World War II Munitions as a source of Mercury to the Southwest Baltic Sea

Kathleen Gosnell, Aaron Beck, and Eric Achterberg
Geomar Helmholtz Centre for Ocean Research, Marine Biogeochemistry, Germany (kgosnell@geomar.de)

The Second World War (WWII) resulted in many humanitarian, cultural and environmental impacts throughout Europe and the world. During WWII anti-aircraft ammunition was used extensively in the Baltic Sea region, and the legacy of WWII munitions are present throughout the area. For example, up to 1.5 million anti-aircraft grenades were shot down in a 10 km² region along the Dänisch-Nienhof (DN) training center of northern Germany near Kiel. Anti-aircraft grenades contain toxic explosive chemicals such as trinitrotoluene (TNT) and mercury fulminate. It has been estimated that the detonation of WWII bombs released up to 2 tons of mercury (Hg) species into the coastal environment of Germany in the surrounding Kiel area. The DN and greater Kiel Bay (KB) region additionally have non-detonated and partial bombs which could also yield a critical source of Hg to the area. Until now very little research has been done into how much of this Hg might be stored in the sediment, or moving through the waters and food chains of the region.

Water, sediment and plankton samples were collected from around DN and KB in order to quantify and investigate potential impacts and magnitudes of Hg contamination from munition sites and bombs. These Hg levels are compared to available TNT values, and other potential munition-sourced pollutants. Water samples were collected using 'trace metal clean' techniques at surface and depth for each station. Plankton samples were gathered at each water station using a vertically towed net in order to assess Hg in the lower food chain. While sediment samples were carefully collected from stations surrounding the KB bomb dumps. These results provide an initial assessment into how much of an impact Hg sourced from anti-aircraft munitions might have on the environment and food chain health within the southern Baltic and KB region.