

A. Treatment of petroleum on the sea

The petroleum crude floating on the coastal waters was considered as the most critical condition encountered. Until these petroleum slicks were completely eliminated, the beaches were under a continuous pollution hazard. Fortunately, the final positions of the bow and stern to the west of the channel eliminated the danger of further contamination of the beaches. The physiography of the bay and a strong wave action from the north confined in the bay about two million gallons of the estimated 3.5 million gallons spilled by the ship. However, the petroleum that leaked out during the first four days after the accident, when the bow was located about 300 yards north of the channel, drifted as far as 30 miles east and 40 miles west. These slicks were reported floating up to a distance of about 10 miles offshore.

As previously stated, the use of detergents to break the slicks offshore was the immediate action taken by the government during the afternoon of the accident. Four days later, this procedure was abandoned after field and laboratory tests proved that the use of detergents harmed marine life, coagulated the petroleum into heavy balls which sank to the bottom in the near shore, and formed a quicksand condition in the beaches. To treat the petroleum in the sea a hydrophobic adsorbent called Ekoperl was used. The Ekoperl is a product of crushing, heating, and treating of perlite. This product was found to effectively adsorb the petroleum floating in the water and was not toxic to marine life. The process of collection in the sea was difficult; therefore, the mixture was allowed to float to the shores where mechanical collection was feasible.

The application of Ekoperl was conducted by means of boats and helicopters, and by hand from shore. The most effective method was by helicopter where the slicks could be easily located and rapidly treated. The turbulence generated by the prop-wash pushed down the powder into the water mixing it with the petroleum.

The location and treatment of a slick from a large boat was a tedious process. The rough wave action also impeded the operations and the offshore reefs restricted the movement of the boat to deep waters. However, after the large petroleum slicks were eliminated, treatment of slicks close to shore was initiated by the use of small boats with outboard engines. The use of the helicopter to perform this operation was exceedingly expensive, since the slicks were small and located at considerable distances from each other.

Throughout the treatment of the crude at sea, the difficulty of collecting the impregnated petroleum adsorbent was evident. The prediction of time and place where it was going to land was impossible due to the variations of the wind direction, tides, swells, and marine currents. Sometimes, the adsorbent landed on inaccessible shores or at times where the collection of the material was impractical. The time lapse between application and collection sometimes permitted the heating action of the sun and the beating action of the waves to separate the crude from the adsorbent before the collection was possible. Therefore, treatment of the near shore was intensified to facilitate the collection of the impregnated material.

B. Preventing the petroleum from reaching the beaches

Mechanical means were used to confine or keep the petroleum out of certain beaches. Plastic slick booms and wooden barriers were used for this purpose.

A twelve inch-plastic slick boom was used to confine the petroleum around the stern, but this boom proved to be ineffective due to the strong wave action and the fragileness of the construction. The petroleum escaped under and over these booms. The U.S. Coast Guard built a large wooden boom with boards of about four feet high and barrels attached to both sides of the boards to keep them floating in a vertical position. This huge boom was built to encircle the stern, but was never used for this purpose, since the petroleum was pumped out of the bow before completing the construction of the boom. The Coast Guard offered this boom to the Department for use in the protection of coastal areas.

A wooden barrier was built to close the bridges that connected the sea with the Condado Lagoon. This measure kept the lagoon practically clean of slicks. Rough wave action destroyed parts of this barrier and reconstruction was needed several times. Finally, the barrier was allowed to float freely over the surface of the water so as not to offer much resistance to wave action.

Based on satisfactory results obtained in the lagoon, wooden booms were built in the protected embayments such as the Caribe Hilton Hotel beach and the