

1984, January 13

North Sea, 150 n.m. east of Esbjerg, Denmark

Dinitrobutylphenol (DNBP, Dinoseb) (Class 6) in drums; extremely toxic solid pesticide; **marine pollutant**

Summary: The Danish container ship **Dana Optima** encountered a heavy storm in the North Sea on her way from North Shields in UK to Esbjerg in Denmark. On Friday 13 January, her main and auxiliary engines stopped which caused some of the deck cargo to fall overboard. One of the lost containers carried 80 drums (200 litres each) of the extremely toxic **pesticide** dinitrobutylphenol (also known as DNBP or Dinoseb). These drums sank to bottom at the depth of 40 m. An extensive search started by vessels from Denmark and Holland equipped with ordinary **sonars**, **sidescan sonars**, **precision navigation equipment** and a **remotely operated vehicle (ROV)**. Dutch trawlers found and recovered 13 drums during March 27-30. After a search grid had been established, a systematic search could start where different sidescan sonars were used. A Dutch minehunter made the first finds of 40 drums on April 2. Danish vessels thereafter made further finds and performed also the final salvage. The salvage operation was carried out by divers under surveillance by laboratory personnel. Recovered drums were placed in **over-packs** and transported to a disposal plant. After 4 months, 72 of the lost 80 drums had been found and salvaged. The drums had been damaged by fishing and salvage gear as well as by the high water pressure. Yet, no environmental effects were observed, due to little pollution by the low-soluble dinoseb. The cost of the operation for Denmark was 1 million USD.

Cause of Accident: Engine failure in heavy storm that caused the ship to list and deck cargo to fall overboard.

Comments on Response: Valuable experiences were gained from this case and a strategy was elaborated for such operations. A rough survey was first made by sector-scanning sonars of the types used by fishing vessels and mine hunters. "Hot" areas were then thoroughly searched by means of sidescan sonars. After mapping these areas, all suspected items were identified and examined by a submersible (e.g. a ROV) equipped with a TV camera before salvage. Navigation and positioning must be carried out by means of a precision navigation system that has the required accuracy. In this operation a system called **ARGO** system showed best accuracy, while **PULSE/8** was preferred because of greater sturdiness.

Source of Information: 1) IMO document MEPC 21/INF.2, Loss and Salvage of Drums Containing DINOSEB, Submitted by Denmark. 2) "Dana Optima", a report on the incident (written in Danish), Submitted by the National Agency of Environmental Protection, Denmark.

(Abstracted April 1991 by Björn Looström, Swedish Coast Guard H.Q.)