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Toxic Ticking Time-Bomb in the Baltic Sea and Threats to Poland's Security

Abstract: The authors examine the threats from hazardous toxic materials from World War II wrecks sunk in the Baltic Sea and their cargo of chemical ammunition, indicate Poland's reaction to this situation, and map out Polish obligations in this regard. This problem gives rise to multiple uncertainties about the exact nature of threats to environmental/ecological security, marine security, human security (including health security), economic security and food safety. The authors also elaborate on legal regulations relevant in this context. The research methods include formal-institutional analysis of relevant legal documents and discourse analysis. The main conclusions are: 1. toxic materials in the Baltic Sea threaten ecological, economic, human and security; 2. food safety in all Baltic states might be endangered; Poland should accede to the Nairobi Wreck Removal Convention; and Poland should cooperate regionally to resolve the problem of the Baltic chemical waste.

Keywords: *Baltic Sea, chemical weapons, chemical waste, wrecks, international law, Poland*

Introduction and Methodology

Shipwrecks are very attractive for marine archaeologists and divers and have become the subject of countless stories. However, they may also give rise to a whole range of problems. Broken hulls may pose a risk of collision, obstruct navigation or block mooring sites; if moved by currents and waves, they can damage fisheries and fishing operations, the coastal environment, and infrastructure. Pieces of debris can litter the shore, and corroded tanks may leak dangerous substances into the environment. Shipwrecks of modern commercial

vessels may release large oil spills. However, the situation is even worse in the case of military ships that carried chemical weapons.

This review paper aims to examine the threats from hazardous toxic materials from World War II wrecks sunk in the Baltic Sea and their cargo of chemical ammunition, indicate Poland's reaction to this situation, and map out Polish obligations in this regard. This problem's social and political importance becomes even higher considering the relatively recent findings of the Polish Supreme Audit Office's (SAO; in Polish *Najwyższa Izba Kontroli*, NIK) report analysed in the remainder. The SAO's report was an inspiration for the authors and a source of up-to-date knowledge. The research questions are: what threats come from the toxic materials left in the Baltic Sea? What are Poland's international legal obligations regarding removing such materials and weapons? The authors elaborate on the relevant threats and legal regulations in this context. The added value of this review paper is an attempt at classifying the security threats from toxic materials left in the Baltic Sea into a coherent set, particularly in light of the recent SAO's report.

The research methods include formal-institutional analysis of relevant legal documents and discourse analysis (literature analysis). Regarding the factual state, the authors – apart from the relevant literature – mostly used the recent Polish Supreme Audit Office's report “Counteracting threats arising from the presence of hazardous materials on the bottom of the Baltic Sea” (original title: “Przeciwdziałanie zagrożeniom wynikającym z zalegania materiałów niebezpiecznych na dnie Morza Bałtyckiego” – hereinafter: SAO Report 2020) of May 2020, which details the information known so far, including the number of wrecks and amount of chemical weapons/materials and Poland's activities (or rather lack thereof) aimed at dealing with this enormous security threat. In the area of threats caused by the toxic materials in the Baltic Sea and corresponding security levels, the authors referred to the relevant literature and the SAO report. As to the legal obligations of Poland, the most important international legal instruments such as the Chemical Weapons Convention, the Law of the Sea Convention and the Nairobi Convention on the Removal of Wrecks were examined. Due to space limits, other conventions that Poland ratified, such as the 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, the 1998 Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, and the 2001 Stockholm Convention on Persistent Organic Pollutants will not be included in this review paper.

The article's structure is as follows: section 2 presents the facts related to the toxic materials in the Baltic Sea – their amount and types, as well as Poland's efforts to monitor and deal with the problem. Section 3 examines the various security aspects arising from the title problem, such as ecological/environmental security, marine security, human security (including health security), economic security and food safety. Section 4 covers the legal obligations of Poland in this regard. Finally, the authors attempt to answer the research questions in the Conclusions.

