

Viggo Hinrichsen

Maritime Chemical Accident

1973, September 29

Baltic Sea, 1 n.m. north of Oland, Sweden

Chromium trioxide (Class 5) in drums; corrosive and dangerous solid; powerful oxidizer that decomposes by heat to free oxygen and may cause fire and explosion in contact with combustibles; **Sodium dichromate** (Unclassified) in drums; both substances form corrosive **chromic acid** in water

Summary: The West German dry cargo ship **Viggo Hinrichsen** encountered machinery failure during stormy weather on her way from Rotterdam to Rönnskär in northern Sweden. The ship was towed towards land but listed during the tow and sank at the depth of 17 m, with a cargo of 234 tons of **chromium trioxide** in 1100 drums and 180 tons of **sodium dichromate** in 700 drums. All drums had removable heads. The cargo was stowed in the holds, except for 27 drums stowed on deck. Bottom water samples, taken the day after, showed that chromium compounds had started to leak out and dissolve in the water. When informed of the leakage, responsible Swedish authorities jointly decided that the ship should be salvaged. The concentration of chromic acid was less than 1 g/l in the water close to the vessel and a few mg/l 100 m downstream. Three days after the accident, the place was treated with 11 tons of **ferrosulfate** that was poured onto the wreck from sacks that were cut open at the water surface. Ferrosulfate is a **reducing agent** that converts the chromic acid to a form which is less dangerous for the environment. During the towage, before the ship sank, 10 drum fell overboard. Eight of these drums were located by **sonar equipment** carried on a naval submarine salvage ship. Some of the drums were found damaged and empty. Six days after the accident two big **pontoon cranes** heaved the ship up to the surface and towed her hanging in the cranes to a port where the cargo was taken care of. The total loss of chromium compounds to the environment was estimated to 1-2 tons. The environmental damage was slight - some dead fish and jellyfish. The total cost of the operation was USD 3 millions in today's money value.

Cause of Accident: Machinery failure during storm on undermanned ship (only 2 crew on board!). Cargo listed during tow and the ship sank.

Comments on Response: The accident showed that better information is needed about what chemicals are transported in the Baltic Sea. Better general preparedness is also needed regarding response to chemical accidents at sea, including measures like chemical analysis of chemicals spreading in the water. After the operation some scientists claimed that the ferrosulfate treatment did not do any good - but not any harm either. In 1973, the responsibility was not stated in Sweden for actions against chemical accidents at sea. By this reason, the command responsibility was unclear. However, the year after, the Swedish Coast Guard was commissioned this responsibility.

Source of Information: Brief reports (in Swedish) written by the different authorities involved in the operation.

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