ABSTRACT: An environmental spill contractor responded to the largest inland oil spill in U.S. history. Special equipment and techniques proved useful in coping with this unusual situation. The experience level of the responder's personnel was a key factor in the cleanup.

The Marine Pollution Control company (MPC) has been operating as an environmental spill cleanup contractor for 21 years. Oil spills were its initial focus, but lately the company has branched out into other environmental concerns including groundwater contamination and removal of pcbs while still retaining emergency response oil spill capabilities.

On January 3, 1988 at 9:30 a.m. MPC officials first learned from a radio announcement that there had been a major oil spill on the Monongahela River. A 40 year old storage tank that had been reassembled by Ashland Oil Company at their Floreffe, Pennsylvania refinery split open, with approximately 770,000 gallons of diesel fuel flowing into the Monongahela River. MPC officials immediately contacted the company's chief chemist, who lives in the Pittsburgh area just a few miles from where the spill was reported to have occurred. He then contacted O.H. Materials, Inc., a contractor hired by Ashland to control and clean up the spill, to offer assistance.

MPC offered the services of two specially designed self-propelled tank barges and four high capacity pumping systems which could be used to pump out the diked areas where the spill occurred. O.H. Materials was informed that the equipment could be transported from the company's home base in Detroit by lowboy trucks and be at the site within eight hours. At 11 a.m. January 3 O.H. Materials subcontracted Marine Pollution Control to provide personnel and equipment at the site. By 4:30 p.m. an MPC supervisor arrived at the downtown Pittsburgh command post of O.H. Materials to begin setting up a base of operations. By that time the barges had already been moved to a ship terminal in Detroit where a crane loaded them onto lowboy trailers. Since it was deep winter in the midwest and the ice concentration on the Detroit river was rather heavy, MPC commissioned a tugboat to break the ice for the barges to be moved rather than trying to clear the area itself.

Other frustrations occurred because it was the New Year's holiday weekend. MPC trucks, which were initially given permission to use the Ohio Turnpike for transit were turned back at the entrance to the expressway at Toledo and had to take a circuitous route through Columbus, Ohio to reach Pittsburgh. Problems with weather continued in Pittsburgh where conditions were a blustery 10 below zero Celsius (14° F) when wind-chill was taken into account. To keep them from freezing, engines had to be run continually. Personnel had to wear extra layers of clothing and had to be relieved more frequently than usual because of the extreme conditions. We had to find a way to repair our equipment, if necessary, out in the open. The barges, which are called Buda I and Buda II, were lifted by crane into the Monongahela River and immediately deployed to remove oil and debris.

While workers on Buda I removed debris, their counterparts on the Buda II vacuumed oil off the water surface where it had pooled along the shoreline. Buda I is a 36-foot long by 12-foot wide vessel which is 48 inches deep. It has a 200 horsepower (hp) Evinrude outboard engine, a generator, light plants, and steam jennies. Buda II is four feet longer and two feet narrower, powered by an 86 hp Perkins engine. It has a vacuum skimming system with a holding capacity of 5,000 gallons, and a 15 kilowatt generator. We had additional power units so that we could continue to run the steam generator for such things as keeping the hoses and decks clear, and cleaning out nearby areas. Absorbent pads were also kept on the deck of the Buda I, which was used as a materials and equipment transport. The pads were used to sop up the oil that could not be vacuumed or that was not removed with the debris.

There was considerable debris along the shoreline of the Pittsburgh area. The debris appears to hold more substantial quantities of oil than it actually does. Once the debris is removed, absorbent pads can be used to remove the remaining light oil.

For the next few weeks the two barges worked their way from downtown Pittsburgh along the shoreline through locks to below Sewickley, Pennsylvania, on the Ohio River near the Greater Pittsburgh Airport. It was the first time the barges had been maneuvered through a locking system and it provided an opportunity to test their capabilities. Crews worked 12 hours a day, unable to continue at night because of the inclement weather. The oil would find its way into small catchment areas and gather along with the debris. The Budas, because they were small, were able to easily maneuver in and out of these areas while our personnel removed product and debris. The Budas could move in between larger barges anchored near the shoreline to remove small pockets of the oil. The crew would work out of a forward basket on the Buda II, or in a small punt boat using rakes and squeegees to bring the oil toward the Buda II for retrieval. MPC personnel wore Tyvek disposable suits as protective clothing so they wouldn't get too caked up with the oil.

