Nongovernmental

1. American Red Cross
2. Red Caribeña de Varamientos [Caribbean network for ships run aground]

The Regional Contingency Plan for the Caribbean (PCRC) contains a description of the Commonwealth that includes information on its location, size, climate, water temperature, and climatological and atmospheric stations, in addition to descriptions of the topography, hydrology, maritime activities, infrastructure, and port area. In this Contingency Plan, the Environmental Quality Board (JCA) is the agency that represents the Government of Puerto Rico; the Department of Environmental Natural Resources (DRNA) performs a significant role through its specialized knowledge of our environment.

The agencies of the government of Puerto Rico that participate in a response do so in support of the Unified Response System. All the leadership in response efforts is vested in the FOSC of the Coast Guard or the EPA. This plan will be in effect until 1997 and is updated every five years. In order to fulfill the purposes of the National Contingency Plan, the Regional Contingency Plan for the Caribbean covers the following elements:

1. Discharge sites
2. Support information
3. Organization of the response

That plan channels government and economic resources, such as knowledge, in the most productive form possible.

The Oil Spill Liability Trust Fund

In accordance with the OPA of 1990, the company or individual responsible for a spill (the responsible party) has the legal obligation--up to a given monetary figure--to cover the expenses for containment and clean-up of the discharge. When the responsible party is not able to assume that responsibility, resources from the Oil Spill Liability Trust Fund shall be utilized to cover these expenditures. This fund was created by the U.S. Congress in 1990 and is administered by the U.S. Coast Guard. The money for such grants is collected through a tax of $0.05 per barrel of oil exported to and imported from the United States. In addition, funds are provided for research related to techniques and chemicals for clean-up. In this way provision is made to prevent a lack of personal and/or equipment from impeding prompt containment and clean-up.

State and Federal Legislation governing Hazardous Material Spills

We have emphasized that the laws serve, above all, as mechanisms for prevention and orientation in the event of environmental disasters. Over the years legislation has been enacted to regulate commercial activities and/or any other type of activities that represent a potential danger to the environment. There are several laws oriented toward such purposes and, accordingly, they justify their cost through their acknowledgement of the problem that pollution of the environment represents. Due to the nature of our governmental system (commonwealth), we are protected under federal law. The following is a brief summary of the laws that apply to this type of accident in Puerto Rico.

A) Oil Pollution Act (OPA)

Prior to the existence of the OPA, several federal statutes were aimed at dealing with legal responsibility and compensation for oil spills. Among them are:

1. Federal Water Pollution Control Act (FWPC)
2. Title III - Outer Continental Shelf Land Act (1978)
3. Trans-Alaska Pipeline Authorization Act (1974)
4. Act to Prevent Pollution from Ships (1973)
5. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (1980)

The OPA was the result of action by the U.S. Congress in 1990 in response to the need for regulating and making compulsory the establishment of contingency plans, thus unifying the responses to discharges of hazardous substances.

Its purposes are:

- To develop a national contingency plan and an emergency system.
- To make the party responsible for the accident responsible for the clean-up.
- To ensure that the response be executed in accordance with the specifications of the regional response plan.
- To mandate that the owners and/or operators of tankers prepare and submit a contingency plan in accordance with the established regulations.
- To mandate that the costs of clean-up operations be paid by the party responsible, as specified in the OPA.
- To create the Oil Spill Response Organization (OSRO), which requires the owners of vessels to submit their contingency plans to the Coast Guard for approval, in accordance with the OPA.
- To require that barges have double tanks by the year 2015.