Factual State and Poland's Reaction

At the bottom of the Gdańsk Deep lie 60 tonnes of chemical ammunition containing mustard gas. The wreck of the *Stuttgart* has already caused a local ecological disaster, and the corroding hull of the tanker *Franken* containing 6000 tonnes of fuel threatens to do the same (SAO Report, 2020, p. 6; Rogowska et al., 2010). The Baltic Sea is one of the most polluted seas in the world (Bełdowski et al., 2018, p. 238; Strehse & Maser, 2020; Vanninen, 2020; MacKenzie et al., 2004, p. 970; Bełdowski, 2016a, pp. 114–122). Its ability to naturally remove contaminants is very low as it is almost entirely landlocked, connected to the North Sea only through the narrow Danish straits. As a result, most pollutants remain in the Baltic once they get there. The main sources of pollution are ships crossing the Baltic, followed by agricultural, municipal and industrial waste transported by the rivers to the sea. Another source is illegal wastewater dumps and the sinking of solid waste (which also includes toxic substances). The last major threat is the fuel in the tanks of shipwrecks and the chemical ammunition and weapons sunk there after World War II (Jurszo, 2020). The Polish SAO prepared an assessment of the state's actions to mitigate or eliminate that danger, which revealed that no such actions were undertaken during the evaluated period (from 2016 to mid-2019) (SAO Report, 2020, p. 14). It can lead to an unprecedented ecological disaster.

Quoting the data of the Hydrographic Office of the Polish Navy, SAO informs that there are more than 415 wrecks in Polish sea waters, with about 100 in the Gdańsk Bay. There are also wrecks in the western part of Polish coastal waters, e.g., at the approach to the port in Świnoujście – some of them were removed to open the waterway to the port, yet many tanks remain under water. There are also some wrecks in the Vistula Lagoon, an area even more vulnerable to pollution than the open sea as its only connection to the Baltic is the Strait of Baltiysk. The most dangerous wreck in Polish waters is *Stuttgart*, which sank near Gdynia during WWII. It was a passenger ship used as a floating hospital towards the war's end. A fuel spill with ca. 415 thousand m² was discovered in its surroundings, and the contaminated area on the sea bottom is increasing. According to the research conducted by the Maritime Institute in Gdańsk in April 2016, a local environmental disaster occurred there as early as 2009: on the sea floor, a spill of mazut created an azoic zone devoid of any life forms, “which is expanding together with the spill, degrading the natural environment” (SAO Report, 2020, p. 5).

Another ticking bomb is the wreck of the *Franken*, a German tanker sunk on April 8, 1945 by the Russian air force several sea miles southeast of the Hel Peninsula. As estimated by the Maritime Institute in Gdańsk, *Franken's* tanks still contain about 6000 tonnes of fuel and petroleum-based substances. The SAO report warns that the “corroded hull can break under its own weight and cause a sudden release of these substances in large quantities” (SAO Report, 2020, p. 6; Hac, 2018).



The map of some of the sunken vessels in the Baltic Sea. Source: SAO Report, 2020, 6.

Following the decision made by the great leaders in Potsdam, after the end of WWII, chemical ammunition and weapons were sunk in the seas. The initial assumption spoke about sinking such items at a depth of at least 4000 metres, but this idea was soon abandoned for economic reasons. While there is no certain data on where, how many, and what kind of chemicals have ended up in oceans and seas globally, careful estimates suggest that it may have been millions of tons (Elmgren, 2001; Zanders, 2002, p. 145). In most cases, the chemical weapons were dropped overboard, either in containers or loose; some ships were also sunk with their lethal cargo. In most cases, the dumped shells, bombs and rockets contained explosives in addition to chemical agents, and some sites were also used to dump conventional munitions. The preserved information strongly suggests that part of the cargo was disposed of *en route* to the designated dumpsites in the Baltic; however, the exact amount and locations remain unknown (Vanninen et al., 2020, p. 1; Bełdowski et al., 2018, p. 2). Barrels and chests began to be dumped also in the shallow waters of the Baltic. However, they constituted a minor fraction of dumped munitions in the Baltic Sea. The majority was aerial bombs and artillery shells. Considering the contemporary lack of knowledge regarding methods of chemical weapon destruction, neutralisation by sinking was fast and relatively cheap and seemed to guarantee that those weapons would not be extracted and used. However, what in 1945 was considered a good solution generated a new problem: the risk of chemical contamination of the environment that could be a real threat to the health and life of the human population consuming Baltic fish and the Baltic fauna (SAO Report, 2020, p. 7; Niemikoski et al., 2020; Strehse & Maser, 2020, pp. 6–7; Lang et al., 2018).

