARA	North East Allegheny Response Association
NEPA	National Environmental Policy Act
NETAC	National Environmental Technology Applications Corporation
NRC	National Response Center
ORSANCO	Ohio River Valley Water Sanitation Commission
OSC	On-Scene Coordinator
OSHA	Occupational Safety & Health Act
PADER	Pennsylvania Department of Environmental Resources
PAMAC	Pittsburgh/Allegheny County Mutual Aid Council
PEMA	Pennsylvania Emergency Management Agency
PERC	Pennsylvania Emergency Response Commission
PPC	Preparedness Prevention Contingency
RCRA	Resource Conservation & Recovery Act
RRT	Regional Response Team
SARA	Superfund Amendments & Reauthorization Act
SERC	State Emergency Response Commission
SWDA	Safe Water Drinking Act
TAT	Technical Assistance Team
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage & Disposal
U-PARC	University of Pittsburgh Applied Research Center
UCSUR	University Center for Social & Urban Research
USCG	U.S. Coast Guard



## EXECUTIVE SUMMARY

This report examines a number of economic and policy issues which have come to the attention of decision makers in the aftermath of the January 2, 1988 Ashland Oil spill into the Monongahela River in Jefferson Borough in Allegheny County, Pennsylvania. The issues which are examined relate to the management of the response to the accident; the short and long term economic repercussions of the accident; the need to support the hazardous materials management industry in the region in order to foster economic development and protect public health and safety; and, finally, the need to enact proposed legislation which would provide assistance to local governments for responding to similar emergencies in the future. All these issues have economic ramifications for Allegheny County, the southwestern Pennsylvania region, as well as the Commonwealth of Pennsylvania. The following summary condenses the most important findings and recommendations from the five substantive chapters devoted to these issues -- namely, chapters two through six. **Chapter One** of the report provides an introduction and brief overview.

**Chapter Two** focuses on an evaluation of the overall adequacy of the emergency response to the oil spill and offers a series of recommendations based on the lessons learned from the oil spill experience which may improve the efficiency of responses to similar incidents in the future. Six key findings emerge in this chapter.

- o The outstanding efforts of all responding agencies, groups, individuals, and the Ashland Oil Company resulted in the successful protection of the public health throughout the emergency. Extensive emergency response actions prevented contamination of operating public water systems.
- o The initial on-site assessment of damage was hampered by adverse conditions: darkness, cold weather, and the perceived danger of fire and explosion. As a result the initial estimates of the amount of fuel released to the river were quite low. The potential threat to down stream drinking water supplies was not recognized until the following day, Sunday, January 3rd. Subsequently, temporary water interconnects were established and equipment was brought in to distribute drinking water to communities. A novel treatment process was developed, tested, and utilized by the West Penn Water Company and Pennsylvania Department of Environmental Resources to remove oil from the water.

- o On-site Ashland personnel immediately made appropriate notifications and responded within minutes of the accident by closing a valve which effectively stopped the discharge of oil from the facility's main containment area and contributed significantly to the containment of millions of gallons of oil within the facility's spill containment system.
- o An important lesson from this incident for all environmental protection professionals is the need to examine facility Preparedness Prevention Contingency (PPC) plans for opportunities to install secondary containment structures that can be used in the event the first containment dikes fail. The initial quantity of oil released and the resulting damage might have been reduced if the storm sewer, through which the fuel entered the Monongahela River, had been equipped with emergency cut-off mechanisms which could have been activated by facility personnel within the first 5-10 minutes after the release.
- o The flow of fuel into the river and the resultant damage could not have been reduced, given the initially rapid rate of release. Although a more rapid response in locating and plugging the storm sewer within the first two hours might have stopped the release of an additional estimated 225,000 gallons of oil, this action would not have substantially reduced the overall environmental or economic impact because of the large quantity of oil that had already been released.
- o Initial river clean-up efforts were seriously hampered by rapid currents, cold weather, and darkness and had to be postponed until dawn of the following day. Subsequent oil recovery efforts were affected by the volumetric flow rate, velocity, and turbidity of the river. The presence of several locks and dams down river from the Ashland Oil terminal caused the oil, water, and sediment to become increasingly mixed. Suspended in this way, oil in the water column could not be recovered. Approximately 205,000 gallons (29%) of the 705,000 gallons of diesel fuel spilled nonetheless were recovered.

With regard to the six findings, the chapter offers thirteen recommendations covering four areas affecting emergency response capabilities.

- o Organization and speed of response
  - The On-Scene Coordinator should coordinate and assign responsibilities for various tasks as well as involve all the relevant parties -- e.g., the Regional Response Team (RRT) and responsible party representatives -- in the decision making process.
  - Responsibility for collecting environmental and river monitoring data in the event of a spill should be assigned to one specially designated person and/or agency.



- o Equipment and materials
  - Preparedness Prevention Contingency (PPC) plans should be kept current at each facility and made readily available to local emergency responders in the event of an emergency.
  - Facility specific PPC plans should consider secondary defensive strategies beyond the initial containment dikes and address the question, "What if this dike fails?"
  - Inventories and lists of available equipment, local laboratories capable of performing analytical tests in an emergency, and vendors which can provide specialized equipment and services should be made available to emergency responders.
- o Communication
  - Sufficient communication equipment and a procedure for contacting key decision makers should be readily available.
  - A computerized geographic information system -- a digitalized mapping of the physical infrastructure of Allegheny County and its respective communities -- should be developed and implemented to provide in the shortest time possible an array of necessary information critical to rapid emergency response.
  - Criteria and authority for lifting water conservation orders should be established and communicated to all key decision makers.
  - Consistent information should be given to the media on a regular basis by one spokesperson throughout an emergency.
  - Information regarding public health considerations should be made clear to the public during emergencies.
- o Staff training and information resources
  - More timely health effects data on spilled hazardous substances are needed along with assistance in interpreting their significance.
  - More and better training is needed for firefighters and other emergency response personnel at all levels of responsibility.
  - Use of a vehicle containing a computerized data base should be considered, so that local emergency responders can better keep track of all aspects of an emergency response.

**Chapter Three** examines the scope and nature of the short term economic impacts of the Ashland Oil spill on businesses, local governments, school districts, municipal authorities, and volunteer fire departments in Allegheny County. Key findings include the following points.

- o Fifty-nine local governments, school districts, municipal authorities, and volunteer fire departments have filed claims against Ashland Oil for financial damages amounting to \$574,000. In addition the City of Pittsburgh and Allegheny County have filed claims for \$650,000 and \$589,000 respectively. Fifty percent of the costs claimed by these entities were for wages and labor, 31% for direct costs of cleanup and water supply, 12% for indirect costs (e.g., food for volunteer firefighters), and 7% for lost revenue.
- o The short term economic impact on business in Allegheny County, as reflected by a survey of businesses in areas hardest hit by the oil spill, appears to have been minimal. Approximately one-third of the 147 businesses surveyed reported suffering a financial loss. Among the firms reporting such losses, only half report having filed a claim with Ashland's insurance company. The amounts ranged from \$30.00 to \$100,000. Businesses' financial losses were due primarily to a temporary loss of customers and/or a curtailment of production.

**Chapter Four** focuses on an examination of whether or not the Ashland Oil spill had any long term detrimental effect on the business community's image of the Pittsburgh region as a suitable area in which to do business. Two major issues were examined in this regard: first, the impact of the spill on the investment and location decisions of businesses and secondly, the opinions and attitudes of area business persons regarding the suitability of doing business in Allegheny County in the aftermath of the oil spill. A series of interviews with individuals in business, economic development, and real estate led to the following observations.

- o No business person, economic development official, or real estate official surveyed could identify a business that even considered relocating out of the region as a result of the oil spill, much less any that actually did move as a result of the spill.
- o Eighty-four percent of businesses rated Allegheny County as an excellent or good place to do business and all but four of the 147 businesses which were interviewed reported that the spill did not affect their attitudes about doing business in the county.

- o The vast majority of businesses in the survey gave a positive assessment of both Ashland Oil Inc. and clean-up officials' performance in response to the spill.
- o Sixty seven percent of businesses stated that the spill will have no long term, negative impact on the Pittsburgh region.

**Chapter Five** offers an analysis of the businesses in Allegheny County which provide specialized goods and services designed to protect the public and the environment from exposure to hazardous substances. The chapter also explores the incentives and impediments to growth for these businesses and offers recommendations for improving their opportunities.

Findings include the following three items.

- o A thriving environmental/hazardous materials management industry exists in Allegheny County. It has developed largely in response to the development of federal and state environmental regulations. Allegheny County is considered to be a good locale for this industry because of the corporate base, the number of geotechnical and engineering firms in the area, the central location vis-a-vis the hazardous materials producing industries, and Pittsburgh's university community.
- o This industry is seen to be growing in importance by individuals in the field, but in order to succeed businesses either need to develop a particular, unique expertise or, as is the current trend, provide comprehensive services covering a variety of specialties. For the future, business leaders in this industry in Allegheny County see more regulations developing and a concomitant demand for the services their firms offer. They also anticipate a reduction in the number of smaller firms due to the need to develop comprehensive service strategies.
- o There are a number of impediments to the success of this industry which have been identified by persons in the field. Problems include the cost of liability insurance, which affects the type of services that a firm can provide, as well as the lack of qualified professionals and a lack of governmental enforcement of regulations.

Corresponding recommendations include the following points.

- o There is a need to educate businesses on the various environmental regulations with which they must comply.
- o There is a need to attract and educate new professionals to the environmental and hazardous materials management field.

- o A cooperative approach needs to be developed to implement and enforce environmental programs, technologies, and regulations.

**Chapter Six** examines existing policies and programs of the Commonwealth of Pennsylvania that are available to Allegheny County to assist the county in responding to events like the Ashland Oil spill. The chapter also identifies policy areas in which there is need for improvement.

Findings cover the following items.

- o The Pennsylvania Emergency Management Services Act of 1978 has created an adequate framework for providing local governments with assistance for emergency preparedness and response, but local governments have not received adequate funding to develop a broad program of emergency response capability. Emergency response planning has focussed primarily on natural disasters and, in the area of hazardous materials accidents, on small, isolated incidents.
- o The State Superfund Act of 1988 enhances the authority and financial resources of the Pennsylvania Department of Environmental Resources (DER) to respond to large scale emergencies such as the Ashland spill, but it does not directly address the financial and technical assistance needs of local governments.
- o The proposed Pennsylvania Hazardous Materials Protection Act builds on the existing emergency preparedness and response framework established by the 1978 Emergency Management Services Act by focusing attention on emergency planning for hazardous materials related incidents, and by providing expanded technical and financial assistance to state agencies and local governments for developing and maintaining local systems, equipment, and training for hazardous materials related emergencies.

The following recommendations are offered in response to the above findings.

- o Enactment and implementation of the Hazardous Materials Protection Act are needed to fill gaps in financial and technical capabilities for local emergency responses to large scale accidents.
- o Consideration should be given to establishing a system of user charges applicable to all at-risk industries and payable into a state-administered fund available for response to local, large-scale accidents.

- o The Commonwealth should assist local governments in establishing regional industry-government emergency preparedness and response cooperatives by providing money for planning grants.



## Chapter 1

### Introduction

At approximately five o'clock p.m. on January 2, 1988 a four million gallon diesel fuel storage tank located on the property of Ashland Oil, Inc. in the Floreffe area of Jefferson Borough, Pennsylvania -- about 25 river miles southeast of Pittsburgh -- suddenly collapsed, releasing approximately 3.9 million gallons of diesel fuel. About 750,000 gallons of this fuel flowed into a storm sewer on adjacent Duquesne Light Company property and entered the nearby Monongahela River, threatening the drinking water supplies of numerous communities down stream. In the aftermath of the Ashland Oil spill, which ranks as one of the largest inland oil spills in United States history, many questions have been raised regarding its causes and consequences. The present study examines the short and long term economic consequences of the spill as well as several other related policy issues which have economic, environmental, and health and safety implications for Allegheny County government, the larger Allegheny County region, and Pennsylvania as a whole.

Following the introductory remarks in this chapter, the substantive portion of the report begins in chapter two with an assessment of the adequacy of the emergency response to the Ashland Oil spill. This chapter provides a step by step account of the actions taken by various emergency response officials to assess on-site conditions, to clean up diesel fuel from the river, to protect drinking water supplies, and to protect wildlife. At the end of the chapter there is a series of conclusions and recommendations of actions to improve emergency preparedness and response to incidents like the Ashland spill based on the lessons learned from this accident. The recommendations focus on the organization of emergency response, the process of communication throughout such an event, as well as the adequacy of equipment and staff training. Several of these recommendations have fiscal implications.

Chapter three examines the short term economic impacts of the Ashland Oil spill on local governments and businesses in Allegheny County. The data for this chapter come from two major sources. The information on costs incurred by local governments in Allegheny County was provided by the Pennsylvania Emergency Management Agency (PEMA) coupled with telephone interviews with the individually affected governments. The

information regarding the economic impacts on businesses in Allegheny County was obtained by means of a survey of businesses conducted by the University of Pittsburgh Center for Social and Urban Research in areas of Allegheny County that were most directly affected by the oil spill. This chapter addresses such economic issues as the type and amount of expenses or financial losses incurred by governments and businesses as a result of the spill; financial gains which may have accrued to businesses; and whether or not the respective governments and businesses filed claims for reimbursement.

The subject of chapter four is an evaluation of the long term impacts of the Ashland Oil spill on the business climate of Allegheny County. This chapter explores the issue of whether or not the oil spill has had any lasting, negative impacts on the business community's perception of the Pittsburgh region as a suitable place to do business as measured by any changes in investment and/or location decisions on the part of management. Information for this analysis comes from surveys of business persons, real estate officials, and economic development officials in Allegheny, Beaver, Washington, and Westmoreland Counties.

One of the outcomes of an event such as the Ashland Oil spill is a heightened awareness on the part of government officials and the general public of the need to protect society and the environment from the unexpected release of the numerous hazardous materials which are part of modern industrial society. There are a number of businesses which provide specialized goods and services designed to protect the public and environment from these dangerous substances. Chapter five examines the nature of the environmental/hazardous materials management (EHMM) industry in Allegheny County and explores the incentives and impediments to growth for businesses in this field. The discussion draws on data collected through a survey of a broad range of EHMM businesses in Allegheny County. The chapter concludes with a series of recommendations for specific actions which the EHMM entrepreneurs have suggested for promoting the growth of their industry, which would in turn benefit the county's economic development.

The sixth chapter of this report identifies and explains the existing Commonwealth policies and programs that are available to Allegheny County to assist it in its response to incidents such as the Ashland Oil spill. This chapter also identifies areas for improvement in emergency response assistance based on a review of current Commonwealth programs.



Chapter 2  
**A Qualitative Assessment of the Emergency Response  
to the Ashland Oil Spill**

**2.1 Purpose**

The purpose of this chapter is to provide the reader with an understanding of the adequacy of the emergency response to the Ashland Oil spill. The effectiveness of an emergency response determines the ability of officials to minimize losses to property, businesses, and individuals. This chapter briefly describes the actions of the various emergency response organizations in assessing on-site conditions, recovering fuel from the river, and protecting water supplies and wildlife. The conclusions and recommendations at the end of this chapter address various issues related to the response to the incident, including the overall organization and speed of the response; the adequacy of equipment and materials; the pattern of communication among emergency responders and between these responders and the public; and, finally, personnel education and training.

Information for the following assessment has been gathered from meetings with public and private emergency response officials, public hearing records, and government reports. (See Appendix 2.1.) Many of the recommendations made by emergency response officials involved in the Ashland incident have been adopted for inclusion in this report.

**2.2 Description of Emergency Response Organizations**

Successful protection of the public health throughout the emergency resulted from the outstanding efforts and cooperation of hundreds of response personnel, including individuals from Ashland Oil Inc. and its contractors, over seventeen regional offices of seven federal agencies, over eleven state agencies from four states, and numerous local emergency response agencies, fire departments, and water suppliers. A list of the federal, state and local response agencies and their primary responsibilities throughout the Ashland Oil spill incident appears in Table 2.1.

Table 2.1

**List of Agencies Involved in the Emergency Response  
to the Ashland Oil Spill**

<u>AGENCY</u>	<u>PRIMARY RESPONSIBILITIES</u>
U.S. Environmental Protection Agency (Regions III, IV, V)	Overall coordination and direction Water and biology monitoring Advice to water suppliers
U.S. Coast Guard (Second & Fifth District Marine Safety Office Pittsburgh, National Strike Force)	Initial Federal agency on-scene Response technical assistance Clean Water Act Sec. 311 fund administration
U.S. Army Corps of Engineers (Pittsburgh, Cincinnati, Huntington, Louisville)	Reconnaissance and sampling Pumping operations River hydrology
U.S. Department of Interior (Philadelphia, Chicago)	Wildlife monitoring Natural resource damage assessment
U.S. Occupational Safety and Health Administration	Worker safety
Federal Emergency Management Agency	Technical assistance Coordination with PEMA & ANG
National Oceanic and Atmospheric Administration (Rockville, Seattle)	Modeling of oil transport Sampling technical assistance
Ohio River Valley Water Sanitation Commission (ORSANCO)	Modeling of oil transport Water monitoring

Table 2.1 (continued)

<u>AGENCY</u>	<u>PRIMARY RESPONSIBILITIES</u>
Pennsylvania Department of Environmental Resources	Overall coordination and direction Advice to water suppliers
Pennsylvania Emergency Management Agency	Advice to water suppliers Coordination with National Guard
Pennsylvania Army National Guard	Provision of water buffaloes
Pennsylvania Game Commission	Monitoring waterfowl impact Saving damaged waterfowl
Pennsylvania Fish Commission	Monitoring fish kills Water quality monitoring
Pennsylvania State Police	Advice to fire departments
West Virginia Department of Natural Resources	Environmental monitoring
West Virginia Department of Health	Advice to water suppliers
Ohio Environmental Protection Agency	Advice to water suppliers Environmental monitoring
Kentucky Department for Environmental Protection	Advice to water suppliers Environmental monitoring
Allegheny County Health Department	Air quality monitoring Advice to water suppliers

Table 2.1 (continued)

<u>AGENCY</u>	<u>PRIMARY RESPONSIBILITIES</u>
Allegheny County Emergency Management Agency	Evacuation Advice to local government Advice to water suppliers
City of Pittsburgh Emergency Management Services	River clean-up Distribution of water
Local Water Suppliers	Management of conservation, treatment and distribution of water
Local Fire Departments	Evacuation Advice to local governments

### **2.2.1 Federal Responsibility for Spill Response**

Section 311 of the federal Clean Water Act establishes a federal program for responding to the release of petroleum products to surface waters of the United States. The program is administered jointly by the U.S. Environmental Protection Agency (EPA) and the U.S. Coast Guard (USCG).

The USCG administers a response fund which is available for the On-Scene Coordinator (OSC) at an accident to use in hiring emergency response and clean-up contractors in the event that the responsible party, if identified, fails to take appropriate response or clean-up actions. The USCG is responsible for responding to spills in the coastal zone, the Great Lakes, and to all discharges which result from a vessel casualty or from transfer activity within specified ports and harbors of the inland river system. The USCG does not normally serve as the OSC for discharges from industrial or bulk storage facilities but will, where necessary and at the request of EPA, serve as the first federal official on-scene (FFOS) until the designated EPA OSC arrives.

The EPA is responsible for responding and serving as OSC for spills from industrial and bulk storage facilities on inland waters such as the Monongahela River. In general

the EPA supervises and directs all phases of clean-up when the responsible party (in this case, Ashland) has the financial and technical capabilities and the desire to conduct the clean-up. However, Section 311 authorizes the EPA to declare a spill a "federal spill" and to take over the clean-up when the responsible party's willingness and/or capacity falls short of what is required.

In practice the agencies whose personnel are first able to arrive on scene make the initial response. Actual recovery operations are conducted by specialized contractors hired by the responsible party or one of the federal agencies.

In the Ashland case the USCG acted as the first federal agency on scene, exercised control of river traffic, and mobilized its National Strike Force. After inspecting the site, the Coast Guard provided information to EPA. The EPA advised the USCG that the position of Federal On-Scene Coordinator would be assumed by EPA and that the OSC would arrive on-site at first light. The EPA immediately dispatched its Region III Technical Assistance Team (TAT).

#### **2.2.2 Regional Response Team (RRT)**

Under the National Contingency Plan,<sup>1</sup> a Regional Response Team (RRT) is activated by the federal on-scene coordinator to advise and assist the coordinator in managing the emergency operation.

RRT members transmit information to and from their respective agencies. In the Ashland case the RRT convened daily by conference telephone calls to discuss all aspects of the response, to share information, and to make recommendations. Specific tasks and responsibilities were assigned by the OSC to the agency deemed best qualified for the purpose.

An important follow-up task of the RRT is to critique the entire operation, both technically and intergovernmentally, in order to learn more about what went right and what went wrong. The RRT's evaluation of the Ashland incident appears in a report issued by the EPA in October 1988.<sup>2</sup> The report provides background information on the incident

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<sup>1</sup> The National Contingency Plan was established by the Clean Water Act and the Comprehensive Environmental Response Compensation and Liability Act.

<sup>2</sup> U.S. EPA Region III, Evaluation of the Response to the Major Oil Spill at the Ashland Terminal, Floreffe, PA by the Incident-Specific Regional Response Team, Philadelphia, PA., October 1988.

and the response. It also lists findings and recommendations for improving future responses -- many of which have been extracted and summarized for inclusion here.

## **2.3 Description of Emergency Response Activities**

This section provides a summary of the emergency response actions taken to assess on-site conditions, recover fuel from the river, and protect water supplies and wildlife. An understanding of this information is necessary in order to assess the quality of the emergency response.

### **2.3.1 Emergency Response On-Site**

The Center for Hazardous Materials Research (CHMR) has identified a number of events that are key to understanding and assessing the on-site emergency response. A detailed minute-by-minute summary of these events as well as a map of the accident site can be found in Appendix 2.2.

#### **2.3.1.1 Summary of Key Events Related to On-Site Emergency Response**

The spill occurred at approximately 5:10 p.m. on Saturday, January 2, 1988, during the New Year holiday weekend. Ashland Oil Company provided prompt notification of the spill to the National Response Center operated by the Coast Guard and immediately called in the company's emergency response and clean-up contractors.

Local authorities were the first on-scene responders. By 5:30 p.m. personnel from the Floreffe Volunteer Fire Department, local police, and the Mt. Pleasant Hazardous Materials (Hazmat) Team were on-site and notified the Allegheny County Police Radio Room. County police immediately activated the Emergency Operations Center. The Allegheny County Emergency Management Agency notified police, the Allegheny County Health Department and the Pennsylvania Department of Environmental Resources. By 6:45, only 90 minutes after the initial release, officials from these agencies were on the scene. The Allegheny County Special Intervention Team, located in the South Hills, was activated by the Allegheny County Emergency Management Agency at 7:00 p.m. and appeared on-site within 45 minutes.