B) Environmental Public Policy Act of Puerto Rico (Law No. 9, of 18 June 1970)

Law No. 9 was enacted to establish the public policy of the Commonwealth with respect to the conservation of resources and the environment and to establish and define the authority, powers, and duties of the Environmental Quality Board (JCA). This law regulates all the agencies, municipalities, and other entities of the Government of Puerto Rico with respect to the management of the potential environmental effects of any public or private operation. It grants to the JCA regulatory, administrative, and quasi-judicial powers. The JCA administers the programs for water and air quality, control of land pollution

and noise, and scientific and emergency environmental advisory services. This latter program is responsible for the administration of environmental emergency response, which confers on it the authority to represent the Government of Puerto Rico.

C) Law governing the Emergency Plan for Harmful Material Spills (Law No. 13, of 13 July 1973)

Law No. 13 requires the JCA to prepare an emergency plan to deal with spills of harmful materials that occur in the territorial waters of Puerto Rico. It confers on the JCA the authority to require the recipients of harmful materials to provide the necessary equipment and materials to handle spills, as well as warehouse facilities for such materials. This emergency plan establishes operating procedures and provides an inventory of materials necessary to minimize the possible damages. The JCA also has been given the authority to contract with any agency or public or private organization for services and to order to take administrative and legal action against individuals, corporations, and other legal entities to enforce this law. As has been pointed out for previous cases, the law was created a result of the oil spill from the vessel Zoe Colocotronics, which occurred on 15 March 1973. At that time the issue was considered dead since the legislature did not allocate funds to the JCA to fulfill the objectives set forth in the law.

D) Law Creating the Environmental Emergency Fund of Puerto Rico (Law No. 81, 2 July 1987)

The purpose of Law No. 81 was to create the Environmental Emergency Fund of Puerto Rico; it makes provision for income for the fund, the mechanisms for its utilization, and arrangements for federal matching funds. The JCA can utilize these funds to institute judicial or administrative actions ordering the individuals responsible for the spill to take the necessary actions to protect the environment and the public. The law authorizes the recovery of any expenditure that the government incurs during containment and clean-up operations.

As we have pointed out, current legislation assigns responsibilities to the originators of the incident but also facilitates the use of government resources for immediate response to the emergency.

The history of the environmental legislation can thus be divided into the periods before and after the Exxon Valdez spill in Alaska in 1989. We have already called attention to the OPA as the response to the incident; this experience put into perspective aspects that had not been accounted for in previous laws.

Background on the Spill from the Morris J. Bergman

At approximately 4:00 a.m. on 7 January 1994, the barge Morris J. Bergman, loaded with some 1.5 million gallons of Bunker 6 fuel oil, ran aground on a reef about 200 yards from Punta Escambrón, off the tourist coast of San Juan, Puerto Rico. The cable that the tugboat Emily S. was using to tow the barge from the Caribbean Petroleum Corporation terminal in the port of San Juan broke, causing the Morris J. Bergman to run aground. The barge contained nine single-bottomed tanks, two of which broke immediately after running aground, causing approximately 750,000 gallons of the fuel to be released into the ocean. The discharge affected approximately three miles of beach almost immediately. The barge

belonged to New England Marine Services and was being operated by Bunker Group of Puerto Rico. The tugboat had a crew of six and the captain on board at the time of the incident.

By 13 January weather conditions caused the barge to slide on the reef, resulting in another spill. On 15 January, after several fruitless attempts, the barge was successfully moved so that it could later be sunk in 6,120 feet of water some 20 miles off the northern coast. The choice of that site, one of the deepest geological faults in the Atlantic, produced another discharge--a result of the sudden change in pressure. While the vessel was sinking, another indeterminate quantity escaped; estimates are that from 160,000 to 200,000 gallons of fuel still remain within the vessel.

Impact of the Spill

A response to an accident such as the one described above requires the following: prompt action, organization in execution, and adaptation of the plan of action to the actual circumstances so that authorized personnel are provided with all the practical information necessary for the best use of the available tools. Knowledge of the circumstances in which the events are occurring, we emphasize, is of the utmost importance in achieving an effective response.