The safety of weapons disposal also turned out to be overestimated. The first case of fishermen dredging out WWII chemical weapons was recorded in 1952, and so far, there have been 29 such incidents (SAO Report, 2020, pp. 7, 9). Every such event involves a risk of people incurring chemical burns, and fishing nets and vessels may also be contaminated. The risk of spreading contamination is heightened because the effects of contact with, e.g., mustard gas may become evident only after several hours. Another threat is the transmission of poison agents up the food chain. Limited veterinary supervision of sea fishing means that consumers cannot be sure whether they are not ingesting derivatives of such substances together with their fish dishes. Furthermore, cases of chemical weapons were also found stranded on beaches in Dziwnów, Kołobrzeg, and Darłowo. What compounds the problem is that the weapon dumpsites contain not only chemical weapons but also non-defused bombs and artillery shells, which at some point may explode, leading to increased chemical contamination (SAO Report, 2020, pp. 9–11).

Although the weapons and ships have remained in the sea for over 70 years, the Polish maritime authorities (the Minister of Marine Economy and Inland Navigation together with the heads of the Maritime Offices in Gdynia and Szczecin) have not yet analysed the situation – no stock has been taken of the locations, types and state of dangerous substances (fuel and petroleum-based products in the wreck tanks as well as poison agents and their derivatives coming from the WWII weapons) (SAO Report, 2020, p. 14). The list of neglects compiled by the SAO is longer and includes the following:

- no methodology or techniques for evaluation of sea environment contamination has been developed in Poland so far;
- no actions have been undertaken in particularly dangerous cases such as the mentioned *Franken* and *Stuttgart* wrecks;
- the environmental protection authorities (the Minister of Environment, the Minister of Climate, and the Chief Inspector of Environmental Protection) do not monitor threats; e.g., there is no monitoring of concentrations of military poison agents and their derivatives in Baltic fauna (e.g., fish or blue mussels);
- the Minister of Marine Economy and Inland Navigation did not request the states of registry of the ships sunk in Polish Baltic waters to cover the costs of wreck removal or help in removing contamination caused by these vessels (SAO Report, 2020, pp. 15–19).

The SAO report leads to the conclusion that Poland has done nothing to solve the problem of the ticking time bombs, which are the fuel in wrecks and the chemical weapons on the Baltic floor.

Security Aspects – Ecological/Environmental Security, Marine Security, Health Security, Human Security, Food Safety, etc.

Ecology has been gaining importance in recent years as people are increasingly aware of the wrecks' negative impact on the natural environment. Since human activity is continually expanding, the number of resulting environmental problems is also steadily growing. Is it justified to speak of an ecological problem in the case of the Baltic Sea? The Baltic Sea is a small but specific geographical region. Approximately 90 million people are living on its shores in nine different countries. This aspect alone lets us assume that despite the growing awareness of Europeans, such a large number of people living within a relatively small area must result in significant anthropogenic pollution (agricultural, industrial, communal, etc.) of sea waters, calculated each year in millions of tons (Marszałek-Kawa & Siemiątkowski, 2020; Siemiątkowski et al., 2020). If this factor is compared with another fact – a very slow (25–35 years) time of total exchange of the relatively shallow waters of the Baltic Sea, which is constantly lengthening due to the decreasing frequency and strength of water inflow from the North Sea/the Atlantic – it will not be an exaggeration to say that the Baltic is today “one of the most heavily polluted seas in the world” (MacKenzie et al., 2004, p. 1970; Bełdowski, 2016a, pp. 114–122), which in turn results in, e.g., the catastrophic state of marine biocenosis (Fabisiak, 2008, p. 26) or the constantly growing areas of anaerobic water. This brief presentation of the ecological situation in the Baltic Sea cannot ignore other threats, for example, overfishing, the presence of invasive species, the increase in the scale and importance of sea transport (and thus frequency and seriousness of shipping accidents), the use of the seabed to build networks that transmit energy resources, as well as military activities (conducted particularly by the Russian Federation) (Svensson, 2010, p. 9; Lebiedzińska, 2016, pp. 325–326). Thus, it should be assumed that if the harmful human activity toward the Baltic Sea is not reduced quickly, considering this waterbody's ability to self-purify and restore its resources, the Baltic may soon turn into a dead sea.