Initial response efforts of these officials and Ashland's contractors focussed on the terminal site in order to (1) establish access control; (2) stop the flow of diesel fuel on-site; (3) plug several leaks found in a damaged tank holding 1 million gallons of gasoline; and (4) conduct a thorough assessment of the extent of the spill. As several million gallons of diesel fuel remained within the containment dikes, the integrity of this containment had to be assessed.

The U.S. Coast Guard Marine Safety Office (MSO) in Pittsburgh received notification of the spill from the National Response Center (NRC) at 7:00 pm. The USCG acted as the first federal agency on-scene, exercised control of river traffic, and mobilized the U.S. Coast Guard National Strike Force.

The initial on-site assessment was severely hampered by cold weather, darkness, and concern over the potentially volatile mixture of gasoline and diesel fuel. Dangerous conditions on the river (rapid currents, cold weather, and darkness), moreover, severely restricted any possible response action on the water until daybreak, January 3rd.

As a result, estimates of the large volume of fuel released to the river and the severity of the potential impact of the spill on the river system and down stream water suppliers was not fully realized until early the next morning, January 3rd. In addition, preliminary reports suggested that water intakes were low enough to avoid the oil or that river water could be adequately treated by the water plants. The dispersion of oil throughout the water column and the corresponding impact on local water supplies was not recognized until at least twelve to eighteen hours after the release.

During the first fourteen hours most agencies worked independently, since each had numerous individual functions to perform. No single agency assumed an overall coordinating role or command of the incident response in this period.

On January 3, 1988, approximately 14 hours after the release, the U.S. EPA On-Scene Coordinator arrived on-site and advised Ashland that EPA would thereafter direct and monitor all phases of clean-up operations. At this time EPA determined that the response actions taken by Ashland (including contractors hired) were appropriate and that federal supervision of Ashland Oil's clean-up was equivalent in every respect to what the federal government would have done under the same circumstances.

On Monday, January 4, 1988 the Incident-Specific Regional Response Team was formally activated, although many of the RRT member agencies had already become actively involved in the initial incident response. Under the National Contingency Plan, the

Regional Response Team is activated to provide advice and assist the Federal OSC in managing the emergency operation.

### 2.3.1.2 Estimated Rate of Oil Discharge into the River

Based on the sequence of key events given in Appendix 2.2 as well as the on-site assessment and a hydraulic analysis of the path of the oil through the sewer line to the river, CHMR has estimated the rate of oil discharge into the river as shown in Table 2.2.

From the table it is evident that approximately 340,000 gallons of diesel fuel (50%) were lost to the river within the first 30 minutes. Within the first two hours at least 480,000

**Table 2.2**

#### **Estimated Rate of Diesel Fuel Discharge**

<u>Time Period</u>	<u>Estimated Discharge Rate (gals per minute)</u>	<u>Estimated Volume Discharge (gals)</u>	<u>Cumulative Discharge</u>	<u>Cumulative Time</u>
First 5 min.	0-13,000 gpm	60,000 gallons	10%	5 min.
Next 10 min.	13,000 gpm	130,000 gallons	25%	15 min.
Next 15 min.	13,000-2,000 gpm	150,000 gallons	50%	30 min.
Next 1.5 hr.	2,000- 800 gpm	140,000 gallons	70%	2 hrs.
Last 9.5 hrs.	800- 400 gpm	210,000 gallons	98%	11.5 hrs.
Plug Release		15,000 gallons	100%	
Total Released Fuel		705,000 gallons		

gallons (70%) had discharged. Considering this initially rapid rate of release, standard response time for off-site emergency responders, and typical circumstances common to incidents of this type (including darkness and impeded access), it is unlikely that the quantity of oil released could have been substantially reduced in the crucial first two hours. Had the storm sewer, into which the released oil was pouring, been equipped with emergency cut-off mechanisms, these devices could have been activated by facility personnel within the first five to ten minutes following the release. Such action could have greatly reduced the oil's ability to reach the river.

It is important to note that the on-site company personnel responded within minutes of the accident by closing a valve controlling the discharge of oil from the facility API



separator.<sup>3</sup> The action effectively stopped the discharge of oil from this source and contributed significantly to the containment of millions of gallons of oil within the facility's spill containment system.

More rapid response in locating and plugging the storm sewer after the first two hours might have stopped the release of an additional estimated 225,000 gallons of oil. However, the large quantity (405,000 gallons) already lost during the first two hours was sufficient in itself to cause significant impact to the river system and result in losses to property, businesses, and individuals. It is unlikely that stopping the flow after the first two hours would have substantially reduced this impact.

### **2.3.2 Oil Recovery Emergency Response**

This section provides a brief description of river conditions at the time of the incident, which are important for understanding and assessing the emergency response effort to recover spilled fuel from the river. Skimming operations are noted and the quantity of fuel oil recovered from the river is also reported.

#### **2.3.2.1 River Conditions Affecting Oil Recovery Emergency Response**

On January 2, 1988, the flow rate and velocity of the Monongahela River were high. Water turbidity in the river was also high -- a result of the significant storm water runoff from previous rains.

Diesel fuel in the river reached the first lock and dam spillway (located one mile below Floreffe) within minutes. By daybreak the following day, January 3rd, the diesel fuel had spread across the full width of the river, 10 miles down river from Floreffe, before reaching the confluence of the Monongahela with the Youghiogheny. Lock and dam #2 (located 14 miles down river from Floreffe) was the second spillway encountered by the diesel fuel as it flowed down river.

As river water moves over each dam, it drops many feet in distance -- a circumstance which adversely affected oil recovery efforts because it caused the oil, water, and suspended sediment to become increasingly mixed as each dam was passed. As illustrated in Figure 2.1, this mixing action caused the oil to contact and coat sediment particles suspended

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<sup>3</sup> An American Petroleum Institute (API) separator provides treatment of the normal surface water run-off from the terminal property.

throughout the water column, which prevented much of the oil from floating back to the surface.

River water samples were collected at the West Penn Water Company's Becks Run Plant, located approximately 20 miles down river from Floreffe. Analysis determined that the diesel fuel had dispersed throughout 80% of the total water column, to a total depth of approximately 16 feet from the water surface by the time it reached the Becks Run plant at 8 a.m., January 3, 1988.

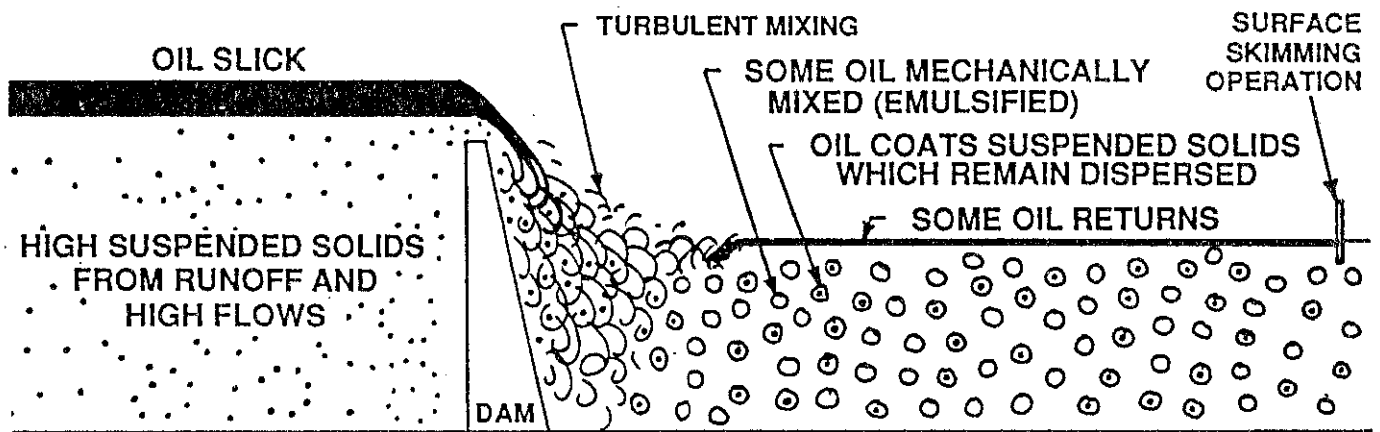
#### **2.3.2.2 Summary of Skimming Operations to Recover Diesel Fuel**

On January 3, at 5:30 a.m., the first 500 foot section of a 5-inch fire hose was installed across the width of the Monongehela River near the Birmingham Bridge in Pittsburgh. As the response progressed, Ashland's contractors installed over 20,000 feet of floating containment booms and absorbent materials. (See Figure 2.1).

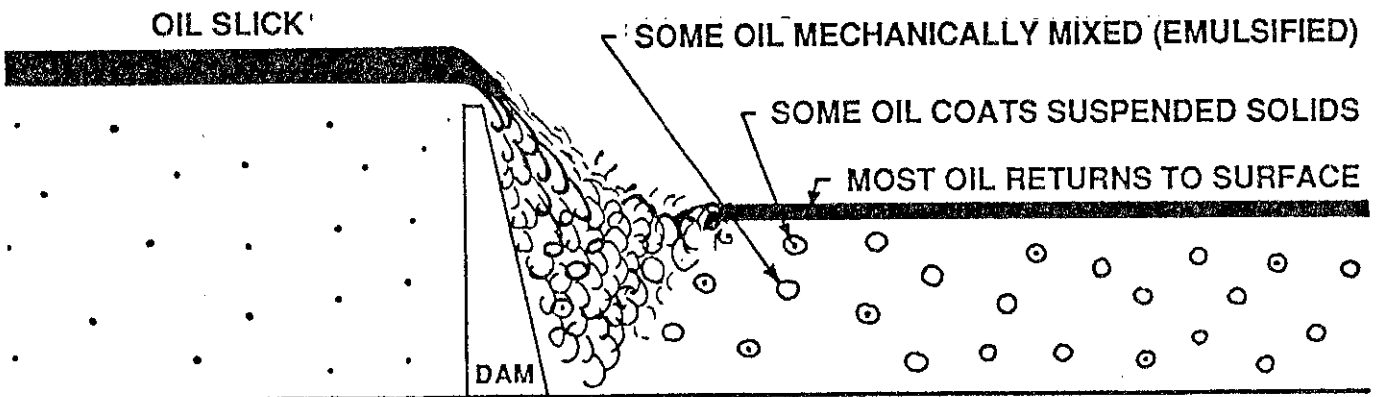
The USCG coordinated the recovery of oil from the river. The United States Coast Guard National Strike Force Atlantic Area Strike Team personnel arrived at 1:15 p.m. on January 3 and immediately conducted an overflight of the spill area. They determined that the speed of the river had reduced the effectiveness of the containment boom and recommended that the boom be deployed such that oil would be deflected toward natural containment areas for easier removal. The deflection booms were successful in containing the oil on the surface primarily because the boom angle was consistently maintained. However, the booms were unsuccessful in containing the oil that flowed down river below the water's surface.

The oil which remained in the river became, essentially, completely mixed and emulsified in the water by the time the spill passed the Dashields Lock and Dam, approximately 38 miles downstream from Floreffe on the Ohio River. No substantial recovery occurred below this point. The river clean-up operations, which ultimately spanned 38 miles, were severely hampered by extremely cold weather conditions. The risk of hypothermia for clean-up crews led to the decision by the OSC to remove all personnel from working on the river on the fourth day after the spill.

# EFFECT OF MIXING ACTION AT DAMS ON OIL SPILL



HIGH TURBIDITY WATER



LOW TURBIDITY WATER

Approximately 205,000 gallons of diesel fuel (29% of the total 705,000 gallons released to the river) were recovered through skimming operations conducted by the clean-up contractors.<sup>4</sup> The period during which diesel fuel recovery continued is described in the following table.

**Table 2.3**  
**Quantity of Diesel Fuel Recovered Through Skimming Operations**

<u>Date</u>	<u>Elapsed Time</u>	<u>Approximate Quantity Recovered</u>	<u>Cumulative % of Total Recovered</u>
1/7	First 5 days	140,000 gallons	68%
1/11	Next 4 days	25,000 gallons	80%
1/21	Next 10 days	20,000 gallons	90%
3/31	Next 2 months	20,000 gallons	100%

The general locations where diesel fuel was recovered from the river system are summarized as follows:

% of Total Recovered

Location

65-75% Monongahela River down river from Lock & Dam #2 (River Mile 112)

20% Back channel of Ohio River at Neville Island (River Mile 8.5)

5-15% Main channel of Ohio River to Dashields Lock & Dam (River Mile 132)

At least 99% of the diesel fuel that was recovered was thus recovered from a 25-mile reach of the river system between Lock and Dam #2 on the Monongahela River and the Dashields Lock and Dam on the Ohio River.

### **2.3.3 Emergency Response to Protect Water Supplies**

Although downstream water companies were promptly alerted, preliminary reports were suggesting that only 100,000 gallons of diesel fuel had entered the river and that water

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<sup>4</sup> The two primary cleanup contractors hired by Ashland Oil were O.H. Materials of Findlay, OH and McCutcheon Enterprises of Vandergrift, PA. These contractors in turn subcontracted work out to a number of firms.

intakes were low enough to avoid the oil or that the oil could be adequately treated by the water plants. The size of the spill, the increasing dispersion of oil throughout the water column, and the corresponding impact on water supplies first became clear to emergency response personnel the morning following the accident. The key events relevant to emergency response actions taken to protect drinking water supplies are outlined in Appendix 2.3.

The morning following the accident, state and local authorities directed their efforts toward concerns over water quality and drinking water supplies.<sup>5</sup> By noon on January 3rd these efforts began to constitute a separate, significant response activity, which the state and county authorities managed. They established a separate command post at the Allegheny County Emergency Operations Center located in Pittsburgh's Strip District, adjacent to the city's central business district, which served to coordinate this significant phase of the response effort.

A disaster emergency was declared for Allegheny, Beaver, and Butler Counties by the governor. Temporary interconnects were installed to link the City of Pittsburgh and West Penn Water systems. Work was started on numerous new permanent interconnects and other, older interconnects were opened. Substantial efforts were made to bring in equipment in order to distribute drinking water to affected communities. West Penn Water Company, with assistance from the Pennsylvania Department of Environmental Resources (PADER), developed and pilot-tested a treatment that proved successful in removing oil from water supplies. This procedure involves the increased use of chemicals typically used in water treatment procedures (especially powdered activated carbon and polymer and potassium permanganate) plus the addition of ferris sulfate and bentonite clay, materials not typically used in water treatment. This process was used by down river water suppliers, making it possible for them to open river intakes days before they otherwise would have been able to.

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<sup>5</sup> Diesel fuel contributes a significant taste and odor to drinking water at very low concentrations.

Water supplies in four states -- Pennsylvania, Ohio, West Virginia, and Kentucky -- were affected as the spill flowed down river. The following table summarizes the spill's impact on all major water supply companies which depend on the rivers for their water.

**Table 2.4**

**Impact on Major Water Companies**

<u>Mile Point</u>	<u>Water Company</u>	<u>Intake Closed</u>	<u>Intake Open</u>	<u>Days Closed</u>
-4.5*	West Penn, PA	1/3/88	1/6/88	4
4.5	West View, PA	1/3/88	1/10/88	8
8.6	Robinson, PA	1/3/88	1/10/88	8
36.0	Midland, PA	1/4/88	1/7/88	4
40.0	E.Liverpool, OH	1/4/88	1/7/88	4
59.0	Toronto, OH	1/6/88	1/9/88	4
65.0	Steubenville, OH	1/6/88	1/10/88	5
86.0	Wheeling, WV	1/8/88	1/10/88	3
137.0	Sisterville, WV	1/13/88	1/21/88	9
306.0	Huntington, WV	1/22/88	1/25/88	4
320.0	Ashland, KY	1/22/88	1/23/88	1
408.0	Maysville, KY	1/23/88	1/24/88	1
462.0	Cincinnati, OH	1/24/88	1/27/88	4
463.0	Kenton Co., KY	1/24/88	1/26/88	3
600.0	Louisville, KY	-	-	0

\*The juncture of the Monongahela and the Allegheny Rivers at Point State Park in downtown Pittsburgh is considered to be the zero point. The West Penn Water intake valves are located 4.5 river miles up the Monongahela River from downtown Pittsburgh.

By the time the spill passed Cincinnati, oil levels in the Ohio River dropped to the point where immediate concern with regard to drinking water had subsided. Water suppliers further down river implemented adjustments to their treatment processes similar to that developed by the West Penn Water Company and PADER and were successful in treating the river water without closing their intakes as the spill passed by.

### **2.3.3.1 Effectiveness of Response to Protect Water Supplies**

Robinson Township was the only area whose water company had to deny customers water during the incident. Approximately 17,000 customers were without water for up to 48 hours. Two thousand customers were without water for up to 5 days, and 200 customers were without water for an entire week.

Although some water shortages occurred, the outstanding efforts and response actions taken by emergency responders proved to be totally effective in protecting the impacted water delivery systems from contamination and in maintaining water service to most customers in the impacted areas. These feats were accomplished in part by the following activities. Advance notification enabled many down stream water suppliers to increase storage volume before the spill affected their intakes. Intakes were closed and water supplies were extensively sampled and analyzed to ensure that water supply systems did not become contaminated. Over 7.6 million gallons of fresh water were supplied to affected communities using barges and towboats chartered by Ashland Oil, Inc. Alternate supplies were provided including the use of reserve wells and interconnects with other systems. Many water suppliers successfully made adjustments to the treatment process developed by the West Penn Water Company and PADER for their own particular systems. As a result of these actions the quality of the water that was supplied never deteriorated.

The public's reaction to the various efforts to protect drinking water supplies was reflected in part by their response to the governor's water conservation order of January 4, 1988. According to reports of various water suppliers, the extensive public cooperation with the water conservation order resulted in a reduction of the public's consumption of water. This may have been due to the information provided at the regular press briefings which were conducted by state and county emergency management personnel in order to keep the public informed. According to Pennsylvania Lt. Governor Mark Singel the thoroughness, accuracy, and balance of the news reports appear to have contributed to the public's voluntary conservation of water.<sup>6</sup> Overall, those residents whose water supply was

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<sup>6</sup> Testimony by PA Lt. Governor Mark Singel before the Pennsylvania Senate Environmental Resources Energy Committee. Public hearing held Thursday, January 21, 1988, Pittsburgh, Pa, p.5.

affected by the spill reacted positively to the management of the response to the oil spill by government and Ashland officials.<sup>7</sup>

#### **2.3.4 Emergency Response to Protect Wildlife**

The oily waters threatened waterfowl along the river system. Damaged waterfowl were airlifted by helicopter or transported by truck to the Pennsylvania Game Commission's headquarters near Midland in Beaver County. Many volunteers from the Western Pennsylvania Audubon Society, three experts from Tri-State Bird Rescue & Research Inc. of Wilmington, Delaware, and numerous Game Commission officials from Pennsylvania and Ohio treated and saved many of the endangered ducks.

The Tri-State Water Fowl Recovery Team trained personnel to clean the waterfowl. Game Commission officials set out in boats to look for distressed wildlife. They picked up ducks and geese, which were closely examined, weighed, and fed. The birds had their temperatures taken, their mouths and nostrils cleaned, their eyes rinsed, and their feathers cleaned and recleaned. Some volunteers prepared newspaper beds so the birds could rest under heat lamps where they were tended by rescue workers around the clock until they were ready for release. A total of 78 waterfowl were saved by this procedure. People were advised not to attempt to clean ducks but to place them in cardboard boxes and transport them in the warmth of their car interiors, not in an unheated trunk, to one of three drop-off points established along the river.

Information regarding emergency response activities to save fish and mussels is less available. Efforts which centered on monitoring fish kills and other environmental impacts were severely hindered by arctic weather and river ice. The coordination of river monitoring also suffered and analysis methods were not standardized. These activities were headed by the U.S. Department of Interior, the respective state fish and wildlife commissions, and state environmental agencies.

Divers supplied by Ashland Oil took mussel samples (including an endangered species known as the pink pearly mucket) from the Ohio River near Huntington, W.V. both

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<sup>7</sup> University Center for Social and Urban Research, An Evaluation of the Public's Perceptions of the Health and Environmental Risks Associated with the January 2, 1988 Ashland Oil Spill (Pittsburgh, December 1988).



before and after the spill arrived. The U.S. EPA Wheeling Biology Laboratory used a series of samples collected as the spill passed through the Wheeling, W.V. area to perform several acute and chronic fish toxicity tests. In-situ fish toxicity tests were also conducted at two locations down stream of Wheeling prior to and during passage of the spill. No mortality of the caged fish was observed.

## **2.4 Conclusions and Recommendations**

This section summarizes conclusions regarding the overall adequacy of the emergency response to the Ashland Oil spill and offers associated recommendations which may improve the efficiency of future responses to similar incidents. The issues discussed in this section include the overall organization and speed of the response; the adequacy of equipment and material; the pattern of communication among emergency responders and between emergency responders and the public; and the education and training of emergency personnel.

The oil spill incident had a significant impact on the water companies which depend on the Monongahela and Ohio Rivers for their source of supply. The spill created water supply shortages in some areas, which required customers to conserve water use, and led to actual loss of water supply in one service area. In spite of these hardships, the outstanding efforts of all responding agencies, groups, individuals, and the Ashland Oil Company resulted in the successful protection of the public health throughout the emergency. Extensive emergency response actions prevented any contamination of operating public water systems. Although the emergency response to the Ashland Oil spill effectively protected public health, there are valuable lessons to be drawn from the experience which may improve the efficiency of responses to any similar incidents in the future.

The following recommendations aim to improve preparedness among emergency responders in confronting incidents similar to the Ashland Oil spill. The recommendations benefit from CHMR's experience in emergency management and preparedness as well as from observations and suggestions offered by emergency response officials in public hearing records and government reports on the Ashland Oil spill.

The recommendations underscore the need for expanded technical and financial assistance to county and local governments for emergency preparedness and planning. In addition, the resources of local industry should be more fully utilized through the creation or expansion of local industry-government mutual aid cooperatives. Such mechanisms for implementing the following recommendations are discussed in detail in chapter 6 of this report.

### **Organization and Speed of the Response**

The following list provides a summary of CHMR's conclusions and recommendations regarding the overall organization and speed of the response. Five key findings can be highlighted.