The barge Morris J. Bergman ran aground in shallow water in an area with strong wave action to the north of the island. In January the weather can be severe along that coast, which increases the risk of accidents. In addition, the area is known to be highly valuable for tourism. Because of the magnitude and visibility of the spill, the potential impact promised to be a challenge for all those responsible.

1) Economic Impact

The area of impact rapidly included the Condado area and the tourist sectors (Isla Verde), and it was the height of the tourist season. There are a large number of hotels in that area, which doubled the economic impact of the disaster. As was to be expected, enjoyment of coastal areas was denied to local and international swimmers because of the magnitude of the discharge.

The movement of the currents eventually caused the other hotel areas along the northwestern coast to be affected. The entry of the fuel into the San Antonio Channel would naturally affect the port area, which by this time received from four to seven cruisers daily. The tourist industry of Puerto Rico, which represents approximately 6% ($2.5 million) of the gross national product of the island (estimated at $34 million), was seriously affected.

2) Environmental impact

The San Juan tidal basin has been designated as a National Estuary since hundreds of endangered species live in the region. The discharge affected coastal ecosystems, in particular the sensitive mangroves stands in San Juan Bay, in Palo Seco, and to the east and west of the Piñones area. The westward movement of the currents also threatened the areas that are recognized as nesting areas for endangered marine turtles, which, to make matters worse, nest at that time. We can only mention a small part of--just sketch--the actual environmental impact. To this must be added the concern of the community nearest the spill about the risks associated with the emissions. The personnel of the JCA, in coordination with

the EPA, monitored the air to determine the vapors derived from the fuel that could represent health hazard. The first results showed that the levels of hydrogen sulfide (H_2S) in the area exceeded the permissible exposure levels.

3) Impact on Cultural Heritage

Little has been documented of the impact of accidents of this nature on the historical and cultural heritage. In this case, the discharge reached waters that border a national heritage of great historical and cultural importance, namely, Morro castle and San Cristóbal. Rigorously protected by law, these historical structures would need specialized cleaning techniques.

4) Administration of the Discharge by State and Federal Agencies

The initial response to the barge running aground was notification of the Coast Guard by the crew, which reported details on the location, the condition of the tanker, and the size of the shipment. The Coast Guard activated the National Response Center and the Caribbean Regional Response Team, among others. The members of the team distributed the tasks by agency. The first problem that slowed down the response occurred when the operations manager informed the Coast Guard, which had activated the National Response Corporation (NRC) to initiate the response. The NRC is a response company located in San Juan, with headquarters in New York; it has 16 contractors whose objective is to provide the equipment necessary for the response. Hours later, the Coast Guard discovered that the resources of the NRC had only been alerted, which means that they were awaiting a separate communication to take action. Given the circumstances and the provisions of the OPA, the federal government assumed jurisdiction and assigned an on-scene coordinator to organize, coordinate, and supervise the response after that. The on-scene coordinator decided to set up a barrier immediately in order to stop the movement of the oil through Dos Hermanos Channel toward San Antonio Channel and to contain the backflow of oil while clean-up operations were being started. In two hours equipment with limited capacity for recovery and temporary storage was mobilized. The NRC provided personnel and established lines of communication to administer materials and to obtain the local supplies needed at the site.

In summary, the response strategy employed included the following operations:

1) The San Antonio Channel was blocked.
2) Other levels of protection were implemented..
3) The resource was secured through salvage, and the weight of the barge was reduced.
4) The bulk of the floating and submerged contaminant was removed.
5) The beaches were cleaned.

Health and human safety, minimization of the impact on the economy and the environment, as well as care in safeguarding historical and cultural structures constituted the visible objectives of the strategies utilized.

