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Damian Szacawa

Passing time: dumped chemical munitions as a challenge for states in the Baltic Sea region

Chemical munitions and chemical warfare agents (CWAs) on the bottom of the Baltic Sea and related incidents are not a new challenge for states in the Baltic Sea region (BSR). The Helsinki Commission (HELCOM) and numerous international projects made it possible to initially identify the problem. However, further monitoring of the situation and research are needed to locate all dump sites and to identify the way to proceed with the dumped chemical weapons (CW) in known locations. Efforts to involve the international community in solving the problem is also needed.

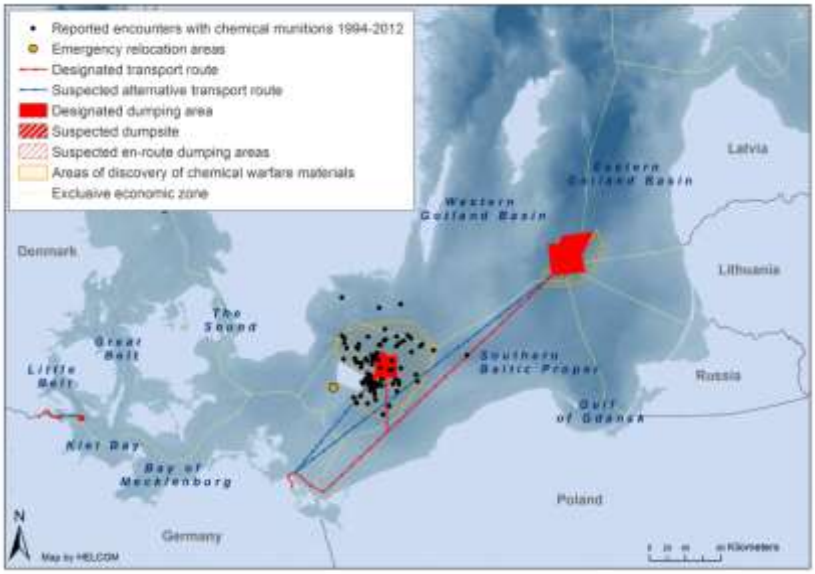
Ticking bombs at the bottom of the Baltic Sea: the genesis of the problem. Chemical weapons were widely used during the First World War, and their production continued thereafter. The lack of use of this type of weapon during the Second World War meant that the arsenals of the warring parties had huge amounts of CW, estimated at approximately 300,000 tons of munitions containing roughly 65,000 tons of active substances. During the Potsdam Conference (July 17 – August 2, 1945), the Allies decided to destroy the stocks of German chemical weapons, most of which were produced in IG Farben factories.

The sinking of CW was supervised by the authorities of three occupation zones in Germany: the British and Americans in the Skagerrak Strait (at least 150,000 tons of CW) and in the North Sea, and the Russians in the Baltic Sea. Three dumping areas have been selected (Map 1): the southern part of the Little Belt at a water depth of about 30 meters, the Southern Gotland Basin in water depths of 80-100 m (the Gotland Deep southeast of Gotland and southwest of Liepaja) and on the east of Bornholm. The latter location is the largest cemetery of munition and CW in the Baltic Sea. At a depth of 70-105 m was sunk approximately 35,000 tons of munitions containing about 13,000 tons of CWAs (sulphur mustard, concentrated sulphur mustard, Clark I, Clark II, Adamsite, chloroacetophenone).

Apart from the aforementioned official places, information obtained in later years from the GDR made it possible to indicate additional locations, including, for example, Gdansk Deep and the area south-east of Bornholm. Moreover, according to witnesses' reports, part of the CW did not reach its destination. After departure from loading ports in northern Germany (Wolgast and Flensburg), chemical munitions were also dumped on the route to the destination areas (this is probably the reason for the presence of CW or their corresponding degradation products in the Słupsk Furrow).

HELCOM activities: diagnosis of the problem. Dumped chemical weapons, munitions, and wrecks lying on the bottom of the Baltic Sea are of interest to states in the BSR, which cooperate within the Baltic Marine Environment Protection Commission (also known as the Helsinki Commission or HELCOM). During the Cold War, the BSR states did not take up this topic, but the problem was visible (e.g. in 1955 the beach in Darłówek was contaminated). Its scale is best evidenced by the fact that in 1985-1992, there were 342 cases of catching chemical munitions by Danish fishermen. These incidents were publicized by the media, and in 1993 the Helsinki Commission set up the ad hoc Working Group on Dumped Chemical Munitions (HELCOM CHEMU). Its main task was to prepare a report on chemical weapons dumping sites and their impact on the marine environment. It was presented in 1995 and contained basic information on the quantity and location of dumped chemical weapons (along with an estimate of the possibility of their displacement), the harmfulness of CW and substances formed as results of their decomposition, and the risks associated with the possible extraction of the chemical weapons. Detailed instructions for fishermen were also prepared, which included a description of how to proceed in the event of catching CW, recommended equipment of first aid kits, and the method of reporting incidents to the relevant authorities. Further research on the searching for other locations of dumped chemical weapons, analysis of chemical processes occurring between CW and the environment, and determining of the degree of corrosion of dumped munitions was also recommended.