- o Ashland took appropriate initial response actions, which included notifying the National Response Center and calling in the necessary emergency response contractors.
- o Although down stream water users were quickly notified of the incident, the severity of the potential impact on the river system and down stream water supplies was not fully realized until 12 to 18 hours after the spill.
- o The fact that the severity of the potential off-site impact was not realized, combined with the difficult circumstances of this incident (concern over volatile conditions on-site, cold weather, darkness, and dangerous conditions on the river), hampered initial response actions and caused the initial priority of the response to be directed on-site.
- o Although initial problems with the overall organization of the response caused some inefficiency and operational difficulties for emergency response personnel during the first 24 to 36 hours, it is unlikely that these problems and difficulties adversely affected the overall adequacy of the emergency response for minimizing losses to property, businesses and individuals.
- o It is also unlikely that any other organization of the emergency response (e.g., incident command or overall coordination of response assumed by other state or local agencies) would have resulted in more effective protection of the public health or further minimized losses caused by the accident.

The overall organization and speed of the response thus was adequate to fully protect public health and minimize losses to property, businesses, and individuals under the

circumstances of this incident. However, some lessons can be learned regarding organizational response efforts which may improve the efficiency of future responses. Five such lessons emerge from the Ashland experience.

- o In the future the On-Scene Coordinator should initiate coordination activities earlier and start assigning responsibilities sooner.
- o The Regional Response Team could have provided additional assistance to the responding agencies, had the RRT been involved in the first 24 hours following the spill. The RRT team should be activated as soon as possible and a decision made as to whether its members should be brought together on site. An "RRT Coordinator" should be designated to assist the OSC by facilitating communications among responding agencies.
- o A responsible party representative (in this case, someone from Ashland Oil) in RRT conferences should directly provide the RRT with factual details regarding the responsible party's activities and ability to comply with RRT recommendations to the OSC.
- o Important environmental data (e.g., discharge flow rate and in-river water quality immediately down river from the discharge) were not collected during the first few hours of the incident because emergency response personnel were preoccupied with responding to the emergency at hand. Facility Preparedness Prevention Contingency plans should identify individuals of the responsible party or its contractors whose sole responsibility is the collection of environmental data.
- o In the initial days of the spill, the coordination and communications of river monitoring data suffered because no lead agency was assigned to oversee these activities. A lead agency should be designated to focus the coordination and communication of monitoring data and to assure standardization in the analysis of these data.

### **Adequacy of Equipment & Materials**

The lack of immediately available containment and monitoring equipment hindered the emergency response. The need to locate and transport essential equipment caused delays. However, as a result of the unique circumstances and conditions affecting this incident (e.g., the rapid release and discharge of most of the oil into the river within the first two hours, darkness, cold weather, rapid river currents, and dispersion of oil throughout

the water column), it is unlikely that another response could have been any more effective in significantly reducing the total quantity of oil discharged to the river or increasing the total quantity of oil recovered from the river.

Nevertheless, additional lessons can be learned. The following eleven points summarize CHMR's conclusions and recommendations regarding the adequacy of available equipment and materials as well as the preparedness of personnel for future contingencies.

- o Containment dikes are an essential first line of defense to prevent the release of oil and hazardous substances from leaking tanks. It is unlikely, however, that dikes can be constructed to provide complete containment of all possible incidents such as sudden massive tank ruptures.
- o Facility Preparedness Prevention Contingency plans should "look beyond the dike" and be prepared to install a "second line of defense" in the event a spill escapes the containment area. All drainage ways near containment dikes should be identified in PPC plans, a strategy should be developed for intercepting releases in the drainage ways, if possible, and secondary structures should be maintained.
- o A computerized geographic information system with the capability for displaying maps of the physical infrastructure of Allegheny County should be implemented to provide emergency responders as quickly as possible with necessary information for rapid responses.
- o Facility PPC plans should be current and include information on locations of hazardous and environmentally sensitive materials stored on-site. PPC plans should be provided or made readily available to local emergency responders. Consideration should be given to keeping a current copy in a highly visible "lock box" located on the perimeter of the site.
- o Inventories of locally available equipment should be prepared to assist emergency responders in quickly locating necessary items. Such inventories could be developed and augmented where necessary through a cooperative arrangement between local industries and government.
- o Methods to monitor the dispersion and concentration of air-borne contaminants, which could emanate from a spill, should be considered in local contingency plans. The availability of air-monitoring equipment (local stationary installations and mobile units), capable of providing real-time data needed to estimate and document community exposures, should be assured and included in inventory lists.
- o State or local contingency plans should maintain a list of local laboratories certified to perform necessary testing in an emergency. Development of a

mobile laboratory capability by the responding agencies and/or the standardized use of certain analytical equipment such as portable gas chromatographic units should be considered.

- o The Ashland incident could have been far more devastating if public water supplies had been contaminated or water shortages had become more severe. Emergency planning agencies and water suppliers should work toward improving the availability of contingency water supplies with consideration given to the installation of permanent interconnect grids among neighboring water suppliers and expanded storage capacities for both raw and treated water.
- o The ability of facilities such as hospitals, nursing homes, medical clinics, and schools to respond to and maintain operations throughout water emergencies and other disasters should be strengthened.
- o Emergency planning agencies should maintain a current list of available bulk water haulers, facilities with tankers that can be used in refill operations, and sources of plumbing expertise and supplies for distribution hookups.
- o Each water supplier should maintain a list of service and equipment companies that can provide replacement pumps, chlorination equipment, and chemical feed equipment to add water treatment chemicals to the water in a water treatment plan in the event of an emergency.

#### **Adequacy of Communication Among Emergency Responders**

Communication problems were encountered due to insufficient communication equipment at the command post to support the large number of response agencies. Some problems were encountered in contacting RRT members during off-duty hours and numbers to newly installed or rented portable phones were not available in a timely manner.

The following points provide some suggestions for improving the emergency response communication system based on lessons from the Ashland Oil spill experience.

- o A list of 24-hour phone numbers for RRT members should be regularly updated and made available to all members of the RRT. Electronic mail (E-mail) systems operated by various government agencies can be efficient mechanisms for communication among RRT members. An RRT E-mail distribution system should be established and each RRT member should be assigned an electronic mailbox.

- o An adequate number of phone lines must be immediately installed at command posts in addition to having ample numbers of cellular phones available. Telephone numbers of newly installed or rented portable phones must be gathered early and disseminated more aggressively during an emergency.
- o The Ohio River Valley Water Sanitation Commission's electronic bulletin board was widely used and worked well for distributing river monitoring data. However, problems were encountered and procedures could be developed to use such a resource even more effectively.

### **Adequacy of Communications Between Emergency Responders**

The water suppliers' public communications activities were generally excellent during the Ashland emergency, but some lessons can nonetheless be learned from the experience. The following conclusions and recommendations regarding proper procedures for communicating with the public during emergencies are offered for consideration based on the lessons learned from how information was provided to the public during the Ashland episode.

- o At one point, prior to receiving official notice from the state, a local agency suggested that the need for water conservation was lessening. Criteria and authority for lifting water conservation orders should be made clear by the party establishing such an order, so that there is basic agreement beforehand on when conservation can be discontinued.
- o Information should be given to the media consistently and on a regular basis during emergencies, preferably through one spokesperson at the facility.
- o Special attention must be paid to ensure that the media continually notify the public if the problem is one of quantity and not of contamination. Suppliers must communicate to the public that the use of interconnections, changes in water flow patterns, and varying pressures may lead to taste and odor problems that can be misinterpreted as contamination.
- o The need for predetermined health advisory threshold levels for releases of a wide variety of hazardous substances to surface waters and the atmosphere and a system to warn the public about health-threatening conditions continues to be a concern to emergency responders.

## **Educational Training and Information Resources**

Although the response to the Ashland Oil spill was effective in protecting public health, it is evident that more timely health effects data on spilled hazardous substances were needed along with assistance in interpreting their significance.

Recent federal requirements under the Superfund Amendments and Reauthorization Act (SARA) of 1986 is generating significant new information on the specific locations and types of hazardous materials produced or otherwise used by particular industries. Firefighters and other emergency responders should be properly equipped to respond to any conceivable emergency which could occur in their respective service areas.

CHMR's conclusions and recommendations regarding training and information resources, based on lessons learned from the Ashland Oil spill, include the following items.

- o The federal Agency for Toxic Substances and Disease Registry (ATSDR) as well as state health departments could be better utilized to provide more timely health effects data and data interpretation.
- o More and better training for firefighters and other responders is recommended. The training programs for first responders need to emphasize rapid identification of hazardous substances involved in an emergency. The significant volumes of new SARA information on the specific locations and types of hazardous materials used by particular industries must be assimilated into training updates for local emergency responders.
- o Consideration should be given to the creation of computerized data base capabilities for local emergency responders. An appropriate mobile command vehicle might have access to this system. Computerized systems can enhance emergency response capabilities such as:
  - maintaining an accurate log of events to provide real-time input for decision making and subsequent recovery of costs;
  - providing quick access to infrastructure and other maps to help identify hazardous chemicals and other materials as well as to locate various environmental, safety, and health hazards;
  - providing real-time input on health effects and health/safety precautions for hazardous substances including complex mixtures and products of combustion; and

- outlining procedures to be followed by emergency medical personnel to decontaminate and handle exposed workers, response personnel, or other individuals.

- o Sampling and analysis protocols for emergency responders should be developed. Such protocols are needed for each of the major types of hazardous materials identified through SARA in local response districts.



Chapter 3

**The Economic Impact of the Ashland Oil Spill  
on  
Allegheny County Governments and Businesses**

**3.1 Purpose**

As a result of the January 1988 Ashland Oil spill, many businesses were forced to close or make temporary adjustments in their operations, which resulted in financial losses. Local governments, municipal authorities, volunteer fire departments, and other volunteer agencies provided a variety of services that required some level of expenditure. Eight suburban school districts and more than a dozen private schools were forced to cancel classes for a week, which resulted in a loss of wages for personnel.<sup>1</sup> This chapter describes the scope and nature of the economic impact of the Ashland Oil spill on private, public, and volunteer organizations in Allegheny County.

**3.2 Methodology**

The ideal source of data for analyzing the economic impacts of the Ashland Oil spill on governments and businesses is the set of insurance claims filed against Ashland by these entities. The claims would presumably provide the best quantitative data regarding losses and expenses incurred by governments and businesses, but such information is not in the public domain and is not available at this time from either Ashland Oil, Inc. or its insurance carrier, Crawford and Company, due to pending litigation. The present report therefore cannot provide a definitive statement on the economic impacts of the Ashland Oil spill. No conclusive information can be reported at this time regarding the economic impacts of the oil spill on businesses, local governments, quasi-governmental bodies, and other agencies

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<sup>1</sup> The school districts which were forced to close as a result of the Ashland Oil spill have various policies with regard to the compensation of teachers for lost days of work.

for several reasons.<sup>2</sup> Some governments and businesses have never filed a claim for damages incurred. Many of the claims that have been filed with Ashland's insurance company have not yet been resolved and new claims have continued to be filed. The discussion of financial damages incurred by local governments, quasi-governments, and businesses in this chapter seeks therefore only to provide a general representation of the ways in which such public and private entities in Allegheny County were economically affected by the Ashland Oil spill.

Despite these limitations, financial information has been sought from the various affected parties. Data regarding the economic impacts on governmental bodies have been provided by the Pennsylvania Emergency Management Agency (PEMA) and also obtained through follow-up telephone interviews with the individual affected governments. The interviews provided opportunities to confirm and elaborate information made available by PEMA. Data regarding economic impacts on businesses have been obtained by means of a telephone survey. The University of Pittsburgh's Center for Social and Urban Research (UCSUR) conducted a telephone survey of businesses in areas that were most severely affected by the oil spill. Targeted areas included the immediate vicinity of the oil spill as well as communities where businesses either had their water service shut off or were asked to conserve water. Also included in the survey were businesses such as barge companies, which rely on the area's rivers for their operations.

The purpose of the sampling design was to obtain a sample of the various types of businesses within each community. The procedure used to select businesses for the survey depended to a large extent on information provided by the water companies that were affected by the contamination of the Monongahela and Ohio Rivers from the Ashland Oil spill. UCSUR contacted these water suppliers for a listing of their business, commercial, and/or industrial customers as of January 1988. The water companies contacted by UCSUR include the Aleppo Township Water Authority, the Hampton Township Municipal Authority, the Neville Township Water Department, the Municipal Authority of the Borough of West View, the Municipal Authority of the Township of Robinson, the

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<sup>2</sup> The term "local government" as used in this report refers to townships and cities and the term quasi-governmental bodies refers to municipal authorities (water and sanitation) as well as school districts.

Municipal Sewer and Water Authority of Cranberry Township, the Richland Water Authority, the Western Allegheny County Municipal Authority (referred to elsewhere in this paper as North Fayette Township), and the Western Pennsylvania Water Company. Each of these water companies, with the exception of the Western Pennsylvania Water Company, responded by sending complete lists of their business customers. West Penn Water only identified its eight largest business customers, which were nonetheless included in the sample.

UCSUR divided the water customers into 30 categories by type of business. (See Appendix 3.1.) The distribution of business types in the survey was matched to the distribution of types of businesses identified in the eight water service areas. Based on the business profile for each service area, a quota for each type of business to be surveyed in the respective water service areas was determined. One exception to this design is that all car washes and laundries in the water service areas were included in the sample because of their dependence on large volumes of water. In addition, a group of other businesses known to have been affected were included in the sample. The latter businesses include barge companies that use the Monongahela and Ohio rivers, businesses located in the immediate vicinity of the spill, as well as certain establishments mentioned in newspaper articles.

The selection of the sample thus was not done on a random basis and so its findings cannot be generalized to the larger business community of Allegheny County. The sample does however reflect the business profile of the affected water service areas. The objective of this aspect of the study is to determine not only the dollar amount of losses and expenditures suffered by businesses, but various qualitative information as well.

The survey of businesses was conducted from December 6, 1988 through January 4, 1989 and had a response rate of 71 percent.<sup>3</sup> (See Appendix 3.2 for a copy of the business survey instrument.)

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<sup>3</sup> The response rate was calculated by including forty-four businesses that interviewers were unable to contact after four attempts.

### 3.3 The Economic Impact on Governmental Bodies

Data were provided by the Pennsylvania Emergency Management Agency (PEMA) regarding the number and status of claims filed by municipal authorities, volunteer fire departments, local governments, service agencies, and school districts in Allegheny County. This information was reported by PEMA as of May 31, 1988 and was verified by the UCSUR between June 20 and July 20, 1988. The verification process consisted of calling each claimant and asking for a confirmation of the amount of the claim that was filed, the status of the claim, and a breakdown of the expenses incurred.<sup>4</sup> For municipal authorities, local governments, service agencies, volunteer fire departments, and school districts these expenses included wage/labor costs, direct and indirect costs, and losses of revenue. In approximately half the cases, information regarding the specifics of a claim was not available. In these cases the breakdown of expenses was estimated on the basis of the breakdowns of the known types of expenditures that were incurred by similar governmental bodies.

As of May 31, 1988 fifty-nine governmental and quasi-governmental bodies in Allegheny County had filed claims for damages amounting to approximately \$574,000.<sup>5</sup> Twenty-two of these claims have been settled and final payments have been made amounting to approximately \$269,000. Fourteen of the fifty-nine claimants received partial payments amounting to approximately \$122,000. The status of the remaining 23 claims is unknown at this time. The municipal authorities have the highest percentage of settled claims (75 percent) whereas volunteer fire departments have the lowest number of settled claims (18 percent). Many of the claims filed by volunteer fire departments remain unresolved due to a dispute regarding the appropriateness of reimbursing volunteer fire personnel for their time. Five of the twelve partial payments have gone to volunteer fire departments, reflecting payments of non-labor costs such as supplies and materials.

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<sup>4</sup> When a discrepancy existed between the data provided by PEMA and the data provided by the claimant, the data from the claimant was used for the purposes of this analysis.

<sup>5</sup> This sum does not include the two largest claims, which have been filed by the City of Pittsburgh and Allegheny County, for \$650,000 and \$589,000, respectively.

Soon after the oil spill Ashland suggested making advance payments to communities that had exhausted their cash reserves.<sup>6</sup> A payment of \$210,000 was advanced to Allegheny County in anticipation of the costs to be incurred. Allegheny County later filed a claim for \$589,000, which has not yet been settled. In addition, Ashland Oil made approximately \$3,400 in advance payments to the American Red Cross, Findlay Township Water Authority, Floreffe Volunteer Fire Department, and Rosslyn Farms Borough. All four of these organizations subsequently filed claims after making adjustments for actual costs incurred. Findlay Township Water Authority and Rosslyn Farms accepted the advance payments as final settlements for their claims. The American Red Cross accepted a donation of \$17,270 from Ashland Oil for the services that it had provided, such as emergency accommodations at the David Lawrence Convention Center for residents who might have lost heating in their homes as a result of the water shortage. The Floreffe Volunteer Fire Department, as the closest fire department to the spill, supplied fuel, food, and beverages to workers at the site and therefore Ashland donated \$1,500 in anticipation of these costs to the fire department. The Floreffe firefighters accepted this amount as a partial payment of the total costs to their Volunteer Fire Department. The remainder of the claim is being negotiated.

The losses that governments incurred can be classified into four specific categories based on the information provided: wage/labor costs, direct costs, indirect costs and losses of revenue. Direct costs are those expenses that were incurred as a result of directly responding to the spill, such as utilizing trucks to transport water. Indirect costs, by contrast, are the expenses incurred in support of the response effort, such as providing food for firefighters while on duty. Wage and labor costs include both lost wages and the cost of overtime worked by employees.

Wage and labor costs accounted for 50% of the total dollar amount of the claims filed by all governments and quasi-governments. Approximately 80% of the expenses claimed by school districts were for the wages of teachers and other school personnel who missed work. Water and sanitation authorities incurred wage and labor expenses when staff remained on the job to answer phones and relay the latest information to concerned customers while other employees were engaged in resolving the water shortages in their

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<sup>6</sup> Don Hopey, "Ashland Taking Oil Spill Claims," The Pittsburgh Press, January 14, 1988, p. A1.

communities (e.g., by connecting to other water sources) and in monitoring water quality. Local governments incurred wage expenses when they had to pay overtime to employees for such things as traffic control in the Floreffe area and distributing water to residents.

Thirty-one percent of the total claimed costs incurred by governmental and quasi-governmental bodies was for direct costs. Direct costs for the water and sanitation authorities included water testing, chemicals, and the purchase of water from other water companies. Direct costs for local governments consisted primarily of equipment and use of local facilities for such things as storing alternative water supplies. The direct costs for volunteer fire departments consisted primarily of expenses for the use of equipment.

The only governmental bodies which filed claims for a loss of revenue were the local governments and water and sanitation authorities. Local governments reported that 15% of the total amount of their claims was as a result of lost revenue. Water and sanitation authorities reported that 12% of their losses resulted from lost revenue. Table 3.1 provides a breakdown of the type of expenses for which claims have been filed by local governments, authorities, school districts, and other such organizations.

**Table 3.1**  
**Type of Expenses Claimed**  
**by Local Governments and Other Non-Business Organizations**

	<u>Wages/Labor Costs</u>	<u>Direct Costs</u>	<u>Indirect Costs</u>	<u>Loss of Revenue</u>
Local Governments	\$ 23,441	\$ 45,583	\$ 440	\$12,036
Water/Sewage Authorities	126,508	104,680	35,658	36,541
School Districts	77,842	-0-	19,591	-0-
Emergency Medical/ Volunteer Fire	39,084	12,399	6,941	-0-
Other*	<u>15,371</u>	<u>13,871</u>	<u>4,318</u>	-0-
Total	\$282,249	\$176,534	\$66,949	\$48,577

\* The American Red Cross and the Mutual Aid Hazardous Materials Specialized Intervention Team

### **3.4 The Economic Impact of the Spill on the Business Community in Allegheny County**

The telephone survey of businesses conducted by the University of Pittsburgh's Center for Social and Urban Research had two objectives. The survey sought to understand the nature of the economic impact of the Ashland Oil spill, if any, on businesses in Allegheny County and, secondly, to assess the attitudes of area business persons towards doing business in Allegheny County in the wake of the oil spill. Findings reported in this section consider only the economic impact of the spill. The sample population includes businesses that were affected by a water shortage or which had their water shut off, businesses in close proximity to the actual accident -- i.e., businesses in Floreffe -- and barge companies.

On January 4, 1988 Governor Casey issued a mandatory water conservation order for Allegheny, Beaver, and Washington counties, which caused several businesses to discontinue or reduce production and resulted in temporary layoffs of employees. Many businesses continued to operate but had to make adjustments in order to provide water for drinking and sanitation purposes for their employees. Manufacturers that use large quantities of water in their production processes had to either cut back on production or completely discontinue production. Other companies cut back operations out of concern for the safety of their workers -- especially in relation to fire safety. On the other hand, some companies benefitted as a result of the oil spill because they had an increase in customers -- for instance, suppliers of bottled water. As a result of the interruption in river traffic, barges were unable to make deliveries. Most restaurants remained open but purchased supplies such as paper products and bottled water that would reduce their need for tap water. As a result of the ingenuity of management and sacrifices on the part of employees, most businesses remained open. In fact, only fifteen of the 147 businesses surveyed reported that they closed for any period of time during the crisis. However, all fifteen of the businesses which did shut down completely reported financial losses.

#### **3.4.1 Number and Type of Claims Filed by Businesses**

Fifty businesses among the 147 establishments surveyed reported that they had suffered financial losses. Of these 50 businesses, approximately half had filed claims, ranging from \$30.00 to \$100,000.00, and the other half have not filed any claims. This finding supports the assertion by representatives of Ashland Oil, Inc. that many individuals

and businesses that might have filed claims chose not to do so.<sup>7</sup> There is a wide variety of reasons given by businesses for not filing a claim. Barge companies responded that losses due to delays are not reclaimable. Some businesses responded that the losses were intangible and difficult to document adequately to support a claim. One establishment indicated an intention to file a claim in the future and two responded that they had been unaware that they were eligible to file. Some establishments simultaneously benefitted and suffered losses. As a result of gains and losses offsetting one another, these firms did not feel the need to file a claim. For example, while dishwater was scarce, one restaurant purchased paper products to conserve water, but business increased because persons associated with the spill response effort and residents whose homes were without water came into the restaurant. The most common reason given for not filing a claim was that the losses were minimal and not worth the effort.

According to the survey, the median dollar value of claims which were filed is \$2,000. Of the 26 businesses that filed claims, fourteen reported receiving payment in full, five received partial payments and there has been no action taken on seven of the claims. The majority of the claims, 65%, were filed by businesses in the service sector, while 20% of the claims were filed by manufacturers. This finding may result from over-sampling in the service area and especially among facilities known to be significant water users. The businesses that filed claims in the service sector are car washes, restaurants, laundries, food stores, hair and health salons. All the car washes and laundries filed claims as a result of closing down completely for some period of time, which inflicted a loss of revenue on them. Restaurants filed claims primarily for supplies such as paper products, bottled water, and beverages.