Operations to Contain the Oil

As long as the source of contamination existed, the discharge could not be controlled. As a result, the highest priority was to eliminate the source of contamination. In order to achieve this objective the following operations were carried out: barriers were deployed to block the flow of oil toward the San Antonio Channel, concentrating on a particular area in order to facilitate recovery. Barriers were not utilized around the barge because of the strong wave action, which presented a risk for the personnel involved in the operations. They were used, however, at Puente Dos Hermanos and in mangrove zones to protect the tidal areas. According to the report of the on-scene coordinator, the problems with the effectiveness of these barriers were the result of the currents and the lack of skills of most of the personnel involved. These operations were accompanied by recovery efforts.

Recovery Operations

These operations took place in two areas: in the open sea and in coastal areas. Attempts were made to recover the crude using dispersants, absorbents, floating aspirators, and direct pumping. The fuel contained in Laguna del Condado was quickly removed in order to avoid greater damage to the tourist industry. During the recovery operation, the personnel had to deal with mechanical problems, excessive use of solvents, refuse in the water, and the need to use various types of machinery in order to recover the fuel. Working on these operations were members of the Coast Guard, agencies hired through the NRC, the Marine Spill Response of the United States, the Oil Spill Response Vessel (OSRV), Caribbean Response, and U.S. Navy team. They also worked on the recovery of the fuel while the barge was being hauled away to be sunk, in order to minimize the constant spillage that occurred during that operation. All the materials used during the operations were deposited in a tanker barge from Crowley Marine Services, another company with significant involvement in the response. The solids and semisolids were transported for final disposal. In Puerto Rico utilizing dispersants in order to recover the crude is authorized. The JCA took samples of the oil to analyze its dispersibility and concluded that the Bunker 6 oil in the barge was not dispersible. The possibility of burning the fuel was also ruled out since concentrations of flammable oil were found very near the shore and this method is viable only if the oil is remote from places with high population density.

Salvage Operations and the Sinking of the Morris J. Bergman

These operations began with an attempt to reduce the weight of the barge by transferring the oil that was still left in the tanks and thus avoiding the possibility of subsequent spills. Weather conditions and the shallow water increased the difficulty and, naturally, the levels of risk for all personnel on the scene. It was not possible to bring another barge closer to the Morris J. Bergman to allow transfer of the oil that it still contained. The only way to access the barge was by helicopter; all the equipment and personnel required for the operation were transported in helicopters from the National Guard of Puerto Rico, the U.S. States Navy, and the U.S. Coast Guard. Pumping of the oil from the Morris J. Bergman began on 9 January and, despite the conditions described, it was possible to remove approximately 16,500 barrels on subsequent days. The operations had to be suspended twice because of worsening marine conditions. On one of those occasions an employee almost lost his life and, as a result, the pertinent authorities made the decision to begin preparations to salvage the barge. Steps were taken, initially

unsuccessful, to get the responsible party to offer a salvage plan to the Government of Puerto Rico. Operations to recover the crude oil continued until 12 January, although it was more than evident that the levels of risk and extreme danger made it virtually impossible. When the responsible party finally did submit a salvage plan, it was rejected by the on-scene coordinator who pointed out that refloating the barge and taking it to a less sensitive place to sink it constituted a better alternative. The Government of Puerto Rico agreed to this plan, which made it possible to begin the salvage operation on 9 January; by 15 January the barge could be towed out to sea and sunk at an old explosives dumping site, approximately 20 miles to the northeast of San Juan. In the process of moving, it was not possible to avoid considerable spillage of fuel. However, once in the open sea, advantage was taken of the situation to reinitiate the operations to recover the crude that was still in the Morris J. Bergman. Of the 1.5 million gallons on board, approximately 880,000 gallons were obtained in the first recovery operation. The second attempt was a failure because of adverse marine conditions.

It should be noted that the entire salvage operation outlined here reveals several alternatives for how to proceed and what to do with the barge. I limit myself to identifying them:

A) Refloating and towing the barge and sinking it out at sea.
B) Towing the barge to the Port of San Juan.
C) Towing the barge to another port in the Caribbean.
D) Cutting the barge into pieces and removing them by stages.
E) Recovery of the barge.