The question of improving the ecological condition of the Baltic Sea (or at least maintaining the present *status quo*) as well as ensuring the safety of the residents of coastal areas is not made easier by the large amounts of chemical weapons and conventional ammunition which contains them were stored at the bottom of the said sea following WWII. Years of ignorance and pretending that there was no problem cause today an urgent need to monitor dumpsites, the level of corrosion of containers with chemical weapons and the quality of the surrounding waters to ensure the safety of the environment and people (van Ham, 2002, p. 93).

Today the problem of storing chemical weapons and ammunition containing chemical weapons at the bottom of the Baltic Sea is politically inconvenient for all countries concerned with this issue. Moreover, the probability of the problem becoming a cross-border one is steadily growing. Nowadays, it is difficult to prove who owned these substances, who decided to sink them, who chose the sites, whether the procedures were followed, what amounts

of these substances were deposited in this way, etc. A great number of dumps were made secretly, sometimes on the way to the target sites, often simply by throwing the contents overboard during transport; however, there are not many documents on this. Although, according to the Potsdam Agreement, it was the countries that won WWII that confiscated from Germany huge amounts of chemical weapons and ammunition containing those weapons and assumed an obligation to destroy them (ChemSean Findings, n.d., p. 21), it is impossible today to clearly identify the culprit(s) and make them responsible, and thus make them cover the costs of, e.g., monitoring, expert opinions, security, neutralisation, compensation. What also remains a fact is that at that time, there were no technologies which would make it possible to efficiently and ecologically dispose of these weapons. In the last decade or so, many articles on the problem have been published, including texts on the chemical agent composition, ecological hazards, impact on the biota and spreading of those substances in the Baltic (Beldowski et al., 2018; Vanninen et al., 2020; Niemikoski et al., 2020; Strehse & Maser, 2020), and the worlds of science and the media have expressed more serious interest in the issue, so now we know more about at least the locations where these substances are stored (Missiaen & Henriët, 2002, p. 1; Missiaen, 2010, p. 3536; Paka, n.d., p. 1; Beldowski et al., 2018). Nevertheless, it is still a political threat, a time bomb hanging over the heads of the leaders of all the Baltic Rim countries. As soon as the problem becomes more visible and alarming, it is certain that serious repercussions, both domestic and regional, will follow.

Likely, the release of harmful chemical substances into the Baltic Sea waters will increase within the next several decades, causing water contamination and damage to marine life. The sunk munitions contain conventional explosives and different compositions of chemical substances, which can have cytotoxic, genotoxic and carcinogenic effects on marine life and humans coming into direct or indirect contact with them (Strehse & Maser, 2020, p. 1). The prophecies envisioning a Chernobyl-scale ecological disaster are probably exaggerated, yet the situation at the dumpsites should be monitored (Witkiewicz & Popiel, 2005, pp. 5–7). Interestingly, differences in assessment of the potential effects of chemical warfare in the sea lead to different opinions on what should be done with this ammunition (Witkiewicz & Popiel, 2005, p. 7). There are already companies specialising in marine salvage on the European market, including retrieving hazardous materials. Still, such operations incur enormous costs related to the salvage process and disposal of such substances on the land, which requires special safety measures (due to toxicity and container corrosion¹). Considering the necessary funds, it is no surprise that initially, the dominant opinion was that those chemical weapons should be left in the sea after all. In this framework, there are two sub-groups: those who want only to monitor the situation and those who advocate isolating

¹ “The majority of containers, barrels or aerial bombs, whose covering was made of steel sheets not thicker than 2 mm and which were sunk in the sea after WWII cannot be lifted out of the sea due to compromised integrity” (Fabisiak et al., 2018, p. 43).

these substances from the environment somehow (e.g., by covering the dumpsites or wrecks with a layer of concrete or polymer). The second approach's obstacle is the lack of funding for such projects, particularly as scientists have not fully confirmed their reliability. Therefore, the dangerous substances will remain on the Baltic Sea floor due to a lack of financing and serious risks related to salvaging, transporting and disposing of chemical warfare agents on the land (Beddington & Kinloch, 2005, pp. 5, 47). As early as 1994, HELCOM² recommended leaving those weapons at their current locations as, in the short term, they generate no risk to the marine environment (HELCOM CHEMU, 1994). Still, “[i]n most countries [including Poland] the ‘do not touch’ policy still applies, and no actual measures have been taken against possible future environmental catastrophes” (Missiaen & Henriet, 2002, p. 6). However, such an approach to the problem is open to accusations, voiced by, e.g., the Polish SAO, that state institutions seem to overlook the issue as no investigation of all dumpsites has been made, nor has the environmental impact of the chemical agents been assessed (SAO Report, 2020, p. 13). With time the preference has shifted significantly towards removal and destruction. HELCOM CHEMU report from 1994 was superseded by the HELCOM MUNI report in 2013, where recovery and destruction were no longer excluded as an option, and scientific, and since then, policy opinions have shifted even further in that direction. Several peer-reviewed and popular science papers suggest the recovery and destruction of all or selected munitions (Beldowski et al., 2018, p. 14).