Fifty percent of all the firms that filed claims reported that their businesses resumed normal operations within seven days. Fifty percent of the businesses which experienced a financial loss but did not file a claim also reported that their businesses returned to normal operations within seven days. It is not surprising that seven days of disruption was the most frequent response of the survey participants, inasmuch as the water conservation order was in effect for seven days.

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<sup>7</sup> Remarks by John B. Hall, Chairman and Chief Executive Officer of Ashland Oil, Inc. made before the membership of the Pittsburgh Press Club, October 27, 1988.



### 3.4.2 Financial Losses

The number of claims which were filed by survey participants does not by itself reflect the actual economic impact of the Ashland Oil spill because almost half the firms reporting losses in this survey did not file claims. It is therefore important to examine estimated business losses to get a better picture of the economic impact of the spill on businesses.

There is a difference in the amount of estimated financial loss depending on the type of temporary adjustment made by a particular business. Firms that shut down completely for a period of time reported the highest losses on average. The median financial loss reported by the firms is \$4,300.00. Table 3.2 shows the median estimated financial losses to businesses by type of adjustment made.

**Table 3.2**  
**Median Value of Losses to Businesses**  
**by Type of Adjustment**

<u>Type of Adjustment</u>	<u>Median Value</u>
Total shut down	\$ 4,300.00
Shut down in part	1,950.00
Brought in supplies	1,650.00
Other*	700.00
Reduced water use	30.00

\* The 'other' category primarily consists of losses due to the purchasing of bottled water, paper products, and the rental of portable bathrooms.

The nature of the financial losses varied among the different types of businesses, but some patterns emerged. Barge companies reported that shipments and deliveries were late, resulting in financial losses. Physical damages that were reported by businesses were primarily problems with plumbing as a result of frozen pipes, which also resulted in financial losses. In addition, restaurants and hotels purchased paper products and canned beverages for use in serving customers. Twenty-one businesses reported that during the oil

spill incident they lost customers. However, only four firms of the total number surveyed reported that they believed that they had lost business permanently. The nature of the financial losses suffered by the 50 businesses reporting a loss is shown in Table 3.3.

For more in-depth analysis, businesses in the survey have been categorized according to the major divisions used in the U.S. Department of Commerce's system of Standard Industrial Classification (SIC). The aggregate classes of industry are agriculture; construction; manufacturing; transportation; wholesale-retail; finance; insurance and real estate; and service. The businesses that were most susceptible to losses are in the service sector, in manufacturing, and in the collective area of finance, insurance, and real estate. Forty-two percent of the service establishments, 40% of the manufacturing firms, and 29% of the finance, insurance and real estate firms responded that they had suffered losses.

**Table 3.3**  
**Nature of Financial Losses**  
**Incurred by Businesses**

	<u>Number of Respondents</u>
Physical damage	2
Production curtailed	20
Shipments late	3
Deliveries late	2
Employees absent	2
Loss of customers	21
Other	15
Total	<u>65</u> *

\*This was a multi-response question in which the respondent could give more than one answer to the question, so the total number of respondents exceeds the total number of businesses surveyed which claim losses.

The service establishments that reported financial losses most frequently are restaurants, hotels, cleaners, car washes, and beauty salons. The service establishments

suffering such losses have on average ten employees. Over half the service establishments reported closing completely or reducing customer services. Car washes and cleaners suffered because they closed entirely for a period of time. Hair salons cut back on services by offering only services that required little water, such as haircuts. These businesses did not have to close entirely but did lose revenue. Restaurants and hotels suffered losses primarily as a result of having to bring in substitute supplies. Many such establishments purchased paper products, bottled water, and bottled beverages to reduce the amount of tap water necessary for operations and thus remain open for business. One restaurant and one hotel closed completely. Both these businesses have filed claims with Ashland. The median estimated financial loss for the service industry was \$1,825. All the service establishments suffering losses reported having returned to normal operations within seven days of the spill.

Manufacturing firms reported the highest estimated losses. Their reported estimated median financial loss was \$30,000 dollars. Eight manufacturing firms reported suffering losses and of these eight, five have filed claims. Manufacturing firms suffered financial losses, primarily as a result of suspending production completely for a few days or suspending part of a production process. One firm shipped its unfinished product to another plant outside the area to complete the production cycle, thus incurring additional transportation and other expenses beyond the costs of normal operations. The average size of the manufacturing establishments that reported losses is seventy-five employees. All the manufacturing firms reporting losses returned to normal operations within seven days.

Only four of fourteen establishments surveyed in the combined finance, insurance, legal, and real estate sector responded that they had suffered losses. The most susceptible establishments were real estate agencies active in the housing market. Their losses arose from the need to stockpile water to protect heating units and from plumbing problems. One agency reported having lost prospective clients. The median value of these firms' estimated losses is \$6,800. The average time needed to return to normal operations as reported by the firms was longer than the time needed by the manufacturing and service industries. The reported average length of time before returning to normal operations was ten days for firms in finance, insurance, and real estate.

### **3.4.3 Lost Wages**

Twenty firms reported that their employees lost an average of four days of work. Of these twenty firms, fifteen reported that their employees were compensated for the loss of work. The data do not indicate why some of the firms chose to compensate employees directly. It could be that these firms paid the lost wages and then included the expense in their claims to Ashland. In other cases, especially in the service sector, employees made up the lost work at a later date.

### **3.4.4 Benefits Accrued by Businesses**

Fourteen of the establishments surveyed reported that they benefitted from the spill. Benefits were primarily reported by the service sector -- especially restaurants and food stores. The most commonly stated benefit was that of increased business as a result of people associated with the spill response coming into the area or due to the sale of bottled water. However, all such businesses reported that the financial benefits were minimal. Many of the benefits reported by the respondents were not directly financial. A couple of establishments stated that their response to the spill resulted in a positive public image. For example, one bottler sold distilled water at cost and a hotel allowed residents without water to use its shower facilities. A restaurant manager, who closed his establishment, stated that he had received positive comments from customers for this action. An environmental consulting firm reported that it anticipated increased business in the future as a result of increased regulations prompted by the spill.

## **3.5 Conclusions**

A major finding of the analysis of the impact of the Ashland Oil spill on governmental bodies is that wage and labor costs accounted for most of the losses claimed by school districts and municipal authorities. Wage and labor costs incurred by the school districts were primarily for lost wages as opposed to the payment of overtime hours, which was the labor cost factor that affected municipal authorities. Local governments and municipal authorities incurred their greatest financial losses in direct costs for equipment and supplies. The municipal authorities' losses were due especially to activities required to restore water service to their customers.

The most significant finding from the analysis of businesses' responses is that although 82% of the surveyed businesses had water service shut off or had to conserve, only 10% of the businesses actually closed. The majority made adjustments and continued operations. In addition, only 34% reported suffering any financial loss and almost half of these firms have not filed a claim. The reported average length of time required for businesses to return to normal was seven days. This interval may imply that operations for most businesses returned to normal almost immediately after the conservation order was lifted or after water service was restored.

The two main adjustments that businesses made, which resulted in losses and subsequent claims, were shut downs, either complete or partial, and the purchase of supplies. Partial or complete shut downs were the most costly adjustment made by firms that reported losses. Shut downs resulted in a loss of sales to customers and a loss in production time. Manufacturers that use large quantities of water in their production process suffered the most by partial or complete shut down of the production cycle. This finding implies that whenever possible an effort should be made for firms to continue operations. The losses would have been reduced if the large manufacturers had an alternative water supply.

The primary adjustment made by all firms surveyed was the purchasing of supplies. Analysis shows that there was a difference in the use of such supplies between firms reporting a financial loss and those which did not report a financial loss. Businesses which reported a financial loss used supplies for customer service, while firms which did not report suffering a financial loss used supplies for sanitary purposes and the convenience of employees.

On the positive side, some businesses did receive minor benefits in the form of increased business. Other businesses benefitted in an intangible way by handling the event in such a way that they projected a positive image of themselves to the public. Although some businesses lost customers during the week following the spill, almost all of the respondents did not believe that they lost any business permanently.



## Chapter 4

### **An Evaluation of the Impact of the Ashland Oil Spill on the Business Climate of Allegheny County**

#### **4.1 Purpose**

In the aftermath of the release and dispersion of diesel fuel from the rupture of Ashland Oil's tank no. 1338 in Floreffe, Jefferson Borough, Pennsylvania in January 1988, there has been a lingering debate regarding the short and long term environmental effects of the oil spill on the ecology of the region. There has been much less discussion, however, regarding the oil spill's impact, if any, on the business climate in Allegheny County. The purpose of this chapter is to determine whether the oil spill had any lingering, adverse impact on the regional business community's image of the Greater Pittsburgh area as a suitable place to do business or whether, to business people, the event was only transient in nature. This chapter focuses on two major issues: first, the impact of the Ashland Oil spill on the investment and location decisions of businesses and second, the opinions and attitudes of area business persons regarding the suitability of doing business in Allegheny County in the wake of the spill.

#### **4.2 Methodology**

The University of Pittsburgh Center for Social and Urban Research (UCSUR) conducted two telephone surveys to collect business climate data. The first survey involved economic development and real estate officials from the southwestern Pennsylvania region and the second survey focussed on businesses in areas of Allegheny County which were affected by the oil spill. There were two parts to each survey. The survey of economic development and real estate people focussed first on changes which may have occurred in the location and/or investment decisions of area businesses as a result of the oil spill and, second, on changes in attitudes of businesses regarding health and safety issues, government's emergency response capability, and the overall business climate. In the survey of

businesses, businesses were first asked a series of questions regarding the economic impact that the oil spill had on their particular businesses. Next, these same businesses were asked their opinions regarding the management of the oil spill response, whether they considered moving as a result of the spill, and the desirability of doing business in Allegheny County.

#### **4.2.1 Survey of Economic Development and Real Estate Officials**

Economic development and real estate officials were chosen to be interviewed because such individuals are most likely to be aware of businesses considering a move into or out of the Pittsburgh area. Commercial real estate specialists are in touch with incoming businesses and are aware of the concerns that these businesses have. Likewise, economic development officials -- due to their daily interaction with incoming and existing businesses -- are also aware of the factors affecting business growth and decline as well as the factors influencing location decisions. Through even casual contact with businesses that are considering a move to the Pittsburgh area, economic development and real estate professionals would be able to interpret impressions that business persons had or still have concerning the Ashland Oil spill's impact on the region.

The telephone survey of economic development and real estate officials was conducted from September 27, 1988 through October 6, 1988. Twenty-three economic development and ten real estate officials were interviewed. Twenty-five of the interviewed officials were working in Allegheny County and eight officials were working in the surrounding counties of Beaver, Lawrence, Washington, and Westmoreland. All of the real estate firms are located in Allegheny County and were selected on the basis of their having a high profile in the Pittsburgh region. The firms are among the area's largest and most well known commercial real estate firms and it was assumed that out-of-town businesses considering a move to southwestern Pennsylvania would most likely be in contact with one of these firms. The economic development officials who were chosen for interviews represent the major public and private regional economic development agencies in Allegheny and the surrounding counties. (See Appendix 4.1 for a list of economic development and real estate officials who were interviewed. See Appendix 4.2 for a copy of the survey instrument administered to the economic development and real estate officials.)



#### **4.2.2 Survey of Businesses**

UCSUR also conducted a survey of businesses in the portions of Allegheny County known to have experienced some direct economic effects from the oil spill. The survey sought to assess the perceptions and attitudes of area business persons regarding the suitability of doing business in Allegheny County in the wake of the spill. Included in the sample population for this survey were the types of businesses affected by a temporary water shortage or shut off of water service, businesses that had a potential for being affected due to their close proximity to the spill, in the Floreffe area of Jefferson Borough, and, finally, companies such as barge operators that use the river in the course of their business activities. It was assumed that any residual adverse impacts on businesses would most likely be reflected in the opinions of business persons whose companies had suffered spill's most direct and immediate economic impacts.

For a description of the design and implementation of this business survey, please see the methodology section of chapter three.

#### **4.3 Analysis of Survey Findings**

The two surveys indicate that the oil spill had little, if any, impact on the business climate of the Pittsburgh area. Responses of the economic development and real estate officials indicate that the spill had no effect on the investment and location decisions of businesses. The survey reveals that a positive attitude exists in the business community regarding the suitability of doing business in the Pittsburgh area. The responses of business people in this regard are quite similar to those of the economic development and real estate persons.

##### **4.3.1 The Impact of the Ashland Oil Spill on Investment/Location Decisions of Businesses**

Perhaps the most interesting finding from discussions with key economic development and real estate officials is that no one is known to have left the Pittsburgh region because of the Ashland Oil spill. None of the thirty-three economic development or real estate officials interviewed knew of any Pittsburgh area business or industry which altered its location or investment plans due to the spill. Thirty-two of the thirty-three individuals

questioned knew of no business among those known to have been interested in locating in the Pittsburgh area, which changed its plans to locate or invest in the region as a result of the Ashland Oil spill. One real estate official recalled that two companies, which are large water users, were concerned about the effect that contaminated water might have on their equipment and operations. These two companies wanted to investigate alternate water supplies available to them in the event that they were to move to Pittsburgh and a similar event were to occur. The real estate official stressed, however, that the oil spill was not a primary concern of the two companies in question. Many industries are interested in any case in the availability of alternate water supplies. The final decisions of the two companies in question reportedly were not affected by the Ashland Oil spill.

Of the 147 businesses which were contacted, not one considered moving because of the oil spill. In addition, none of these businesses reported knowing of any other business that was affected severely enough by the Ashland spill to consider moving from the Pittsburgh area. It seems clear that the Ashland incident did not prompt businesses to pack up and leave southwestern Pennsylvania. Less severe effects of the spill on businesses are nonetheless worth noting.

#### **4.3.2 Temporary Adjustments**

Fifty-four percent (79) of the businesses interviewed by UCSUR made some temporary adjustments in operations as a result of water service shut-offs or conservation orders. For instance, approximately 19% (15) of these businesses said that they closed completely. Seventy-three percent of the businesses that were interviewed in Robinson and North Fayette Townships had to make temporary adjustments in their business operations whereas only 35% of the businesses located in the areas where water service continued to operate said that they had made temporary adjustments. This result would be expected inasmuch as water companies in Robinson and North Fayette were forced to curtail water supplies, whereas water suppliers serving the other areas either asked their large water

users to curb operations, issued mandatory conservation orders, or suggested conservation in order to protect existing water supplies.<sup>8</sup>

#### **4.3.3 Financial Losses**

Thirty-four percent of the businesses interviewed reported suffering a financial loss due to the Ashland Oil spill and the subsequent shortage or shut off of water supplies. Forty-two percent of the business customers of the Robinson and North Fayette Water Authorities -- both of which had to shut off water supplies -- believed that they had suffered a financial loss, whereas only 25% of the businesses located in areas where water was not shut off believed that they had suffered a financial loss. Three percent of the 147 businesses interviewed stated that they believe they lost business permanently. Of these four firms, two are located in the Robinson and North Fayette areas and two are located in the remaining areas. A laundromat was forced to turn customers away, an apartment complex claimed a customer could have gone elsewhere to rent a housing unit, a beauty salon stated that it lost new customers, and a car wash objected that some customers blamed the car wash business for being closed.

Despite the hardships suffered by several businesses, it does seem that no businesses left or considered leaving the Pittsburgh area as a result of the impact of the Ashland Oil spill on regional water supplies. Perhaps if the water shortage/shut off continued for a longer period of time, this finding would have been different. The fifty businesses which suffered financial losses probably either did not lose enough money to necessitate a move or were reimbursed enough to avoid considering one. The fifteen businesses that closed

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<sup>8</sup> The Robinson Township Municipal Authority could not serve 17,000 of its customers for up to 48 hours, 2,000 customers for up to 5 days, and 200 customers for an entire week. After water service was resumed, businesses were asked to cut back 40% temporarily from their normal water usage.

The Western Allegheny County Municipal Authority receives approximately 90% of its water supply from the Robinson Township Authority and its customers were without water for at least as long as Robinson's customers. Once the Western Allegheny County Municipal Authority could reinstitute water service, general conservation was suggested for both public and business customers.

The Municipal Authority for the Borough of West View never halted water service during the emergency. It contacted each of its business clients, however, asking large water users to shut down temporarily and others to conserve as much water as possible.

appear to have withstood the temporary hardship. It appears that business volume after the emergency made up for certain immediate effects of the spill. The receipt or prospect of reimbursement also surely helped mollify some business persons. The firms suspecting a permanent loss of business obviously did not lose enough business to force them out of business or to relocate.

Results might have been otherwise. If the oil spill had not been cleaned up so quickly, if more oil had escaped into the river, if weather conditions had been even less favorable, if water companies had not been able to accommodate their customers so quickly, if cooperation had not existed to the degree it did in the many affected communities, then perhaps businesses would have moved and the Pittsburgh region would have suffered a more permanent loss from the Ashland Oil spill. However, according to the vast majority of individuals interviewed by UCSUR, the local effects of the spill did not include lasting economic damage to the Pittsburgh or southwestern Pennsylvania region.

#### **4.3.4 Perceptions of the Business Climate in Allegheny County in the Wake of the Ashland Oil Spill**

In recent years numerous environmental incidents -- some catastrophic, some less so -- have occurred throughout the United States. A nuclear accident at Three Mile Island caused many people to evacuate their homes; thousands of gallons of spilled oil washed ashore in Washington State, killing thousands of waterfowl; garbage has washed onto ocean beaches; pesticides have run off fields into rural waterways; the country's largest and most productive estuary, the Chesapeake Bay, has been befouled.<sup>9</sup> Disasters, both natural and caused by man, are affecting the environment and hence the health and safety of all of us. The Ashland Oil spill is just one type of ecological event on the list of endemic environmental dangers which have been receiving public notice. The question under investigation in this section is the effect, if any, that the Ashland incident has had on the business climate and the image of the Pittsburgh region.

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<sup>9</sup> As this report nears completion, the largest oil spill in North American history, in Prince William Sound, south of Valdez, Alaska, has just occurred. The initial, largely abortive efforts to recover oil from the spill recall the urgency of learning the lessons of the Ashland Oil spill, not only to protect southwestern Pennsylvania from serious harm in the event of another such accident, but because of the potential applicability of these lessons to diverse regions around the world.

#### **4.3.5 A Short-Term Effect**

The short term nature of the spill's effects on the business community was dramatized by the results of a survey conducted by Penn's Southwest Association four months after the oil spill.<sup>10</sup> The results of this survey suggest that any effects of the oil spill on the self-image of the Pittsburgh region had already been spent. Penn's Southwest Association conducted a mail survey of 200 business clients in southwestern Pennsylvania in April 1988. One of the questions in this survey asked businesses for their impressions of environmental conditions in the Pittsburgh area prior to and since locating in the region. Of the sixty-one respondents, not one mentioned the Ashland Oil spill incident. Only two businesses responded with a negative impression of state, county, or municipal management of ecological and/or pollution issues. This survey, conducted shortly after the Ashland incident, failed to reveal a concern about the oil spill and its effect on the environment and/or Pittsburgh businesses. Any negative effect of the spill would seem, then, to have faded quickly.

Two other sources of information lead to a similar conclusion. The survey of economic development and real estate officials indicates that these individuals could not identify any business or industry that moved from the Pittsburgh region or changed investment plans vis-a-vis Pittsburgh as a result of the Ashland Oil spill. The survey of Allegheny County businesses lends further support to the observation that the spill had at most a fleeting effect on the Pittsburgh business climate. Certainly specific businesses suffered some losses, yet investment or location decisions and general attitudes of area businesses on the Pittsburgh business climate do not appear to have been affected significantly by the Ashland accident.

#### **4.3.6 Attitudes Toward Doing Business in Allegheny County**

Polluted air, tarnished buildings, and toxic water once characterized Pittsburgh, the Gateway to the West, so Renaissance Pittsburgh's increasingly high quality of life over the past several decades seems an especially noteworthy accomplishment. Despite national

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<sup>10</sup> A private non-profit organization whose purpose is to attract jobs and businesses to the southwestern Pennsylvania region. Data courtesy of Penn's Southwest Association.

and international media coverage of the Ashland incident, Pittsburgh area businesses as well as economic development and real estate officials are not aware of any lasting harm done by the oil spill to Pittsburgh's new image as a Renaissance city.

Most of the businesses which were interviewed (51%) rated Allegheny County as a good place to do business. Thirty-three percent considered Allegheny County as an excellent place to do business, 14% considered the County as a fair place to do business, whereas only 3% considered it to be a poor place to do business. Whether or not the interviewed business is located in an area where water was shut off during the Ashland emergency does not seem to have affected opinions expressed concerning doing business in Allegheny County. In fact the businesses not in the areas hardest hit by the water shortage were slightly more critical of Allegheny County on this score than those more severely affected by the spill.

The responses of two groups deviated notably from those of the total population. Of the respondents in the wholesale/retail trade, more reported Allegheny County to be either an excellent or fair place to do business than did the total pool of respondents. More financial/insurance/real estate persons asserted that Allegheny County is a good place to do business while fewer saw Allegheny County as an excellent or fair place to do business than the total population of businesses surveyed.

Of the four interviewees who rated Allegheny County as a poor place to do business, two are manufacturing firms and two are service-related businesses. One manufacturer stated that Allegheny County's regulations on air pollution and health conditions are unduly rigid. Another manufacturer claimed that his business stays in Allegheny County solely to be central to the company's customer base. He rated Allegheny County as a poor place to do business in part due to the lax information/communication that he experienced concerning the water supply situation during the Ashland incident. A laundromat owner claimed the regulations in Allegheny County for his type of business are more stringent than for his counterparts in other counties and states. An auto service center manager noted the negligence of inspectors who should have prevented the Ashland tank collapse. The latter individual, despite his negative rating of Allegheny County, ironically argued that the spill will help the Pittsburgh area in the long run because of increased knowledge now available about such incidents.

The great majority of the respondents denied that the Ashland Oil spill affected their attitudes about doing business in Allegheny County. In fact only four firms claimed

that their attitudes had been affected by the spill. The concerns of these four firms include the threat of reoccurrence of such a spill on a Pittsburgh river, a need for more education regarding disaster response, and a need to protect the Pittsburgh region's natural resources. One of the individuals was disturbed that Ashland had been indicted for criminal negligence. He believed that the precedent that a criminal conviction would set for other businesses suffering similar accidents would be extremely detrimental to the business climate in Pittsburgh. Of the four respondents who said their attitude towards doing business in Allegheny County was negatively affected by the Ashland Oil spill and its ramifications, three nonetheless rated Allegheny County as a good place to do business and one rated Allegheny County as an excellent place to do business. Obviously these respondents are not mere fault-finders. Despite their reservations regarding aspects of the spill, they remain committed to doing business in Allegheny County.