All the alternatives for removal involve the risk of spilling the oil still inside the barge. The option of cutting the barge up was ruled out because of the risk to the personnel involved in the operation. The recovery option was also ruled out since there were no facilities to do this in Puerto Rico and, in addition, there would have been the risk of spills in the port itself.

The JCA, representing the Government of Puerto Rico, decided that it would be more beneficial and of greater general interest to remove the barge as soon as possible to a site with less environmental risk. The threat of continuous discharges and their consequent impact on this region of the country weighed heavily in this determination. Evaluation of the alternatives made it clear that refloating the barge and sinking it in a less sensitive place would make it possible to minimize the adverse impact on the environment, the public, and the response personnel, as prescribed in the Environmental Public Policy Act of Puerto Rico.

Cultural Resources Management Team

The spill from the Morris J. Bergman affected several historical structures significant for the cultural identity of our country and for our tourist industry. What is known as Old San Juan was declared a world heritage site by UNESCO, which means that it is protected by state and federal laws. It is interesting that these aspects were not recognized in the Contingency Plan for the area. There was an imminent danger that the response equipment would damage these places. However, an archeologist was hired to work directly with the on-scene coordinator and to recommend safe measures in and around the historical structures. Thus, the Cultural Resources Management Team was created to consider the interests of all the parties involved. The scene was analyzed and the techniques necessary for cleaning the area

were developed. It should be emphasized that for this aspect a precedent was being set for responses to environmental emergencies in Puerto Rico and the Caribbean. Hence, the contingency plans for the area should include this aspect for their working teams so that their responses involving these structures are rapid, without omitting sensitivity to previously identified values.

Decontamination and Mobilization

Mobilization and decontamination operations were carried out during the active phase of the clean-up and also when it was finished, in order to clean and decontaminate all the equipment used in the operations. The JCA selected the sites for the personnel and the equipment with a view to preventing the release of chemicals into the environment. Private contractors, such as Crowley Environmental Services, handled decontamination of the coasts and beaches and of the equipment used by the NRC. The most difficult task was the decontamination of the barges used to store the oil that was recovered and transferred from the Morris J. Bergman. The Maritime Bureau, Inc., brought together various pieces of equipment and succeeded in setting up the cleaning of these barges.

Disposal of Solid Waste and Hazardous Waste

The options for disposal in Puerto Rico are outlined in the Contingency Plan for the area and are restricted to recycling, dumping nonhazardous wastes, and limited utilization of incineration. Everything else should be disposed of outside Puerto Rico. A joint EPA-JCA team developed the disposal methods while the Coast Guard dealt with the contracts and the costs. The EPA supervised the characterization of the wastes and issued a verdict that there were no hazardous contaminants controlled by the Resource and Recovery Act in the fuel.

Approximately 16,500 barrels of the liquid fuel were returned to the Caribbean Petroleum Company and 16,409 barrels (90% oil) were sent to the Sun Oil Refinery in Yabucoa in Puerto Rico for processing. The solids and semisolids were stabilized and dumped on the ground at the Ponce, Puerto Rico, facilities of Browning Ferris Industries. Betteroads, Inc., processed approximately 4,000 tons of contaminated sand removed from the beaches of Punta Escambrón for treatment with bioremediation methods so that it could be reused (although not returned to the beaches). The DRNA supervised the cleaning operations that directly affected the natural resources of the area, including the sand. After the EPA and the JCA conducted several studies on the oil, burning the fuel in the sand was ruled out partly because of the emissions and partly because that would make it impossible to recover the remainder of the oil from the sand. The DRNA selected the sites for the bioremediation and established a criterion to determine when a site was to be considered clean. With the intention of reusing the sand in public construction projects, 2,800 tons of it were treated and cleaned; the sand is the property of the Government of Puerto Rico.