Map 1. Map of known and suspected dumpsites of chemical warfare materials in the Helsinki Convention Area.



Source: HELCOM, Sea-Dumped Chemical Munitions, https://helcom.fi/wp-content/uploads/2019/08/chemical-munition-1024x724.gif [access date: 15.02.2021].

In the following years, work continued under the ad hoc HELCOM Expert Group to update and review the existing information on dumped chemical munitions in the Baltic Sea (HELCOM MUNI), which operated in 2010-2013, and the HELCOM Expert Group on Environmental Risks of Hazardous Submerged Objects (HELCOM SUBMERGED) was established in 2013. The main task of HELCOM MUNI was to update the state of knowledge on dumped CW and develop recommendations based on the findings of projects financed by NATO and the European Union. The projects of MERCW (2005-2008), concerning modelling of ecological risks resulting from dumped chemical weapons, and CHEMSEA (2011-2014), concerning environmental risk assessments related to dumped chemical weapons and updating map of dumping sites in the Gotland Deep and the Gdansk Deep, were of particular importance. The final report presented in 2013 confirmed the main findings of the HELCOM CHEMU, supplemented them with an analysis of found archival materials, and indicated groups particularly exposed to the risk of contact with CW (including fishermen, especially those who trawl, and workers employed in marine construction works). HELCOM SUBMERGED is currently preparing a risk assessment for the marine environment of the Baltic Sea. The project was presented at the end of 2020, and further work is one of the priorities of Germany, which holds the HELCOM chairmanship in 2020-2022 ("IEŚ Commentaries", No. 286).

A series of unanswered questions makes it difficult to solve the problem. At the beginning of the third decade of the 21st century, despite the work of three HELCOM's working groups and several international programs, the state of knowledge is not satisfactory. Firstly, the information collected still does not allow for an accurate determination of the total amount, types, and locations of dumped chemical weapons. Complementing this knowledge is time-consuming and costly – the estimate presented in 2020 by the minister of maritime economy and inland navigation shows that only in relation to the previously identified places under the control of Poland, it would take 16,500 months and cost approx. 515.7 billion PLN to complete.

Secondly, the scale of threats and risk assessment also require a more complete research. There is no consensus among the BSR states on how to deal with localized and identified CWs. As part of the DAIMON project, which ended in 2019, a decision support system for maritime administration and emergency response authorities was developed, as well as a toolkit for assessing the impact of munitions on marine fauna and flora. They take into account the

place where the weapon was dumped, environmental conditions, the type of CWAs, and the type of container used. Based on the data collected, several approaches have been developed, ranging from the extraction of CWs to their gradual release into the sea.

Thirdly, no global solutions that could be the basis of a regional system have been developed so far. In light of the Chemical Weapons Convention (CWC) of 1993, CWs dumped in the Baltic Sea are considered old chemical weapons. The CWC prohibits the development, production, and stockpiling of CWs, and orders their destruction, with the exception of old chemical weapons and abandoned chemical weapons. The implementation of these tasks was entrusted to the Organization for the Prohibition of Chemical Weapons (OPCW). In the case of discovery of old chemical weapons, the state, party to the CWC, is responsible for their destruction. In practice, international law regulations do not give rise to the request that other states cover these costs.

Conclusions. Dumped chemical weapons are one of the many challenges for broadly understood regional security. Distinctive feature of environmental challenges and threats is that before they are resolved, they often need to be politicized, or at least require sustained pressure from the public.

Thanks to the HELCOM's activity, the BSR states are aware of the problem, although knowledge on this subject is still not complete. The international projects implemented so far and the results of the work of experts within HELCOM indicate that CWs will continue to be a problem for the BSR states and that their constant monitoring is necessary.

Chemical weapons are a source of contamination if released as a result of corrosion of metal containers or as a result of mechanical damage, e.g. during offshore construction works. This is particularly important in the context of intensive exploitation of the Baltic seabed associated with the construction of gas pipelines, such as Nord Stream 2 ("IEŚ Commentaries", No. 91) or offshore wind farms ("IEŚ Commentaries", No. 314).