#### **4.3.7 Perceptions of the Response to the Oil Spill**

An event such as the Ashland spill provides an opportunity for the business community to judge disaster response. Appropriate actions by the involved private and public parties can build confidence. The vast majority of the businesses and economic development and real estate officials interviewed by UCSUR praised Ashland Oil and the cooperating governments' response to the oil spill.

When businesses were asked their opinion regarding Ashland Oil's response to the spill, 109 firms (87% of the sample of businesses) stated that Ashland did an excellent, very good, or good job (20%, 33%, 34% respectively). Only six firms (13%) asserted that Ashland did no better than a fair or poor job. Even among these six firms there was approval of the other actors involved in the spill response. One firm complained that Ashland's insurance company "dragged their feet" in issuing reimbursements for legitimate losses.

Floreffe, the Jefferson Borough location of the Ashland Oil tank collapse, was severely affected by the oil spill.<sup>11</sup> Of the four businesses in Floreffe that voiced opinions about Ashland Oil's response to the spill, three gave the company an "excellent" rating and

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<sup>11</sup> Two hundred fifty Floreffe residents were evacuated for 13 to 15 hours. The Thomas Jefferson High School Gymnasium was made available for residents in need of shelter.

one a "very good" rating. Considering the proximity of these businesses to Ashland and the potential danger to them from the spill, their positive responses are significant. Perhaps Ashland had been a good neighbor to these businesses and built up an ample fund of good will. Two of the businesses reported gaining customers from the incident, noting that their establishments were frequented more than normal during the first few weeks in January 1988.

When asked how they would evaluate the efforts of clean-up officials, 94% of all the business persons responding chose the categories of excellent, very good, or good. The remaining 6% of this group, in contrast, rated the clean-up officials' work as only fair or poor. Even though the clean-up officials received a better overall rating than did Ashland Oil, the responding businesses rated Ashland's performance as excellent more often than they did that of the officials (20% versus 13%).

The economic development and real estate officials who were interviewed also lauded government's response to the oil spill. When asked if they were aware of any change in the attitudes of businesses with respect to the perception by businesses of government's ability to respond to such incidents as the oil spill, most of the thirty-three economic development and real estate respondents alluded to a positive impression of government and its abilities. Seven interviewees (21%) reported no change in businesses' perception of government. Eighteen of those responding (55%) rated government actions as good. These persons stated that the business community had faith in governmental response capability, which complements the impression that there is a favorable business climate in the Pittsburgh region. Four respondents (12% -- two in economic development and two in real estate) believed business viewed the response by government as poor. Reasons given for this perception of a poor response were ineffective action, confusion in communication, a need for more cooperation among governmental branches, and a need for better response plans. Of the remaining four respondents (12%), two questioned the propriety of pressing criminal charges against Ashland, one expressed the need for business to watch government carefully to try to prevent the creation of unnecessary regulations, and one noted that branches of government, business, and the public are interrelated and must learn to interact in order for disaster response to be effective.



#### **4.3.8 Health and Safety Concerns**

For the most part economic development and real estate officials conveyed the impression that the Ashland Oil spill did not weaken the positive attitude of businesses in Pittsburgh regarding environmental health and safety issues and their perception of government's ability to respond to a disaster. These individuals stressed that the oil spill's unsettling effect on area businesses was well below the threshold that might prompt a move from the region. When asked if they were aware of any change in the attitudes of businesses regarding the overall business climate in the Pittsburgh region as a result of the oil spill, 76% of the respondents answered "no." An additional 12% believed the business climate not only did not suffer but, in fact, benefitted from the incident. These individuals said that the disaster was handled so well that it enhanced the positive image of Pittsburgh. Such comments were typically couched in terms that expressed the accidental nature of the spill and the belief that the image of Pittsburgh would not be tarnished whatsoever by the episode.

When asked if they were aware of any change in the attitudes of businesses regarding environmental health and safety issues as a result of the Ashland Oil spill, just over half (17) of the thirty-three economic development and real estate officials responded that they were not aware of changes in attitude. Thirteen individuals noted the current trend of increasing awareness by the public, government, and businesses regarding environmental issues. They regarded the shared concern over the oil spill to be more an example of this trend rather than a negative reflection on Pittsburgh's environment. One of the economic development officials in the survey claimed that business is intelligent enough to realize that every area suffers a threat of disaster. "Pittsburgh experienced the oil spill just as other cities have experienced the effects of failure of man-made structures."

Three interviewees -- one real estate official and two economic development officials -- saw the business community as "opening their eyes" after the Ashland spill. These officials believed that the business community knows that it must prevent environmental disasters in order to avoid public outrage and an undesirable increase in environmental regulations. These three officials claimed that business sees potential liability and will take preventive measures. Three of the economic development/real estate respondents believed that business, as well as the general population in Pittsburgh and surrounding areas, learned some valuable lessons from the oil spill and the resulting water shutoff and conservation

efforts. It is very evident, these respondents noted, that more than one source of water is necessary if everyone is to be assured clean, safe water in the event of an emergency. The Ashland incident perhaps gave an incentive for water companies to establish reliable interconnections and establish or perfect emergency action plans. West View Water Authority Chairman William Wunderly, has been quoted in an article on the oil spill to have affirmed that "his company was pursuing a program of extension and expansion [to] safeguard the integrity of the West View Authority system in the future."<sup>8</sup>

Twenty-two percent of the individuals responding to the business survey question, "As a business person, what concerned you the most about the Ashland Oil spill?," said that they were not concerned. The next most common response from all of the businesses interviewed included a fear of pollution, concerns about health, the inconvenience suffered, the vulnerability felt when one is without water, and the failure of safeguards (e.g., failures attributable to existing regulations, tank inspections, and quality controls in the reuse of old steel in tank reconstruction). Among businesses in areas where water was not shut off, predominant concerns were pollution and the failure of safeguards. In areas where the water supply was shut off, the two most common concerns were about health and vulnerability. The number of businesses expressing concern over the inconvenience resulting from the event was similar between the directly and indirectly affected areas, but the percentage of businesses with this attitude was slightly higher in the areas that experienced a water service shut-off.

#### **4.4 Conclusions**

To evaluate the outlook for doing business in Allegheny County in view of the Ashland Oil spill, the 147 businesses surveyed were asked if they thought that in the long run the spill would economically help, hinder, or have no effect on the Pittsburgh area. Sixty-seven percent of the responding businesses stated that the spill would have no effect on the economic future of Pittsburgh. Fifteen percent thought the spill would aid Pittsburgh in the long run through an increased awareness about such incidents or an elevation of standards to prevent a similar event (55% and 35% respectively). Eighteen percent reported that the spill would hurt Pittsburgh by damaging its image, polluting its waters, or

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<sup>8</sup> J. Spray, "PMAA Members Affected by Oil Spill," The Authority, March 1988, pp. 3-4.

detrimentally impacting businesses. More respondents in the areas that did not experience a water shut-off believed the spill would have no economic effect on Pittsburgh in the long run than did respondents in the shut-off area. Twenty-two percent of the businesses interviewed from Robinson and North Fayette Townships expressed the view that the spill would hurt and 16% said it would help Pittsburgh in the long run, whereas among respondents in the areas without water shut off only 16% believed the spill would hurt whereas 15% thought that it would help.

Overall the majority of businesses participating in UCSUR's survey was not displeased with the emergency response to the Ashland Oil spill. Ashland Oil's response was rated by 87% of the businesses as excellent, very good, or good. Ninety-four percent of the businesses also deemed the efforts of clean-up officials as excellent, very good, or good. Even though 18% of the businesses speculated that the spill would economically hurt Pittsburgh in the long run, 82% believed that there would be no long term effect on Pittsburgh or that a beneficial effect would result.

According to the 33 interviewed economic development and real estate officials, Pittsburgh businesses do not have a less favorable perception of environmental health and safety in Pittsburgh because of the Ashland Oil spill. Many of the officials saw an increase in environmental health and safety problems resulting from industrial development in urban areas across the nation. Hence they believed that even after the Ashland Oil spill Pittsburgh is not perceived as having unusually severe problems. Some of the businesses interviewed by UCSUR expressed concern about the effect of the spill on environmental health and safety in Pittsburgh. To these respondents the spill did threaten the health of the public and/or the environment of the region.

The two surveys could find no evidence that any plans for investments in Pittsburgh were abandoned due to the Ashland spill. Despite the fact that 54% of the businesses interviewed had to make adjustments in their operations because of the spill, 34% suffered a financial loss, and four firms reported that they lost business permanently, there was no knowledge of a business having to close, move, or even considering a move due to the Ashland incident. The economic development and real estate officials knew of no cases in which an incoming business decided against Pittsburgh because of the spill. These officials predicted what the businesses were already reporting -- that the Ashland Oil spill was a very unfortunate incident in the Pittsburgh region's history, but one that will not plague the image of southwestern Pennsylvania in the years to come.



Chapter 5  
An Analysis of the Environmental/Hazardous Materials  
Management Industry in Allegheny County

**5.1 Purpose**

Over the past several years a substantial environmental and hazardous materials management (EHMM) industry has developed in Allegheny County in response to the growing number and complexity of environmental, health, and safety regulations which federal, state, and local authorities have promulgated to protect the environment and the public. The EHMM industry constitutes a variety of organizations and firms which provide business and industry with the technology, services, and products needed to comply with such regulations. Most businesses use materials that could adversely impact the environment or public health but manufacturing, due to the high volume of hazardous materials used and hazardous wastes generated, has become the most regulated economic sector. Manufacturers have come to rely heavily on the expertise and products of the EHMM industry. Businesses in the non-manufacturing sector must also comply with environmental and other regulations, for which the services of an EHMM organization can be helpful. Businesses of all sizes and all levels of government, moreover, must call on EHMM specialists to deal with emergency situations involving hazardous materials.

The Ashland Oil spill and other recent hazardous materials incidents in the region<sup>1</sup> have focussed much attention on the need to protect the public and the environment from unsafe and incorrect practices in the handling of hazardous materials. These incidents have heightened the public's awareness of the need for the products and services that the EHMM industry supplies. This relatively new industry plays a major role in preventing similar crises and in managing any that might develop.

In order to achieve an overview of the industry in Allegheny County and to understand the incentives and impediments to growth which affect the industry, selected

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<sup>1</sup> Examples include the 1987 Bloomfield train derailment, the 1988 West Mifflin plastics plant fire, the 1988 McKees Rocks train derailment, and the 1988 Sterling Plus warehouse fire.

EHMM firms and organizations were surveyed. Following a few introductory comments on the prevalence of hazardous materials in the Pennsylvania economy, this chapter describes the survey methodology, offers highlights of the survey's results, and lists some general recommendations based on survey responses for encouraging the growth of the EHMM industry in Allegheny County, where a strong industrial base and technical expertise are adaptable to EHMM requirements.

## **5.2 Factors Affecting the Development of the EHMM Industry**

In the past decade the southwestern Pennsylvania economy has undergone painful structural adjustments in which the traditional importance of heavy manufacturing, especially in basic steel production, machinery, and transportation equipment has declined sharply. Service-related businesses have become relatively more important as the regional economy assumes a more diversified outlook. Specialty steel, related metal fabrication, and other manufacturing however continue to be prominent in Allegheny County and to provide a key base for EHMM services.

Several other regional factors have contributed to the EHMM industry's development in Allegheny County. First of all, Pennsylvania ranks second in the number of federal Superfund sites. In addition the state has identified an even larger number of sites not on the EPA list and has recently passed legislation to clean up these sites. Secondly, data compiled by the U.S. Office of Technology Assessment (OTA) indicate that Pennsylvania annually leads all states in the number of hazardous materials transportation accidents, primarily because the state is a thoroughfare for materials shipped between the northeast and points south and west. In 1986 Pennsylvania reported 306 truck-related accidents involving hazardous materials and 18 railway-related accidents. In 1985 the figures were 402 and 16, respectively. In addition, industry reports filed in accordance with the requirements of SARA Title III show Pennsylvania to be consistently high in releases of hazardous materials to the environment. According to figures recently released by the U.S. Environmental Protection Agency, Pennsylvania ranks particularly high in the amounts of toxic substances released into the air, disposed of on land and transferred from a facility's property for disposal. See Table 5.1.

**Table 5.1**

**Pennsylvania Toxic Substances Releases**

<u>Release</u>	<u>Pounds</u>	<u>Rank</u>
Surface water	61,898,233	22
Air	87,765,850	13
Land	70,957,429	9
Deep Well Injection	74,250	20
*Off-Site Transfer	173,511,823	8

Source: Pittsburgh Press, April 1989.

\*Wastes which were transferred from a facility's property for disposal, including discharge to publically owned treatment works.

Allegheny County, moreover, is central to the northeastern industrial belt region of the United States. This region contains a high concentration of manufacturing operations, hazardous waste facilities, hazardous waste transportation routes, CERCLA sites, and potential CERCLA sites. Approximately 70 percent of the country's population resides within 500 miles of Allegheny County. In addition, Allegheny County is close to the Province of Ontario, Canada, where a significant portion of Canada's manufacturing and hazardous waste problems are located. Within the surrounding region, there are over 7000 small quantity generators and 3000 large quantity generators of hazardous waste as well as numerous other businesses producing less than 1000 kg of hazardous waste per month.

Recent estimates provided by the U.S. Coast Guard Pittsburgh Marine Safety Zone (PITMS) show that a large amount of materials that could potentially have an adverse impact on the area travel our rivers everyday. Table 5.2 provides a summary of the types and frequency of hazardous materials transported on the rivers for 1987 and 1988 for the PITMS zone and for Pittsburgh specifically. The state's geography, industrial history, and enforcement practices all contribute to the needs and opportunities for the EHMM industry in Allegheny County.

**Table 5.2**  
**Product Transfers for 1987 and 1988**  
**U.S. Coast Guard Pittsburgh Marine Safety Zone \***

	PITMS Total <u>1987</u>	PITMS Total <u>1988</u>	Pittsburgh Only** <u>1988</u>
Ammonium sulfite	3	0	2
Anhydrous ammonia	11	12	7
Asphalt 59	59	61	7
Benzene	6	38	-
B-T-X	18	9	-
Caustic soda	60	58	11
Creosote	7	23	-
Crude oils	81	80	16
Diesel Fuels	332	226	25
Alcohols	24	5	-
Gasoline	338	283	25
Hydraulic oil	2	3	-
Kerosene	65	65	6
Lubrication oils	189	203	18
Methyl ethyl ketone	2	5	-
Methanol	20	34	-
Mineral spirits	15	1	-
Naptha	15	13	-
Napthalene	24	31	-
Piperylene	10	25	-
Resin oil	48	41	1
Styrene	94	90	25
Sulfuric Acid	4	0	-
Tallow	3	22	1
Tar	142	77	79
Toluene	46	53	-
Xylene	72	72	2
Other Products	3	61	-

\* U.S. Coast Guard PITMS Zone includes the navigable portions of the Allegheny, Monogahela, Youghiogheny, Beaver, and Ohio (to the Hannibal Lock-Dam) Rivers.

\*\* Product transfers which originate and terminate within the Pittsburgh city limits.

Note: Average Petroleum Transfer is 225,000 gals to 400,000 gals per barge. Average Chemical Transfer is 250,000 gals to 500,000 gals per barge. Average Caustic Soda Transfer is 600 tons per barge. These figures are only estimates as given by the Coast Guard. They represent information collected on a voluntary basis.



### **5.3 Methodology**

A sample of firms and other organizations in the environmental and hazardous materials management industry in Allegheny County was surveyed through personal interviews to assess the range of EHMM products and services supplied and to identify possible incentives and impediments to the growth of this industry in the county. The types of businesses represented in the industry were roughly categorized by product and service. Ten broad categories were established and two firms or organizations were chosen from each category to be interviewed. The categories appear in Table 5.3. The Standard Industrial Classification (SIC) code associated with each category is listed in Appendix 5.1. See Appendix 5.2 for an explanation of the types of goods and services provided by the EHMM industry. Appendix 5.3 provides a list of the EHMM firms in Allegheny County. Appendix 5.4 provides a list of EHMM firms surveyed. The personal interviews were conducted from December 28, 1988 through January 13, 1989. Appendix 5.5 provides a copy of the survey instrument.

**Table 5.3**  
**Types of Goods and Services in the Environmental/Hazardous**  
**Materials Management Industry <sup>2</sup>**

1. Remedial Action Firms, Clean-up Firms, and Service Contractors
  2. Equipment Suppliers, Equipment Distributors
  3. Environmental Engineering/Consulting Firms
  4. Laboratory and Detection Services
  5. Pollution Management Software Systems, Information Services (\*)
  6. Treatment, Storage, and Disposal Facilities (\*\*)
  7. Transportation Firms
  8. Recovery, Recycling, Reuse, Reduction Firms, & Conservation Organizations
  9. Environmental Law Firms
  10. Spill Control and Emergency Response Firms
- (\*) No organization in Allegheny County was identified as belonging to this category exclusively. However, several businesses grouped in other categories also provide the services identified here.
- (\*\*) No RCRA permitted commercial treatment, storage, and disposal (TSD) facilities are operating in Allegheny County.

#### **5.4 An Overview of Environmental Legislation**

The environmental protection industry has evolved during the past two decades largely in response to changing federal, state, and local environmental laws and regulations. As environmental concerns have grown in number and complexity in this period, increasingly detailed regulations have spawned and shaped the industry.

Heightened environmental awareness on the part of the public over the course of the past two decades has contributed to the increased demand for environmental protection. The National Environmental Policy Act (NEPA) became law in 1969. Its purpose was to provide for the environmental health and safety of the nation's citizens and it established the Council on Environmental Quality, a precursor to the Environmental Protection Agency, for this purpose. The Resource Conservation and Recovery Act (RCRA) of 1976 more directly treats questions of hazardous waste by establishing a "cradle

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<sup>2</sup> See Appendix 5.2 for explanations of these categories.

to grave" system of management.<sup>3</sup> Laws such as these have in turn spurred further environmental action. Table 5.4 summarizes the major federal laws that have developed in response to increasing demands by the public for protection of the environment.

Due to the potential for industry to harm the environment and public health, federal and state agencies impose numerous regulations on industrial activities. The environmental protection industry is chiefly driven by changes in regulatory requirements. As these regulations become more stringent, more services are required by businesses and industries subject to the regulations. The complexity of such regulations, their frequent redundancy, and personnel costs associated with compliance have opened a market niche for specialized EHMM services and products. As Table 5.3 and Appendix 5.1 show, firms offering EHMM services and products are associated with a broad array of SIC codes and industrial groupings. EHMM firms have developed in a variety of service and product areas to assist companies in complying with regulations that have been imposed on almost all segments of U.S. business and industry.

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<sup>3</sup> The term "cradle to grave" refers to the provision in the Resource Conservation and Recovery Act of 1976 for the management of hazardous materials and by-products from the time of creation until final destruction or forever.

**Table 5.4**  
**Summary of Major Federal Environmental Laws**  
**(1963-1988)**

- Clean Air Act (CAA, 1963)  
regulates the emission of hazardous air pollutants.
- National Environmental Protection Act (NEPA, 1969)  
established Council on Environmental Quality (precursor to the Environmental Protection Agency, established in June 1970).
- Occupational Safety and Health Act (OSHA, 1970)  
regulates hazards in the work place and worker health and safety.
- Federal Water Pollution Control Act (FWPCA, 1973)  
regulates the discharge of hazardous pollutants into the nation's surface water.
- Safe Drinking Water Act (SDWA, 1974)  
regulates contaminant levels in drinking water.
- Toxic Substances Control Act (TSCA, 1976)  
regulates the manufacture, use, and disposal of chemical substances.
- Resource Conservation and Recovery Act (RCRA, 1976, 1984)  
regulates hazardous waste generation, storage, transportation, treatment, and disposal.
- Hazardous Materials Transportation Act (HMTA, 1980)  
regulates the transportation of hazardous materials.
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 1980)  
established Superfund to cover expenses associated with the clean-up of inactive and abandoned hazardous waste sites.
- Superfund Amendment and Reauthorization Act (SARA, 1986)  
reauthorized Superfund (CERCLA), established a comprehensive community and industry approach to environmental issues.

## **5.5 Profile of Businesses Surveyed**

The responses to the survey provide a profile of the types of EHMM organizations active in Allegheny County, the range of services and products each one provides, its respective market focus, number of employees, annual earnings, and length of time in operation.

### **5.5.1 Product and Service Diversification**

All the companies interviewed provide products and services outside their primary category or scope of activity. Reasons for such diversification include the potential for market growth in a given area, the application of existing technologies to the environmental/hazardous materials management field, and the ability thereby to provide a client with more comprehensive environmental/hazardous materials services.

When an EHMM business diversifies, and offers more comprehensive services to its clients, the firm in question may no longer have to deal with numerous separate firms to solve parts of a complex environmental, health, and safety problem. Larger EHMM firms prefer to manage a project comprehensively, from start to finish, to better serve their clients. Smaller firms are often without the capital, dedicated environmental staff, or client demand to offer diversified services. Smaller firms frequently enter into cooperative agreements with firms that can help provide needed additional services. The need to be able to provide a variety of services is seen as one of the factors currently influencing the buy-out of many smaller EHMM firms by larger ones.

Among those interviewed, there is a range of diversification for the services and products provided. The more specialized organizations, while growing, only expand to meet needs within the range that they have established for themselves. Diversified organizations expand to meet the needs of their clients and to anticipate market changes, such as those created by new environmental laws or regulations. Newly promulgated underground storage tank regulations are forcing owners and operators to comply with stringent requirements. As a result many of the surveyed EHMM organizations have indicated that they are directing efforts to meet anticipated demand for services from the owners and operators of underground storage tanks.

Several companies which were interviewed do not focus their operations primarily in the environmental/hazardous materials management field. These companies entered

the market because they possess a technology that could be applied to the EHMM industry. In fact most organizations currently operating in the EHMM field have entered it from a more traditional industry. The impetus for moving in this direction is attributable to the demand for EHMM services and products and the profitability of providing these items has prompted the development of the field.

### **5.5.2 Geographical Sales Distribution**

The interviewed organizations do the majority of their business in the United States. Those organizations that supply products or services outside the U.S. either export goods or services or they hold a European company as a subsidiary. On average the interviewed companies do about 50 to 60 percent of their business in Pennsylvania and approximately 30 percent of their total business in Allegheny County. Much variation exists among the interviewed firms regarding the geographic focus of their sales and marketing efforts.

### **5.4.3 Workforce Composition**

The number of employees in the interviewed companies ranges from two persons locally to 6,000 persons worldwide. In most of the surveyed companies the entire workforce, including office support personnel, is dedicated to operations in the environmental/hazardous materials management field. Companies whose major focus of operations is not in the EHMM industry typically maintain a separate EHMM division. The companies consider their environmental divisions to be important components of their operations and anticipate significant growth in the EHMM area.