Management and Organization of the Response

The basic organizational model utilized to structure the response was the Contingency Plan for PR/USVI, the same one that the Coast Guard utilizes in its areas of jurisdiction. The organizational chart was based on two fundamental assumptions: first, that the accident was an isolated event (a single

discharge) and thus involved a single response; and second, that the responsible party was ready, willing, and able to join the Unified Command System.

During the first hours of the response there was a marked division of labor between the party responsible and the on-scene coordinator. This was reflected in confusion on the part of the party responsible regarding action on important aspects and hence on the organizational structure that was required. This division can be observed in the organizational chart that depicted the response from the second to the seventh day. The party responsible handled only aspects for which it demonstrated capacity: the recovery of the oil from the water. Meanwhile, the team from the federal and state agencies handled the rest of the technical and strategic operations and the planning. Both state and federal agencies achieved the integration required by the Contingency Plan. However, Maritime Bureau, Inc. (MBI) and the NRC were not prepared to work together and there were no organizational concepts defined to facilitate the coordination. It was not until the fourth day of the response that all the lines of communication and authority were functioning properly.

During the eighth and ninth days there were two events that required a change in the organization of the response: the transition to a response backed with federal funds, and the removal of the barge from Punta Escambrón. Some classifications of operations were eliminated and others were added. The flexibility offered by the modular approach in the organization was positive because it made it possible to integrate special projects that arose during the course of the response--to deal with issues separately. That was the case with the operation to recover the submerged oil and also with the management of risks to Puerto Rico's cultural heritage. The teams that carried out these operations brought all the necessary elements so that the results would be acceptable.

Described below are the agencies and corporations involved, together with their functions and the services rendered, as outlined in the Contingency Plan.

Environmental Quality Board

The Environmental Quality Board (JCA) is the designated agency for coordinating the state scene. It is threfore the agency that represents the Government of Puerto Rico and has the greatest responsibility for response to pollutants. The Board participated in the decision-making with respect to alternative actions, such as those related to the barge, the use of dispersants, disposal methods, monitoring and sampling, and treatment of fuels. In addition, it played an important role in the development and approval of plans and the setting of priorities.

Department of Environmental Natural Resources

The Department of Environmental Natural Resources (DRNA) is the agency with primary responsibility for the state resources. It contributed to the plans for the clean-up, the team of scientific personnel, protocols for cleaning, methods of cleaning for the various ecosystems affected, and the assessment of the impact on the natural resources.

National Guard of Puerto Rico

The National Guard of Puerto Rico (PRANG) provided personnel and helicopters during the removal of oil from the barge and the sinking of the vessel. It also contributed several types of trucks to transport the wastes.

Department of Transportation and Public Works

Personnel from this agency were activated by executive order of the Governor and, after brief training, participated in the response to the hazardous waste spill under the supervision of MBI. It provided the largest work force in the cleaning of the beaches, including the sand, the rocky coast, and the animals.

National Oceanic and Atmospheric Administration

The National Oceanic and Atmospheric Administration (NOAA) supplied technical and human resources for the scientific evaluations.

Department of Health of Puerto Rico

The Department of Health of Puerto Rico (DSPR) contributed aerial monitoring of the emissions and remained on alert to be able to receive people affected by contamination. It also contributed ambulance services to the work sites, in case of accidents.

Civil Defense

Civil Defense (DC) coordinated the work of the support agencies, such as the Red Cross and the Police and Fire Departments of Puerto Rico.

Occupational Safety and Health Administration

The Occupational Safety and Health Administration (PROSHA) provided trained personnel daily and gave instructions on safety to prevent accidents in recovery and clean-up operations.

Effectiveness of the Response

Because of the magnitude of the accident, the spill from the Morris J. Bergman posed an organizational challenge to produce a response that was rapid and, most particularly, effective. In the final analysis, it can be said that the response was extremely successful. The publicity was comprehensive and, in general, positive as well. The sensitive environment was protected and the clean-up operations were rapid and effective

Fuel Inventory

The success of an operation of this nature depends on many varied factors, but the most important is the source of the pollution. The oil spilled by the Morris J. Bergman was partially recovered and what could not be recovered lies at a depth of 6,120 feet.

