Sea-dumping was for many years considered as safe disposal of various materials that were hazardous on land. This also applied to the problematic surplus chemical warfare material (CWM) that remained in warehouses both after World War I and World War II. It is estimated that by the end of WWII in 1945 the worldwide stocks of chemical warfare agents (CWAs) reached about 500,000 metric tons. Although back then, from the on-land risk-management perspective, sea-dumping was supposed to be a "consequence-free" and time-efficient utilization of massive quantities of poisonous substances. Nowadays we know that such transfer has only created a new risk, while few of such dumpsites have been investigated at the Baltic Sea. Baltic Sea alone became a dumpsite for at least 40,000 tons of CW containing 15,000 tons of CWAs, mainly sulfur mustard (up to 80%). Remaining part included such compounds and mixtures as Tabun, arsenic-based Lewisite, Adamsite and Arsine Oil. Release of those chemicals to the environment was also estimated to start no sooner than 70 years from sea-dumping.

Newest findings indicate that CWAs remain highly toxic in water, what in the light of their confirmed release from the submerged containers poses an actual threat to the Baltic Sea environment. Moreover, their biological uptake has just recently been detected, as trace contamination by phenylarsenic CWAs of muscle tissue were detect in Eastern Baltic Sea cod population in the Bornholm Deep area. For many years considered as an unrealistic threat, these findings finally put at least the arsenic-based CWAs in the spotlight due to their environmental persistence and toxicity to aquatic species.

Supported by newest findings, there is an urgent need to find CWA-specific biomarkers and bioindicators, that could in the future serve as a tool for i.e., monitoring of sea-dumped munitions threats. Proposed project aims in a series of laboratory and in-situ studies that would allow to describe and analyze observable and measurable effects of exposure.