Several organizations hire part-time employees, who function as office support personnel and perform maintenance, administrative, or research duties. Another group of part-time personnel work as contract employees. Hiring these types of employees allows companies to respond rapidly to fluctuations in the market. Many companies which cannot afford full-time professionals contract for desirable services on a part-time or as-needed basis.

Companies with environmental staffs may also rely on the expertise of individuals affiliated with other company divisions and usually consider these external employees as part-time personnel. For instance one interviewed company said it had only five full-time people dedicated to the EHMM field but drew on the expertise of an additional 35 people

from other divisions on a part-time basis. The use of such employee resources maximizes the efficiency of an environmental group by allowing it to benefit from the expertise of the entire organization. This trend can be observed in both established EHMM firms and in companies that have only recently set up environmental divisions.

#### **5.5.4 Revenue Distribution**

Four of the interviewed companies reported total revenues in the previous fiscal year of approximately 100,000 dollars or less. Seven companies reported revenues between 1 and 5 million dollars, two companies cited revenues falling between 10 and 20 million dollars, and an additional four companies reported figures of between 100 and 400 million dollars. The three remaining organizations declined to comment on their revenue volume.

Thirteen of the interviewed companies stated that 100% of their revenues come from the environmental/hazardous materials management field. Four other companies indicated that over 75% of their revenues come from the EHMM field, whereas two organizations attributed less than 50% of their revenues to EHMM. One company did not respond on this point.

#### **5.5.5 Age of Firms**

The interviewed organizations range from start-up companies to those that have been in business for 116 years. Six of the companies were less than five years old; five companies were between 5 and 10; six were between 11 and 50; and three companies were over fifty years old.

Companies surveyed that were less than 10 years old (approximately half the sample) began their operations specifically to address the market for environmental/hazardous materials management goods and services. Companies older than 10 years have moved into the field because they possess a product, technology, or expertise deemed applicable to the industry and they saw an opportunity to expand.

## **5.6 Survey Findings**

The following discussion examines the problems facing EHMM organizations and also highlights certain prospects for the growth of the environmental/hazardous materials management industry in Allegheny County.

### **5.6.1 Success in the Environmental/Hazardous Materials Management Field**

The interviewed organizations 10 years or older have much higher revenues than the younger ones. The older firms account for over 90% of the total annual revenue reported for the twenty companies and other organizations combined. Among the older, larger organizations, well established networks of contacts and administrative structures help explain their success. Their internal diversification also helps them through fluctuations in EHMM demand.

When asked to evaluate the performance of their firms within the environmental/hazardous materials management field, all but one of the survey respondents replied that their own overall performances are positive. Nineteen firms expressed the view that they provide necessary services which benefit both their clients and the environment. All the organizations indicated that activity in the EHMM field fluctuates with the promulgation of new environmental laws and regulations. Several organizations indicated that their firms had doubled in size and revenue over the previous year due to increased demand for their products and services.

Several firms attributed the performance of their organizations to the superior quality of their particular products or services, offered at competitive prices. These organizations indicated that while they are not the least expensive firms offering particular products or services, the quality of their offerings enables them to be competitive. Placing a high value on the relationships that they have with their clients, these firms often go to extremes to satisfy a customer.

An overwhelming number of respondents attributed the success or growth of EHMM organizations to environmental laws and regulations but also cited the growth of private sector awareness and secondary enforcement by the banking and insurance industries. Against this common background, the organizations' strategies for increasing their shares of the market are worth noting. They cited the following items:



- o better advertising and marketing;
- o high profile in the field or a good performance record;
- o broad range of professional contacts;
- o ability to satisfy a customer;
- o high standards and quality of work;
- o ability to provide a customer with comprehensive services;
- o ability to fill a specific niche in the field; and
- o networking ability within industry and in the public sector.

Many respondents believe that the climate for EHMM firms in Allegheny County is very healthy and that the County may already have more than an ample number of EHMM firms. When asked what were the most important incentives for promoting the growth of existing EHMM firms, the survey respondents indicated that programs other than direct financial incentives would most benefit their organizations. Desirable incentives would include educational programs aimed at companies that are not in regulatory compliance; programs to make EHMM easier and less costly; public education regarding EHMM; community, industrial, and governmental cooperative efforts to understand, apply, and enforce regulations in a fair manner; and cooperative efforts between enforcement agencies and EHMM firms. Several firms also indicated that tax incentives for companies that develop, institute, and maintain EHMM programs -- such as waste minimization, recycling, reuse, substitution, or remediation -- would increase the need for EHMM services.

Many organizations indicated in their interviews that programs to educate the public and businesses would also indirectly promote their own growth. Most firms agreed that heightened awareness of EHMM issues increases the demand for EHMM products and services. Recommendations were made that educational institutions (especially the universities, community colleges, and regional information centers such as CHMR and NETAC), industry, and government agencies cooperate in a joint educational effort. Cooperative efforts among these parties in sponsoring meetings, seminars, courses, and informational services would serve to educate the general public, instruct particular

industries, and sensitize the media and other institutions regarding EHMM concerns and needs.

A number of those interviewed indicated the need for accredited training or educational programs. Many of the companies commented that there are not enough professionals or adequately trained individuals available to meet current local demand. The concerned organizations envision working with area colleges and universities in designing and promoting accredited programs that meet their own particular needs. They suggest that the County take an active role in encouraging students to enter these programs. Recommendations were also made that young professionals currently need to have a comprehensive education to be able to appreciate future needs of the EHMM industry.

Several organizations discussed the desirability for Allegheny County to actively promote the services of organizations currently functioning in this field. They indicated that promotion of the EHMM products and services available in the Pittsburgh area could establish Allegheny County and southwestern Pennsylvania as a center for the EHMM industry.

There were also recommendations that concerned local governments should sponsor or promote practical EHMM research programs in conjunction with university and industry support. These research programs would seek solutions to particular problems, leading to demonstrations of effective technologies for broader use in the EHMM field.

The most common theme identified by all the respondents was the need for cooperation among industry, the public, and government. Most organizations also indicated that growth in the EHMM field required well-balanced decisions that involved all concerned parties and sectors.

### **5.6.2 Entry Barriers and Impediments to Growth**

The interviewed firms most commonly noted a lack of regulatory enforcement as a factor that has inhibited their particular firm's success in the EHMM field. Many of the firms commented on the need for increased enforcement action by municipal, state, and federal agencies. Suggestions were made regarding the need for regulatory agencies to identify non-compliant companies, educate them as to applicable regulations, and then work with them to achieve compliance with the regulations.

The second most common explanation for slowed growth was the lack of education among private sector businesses and industries. Many of the respondents asserted that private sector companies are poorly educated regarding environmental regulatory requirements. The EHMM firms fear that a potential customer, who is not aware of the regulations, is much less likely to seek their services or products than a well-informed individual or firm.

Another major impediment to the growth or success of the firms surveyed was their inability to obtain and maintain product or service liability insurance. Most of the interviewed organizations indicated that liability insurance rates for environmental/hazardous materials management firms are extremely high. The financial burden of maintaining liability insurance can represent 10% to 15% of the cost of the service provided by an EHMM firm. Several firms indicated that their ability to acquire insurance influences the types and amount of services that they can provide to a client.

Other general factors seen as inhibiting success and growth in the EHMM field include lack of professional experience, lack of operating capital, poor business choices, limited availability of qualified personnel, competition among EHMM firms, and poor public relations. Most of those surveyed indicated a reluctance to use outside investment capital and preferred to control the internal growth of their organizations. Only a few companies indicated an inability to secure investment capital.

Since the EHMM industry is growing, particular expertise and appropriate marketing can find niches for new entrants to the field. Allegheny County was noted as a good place for firms in the EHMM industry to locate due to its strong corporate base, its well-established geotechnical and engineering firms, Pittsburgh's central location in relation to the nation's hazardous materials generating industries, and the presence of major universities. The participating organizations nonetheless identified the following barriers to entry into the EHMM industry:

- o lack of available, up-front capital for equipment, operations, payroll, and insurance;
- o competitive forces in a relatively established industry;
- o difficulty in establishing a respected track record;
- o inability to make professional contacts;
- o inability to establish requisite infrastructure for directing operations;

- o lack of technical and regulatory knowledge; and
- o the inability to obtain liability insurance.

### **5.6.3 Perceived Demand for EHMM Goods and Services**

The surveyed organizations reported that they see themselves currently meeting or exceeding the EHMM needs of Allegheny County and the tri-state area. Many of the companies indicated that they have chosen to channel their growth to provide comprehensive services in a few specific service areas. (See Table 5.3 and Appendix 5.2 for explanations of services provided in respective categories.) The firms anticipate meeting the needs of the greater Pittsburgh area as regional demand grows.

The demand for EHMM services depends on the development and promotion of public facilities, education, and research relating to the EHMM field. Survey respondents frequently noted a need for a RCRA-approved commercial treatment, storage, and disposal (TSD) facility in Allegheny County. Many companies reported concern that Pennsylvania currently has no commercially permitted facilities to dispose of hazardous waste. A TSD facility in Pennsylvania would also reduce the cost of providing disposal services to regional clients as well as increase the ability to treat wastes generated elsewhere in Pennsylvania. A TSD facility would also make Pennsylvania more attractive to companies that require waste disposal services and, in turn, the market for firms offering EHMM products and services would expand. The siting, construction, and operation of a TSD facility would require the support of the Pennsylvania Department of Environmental Resources as well as local governments and the public. Private investors are considered by those interviewed to be the best source of financial support for such an endeavor.

### **5.6.4 EHMM Professionals**

Most of the businesses had a very high opinion of EHMM professionals yet also noted the presence of charlatans in the EHMM field, who may provide misinformation, inadequate service, or inferior products. Such poor practices may leave clients subject to law suits and fines for noncompliance, without providing the needed product or service. Suggestions were made that certifications or licenses be offered to accredit organizations that can demonstrate competency in providing specific products or services.

Most respondents indicated that though most of the professionals with whom they deal are competent, some individuals lack a sufficient mix of experience, technical background, and management skill. According to the respondents, substantial training and education are necessary to enable new employees to perform expected tasks or job duties. Many of the people entering the EHMM field have moved from related areas and they have experience and the professional skills to manage particular tasks, even though they lack thorough knowledge of the EHMM industry. Technical knowledge and experience must be balanced for optimal results. Companies which rely on recent college or university graduates to satisfy their staffing needs may obtain individuals who are educated in traditional engineering, biological, chemical, and environmental science programs, but who often lack the experience, industry-related technical knowledge, or management skills needed to perform their responsibilities efficiently.

Most interviewed companies anticipate an inadequate supply of qualified workers to meet future demands in Allegheny County. They indicated that the industry is currently growing faster than their ability to locate, hire, and train qualified individuals. One result is a process of salary inflation. Small organizations commented that they cannot afford to pay prevailing professional salaries. This factor reduces their ability to compete in a market that is demanding more comprehensive services. Many companies, large and small, saw the need for more training, especially for technicians, to satisfy the needs of their particular field. One type of professional in great demand is the certified industrial hygienist (CIH) with health and safety experience in the area of hazardous materials and waste management.

#### **5.6.5 The Effect of Regulations**

All the businesses surveyed considered environmental regulations to be the driving force in the EHMM industry. Several firms commented that they had provided EHMM services prior to the implementation of environmental legislation, but that the market was not large enough to sustain their operations at that time.

Some firms indicated that environmental regulations can ironically serve as impediments to their productivity. Most notable are transportation regulations imposed on transporters of hazardous waste. These firms maintained that compliance with some federal

and state Department of Transportation regulations increases the cost of services without providing commensurate safety benefits.

Most of the companies which were interviewed indicated that a considerable portion of their time is dedicated to maintaining and updating information on regulatory and technical requirements. It is important for organizations and individuals to enhance their technical and regulatory understanding in order to maintain a competitive position vis-a-vis other businesses. Given that this is a regulatory-driven business, it is essential to be constantly aware of current regulatory requirements as well as possible future ones. Most firms assign the responsibility for tracking regulatory developments to specific individuals or groups. These people digest such information and distribute it within their organizations to appropriate people. The interviewed businesses obtain their regulatory information from the same basic sources.<sup>4</sup> Technical information is obtained in a similar manner but more emphasis is put on professional contacts, consultants, and trade journals. Changing technologies and more stringent regulatory requirements have forced many organizations to stay abreast of technical information.

All of the organizations that were interviewed indicated that there are more than enough available resources to obtain regulatory and technical information. The most common observation was that there is a need to get this information to the appropriate people. Several organizations interviewed provide technical information services as well as technical assistance to clients in order to help the clients understand and sift through the current flood of technical information in the EHMM field.<sup>5</sup> Several organizations indicated that obtaining and maintaining regulatory and technical information can be an expensive task. Seminars on these topics can cost as much as \$1,500 plus traveling expenses. Technical journals, books, and information services are also expensive. Unfortunately, the cost of keeping abreast of current developments in the EHMM field

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<sup>4</sup> Information sources that were cited by respondents include the Code of Federal Regulations, the Federal Register, and reporting services such as the Environmental Reporter and the Bureau of National Affairs (BNA), etc., as well as seminars and technical meetings, trade associations and professional contacts, computer databases, consultants, regulatory agency services, hotlines, and trade journals.

<sup>5</sup> For example, CHMR operates a technical assistance hotline that provides free technical and regulatory information to business and public sector organizations.

cannot be absorbed into the operating overhead of some of the smaller companies interviewed, making these companies less informed and open to the possibility of making inaccurate decisions.

## **5.7 Conclusions and Recommendations**

The EHMM field has experienced tremendous growth and change in the recent past. With increasing attention from an environmentally-sensitized public and under increasing pressure from government, this field will be subject to many challenges in the years ahead. The survey respondents identified several major trends in the EHMM field. Most commonly they indicated that in the near future there would be a reduction in the number of smaller organizations. Many firms commented on the current trend for large and medium size businesses to buy out smaller businesses. They see this trend continuing because of the need for an organization to be able to provide comprehensive services to support a specific technical area. They also see increased competition as either forcing smaller companies out of business or forcing them to be absorbed by larger businesses.

All the organizations interviewed saw growth in the EHMM field for two primary reasons: more regulations and increased demand by private firms for EHMM products or services. More and stricter regulations have already been shown to increase business opportunities for those interviewed. As more private businesses become informed about existing and new regulations, they will be forced to take actions to comply. Banks and insurance companies are also forcing their clients to demonstrate sound EHMM judgement to become eligible for loans or other financial services.

Three general recommendations can be made based on the EHMM survey. First, there is a need to educate businesses and the public regarding environmental, health, and safety regulations, policies, and issues. Second, a more active, integrated approach needs to be taken in order to attract and educate new professionals who are interested in entering the environmental/hazardous materials management field. Third, a cooperative approach among EHMM firms, industry, governmental regulatory agencies, educational institutions, and the public should be fostered in the development, implementation, and maintenance of relevant programs, technologies, and regulations.

The most common theme expressed by all those interviewed is the need for environmental education at all levels of society. It is necessary to educate businesses and

industry as to compliance with regulatory requirements. Public education regarding the environment is also critical to a better understanding of the dangers and benefits of an organization's operations in a local area. Providing the public with an understanding of how to knowledgeably interpret information that may have an impact on the environment and public health and safety allows for informed public decision making. There is also an intense need for environmental education at the elementary and secondary levels in the public and private schools. Educational programs would benefit from the cooperation of industry and government. Educational institutions should cooperate by providing information, education, and training programs. It is recommended that state and local governments actively promote and support programs that educate businesses and the public regarding environmental issues. While many environmental laws and regulations may seem, at first blush, to inhibit the growth and productivity of an organization, these requirements have actually been developed to help organizations take into account the environmental impact of their own operations. Environmental regulations prompt organizations to implement plans for waste reduction, minimization, recycling, substitution, and/or reuse. These measures actually may increase profitability for complying firms.

The second finding on EHMM is the need to provide integrated educational programs for professionals entering the field. Respondents to the survey indicated an increasing demand for competent professionals and workers who are capable of providing services to clients. Professionals must have the technical, regulatory, and practical experience as well as the management skills necessary to coordinate and oversee particular projects.

It is recommended that local colleges and universities actively support and promote integrated environmental/hazardous materials management programs. Programs must integrate course work in engineering, the natural sciences (e.g. biology, chemistry), management, and communication to provide a graduate with appropriate skills and certification. Laborers must be educated about safe work practices and must receive technical information necessary to their tasks. Creating a strong professional and labor base for this industry in Allegheny County will promote the success of firms already established here. It will also develop the technical knowledge, ability, and experience to make the EHMM firms in this region more competitive nationally and internationally.

Finally it is recommended that a cooperative approach be undertaken to develop, implement, and maintain environmental programs, technologies, and regulations. A



combined governmental, industrial, academic, and public approach will facilitate the flow of information and understanding in the EHMM industry. One organization that was interviewed, the National Environmental Technology Applications Corporation (NETAC), was established jointly by the U.S. EPA and the University of Pittsburgh for just this purpose. NETAC will bring concerned sectors together to discuss their respective issues and concerns. By using the collective expertise of all the sectors, ideas and technology will have the benefit of thorough review and comment. Combined sector support for ideas and technology will facilitate technology transfer and application in industry.

It is recommended that local and state government support and promote the efforts of organizations like NETAC. Allegheny and neighboring counties should sponsor or initiate round-table discussions, seminars, and meetings. By encouraging the exchange of ideas and knowledge, the southwestern Pennsylvania region will continue to establish itself at the forefront of knowledge and understanding in this industry. By so doing, the region can become a center of the environmental/hazardous materials management industry and make the area more attractive to EHMM organizations and the clients which utilize EHMM products and services.

For many respondents the cooperative spirit should extend to enforcement as well. These companies stated that once a few businesses would be fined for noncompliance, companies would assume a more compliant attitude towards regulatory requirements. Several businesses suggested that enforcement agencies take a more flexible and informed approach in applying the regulations. These businesses believe that the industry can best benefit if enforcement agencies, clients, and EHMM firms work together.

Although the growth and development of the EHMM industry involves many concerns separate from the direct analysis of the Ashland Oil spill of January 1988 and its aftermath, an underlying connection can be emphasized. Having a strong EHMM sector in Allegheny County and southwestern Pennsylvania provides a core of expertise for dealing with emergency preparedness and the management of possible accidents involving hazardous materials and dangers to the environment and the public's safety. Southwestern Pennsylvania, with its well established industrial history, its diversified manufacturing community, its capacious infrastructure, its numerous R&D institutions, and its tradition of finding solutions for its own environmental problems, is uniquely positioned to take advantage of these opportunities in the EHMM industry. The regulated nature of environmental hazardous materials management arena requires new and evolving businesses

to have substantial business, technical, and information resources to thrive. In this context a lesson of the Ashland Oil spill is the need to cultivate the further development of the EHMM industry in Allegheny County.

## Chapter 6

### An Analysis of Pennsylvania's Emergency Management

#### Policies and Programs

##### 6.1 Purpose

The purpose of this chapter is threefold: first, to identify and explain the Commonwealth policies and programs that are currently available to Allegheny County to assist it in responding to events like the Ashland Oil spill; second, to examine the role and importance of recent federal legislation (SARA Title III) in the process of emergency planning; and third, to identify any gaps in emergency response assistance based on a review of current programs. Information for this analysis has been obtained from interviews with state agency officials, a review of public hearing records, examination of the relevant legislation, and through an evaluation of existing programs described by the Pennsylvania Department of Commerce.<sup>1</sup>

##### 6.2 Existing Commonwealth Emergency Response Policies and Programs

This section provides an overview and brief description of the state and local government emergency response agencies charged with the responsibilities for implementing the Commonwealth's emergency response policies and programs as well as a brief description of several local industry-government emergency preparedness and response arrangements. In addition, other Commonwealth policies and programs relating to the protection of the public from health and safety hazards -- but not related to emergency response -- are briefly discussed. Figure 6.1 provides a comprehensive listing of agencies/organizations with emergency response roles, responsibilities and capabilities.

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<sup>1</sup> Pennsylvania Department of Commerce, Economic Development Resource Manual: A Guide to State Programs for Area Economic Development (February 1987).

In Pennsylvania emergency response policies and programs are currently administered through the Pennsylvania Emergency Management Agency (PEMA) at the state level, County Emergency Management Coordinators appointed at the county level, and local emergency management organizations (usually local fire and police departments) established in each political subdivision of the Commonwealth.

#### **6.2.1 The Pennsylvania Emergency Management Agency (PEMA)**

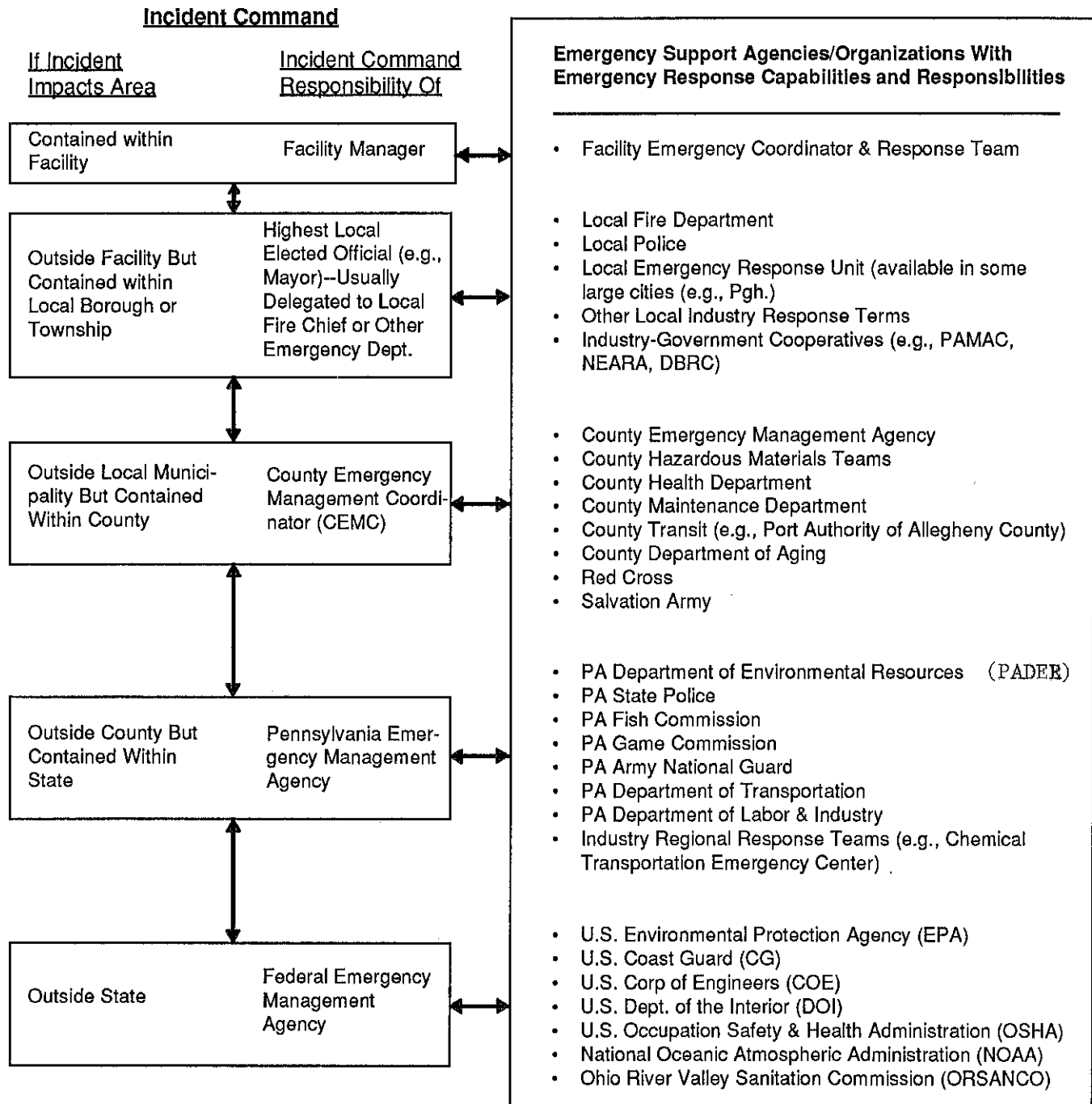
PEMA was created in 1978 when the General Assembly and the governor of the Commonwealth of Pennsylvania approved Act 1978-323, which amends Title 35 of the Pennsylvania Consolidated Statutes<sup>2</sup> by adding Part V, entitled "Emergency Management Services." (See Appendix 6.1.) This text refers to Act 1978-323 as the Emergency Management Services Act. This act gives PEMA extensive emergency preparedness and response powers, which include the power to:

- o prepare, maintain, and keep current a Pennsylvania Emergency Management Plan for the prevention and minimization of injury and damage caused by disaster, for prompt and effective response to disaster, and for emergency relief and recovery. The plan may include numerous provisions such as preparedness standards, designation of responsibilities, assistance to local governments in designing emergency management plans and training programs, etc.;
- o establish a statewide system of disaster communications;
- o provide technical advice and assistance to local governments in the preparation of emergency management plans and to periodically review such plans and suggest or require revisions;
- o establish and operate or assist political subdivisions in establishing and operating training programs;
- o determine the need for, maintain information regarding, and procure materials, supplies, equipment, facilities and services necessary for emergency readiness, response, and recovery; and
- o administer grant programs to political subdivisions for disaster management.