The table below shows a breakdown of the destination of the fuel.

Morris J. Bergman	
Cargo (Bunker 6)	**Fuel (gallons)**
Fuel being transported to San Juan	1.5 million
Fuel transferred to the BGI Trader	693,000
Fuel recovered from the water	798,000
Fuel recovered and disposed of on the ground	689,000
Fuel evaporated* (estimated at 10%)	79,800

* Estimate based on the fuel analyses conducted by the JCA.

It is significant that the results show that more fuel was handled than the barge was reported to have contained. According to the report of the on-scene coordinator, there are two hypotheses to explain this discrepancy:

1) The barge transported more fuel than was reported.
2) The recovery figures are inaccurate.

Although the first hypothesis cannot be categorically ruled out, the second seems more probable since every recovery method always involves a percentage of error. It is useful to note, in addition, that these operations recovered mixtures of absorbent and oil, water and oil, scum and oil, and sand and oil, and that only a small portion of 90% petroleum was recovered. Although this was the case, the fact that oil could be recovered in various ways allows the response operation to be characterized as successful.

The operations continued until roughly the end of April but after the fifth week everything was more routine. The beach of the Caribbean Hilton Hotel, perhaps the most affected area, was reopened to swimmers on 7 April.

The total financing of the operation was another one of the most complex aspects, since there was a possibility that the company that operated the barge, New England Marine Services, would declare bankruptcy. According to the law on liability for oil spills, the financial liability of New England Marine Services was limited to $10 million. The nature of the accident left the possibility that the final cost

would be greater than that. On the second day the possibility that federal funds would support the response was studied, so that the funds that would correspond to those of the responsible party would be deposited in the Oil Spill Liability Trust Fund. In the end it was decided to do this to avoid possible interruptions in the response activities for lack of funds. Even as late as August 1995, necessary expenditures continued to increase the overall cost of the spill.

Approximate costs to 5 June 1995	
Item	**Cost ($)**
Response functions	81,659,000
Agency costs	6,874,000
Subcontractors and suppliers	1,045,000
Approximate total	89,579,000

At a final cost of almost $90 million, the response to the spill from the Morris J. Bergman is the most expensive that has been financed with federal and state funds in the history of Puerto Rico to date. The result was effective recovery of 88% of the contaminant.

Lessons from the Response to the Spill from the Morris J. Bergman

The positive experiences of the response to the spill from the Morris J. Bergman are undeniable testimony to the maturity of the technical and operational organizational chart for the management of emergencies caused by hazardous material spills in Puerto Rico. As we stated in the introduction, the accident made it possible to identify areas in which improvements can be made, so that, in the event of another disaster, execution will be even more effective

Aspects that require improvement are described below:

1. Contracts should be in effect for the use of barges and equipment necessary for the recovery of the oil from the damaged tank vessel. This is the way to avoid delays caused by contracting processes.

2. The authority and capability of the manager of barge operations should be fully defined and reported.

3. A financial manager, whose functions should be directed toward coordinating all types of contracting and financing transactions, should be included in the contingency plan.

4. The Area Contingency Plan should be tested through simulations in order to maintain the capability and level of alert needed to respond to any emergency.

In summary, therefore, it is necessary to establish an ongoing program to train the personnel of the 17 agencies responsible for devising response plans and responding to emergencies caused by spills of chemical substances, fuels, or any other material that poses an imminent threat to human life, to the community, and the natural and cultural resources.

The cases outlined here increase our knowledge and are magnificent learning experiences in comprehensive training for preparedness and prevention, rapid response and recovery, and every exercise that helps to minimize the harmful effects of accidents of such a complex nature.

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