The fact that significant amounts of chemical warfare agents and other harmful substances remain on the Baltic seafloor entails a variety of hazards, e.g., restrictions on depth and areas of fishing, as well as endangering the safety of humans, vessels, and beaches. According to Beddington and Kinloch (2005, p. 3) and Theobald (2002, p. 101), there are three main types of threats caused by chemical weapons sunk in the sea: “direct physical contact with either chemical or conventional munitions resulting in threats to human health [health security, human security]; b) contamination of marine organisms and the environment in the vicinity of dumped munitions and the consequent potential for some concentration of toxic contaminants entering the wildlife and human food chains [environmental security, food safety]; c) spontaneous explosions which can be both directly life-threatening, but also have the potential to spread material away from the dumpsites so increasing the potential for more of it to come into direct physical contact with individuals [human security, marine security]”³.

² The Baltic Marine Environment Protection Commission, established in 1974. In 1992 the CHEMU (Chemical Munitions), its ad hoc Working Group, was established.

³ Beldowski, Long, and Söderström (2018, p. 9) point that “release of constituents can occur either through explosion of burster charge or corrosion of casings. Given the fact, that deliberately dumped munitions were not armed, the latter seem more likely. According to existing models [...] in the Baltic conditions, corrosion rate of the bombshells ranges from 0.05 to 0.575 mm/year depending upon shell

Direct physical contact can result in chemical burns or, in worst cases, death (health security, human security) (Kasperek, n.d., pp. 7–8). As a group most at risk of contact with chemical weapons sunk in the Baltic, fishermen should not work in the confirmed dumpsite locations. They also should pay attention to how deep the nets go so as not to disturb any containers on the sea floor (to avoid damaging them and causing a leak or dragging them to the surface). There are established procedures which fishermen should follow, yet greed sometimes can prevail. Thus, the very low number of reported cases of contact with chemical weapons in the Baltic Sea should be viewed with dismay. Many such incidents were noted after the war: the data available for 1968–2012 include 686 cases (HELCOM online). Yet paradoxically, although the calculations may appear simple, the full scale of the problem is difficult to assess. Firstly, there are no data for the years after 2012. Secondly, despite the procedures in force⁴, many incidents are not reported to the proper authorities as it would mean loss of time, fuel, money or the necessity to destroy the entire catch. Hence fishermen often just drop the hauled containers or lumps overboard. It indirectly increases the areas of sea bottom spills of chemical warfare agents. Significantly, the vast majority of reports come from Danish fishermen, who are compensated by the state for losses related to contact with harmful substances at sea, and thus are unafraid to follow the proper procedures. Other states of the Baltic region have no such support system for fishermen⁵.

The second type of threat – toxic substances influencing the ecosystem of the Baltic Sea – can be understood in two ways. The first meaning is literal: the dumped substances should be treated as a factor threatening the biodiversity and the general state of marine life in the Baltic Sea, predominantly the fauna (environmental security) (Helsinki Commission, 2010, p. 76). What should also be mentioned in this context is the negative environmental impact of WWII shipwrecks and the fuel remaining in their tanks⁶, as well as of the maritime transport of today – while the latter is crucial to the development of the economy, its intensity leads to a certain number of accidents and resulting spills (Caban et al., 2017, pp. 1–6). Secondly, it should also be considered how the first threat, i.e., the exposure of the species living in the Baltic ecosystem to harmful chemicals, will impact the health of the consumers as today,

type. This process may be enhanced up to four-fold by even slow water flow, which is a normal situation in most areas of the Baltic” [emphasis added].