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<sup>2</sup> Section 1, Title 35, Act of November 25, 1970, P.L. 707, No. 230.

**Figure 6.1**  
**Comprehensive Listing of Agencies/Organizations with Emergency Response Roles, Responsibilities, & Capabilities**



Notes:

1. A local incident commander (e.g., County Emergency Management Coordinator) can request assistance from a state support agency (e.g., PADER), even if the incident is contained within the local area.
2. The proposed Pennsylvania Hazardous Materials Protection Act would give trained and certified local emergency response teams (e.g., County Hazardous Materials teams) authority to enter and take any necessary response actions in the event of a hazardous materials incident.
3. The PA Hazardous Sites Cleanup Act gives PADER authority to undertake any investigation and response which it deems necessary to protect the public health, safety, or welfare of the environment.
4. The U.S. EPA and the U.S. CG have authority and responsibility to supervise, direct, and in some cases take over all phases of clean-up in response to spills of petroleum products and hazardous substances to surface waters of the United States.

The Pennsylvania Emergency Management Council (composed of the Governor, Lieutenant Governor, other cabinet level officials, and leaders of the General Assembly) has responsibility for overall policy and direction of PEMA. The council shall, within the limitations of appropriations made to the agency, arrange for the employment of such staff personnel (including a State Director), equipment, and services essential to the development and maintenance of the statewide program.

Given the scope of powers entrusted to PEMA, it is evident that the Emergency Management Services Act has provided a broad framework for creation of a system under which the state could provide local governments, such as Allegheny County, with considerable assistance in emergency incidents such as the Ashland Oil Company's diesel oil spill into the Monongahela River in January 1988. However, actual implementation of a broad program by PEMA for incidents like this has been hampered by insufficient funding. Available resources at PEMA have concentrated on emergency response planning involving natural disasters, civil defense, and nuclear accidents -- though some progress has been made toward developing a statewide Emergency Management Plan that includes hazardous materials related incidents. This progress is occurring within the federal government's framework for emergency planning required by Title III of the Superfund Amendments and Reauthorization Act (SARA). In addition, some progress is being made by PEMA providing limited technical assistance and training to local governments.

The technical assistance and training available thus far have appropriately concentrated on initial response procedures to typical emergencies such as warehouse fires, train derailments, hazardous materials transportation accidents and on training local first responders to identify the most common potential hazards typically encountered during such emergencies. However, the experience of the Ashland Oil spill and the qualitative assessment of the emergency response to the spill, as presented in chapter 2 of this report, suggest that the technical equipment, training, and financial resources currently provided to local governments are not sufficient for adequate preparation and response to major incidents that involve an expanding universe of hazardous substances that can be released to the environment in a large number of ways.

First responder training is a continuous need due to personnel turnover. Training for local emergency responders must emphasize rapid identification, prompt response, and accurate monitoring of hazardous substances involved in an emergency. Monitoring should

include the use of the kind of information provided under SARA on the location and types of hazardous materials at particular industrial sites. To improve coordination during multi-jurisdictional incidents such as the Ashland spill, local emergency responders must understand available resources and the responsibilities of state and federal level emergency response organizations, such as the Coast Guard, the U.S. Environmental Protection Agency, Pennsylvania Department of Environmental Resources, Pennsylvania Fish and Game Commission, and others. Coordinated joint training, including field exercises involving emergency response personnel from these various agencies, needs to be a priority.

The Emergency Management Services Act provides that whenever the Governor has proclaimed a disaster emergency, he shall have the power to transfer any unused funds in the General Fund for reimbursements to local governments for roadway clearance or restoration of water systems. The total of such transfers shall never exceed \$1,000,000 in any one year except by action of the General Assembly.

These funds are for a limited set of corrective, after-the-fact actions. The emphasis in the Emergency Management Services Act is to provide financing and emergency assistance to local governments for response to flood-related emergencies. No financial assistance is typically provided for planning, developing, or improving local systems, or for equipment, education, or training for hazardous materials-related emergency preparedness and response. Many local governments allocate insufficient resources to establish the required basic organization on the local level that is needed to accept technical and training assistance from the state. Financial assistance from the state in the form of grants requiring local matching funds would further encourage local governments and provide essential resources for improving local emergency preparedness and response. The benefits from this assistance can be substantially further leveraged by requiring local industry participation.

### **6.2.2 County Emergency Management Coordinators**

Act 1978-323, which created PEMA, requires that a coordinator be appointed in all counties with approval of the director of PEMA. The latest list of Pennsylvania's 67 County Emergency Management Coordinators is available from PEMA. In Allegheny County the designated Emergency Management Coordinator is Robert G. Kroner, who is also the County Police Superintendent.

Act 1978-323 gives each political subdivision (including each county) a broad mandate to prepare for and respond to emergencies. Under the Act each affected subdivision is supposed to

- o prepare, maintain and keep current an emergency management plan in consonance with the Pennsylvania Emergency Management Plan;
- o establish, equip, and staff an emergency operations center with communication systems to support operations in emergencies and provide other essential facilities and equipment for agencies assigned emergency functions;
- o provide training and organize, prepare, and coordinate all locally available manpower, materials, equipment, facilities, and services necessary for disaster emergency readiness, response, and recovery;
- o adopt and implement precautionary measures to mitigate the anticipated effects of disaster; and
- o cooperate and coordinate with any public or private entity in achieving any of the foregoing purposes.

It is evident that the Emergency Management Services Act provides the framework to create an adequate system with extensive powers granted to local governments to prepare for and respond to emergencies. In addition, the act provides that some technical assistance and training be available to local governments through PEMA. While it is apparent that Allegheny County and the City of Pittsburgh have moved forward and established effective, operating emergency management organizations, it is also clear that local governments' financial resources are generally insufficient in comparison with what local emergency management planners require to address the growing universe of hazardous materials or to prepare for the myriad of possible incidents which may result in a significant release of such materials to the environment.

Currently no financial assistance or equipment resources are provided to local governments by the Emergency Management Services Act. Existing technical and training assistance provided through PEMA is limited, as discussed previously. As a minimum, sufficient technical and financial assistance is needed to ensure that local governments have adequate equipment, materials, communication systems, staff training, and the kinds of information resources described in chapter 2 of the present document.



### **6.2.3 Local Emergency Management Organizations**

Act 1978-323 also directs and authorizes each political subdivision of the Commonwealth (townships, boroughs, and towns) to establish a local emergency management organization (usually within local fire and police departments) in accordance with the plan and program of PEMA, and requires that a local emergency management coordinator be appointed with approval of the director of PEMA. Each appointed local emergency management coordinator must attend and successfully complete in-service training prescribed by PEMA. Responsibility for the training rests with each successively higher political subdivision than the one in which the coordinator is functioning. In this way PEMA is directly responsible for developing the training program and training the county emergency management coordinators. Similarly, training responsibility for local emergency responders lies with the county coordinator, a situation which creates additional demands on limited county staff and financial resources in the area of emergency preparedness. State financial assistance at the county level is needed to support limited county resources and help establish a priority for this important training function.

Each local organization has responsibility for emergency management, response, and recovery within the territorial limits of the political subdivision. The powers and duties of local political subdivisions is the same as those discussed previously for county emergency management organizations. While technical assistance is available from PEMA and the county emergency management coordinators, financial assistance is not provided.

### **6.2.4 Other Commonwealth Policies and Programs**

State agencies provide many sources of assistance to local governments to be used to protect the public health and safety. This assistance is either technical or financial or both and is directed primarily to the protection of the public health and safety through infrastructure improvements such as flood control, water facilities, wastewater collection and treatment, and the development of local solid waste management or resource recovery programs. However, none of these state programs is geared to providing technical or financial assistance for emergency preparedness and response activities.

These programs for the protection of the public from health and safety hazards are offered both through the Department of Community Affairs (DCA) and the Department of Environmental Resources (DER). Examples of the financial and technical assistance

that are offered include federal and state funding for construction of flood abatement projects; technical assistance on floodplain management; federal and state funding for wastewater treatment facilities; and grants or loans for the planning and development of municipal solid waste management or resource recovery programs. A brief summary of all such programs is provided in Appendix 6.2.

#### **6.2.5 Industry-Government Emergency Preparedness & Response Cooperatives**

As discussed in the previous sections, Act 1978-323 gives PEMA and local emergency response agencies extensive powers to prepare for and respond to emergencies -- including the power to cooperate and coordinate with any public and private entity. One type of private arrangement is an industry-government emergency preparedness and response cooperative. Several such industry-government cooperatives have already been established in certain regions of the Commonwealth and in other states. These cooperatives have been successful in marshalling the resources of local industry to assist government in improving emergency planning, training, and response. A cooperative organization in Allegheny County is under discussion, partly as a result of experience with the Ashland spill. This effort is described later in the present chapter.

Two cooperatives, the Delaware Bay and River Cooperative (DBRC) and the North East Allegheny Response Association (NEARA), are described in the following paragraphs. The DBRC may serve as a model for a southwestern Pennsylvania cooperative, whereas the NEARA is an example of an existing local cooperative which may be expanded or incorporated into a regional organization.

#### **6.2.6 Delaware Bay and River Cooperative**

The Delaware Bay and River Cooperative was formed in 1978 by companies that ship petroleum on the Schuylkill River in Philadelphia south to the mouth of the Delaware River on Delaware Bay. The members include petroleum companies such as Amoco and Chevron, chemical companies such as Du Pont, and utilities.

The cooperative member organizations, which are assessed annual fees, help one another contain and control spills and will help non-members at the request of the Coast Guard or other government agencies. A 24-hour hot line allows the cooperative to act within minutes of an accident -- with deployment to the scene usually accomplished in less

than an hour. The cooperative relies both on its own resources as well as those of private contractors. Available equipment includes an oil skimming boat, built in 1979 for \$1.2 million, which is one of only three in the world. The cooperative also owns 20,000 feet of the sausage-like booms that absorb and divert the flow of oil.

The DBRC also donates \$10,000 to \$15,000 a year to the annual budget, of approximately \$30,000, of the Tri-State Bird Rescue and Research Center, a volunteer clinic that is gaining an international reputation for its wildlife medical work and research. In return the volunteers, who contribute about 12,000 hours a year, agree to respond 365 days a year to assist birds in case of a spill and to share their research information.

#### **6.2.7 North East Allegheny Response Association**

The North East Allegheny Response Association (NEARA) is a group of volunteer, municipal, and industrial fire companies and emergency response groups in the northeastern section of Allegheny County.<sup>3</sup> The association was formed to provide mutual aid and equipment or facilities to any of the association members.

A goal of NEARA is to provide its members with a well trained and equipped hazardous materials response team composed of local volunteer firefighters. Their training is being provided without charge by the Allegheny County Fire Academy. The program consists of 166 hours of hazardous materials training conducted by state certified instructors.

NEARA's hazardous materials vehicles and equipment have been donated by Allegheny County and includes a hazardous materials emergency response (HAZMAT ER) vehicle, which is physically located at the University of Pittsburgh Applied Research Center (U-PARC) in Harmarville, PA. The HAZMAT ER vehicle is equipped with protective clothing, miscellaneous "Plug N'Dike" material (not including sewer plugs), drums, miscellaneous patching kits, a 10 gallon per minute transfer pump, miscellaneous mop-up equipment, an infrared probe eye, binoculars, neutralizing chemicals, litmus paper, miscellaneous toxic gas monitors, miscellaneous absorbent pads (not boom types), a fire extinguisher, library, and a radio. All equipment is available for use by any member in time of need.

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<sup>3</sup> The communities which are members of the association include Natrona Heights, Verona, Aspinwall, Sharpsburg, Springdale, Oakmont, and Harmarville.

### **6.3 Title III of the Superfund Amendments and Reauthorization Act (SARA)**

In addition to the existing Commonwealth emergency policies and programs, the federal government has recently established a framework for emergency planning under Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986. This development is an outgrowth of the federal government's overall concern for the proper management of hazardous materials. Similar legislation on the state level is under development -- to be known as the Pennsylvania Hazardous Materials Protection Act. The latter effort, discussed in a subsequent section, is intended to ensure that the Commonwealth acts in accordance with federal legislation and establishes other requirements to protect citizens and emergency service personnel from the health hazards and harmful exposures which may result from hazardous materials incidents.

This section provides an overview of the emergency planning requirements of Title III of the Superfund Amendments and Reauthorization Act (SARA), which became law on October 17, 1986. Title III of SARA is also known as the Emergency Planning and Community Right-to-Know Act (EPCRA). As the name implies, EPCRA has two major foci, emergency planning and community right-to-know.

This piece of federal legislation requires that industry provide information to local and state emergency planners concerning hazardous substances used and stored at company facilities and that local governments and communities plan for hazardous materials emergencies that may be encountered in their jurisdictions. The program is designed to help protect communities against potential chemical emergencies by providing a framework for ensuring that local and state emergency planners have the information they need to plan for, prepare for, and respond to emergencies involving hazardous materials.

Title III has four major parts: emergency planning, emergency notification, community right-to-know, and toxic chemical release reporting. These four components to the legislation and their importance in the process of emergency planning are discussed below.

#### **6.3.1 Emergency Planning**

The emergency planning sections of SARA Title III are designed to develop governmental emergency preparedness capabilities through increased coordination and planning on the state and local level. Section 301 has established two planning levels

within each state -- a state emergency response commission (SERC) and local emergency planning districts, each governed by a local emergency planning committee (LEPC).

In Pennsylvania the SARA Title III program is administered through the Pennsylvania Emergency Response Commission (PERC). The Pennsylvania Emergency Management Agency (PEMA) is the lead state agency for PERC, with the Department of Labor and Industry playing a supporting role in assisting PEMA. As a result of SARA Title III, each county in Pennsylvania has been designated as a local emergency planning district to be governed by a local emergency planning committee (LEPC). The contact at the local level is the County Emergency Management Coordinator.

Facilities subject to emergency planning requirements are required to notify both state and local emergency planning officials that they are subject to the provisions of EPCRA.

Section 303 also requires LEPCs to submit emergency response plans to the SERC. These plans must include identification of facilities where hazardous materials are used and stored; transportation routes for extremely hazardous substances; emergency response procedures; community and facility coordinators; emergency notification procedures; release detection methods; availability of emergency equipment; evacuation plans; training programs and methods; and schedules for exercising emergency response plans.

### **6.3.2 Emergency Notification**

Facilities that have an unplanned release of any listed, extremely hazardous substance which exceeds a specified quantity must immediately notify the LEPC and SERC. Written follow-up is also required under this section, setting forth the information provided during the emergency notification and updating it with additional information, such as actions taken to respond to and contain the release, known and anticipated health effects, medical advice, and so forth.

### **6.3.3 Community Right-To-Know Reporting**

The Community Right-to-Know provisions of SARA Title III are intended to increase the public's knowledge and access to information regarding the presence of hazardous chemicals in their communities and releases of these chemicals into the environment.

A Material Safety Data Sheet (MSDS) is the vehicle most often used to provide information on the hazardous properties of a material used and stored at industrial facilities. An MSDS is a document prepared for each hazardous chemical, which contains information regarding the material's physical and chemical properties, potential hazards, safe handling procedures, and emergency first aid procedures. Facilities that must have MSDSs available under the Occupational Safety and Health Act (OSHA) hazard communication regulations are required under provisions of SARA Title III to submit copies of MSDSs or a list of MSDSs to the LEPC, SERC, and the local fire department.

Emergency and hazardous chemical inventory forms must be submitted by facilities to their respective LEPC, local fire department, and the SERC. These forms provide information on the types, amounts, and locations of hazardous chemicals at facilities. If significant new information about a chemical is discovered or if new hazardous chemicals are introduced to a facility in quantities above the established reporting levels, appropriate agencies must be notified.

#### **6.3.4 Toxic Chemical Release Reporting**

Facilities must submit Toxic Chemical Release Forms for specified chemicals. Owners and operators of certain facilities that process, manufacture, or otherwise use a listed toxic chemical in amounts exceeding threshold quantities must report emissions of such chemicals on an annual basis.

#### **6.3.5 Public Availability of Information**

Information such as emergency plans, MSDSs, hazardous chemical lists, inventory forms, toxic chemical release forms, and follow-up emergency notices must be made available to the public. Each LEPC is required to publish an annual notice in a local newspaper stating that emergency plans, inventory forms, etc. have been duly submitted and are available for review.

### **6.3.6 Importance of SARA in the Emergency Planning Process**

SARA requires state and local emergency planning agencies, such as PEMA and the county emergency planning coordinators already established under the Emergency Management Services Act, to expand their activities related to coordination and emergency planning for incidents involving hazardous materials. SARA also establishes additional notification and reporting requirements that increase knowledge and access to information about facilities where hazardous materials are used and stored. This information, in turn, is to be used by local emergency planners in developing their plans for emergency response to hazardous materials incidents.

The requirements of SARA have provided an important mechanism for local emergency planners to identify the universe of hazardous materials in their respective communities and define their responsibilities related to emergency planning for hazardous materials incidents. However, these requirements have also placed additional demands on the limited staff and financial resources of local governments, without Congress having provided additional financial assistance.

### **6.4 Proposed Pennsylvania Hazardous Materials Protection Act**

Proposed state legislation, the Hazardous Materials Protection Act, is being developed to ensure that the Commonwealth acts in accordance with SARA and defines requirements for the establishment of a comprehensive hazardous materials safety program and a response fund to provide financial assistance to state agencies and counties for hazardous materials emergency preparedness and planning. A copy of this proposed legislation is provided in Appendix 6.3. The proposed Hazardous Materials Protection Act would

- o designate the Pennsylvania Emergency Management Council (for which PEMA is the lead state agency) as the Commonwealth's emergency response commission and establish emergency planning districts in accordance with the provisions of SARA;
- o establish and maintain a comprehensive hazardous materials safety program at the state and county levels of government;
- o create a hazardous materials response fund to provide financial assistance to state agencies and counties to develop effective and integrated hazardous materials release response capability;

- o establish an emergency notification system for hazardous materials releases;
- o assign responsibilities to various state, county, and local departments, and agencies to ensure the development and furtherance of a comprehensive hazardous materials safety program;
- o provide civil liability protection to emergency response personnel properly carrying out their duties and responsibilities; and
- o require those persons responsible for the release of hazardous materials to pay the costs incurred by hazardous material response teams for emergency response activities and to establish emergency planning and hazardous chemicals fees charged to facilities covered under the Act.

This proposed Act will go a long way toward correcting the deficiencies in existing Commonwealth policies and programs in the emergency response arena. It builds on the existing emergency preparedness and response program established by the 1978 Emergency Management Services Act by focusing attention on emergency planning for hazardous materials related incidents. As part of creating the comprehensive hazardous materials safety program, PEMA will develop emergency preparedness plans in conjunction with the Departments of Environmental Resources, Health, Transportation, Agriculture, Labor & Industry, as well as the Public Utility Commission, Fish Commission, Turnpike Commission, and the State Police. The program will include guidance on duties, responsibilities, roles, missions, coordinated procurement, and staffing of these departments.

## **6.5 Pennsylvania Hazardous Sites Cleanup Act**

On October 18, 1988 the Pennsylvania Hazardous Sites Cleanup Act (or State Superfund Act) was signed into law. The key purpose of this law is to authorize an expanded state role in investigating and responding to the release of hazardous substances and to encourage the siting of hazardous waste treatment and disposal facilities in Pennsylvania. Although most of the provisions in this Act are directed at responding to hazardous substance releases from contaminated sites and facilities, the Act contains a few key provisions that give the Department of Environmental Resources (DER) extensive powers and responsibilities to carry out certain emergency response actions, including those caused by non-hazardous substances, as in the case of the Ashland spill.

The Act gives DER the power and duty to provide emergency response capability for spills, accidents, and other releases of hazardous as well as non-hazardous, substances



and contaminants. Where there is a release, the DER is authorized and required to investigate it. If further response action is deemed appropriate, the DER must notify and allow the responsible party to investigate and undertake an appropriate response or DER may undertake any further investigation and response which it deems necessary to protect the public health, safety, or welfare, or the environment. The Act establishes a fund to provide the financial resources needed to plan and implement responses to the release of these substances and contaminants. The funds can be used for emergency response actions, studies and investigations, planning, remedial response, maintenance and monitoring activities, replacement of water supplies, and protection of the public from the release.