It was a tedious task, made particularly difficult because oiled areas by the shoreline were inaccessible by the usual routes: the area was marked by a high shoreline rock area and a railroad right of way. Because of this, the shallow draft barges were very useful.

Because of the dams and locks in the rivers, the diesel fuel had been churned and emulsified into the water column beneath the river's surface. Towns and villages along the rivers were concerned about their water supplies becoming contaminated with diesel fuel. Pennsylvania's Governor ordered the National Guard to help local communities that had shut off their river intakes to make potable water.

MPC suggested using high capacity emergency offloading transfer pumps, designed to remove cargo from stranded vessels at sea, to provide water to the water treatment plants along the Ohio River between Wheeling, West Virginia and Cincinnati, Ohio. The pumps
have capabilities ranging from 1,400 gallons/minute to 3,000 gallons/minute. Personnel near the pumps wear ear muffs for hearing protection because of the high noise level. A diesel hydraulic power pack or "prime mover" provides the power for the pump.

After several towns along the Ohio River commissioned MPC to provide potable water for them, the Marine Department of Ashland Oil secured four barges and a pusher tug for hauling the water and the pumps to and from the communities. MPC's equipment was loaded onto the barges in Wheeling, W.Va.; crews were stationed in Sisterville, W.Va., a town of about 1,400 people. The barges traveled the Ohio River collecting water which was untouched by the spill from streams and creeks flowing into the Ohio River.

The tug and barges were dispatched to Wheeling, Sisterville, and Mayville, Kentucky—communities that were completely dependent on the Ohio River for potable water and which now required other sources of water. MPC crews worked around the clock loading the water from the creeks and unloading it at water treatment facilities at the towns.

In the process of the cleanup and water transport, MPC used specialized equipment and communications systems which are normally transported in standard aircraft containers. Some of the equipment used at the Ashland site included the hydraulic pumps, six inch flat discharge hose, hydraulic hoses, and hard hoses. All of the equipment was stored in the containers which weighed some 1,960 lb when loaded. At the MPC Detroit base and at bases around the world similar equipment is ready for immediate air transport to emergency situations. For the Ashland Oil site the equipment containers were transported on semi-trailers. All of the equipment is built to be lightweight so that it can be moved by a minimum number of personnel. MPC supplied O.H. Materials with 18 roll-on-roll-off boxes and four truck tractors to haul debris from the Ashland spill back to the company's refinery. Later, when disposal sites were designated, MPC personnel transported the debris to Model Cities, New York, and Harrisburg, Pennsylvania, for disposal.

During the entire operation, MPC officials were in constant communication with the site crews, O.H. Materials, Ashland Oil, and MPC's home base. A portable base station was set up for a two-way radio system that uses a specially-assigned frequency, called an Oil Spill Emergency Itinerant Frequency, granted to MPC by the Federal Communications Commission in conjunction with the American Petroleum Institute for use only in oil spills. All personnel and vehicles carry two-way radios tuned to this special frequency. As a backup, all personnel carry nationwide pagers and portable cellular phones. For in-house training purposes, MPC also videotaped parts of the cleanup and water transport operations.

Six weeks after MPC first arrived in Pittsburgh, the last of the company's personnel packed up their equipment and returned to Detroit.

Conclusions

MPC participation in the Ashland oil spill as well as numerous other spills, gives ample evidence that such companies are capable of handling emergency environmental situations and need to be prepared to do so on a moment's notice. The importance of trained personnel can't be overstated. These are not instances where untrained emergency workers can be recruited, because circumstances don't allow on-the-spot training. Teamwork is essential for recovery and control of the spill and for minimizing environmental damage. The average supervisor and first line personnel of such a company should have ten or more years of spill response experience. That allows them to innovate in situations where other less experienced personnel would just be coping.

The majority of spill contractors today have turned their attention and efforts toward the field of hazardous materials. It's important to note that even though the numbers of oil spill incidents have dropped, the example of the Ashland Oil spill demonstrates the need for constant training of technicians and updating of equipment. Many contractors have stopped responding to oil spills because they are not willing to invest the amount of time, energy, and money needed to keep both personnel and equipment ready. As a consequence, when a major spill occurs there are only a few specialized groups prepared to handle the emergency. This is an issue that needs to be looked at closely, not only by the spill groups, but by environmentalists concerned with prompt and efficient control of hydrocarbon spills.

There will always be spills. Whether there will always be sufficiently trained personnel to handle them is increasingly coming into question.