

**Forum:** Baltic Forum

**Issue:** Protection of European Waters from Dangerous Heritage of the WWII

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## **Introduction**

The danger of sunken ammunition in the Northern and Baltic seas for a long period of time was underestimated. Only at the end of the 20<sup>th</sup> century people have started to investigate the issue, involving scientists for evaluation of all possible implications. Tons of sunken weapons, bombs, and shells are slowly corroding at the bottom of the sea with different chemicals being released. These chemicals may cause severe damage to the ecosystem of the seas as well as harming people seriously. Genetic implications caused by poisoning people, as dangerous legacy of World War II, have two important features. Firstly, they are irreversible, and the mutation would not disappear from the gene pool. Secondly, when people are poisoned with chemicals, unpredictable hereditary changes in future generations may occur, which people will not be able to remove even with the most effective drugs using advanced medical technologies. The accidents when people, especially fishermen, suffered because of the sunken ammunition have already been happening for several decades. Since 1976 there were 439 messages about finding chemical bombs at the sea bottom in Denmark, and also 13 cases of poisoned fish, when fishermen got chemical burns on their hands because of touching it.

## **Definition of key terms**

### UXO

Unexploded ordnance: explosive weapons (bombs, shells, grenades, land mines, naval mines, cluster munitions, etc.) that did not explode when they were employed and still pose a potential risk of detonation, many decades after they were used or discarded.

### Yperite

The mustard gas, a toxic war gas with sulfide based compounds that raises blisters and attacks the eyes and lungs; antidote is not known.

## Phosgene

The chemical compound with the formula  $\text{COCl}_2$ . This colorless gas gained infamy as a chemical weapon during World War I where it was responsible for about 85% of the 100,000 deaths caused by chemical weapons.

## Tabun (GA)

An extremely toxic chemical substance. It is classified as a nerve agent because it fatally interferes with normal functioning of the mammalian nervous system.

## Chemical Warfare Agents (CWAs)

General term for all toxic chemicals used in weapons lying at the bottom of the sea.

## **Background information**

The problem discussed was created both during and after the World War II. Close to their defeat, in 1945, the Germans ordered that enormous part of their weapons be disposed of at sea. After the end of the World War II Allied forces (USSR, USA, and Great Britain) also sent to the bottom of the Baltic Sea stocks of chemical weapons of the defeated Germany. It is estimated that 302 875 tons of ammunitions, containing 14 kinds of toxic chemicals, were sunk in the sea. The mass of toxic substances in its pure form was about 60 thousand tons.

Some scientists estimate that there are 1.6 million metric tons of conventional and chemical ammunition in German territorial waters alone, unexploded time bombs lying in or on the sea floor. The unexploded ordnance (UXO) includes giant aerial bombs weighing hundreds of kilograms, 15-kilo shells, small high-explosive shells, hand grenades, detonators, and ammunition rounds, for a total of more than 50 million individual items. There are more than 100 of these bomb and shell graveyards scattered along all of northern Germany's coastlines. There are also apparently 5,000 metric tons of shells filled with substances such as phosgene and the nerve agent tabun in the Little Belt, the strait between the Danish island of Funen and the Jutland Peninsula.

According to specialists there are 422 875 tons of chemical weapons and the field of 85 thousand tons of "clean" of toxic substances at the bottom of the Baltic Sea. The depth of their placement is often no more than 100 meters.

The data on the hazardous materials lying on the sea bottom closer to Lithuanian-Latvian border became available from Soviet records in 1992. In 1994 experts recommended that the weapons be left in place on the sea floor, saying attempts to

raise the materials could pose more of a threat. However, at the beginning of the 21<sup>st</sup> century scientists became more concerned about the problem. They warn that large amounts of poisonous materials will soon seep through bomb casements and shells: during the past 60 years the stores of shells filled with chemical agents have gradually corroded and could burst all at once, sending thousands of metric tons of poisonous chemicals into the sea at any moment. Ecologists and biologists say that if the released mustard gas reacts with the natural environment, the biological balance will start changing in the Baltic Sea because some of the species of sea fauna and flora will mutate and survive, while others will die out. Even though humans will not have a direct contact with the material that seeps through into the sea at a depth of 200 meters, they could ingest it as part of the food chain.

### **Major countries and organizations involved**

All of the Baltic States are in danger and are most likely to suffer from the consequences, as well as the Mediterranean countries, such as Italy, France, and Spain, which may also experience the implications of the sunk chemicals and weapons.

### **Relevant treaties and UN resolutions**

In 2000 North Atlantic Treaty Organization (NATO) released a paper, concerning a problem of dangerous legacy of the Second World War, including the variety of sunken chemical weapons. Also, the HELCOM (Helsinki Commission) in their report (which is the contribution to the second part of the report of the Secretary-General on oceans and the law of the sea, pursuant to United Nations General Assembly resolution of 29 December 2014) underlined the subject.

### **Previous attempts to solve the issue**

Previously, experts have made a number of proposals on the issue of burial of toxic substances, including their preservation, the construction of a special burial sarcophagus, etc. In particular, the number of Russian scientists are working on the problem of providing reliable isolation of flooded chemical ammunitions using special composite materials.

Poland is leading a project named *CHEMSEA*, which includes 11 research institutes from Poland, Sweden, Finland, Lithuania, and Germany. The aim of this project is to make a full list of all places and basins where the weapons were sunk as well as estimate possible consequences and develop ways of dealing with the threats. The site

of the project contains a lot of information on their studies and activities:

<http://www.chemsea.eu/>

### **Possible solutions**

One of the ways of dealing with the discussed problem are special cryogenic technologies, which use liquid nitrogen for the safe recovery of chemical munitions at a special vessel and their reburial, as well as using neutral chemicals to create a strong shell to prevent the leakage of toxic substances. The first important step, however, is the precise estimation of the number of weapons sunk as well as the localization of the places of their reburial. The work of *CHEMSEA* group should be taken into consideration. All possible implications of any actions taken should as well be carefully considered.

One way to compensate the material expenses is to make the countries responsible for this ecological problem to finance the mitigation measures. Yet, it is highly important that all the countries of the region as well as other Member States would cooperate and jointly discuss possible strategies for safe disposal of ammunition.