Burgenstein — Maritime Chemical Accident

1977, January 10 — Port of Bremerhaven, Germany

Sodium peroxide (Class 5) in drums; solid that reacts violently with water and organic materials; powerful oxidizer that decomposes by heat to free oxygen and may cause fire and explosion in contact with combustibles

Sodium cyanide, **potassium cyanide** (Class 6) in drums; highly toxic solids that in contact with water, moisture, oxidants, or acids emit the extremely poisonous gas **hydrogen cyanide**, TLV 10 ppm (USA), IDLH 50 ppm (USA)

Summary: During loading of the German ship **Burgenstein**, a drum with **sodium peroxide** was damaged by a fork-lift truck and part of the content was spilled on plastic materials on deck. Water from a rainfall had penetrated the hold and water had reached the drums. A truck wheel spun in the spilled peroxide and the wet plastic. Bright yellow flames flared up. The fire spread rapidly to other spills of peroxide on deck and thereafter to the cargo followed by a violent blaze. A number of longshoremen succeeded to escape on a ladder from the burning hold, but three crew died in the fire. The fire brigade arrived and started the fighting with water and foam. The fire spread to other parts of the cargo. Explosions forced the fire fighters to withdraw temporarily. The fire fighting had to be carried out under great precaution due to the presence of **cyanides** in the cargo that could emit **hydrogen cyanide**. The port and a large area around was declared as a **safety zone** and people in parts of the city were told to keep doors and windows closed. After 5 hours, the fire fighters managed to control the fire and after another 4 hours it was extinguished.

Cause of Accident: Damage of sodium peroxide drums by a fork-lift truck during loading. Spill of peroxide reacted with wet plastic sheets under a spinning truck wheel. The resulting fire could spread rapidly around in the hold to other spills of peroxide.

Comments on Response: At the initial fire fighting, the fire brigade used water. This was a serious mistake considering the cargo of 1) **sodium peroxide** that reacts vigorously with water, and 2) **cyanides** that emit hydrogen cyanide when wet.

Source of Information: "The BURGENSTEIN Case", Waterways and Shipping Directorate North, Special Federal Unit for Marine Pollution Control, Deichstrasse 12, D-2190 Cuxhaven, Germany.
(Abstracted April 1991 by Björn Looström, Swedish Coast Guard H.Q.)