⁴ “A fished-out object of unknown origin should not be touched or taken to the port. It is advised instead to take pictures of such an object, mark the coordinates at which it is sunk again, and notify the Maritime Office and/or the Navy” (Andrulewicz 2016, p. 82).

⁵ Since 1952 only 29 such cases have been reported in Poland, which further undermines the credibility of the collected data (SAO Report 2020, p. 9; ChemSea Findings n.d., p. 19).

⁶ “In 2005, it was estimated that there were 8569 potentially polluting shipwrecks in the world’s oceans and that 1583 of those were tankers. 75% of the wrecks sank during the WWI. Over 70 years later these wrecks are significant global risks of marine pollution” (Svensson 2010, p. 3). As mentioned earlier, only in Polish sea zone there are as many as 415 wrecks, 2 of which (the Franken and the Stuttgart) need to be secured immediately.

the content of certain substances in Baltic fish almost exceeds the strict EU norms (food safety). In this case, the media's role is also significant as sensationalist pieces of news that manipulate information or omit certain data can generate negative emotions and anxiety among the readers/viewers. On the other hand, according to the newest research, very small amounts of military chemical agents have been detected in fish (Niemikoski et al., 2020). Currently, the levels do not threaten the consumers' health, although this may change in the future due to progressing corrosion of containers, shells and hulls (Bełdowski et al., 2016b).

The second of the presented threat types can also have economic repercussions (economic threat), to which media can contribute. How information is presented in mass media can negatively affect the population whose livelihoods depend on the sea. Presenting images of fish that have visible diseases or are just generally unhealthy can result in decreased fish consumption, directly translating into lower earnings for fishermen and fish processing businesses. Thus, information on health problems among sea fish should not be suppressed, but it should be reliable, based on proper laboratory tests. Besides, inaccurate information on chemical ammunition dumpsites in the Baltic or on fish diseases can discourage tourists from taking seaside holidays, which would affect the owners of shops, restaurants, hotels, and cultural institutions. The consequence of loss of income in these sectors would be decreased revenues of local government units and the state budget.

As to the third category of threats, the dangers related to sunken conventional ammunition should also be mentioned: it is unknown what its current state is, how stable it is and whether there is a threat of accidental explosion (human security, marine security). Similar considerations must be taken into account with regard to fuel in the tanks of warships that sank with chemical warfare agents on board or carried by ships that sunk during peacetime incidents related to maritime transport. Lack of certainty as to the precise location of chemical and conventional ammunition and its type and amount generates additional, not insignificant costs for contractors building wind farms or gas pipelines. Before starting the multi-million-dollar projects, they need to ensure that the lives and health of construction workers are safe and the investment will not be at risk of an unexpected explosion of unstable charges. Currently, such problems have been encountered, e.g., during the construction of the Nord Stream II part pipeline southeast of Bornholm; earlier cases involved the construction of the Nord Stream I or the LNG terminal in Świnoujście (Da Vinci Analytic Group, 2019).

Poland's Legal Obligations – International Regulations that Underpin the Cooperation with Polish Neighbours

The order of analysis here is from more specific to more general documents, with one exception – the Nairobi Convention on the Removal of Wrecks, which is examined last. One thing should also be clarified: although the ships were sunk in the Baltic Sea after

WW II and the legal documents examined below were adopted much later, one may argue that they are still applicable as the consequences and threats coming from these previous events continue till today. The legal regulations analysed in the following sections constitute a potential foundation for Poland's cooperation with its neighbours to remove the wrecks and chemical ammunition.

Convention on the Protection of the Marine Environment of the Baltic Sea Area, 1992