#### **6.5.1 Proposed Legislation Would Augment the Pennsylvania Hazardous Materials Cleanup Act**

While the Hazardous Sites Cleanup Act substantially improves DER's authority and financial resources to respond to emergencies such as the Ashland spill, it does not directly address the financial and technical assistance needs of local governments.

On the other hand, the proposed Hazardous Materials Protection Act would build on the existing program established under the 1978 Emergency Management Services Act (Act 1978-323) to improve technical and financial assistance to local governments and also would enable these governments to act in accordance with the Federal Emergency Planning and Community Right-to-Know Act of 1986. Under the proposed legislation, expanded technical and financial assistance would be provided to state agencies and local governments for developing and maintaining local systems, equipment, and training for hazardous materials related emergencies. Enactment of this legislation would represent an important step toward improved and coordinated state and local government capabilities for hazardous materials emergency preparedness and response.

Full implementation of this proposed legislation, such that its basic purpose is satisfied, combined with the new authority and financial resources granted to DER by the State Superfund Act, would serve to fill many of the gaps in emergency response assistance identified in this chapter and summarized in the following section.

### **6.6 Gaps in Assistance**

Act 1978-323, which adds provisions relating to Emergency Management Services, creates a very adequate system, through PEMA, for the Commonwealth to provide local

governments, including counties, with technical assistance for emergency preparedness or response. However, these programs are insufficiently funded. The existing programs do not have sufficient technical, equipment, or financial resources to adequately prepare for and respond in a timely manner to major incidents which may result in a significant chemical release to the atmosphere or a large chemical spill into a major waterway such as in the case of the Ashland spill.

The Commonwealth should build on its existing emergency preparedness and response program through PEMA and the county emergency management agencies. Pennsylvania should at the same time expand technical and financial assistance to local governments for planning, developing, improving, and maintaining local systems and equipment for emergency preparedness and response. As a minimum, sufficient technical and financial assistance is needed to ensure that local governments have adequate equipment, materials, communication systems, staff training, and information resources described in chapter 2 of this report. Consideration should be given to establishing a system of user charges. The proposed Hazardous Materials Protection Act represents an important first step toward this goal and the passage of this legislation should be strongly supported.

The Commonwealth should also help local governments establish and expand, where appropriate, strong regional industrial-governmental emergency preparedness and response cooperatives, which could successfully marshal the resources of local industry and government to support the County Emergency Management Agency Incident Command by improving emergency planning, preparedness, training, and response. Such cooperatives could serve to coordinate and augment existing industry and government emergency response resources, including both specialized equipment and personnel such as emergency managers, equipment operators, and workers, chemists knowledgeable in materials' physical/chemical properties, toxicologists, physicians, meteorologists, analytical chemists, safety experts, communication specialists, and scientists knowledgeable in environmental monitoring and wildlife protection. Such cooperatives could also serve to substantially help local industry and government comply with the new federal emergency planning and community right-to-know requirements of SARA Title III by facilitating coordination and communication between industry and government. Industries must provide various notifications and information on hazardous materials at their respective facilities and local government emergency response agencies must incorporate this information into their

emergency response plans. Industry can be a valuable source of information and expertise for certain elements of a local emergency planning committee's emergency response plans, such as emergency response procedures, release detection methods, and availability of emergency equipment.

PEMA and local emergency response agencies are already empowered and authorized by Act 1978-323 to cooperate and coordinate with any public or private entity, such as an industry-government emergency preparedness and response cooperative. Several such industry-government cooperatives have already been established in certain regions of the Commonwealth and in other states, as noted above, which can serve as models for new or expanded cooperatives.

In the aftermath of the Ashland Oil spill, the Greater Pittsburgh Chamber of Commerce and its Public/Private and Intergovernmental Cooperation Program (ICP) office have responded to the County Coordinator's request to help strengthen cooperation and communication between the private and public sectors in multi-jurisdictional, multi-level emergencies. The ICP is proposing creation of a Pittsburgh/Allegheny County Mutual Aid Council (PAMAC), for which it has developed a Project Proposal Overview and Rationale. (See Appendix 6.4.) The Chamber is currently evaluating the feasibility of implementing this proposal. The purpose of the proposed PAMAC organization would be to provide a means for support and cooperation by the private sector during times of emergencies so that additional trained manpower and equipment resources from industry could be provided in support of the CEMA incident command. However, the Allegheny County Emergency Management Agency would retain responsibility for incident command. The Commonwealth, through PEMA, and the Allegheny County Emergency Management Agency should strongly support the creation of PAMAC.

Establishing such cooperatives could be facilitated and strengthened with seed or planning grants provided by the Commonwealth through PEMA to local governments or mutual aid cooperatives. The benefits to the Commonwealth from such grants would be substantially leveraged by the significant financial and technical resources typically contributed by industry to such cooperatives.

## 6.7 Conclusions

The 1978 Emergency Management Services Act has designated an adequate framework for creating a system for the Commonwealth of Pennsylvania to provide local governments with assistance in the areas of emergency preparedness and response. The Act gives extensive emergency preparedness and response powers to PEMA and to local governments. However, these organizations have been insufficiently funded to develop a broad program and have initially concentrated on emergency response planning for natural disasters, civil defense, and nuclear accidents. Financial assistance under the 1978 Act has been limited to helping local governments respond to flood related emergencies and other natural disasters.

The limited amount of technical assistance and training provided to local governments regarding hazardous materials response under existing policies and programs has been concentrated on initial response procedures to emergencies such as warehouse fires, train derailments, and transportation accidents, as well as on training local first responders on the most common potential hazards typically encountered during such emergencies. However, the experience of the Ashland incident and a qualitative assessment of the emergency response to this incident, as presented in chapter 2, suggest that the technical, equipment, training, and financial resources currently provided to local governments are insufficient to prepare adequately for and respond to major incidents from a growing array of possible hazardous substance and facility scenarios.

The State Superfund Act, enacted in late 1988, substantially improves DER's authority and financial resources to respond in case of emergencies such as the Ashland spill. The Act does not, however, directly address the financial and technical assistance needs of local governments for such incidents.

The proposed Pennsylvania Hazardous Materials Protection Act would improve this situation by building on the existing program established under the 1978 Emergency Management Services Act to improve technical and financial assistance to local governments and also enable these local jurisdictions to act in accordance with the federal Emergency Planning and Community Right-to-Know Act of 1986. Under the proposed legislation expanded technical and financial assistance would be provided to state agencies and local governments for developing and maintaining local systems, equipment, and training for hazardous materials related emergencies. Enactment of this legislation would

represent an important step in the direction of improved and coordinated state and local government capabilities for hazardous materials emergency preparedness and response.

Full implementation of the Hazardous Materials Protection Act, together with the expanded authority and financial resources now available to DER, would serve to fill many of the gaps in emergency response assistance identified in this chapter.

In addition, the Commonwealth needs to assist local governments in establishing and expanding strong regional industrial-government emergency preparedness and response cooperatives. These new organizations could help enlist local industry and government resources to improve emergency planning, preparedness, training, and response. The cooperatives could serve to coordinate and augment existing industry and government resources and help assure local compliance with the new federal emergency planning and community right-to-know requirements of SARA. Establishing such cooperatives can be facilitated and strengthened with seed or planning grants provided by the Commonwealth through PEMA to local governments or mutual aid cooperatives.

The Greater Pittsburgh Chamber of Commerce, through its Public/Private and Intergovernmental Cooperation Program office, has responded to the County Coordinator's request to develop ways of strengthening cooperation and communication between the private and public sectors in multi-jurisdictional, multi-level emergencies. In particular, the Chamber is sponsoring the creation of a Pittsburgh/Allegheny County Mutual Aid Council (PAMAC) to meet this need by pooling industry resources -- especially equipment and technical expertise -- to support the CEMA incident commander. The Commonwealth, through PEMA, should support the creation of PAMAC.

## APPENDIX 2.1

### List of References Cited in Chapter Two



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3. Individual interviews with emergency response personnel representing the U.S. Coast Guard Pittsburgh Marine Safety Office, Allegheny County Emergency Management Agency, and Allegheny County Health Department Bureau of Environmental Health.
4. Testimony before the Pennsylvania Senate Environmental Resources and Energy Committee Public Hearing held Thursday, January 21, 1988, Pittsburgh, PA:
  - o Pennsylvania Lt. Governor Mark Singel
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5. Testimony before Subcommittee on Transportation, Tourism and Hazardous Materials, U.S. House of Representatives, Washington, D.C., Jan. 26, 1988:
  - o Lieutenant Governor Paul Leonard  
State of Ohio
6. Testimony before The Subcommittee on Environmental Protection, Committee on Environment and Public Works, United States Senate, Feb. 4, 1988:
  - o Congressman Doug Walgren  
House of Representatives  
Congress of the United States
  - o Rear Admiral J. William Kime  
Chief, Office of Marine Safety  
Security and Environmental Protection  
United States Coast Guard
  - o Dr. J. Winston Porter  
Assistant Administrator for  
Solid Waste and Emergency Response  
U.S. Environmental Protection Agency
  - o Mr. James M. Seif  
Regional Administrator, Region 3  
U.S. Environmental Protection Agency



- o Mark M. McClellan  
Deputy Secretary for Environmental Protection  
PA Department of Environmental Resources
- o Robert G. Kroner, Coordinator  
Allegheny County Emergency Management Agency

## APPENDIX 2.2

### Summary of Key Events Related to On-Site Emergency Response



The following provides in chronological order a brief summary of key events and related on-site emergency response actions implemented during the first few hours following the incident.

Saturday, January 2, 1988

5:10 pm      A storage tank at Ashland Oil's Floreffe, PA, terminal ruptured and released nearly 3.9 million gallons of Diesel Fuel Oil No. 2. Ashland Oil promptly made the appropriate notifications, disconnected power, sealed the discharge from the facility API separator and containment system, and called in emergency response contractors.

The sudden release caused diesel fuel to surge over the containment dike, flow across a parking lot, and enter a storm sewer serving the adjacent Duquesne Light Company Elrama Power Station as shown in Figure A1. This storm water system discharges to the Monongahela River approximately 25 miles upstream from Pittsburgh, Pa.

A portion of the diesel fuel which surged over the containment dike flowed across Route 837 into a ravine on the other side of the highway. This ravine drains to a culvert beneath Route 837 which discharges back into the parking area between the Ashland Terminal and the Power Station -- eventually also draining into Elrama's storm sewer. This culvert was partially buried and served as a throttle to retard the flow of this portion of the escaped diesel fuel and allow it to flow for several hours after the initial release.

The surging diesel fuel also severely dented an empty storage tank and caused damage to another storage tank containing approximately 1 million gallons of gasoline.

5:30 pm      Emergency responders from the Floreffe Fire Department, local police, and the Mt. Pleasant Hazmat Team were on site and an oil-covered half-mile stretch of Route 837 was closed to traffic. The Allegheny County Police Radio Room was notified. The Emergency Operations Center (EOC) was activated and follow up notifications (Red Cross, County Health, Maintenance, etc.) were made from there.

5:40 pm      Larry Clark, Elrama Power Station Superintendent, arrived on site. Duquesne Light employee reported that fuel oil bubbled out of Catch Basin A, but "in a matter of minutes it was gone". Physical evidence during subsequent inspections by CHMR indicate that the maximum depth of overflow above the top of Catchbasin "A" was 1-foot. No overflow occurred in downstream catchbasins.

6:15 pm      Pennsylvania Department of Environmental Resources (PADER) staff arrived on site.

6:45 pm Allegheny County Emergency Management Personnel (EMP) arrived at Floreffe. Mt. Pleasant Hazmat personnel/Floreffe Fire personnel had established hot/warm/cold zones.

7:00 pm Allegheny County Specialized Intervention Team (SIT) from South Hills was activated and USCG Marine Safety Office in Pittsburgh received notification of the spill.

7:45 pm South Hills SIT arrived on site.

8:00 pm Pennsylvania Emergency Management Agency's (PEMA) staff duty officer was notified by the Allegheny County Emergency Management Agency.

10:00 pm Initial response efforts had been to establish access control, assess conditions on site and stop the flow of diesel fuel still draining from the site. These efforts were severely hampered by cold weather, darkness and concern over the potential volatile mixture of gasoline and diesel fuel. Reports had been received of oil discharging to river and strong odor of gasoline was starting to penetrate the air.

Duquesne Light Power Plant was advised to shut down. One response crew was dispatched down to the river and one crew into the tank area to locate the source of the gasoline odor.

11:00 pm Crews reconvened at command post. Storm sewer manholes found within the power station were flowing approximately 8-inches deep with oil. High oil mark near floor grating at Catchbasin "A" also observed. There was confusion regarding orientation of the storm sewer -- it was not known how oil could enter this sewer.

Decision was made to not set booms in the river at discharge -- current in river was too fast and dangerous (estimated greater than 3 knots or 3.5 MPH) and oil flow was too great for available equipment. It was decided the best approach was to plug the sewer in a manhole within the power plant.

Five (5) leaks from the damaged tank holding 1 million gallons of gasoline were located and four (4) were plugged. Emergency response crews were unable to plug the leak from the tank's feeder line.

There was considerable concern over the potential volatile situation created by the diesel fuel/gasoline mix and the decision was made to back off and reconvene at the command post at Floreffe Fire Station.

11:20 pm First meeting convened at Floreffe Fire Station.

Sunday, January 3, 1988

12:45 am Concern over the potentially volatile situation, combined with the close proximity of the Hercules Chemical Plant which contained a number of

extremely hazardous substances on site, led to the decision to evacuate approximately 1,200 residents. Elrama power station was closed and evacuated. Evacuation order lasted 11 hours.

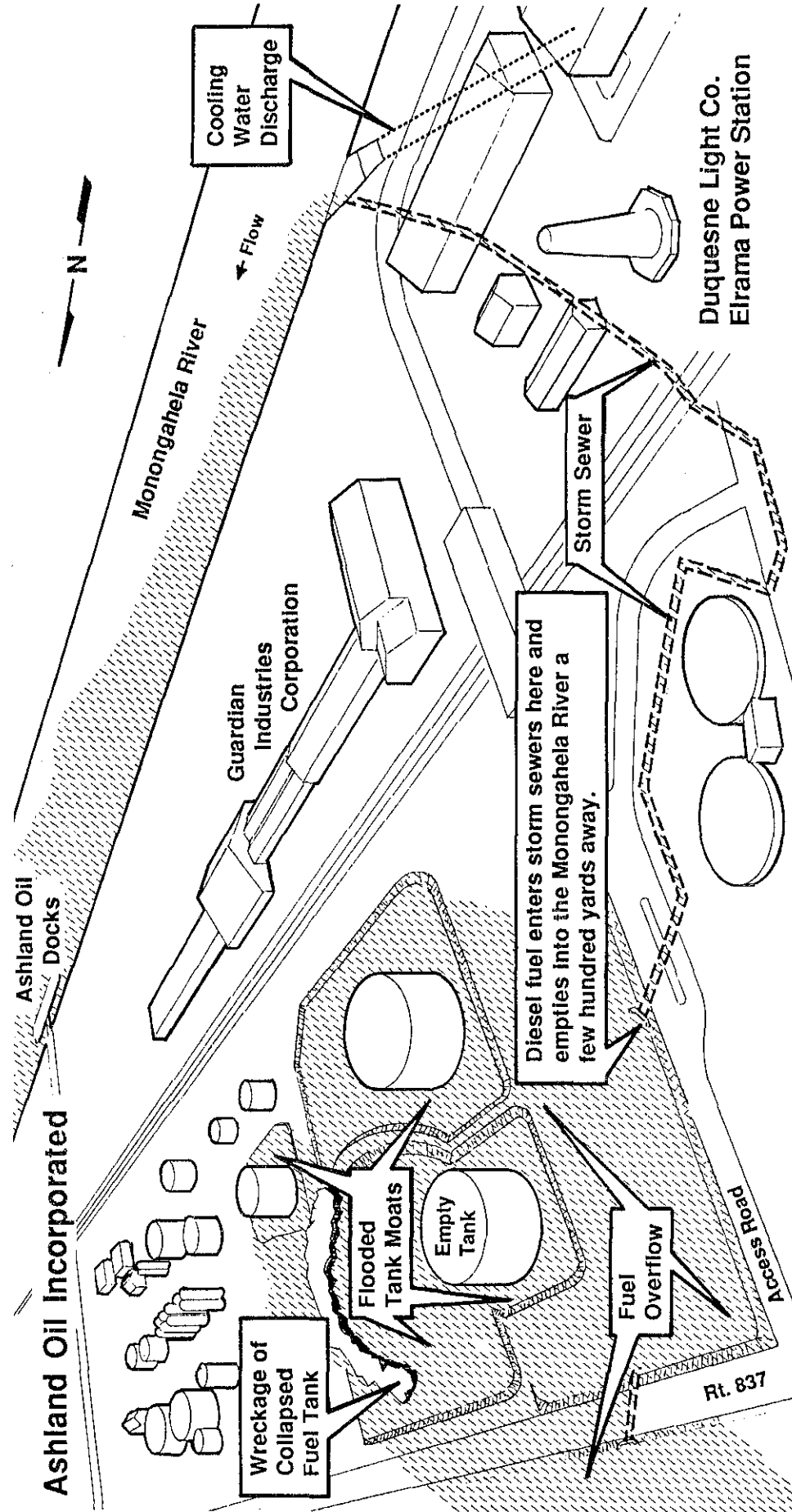
Containment efforts continued **throughout the night**, along with a lot of other diking efforts by the volunteer firemen and Hazmat teams on the scene trying to contain what oil was still on the ground and keep that oil from getting into the sewer system.

**Around four or five in the morning** the severity of the situation probably was realized when estimates of the amount of oil that was lost were starting to come into the command center. Close to a million gallons could not be accounted for.

- 4:40 am Plug was installed in manhole of storm sewer and vacuum truck was requested from Ashland. Oil was flowing 6-8 inches deep in the sewer before the plug was installed.
- 7:30 am Duquesne Light power plant resumed operation.
- 7:40 am EPA On Scene Coordinator (OSC) arrived on site.
- 8:30 am Plug in manhole inlet pipe had failed, however, plug in outlet pipe was still holding. Vacuum truck had still not arrived. Two inches of storage was left in manhole before oil would begin spilling out into power station. Therefore, plug was pulled to release oil to river.
- 9:30 am Throughout the night Ashland employees had been offloading gasoline from the damaged tank into barges. By this time, all gasoline was off-loaded, final gasoline leak was sealed, and evacuation order was lifted.

Vacuum truck was in place at storm sewer manhole in the power plant. Oil recovery was keeping up with the flow in the sewer which was estimated at a depth of 1-2". Plug was reinstalled.

# ROUTE OF DIESEL FUEL FLOW TO MONONGAHELA RIVER



## APPENDIX 2.3

### Summary of Key Events and Emergency Response to Protect

#### Drinking Water Supplies





The following provides in chronological order a brief summary of key events and related emergency response actions implemented to protect drinking water supplies.

Saturday, January 2, 1988

7:30 pm Downstream water companies in Pennsylvania were alerted. Preliminary reports suggested that only 100,000 gallons had entered the river and that water intakes were low enough to avoid the oil or that it could be adequately treated by the water plants.

11:00 pm Ohio EPA was first notified of the spill by the Ohio Disaster Service Agency. Ohio EPA immediately called the Coast Guard to confirm the information. At that time, information was that 100,000 gallons had entered the river and that the spill would be no problem for Ohio.

Based on this information, no calls were made to public water supplies in Ohio. Otherwise, the Ohio EPA emergency response people would have contacted the Division of Public Water Supply, which would then have called the local treatment facilities.

Sunday, January 3, 1988

8:30 am Dispersion of the oil throughout the water column and potential severity of the spill's impact on downstream water users was first realized. West Penn Water Company shut off their intakes at Becks Run.

Temporary interconnects between the City of Pittsburgh and West Penn Water at hydrants using fire department pumpers were started.

8:00 pm Robinson Water Authority shut down their intakes at Groveton.

10:00 pm West View shut down their intakes.

Monday, January 4, 1988

Ohio EPA emergency response personnel on scene determined that the situation was worse than reported previously (January 2) and Ohio EPA began contacting the water companies along the river.

Gov. Casey declared a disaster emergency in Allegheny, Beaver and Washington Counties. PEMA's Director was dispatched to the scene. Voluntary water conservation efforts were requested.

More than 100 PA National Guard water trailers were brought in from across the state and dispatched into affected communities. This exhausted the supply of state owned water trailers.

County and state personnel proceeded to make contacts across the state to locate additional trailers. More than 75 water haulers or businesses with equipment to haul water had been contacted.

Tankers were also positioned at area hospitals in the affected area to feed the boilers and maintain heat if water service was lost.

Work began on a permanent connection between a City of Pittsburgh water main and a West Penn water main which had been previously planned and scheduled for construction later in the spring.

Previously installed interconnects between West View and the City of Pittsburgh were opened.

West Penn Water company, with assistance from PADER, developed and pilot tested a treatment that proved successful in removing the oil. This process was used by downriver water suppliers making it possible to open river intakes days before they could have otherwise.

Tuesday, January 5, 1988

8:00 am First complement of additional trucks began arriving. These larger trucks were not equipped to dispense water to individuals. The County Maintenance Division solved the problem by designing a system of faucets on plastic pipe installed down both sides of each truck.

PA Emergency Management Council adopted an order which established water supply rationing restrictions on non-essential water use.

Pennsylvania Fire Commissioner worked with local fire companies and the County to establish a separate water tanker fleet to supply water to fight fires if any occurred.

Ohio EPA emergency response personnel on scene determined that the situation was very serious and Ohio should take emergency measures. The Governor of Ohio declared a full emergency and the Emergency Operations Center at the Ohio Disaster Services Agency was activated.

Wednesday, January 6, 1988

West Penn Water was given approval to open intakes at Becks Run while at the same time it's permanent interconnect with the City of Pittsburgh was completed.

Work was progressing on a permanent interconnect between the Moon Township Municipal Authority and the Robinson Township Water Authority.

## APPENDIX 3.1

### Types of Businesses Located in the Communities Surveyed



- 1 - Bank, management, real estate, legal
- 2 - Bottler
- 3 - Car wash
- 4 - Chemical
- 5 - Church, funeral
- 6 - Cinema
- 7 - Cleaners
- 8 - Community organization
- 9 - Construction, engineering
- 10- Food, grocery
- 11- Gas, automobile
- 12- Hair, health
- 13- Hospital
- 14- Hotel
- 15- Industrial product sales
- 16- Industry
- 17- Petroleum, refiner
- 18- Physician
- 19- Post, freight
- 20- Printing, photography
- 21- Private school
- 22- Production, communication
- 23- Recreation, camp
- 24- Research
- 25- Restaurant
- 26- Retail
- 27- Storage
- 28- Travel
- 29- Utility, service
- 30- Water (bottled)