Poland ratified the predecessor Convention on the Protection of the Marine Environment of the Baltic Sea of 1974 in 1980. The title Convention is its revised version, and Poland has also been its state-party since 1999 (Dz. U. 2000.28.346). This Convention aims to protect the marine environment, which includes preventing pollution of the Baltic Sea, the pollution defined as the "introduction by man, directly or indirectly, of substances or energy into the sea, including estuaries, which are liable to create hazards to human health, to harm living resources and marine ecosystems, to cause hindrance to legitimate uses of the sea including fishing, to impair the quality for use of sea water, and to lead to a reduction of amenities" (Art. 2). It also defines dumping as "any deliberate disposal at sea or into the sea bed of wastes or other matter from ships, other man-made structures at sea or aircraft" and "any deliberate disposal at sea of ships, other man-made structures at sea or aircraft" (Art. 2). Of direct relevance to the subject matter of this paper are obligations contained in Art. 3 of the Convention, namely that Contracting Parties will jointly or separately take any relevant measures – legislative, administrative or other – that may eliminate or prevent pollution. The goal is to restore the Baltic Sea ecosystem and preserve its balance. The precautionary principle will apply: the Contracting Parties are to take preventive steps whenever it can be logically assumed that any substance or energy that has been directly or indirectly introduced into the marine environment has the potential to endanger human health, marine ecosystems, living resources and amenities; or that it may interfere with other legitimate ways the sea area is used even when there has been no conclusive confirmation that a causal relationship exists between inputs and their purported effects (Art. 3 (1) and (2)). The Convention also confirms the "polluter pays" principle. Other obligations relate to cooperation in combating pollution (Art. 14), nature conservation and biodiversity (Art. 15), and informing the public of incidents of pollution and their consequences (Art. 17). Annex VIII to the Convention details the response to pollution incidents. The most important regulation is number 2 in the Annex, according to which the Contracting Parties must develop individual national contingency plans and bilateral or multilateral response plans in case of pollution incidents. As the current situation with toxic materials in the Baltic Sea may be termed a ticking time bomb, it is important to draw a joint plan as releasing these substances will affect all the Baltic states.

Chemical Weapons Convention, 1993

Poland ratified the Convention in 1999 (Dz. U. 1999.63.703). This Convention is relevant in the context of toxic materials in the Baltic Sea as some of them are old chemical weapons. According to the most basic regulation, “each State Party undertakes to destroy chemical weapons it owns or possesses, or that are located in any place under its jurisdiction or control, in accordance with the provisions of this Convention” (Art. 1), as well as all chemical weapons left by that state-party on the territory of another state-party. The latter could serve as another argument for negotiation and cooperation between Poland and other Baltic Rim States to jointly remove these weapons from the Baltic Sea as it is also in their interest.

There are also provisions on old and abandoned chemical weapons, the former defined as “[c]hemical weapons which were produced before 1925; or [...] chemical weapons produced in the period between 1925 and 1946 that have deteriorated to such extent that they can no longer be used as chemical weapons”, and the latter as “[c]hemical weapons, including old chemical weapons, abandoned by a State after January 1, 1925 on the territory of another State without the consent of the latter” (Section a 1 and 2). Detailed obligations on the destruction of such weapons are specified in Part IV (B) of an Annex to the Convention on implementation and verification. Both old and abandoned chemical weapons should be destroyed following the procedure envisioned in the Annex. These provisions include the assistance and guidance of the Technical Secretariat of the Organisation for the Prohibition of Chemical Weapons. Old chemical weapons are destroyed under national legislation (Section B 3). Although they were not strictly abandoned, the toxic materials in the Baltic Sea qualify as old chemical weapons, and the obligations concerning both kinds of weapons are the same. Concerning abandoned weapons, the Annex provides for consultation with the abandoning state in order to establish a mutually agreed plan for their destruction (Section C 13 and 14). The abandoning state-party “shall provide all necessary financial, technical, expert, facility as well as other resources”, and the territorial state-party (in this case, Poland) should cooperate appropriately (Section C 15). The question is, which state could be regarded as the abandoning state? The possibilities include Germany and the Allies – the former because it was usually the registered owner of the wrecks and the chemical weapons and the latter as they decided to abandon and sink the ships with chemical ammunition or just dump the ammunition. If it is impossible to identify the abandoning state, the territorial state-party may ask for assistance from the Organization and other states-parties to ensure the destruction of such abandoned chemical weapons (Section C 16).

Convention on the Law of the Sea (UNCLOS), 1982

Poland has been a state-party to UNCLOS since 1998 (Dz. U. 2002.59.543). UNCLOS does not contain any specific rule relating to the wrecks (Aznar-Gómez, 2003, p. 64). Firstly, according to international law and UNCLOS, national law may be applied to wrecks and abandoned ves-

sels located within territorial waters of individual states, where the latter have full sovereignty (Tecem, 2019, p. 12). Secondly, even though UNCLOS provides no express rules relating to wrecks, it contains the whole part XII devoted to the protection and preservation of the marine environment. The most general obligation is that of states-parties to protect and preserve the marine environment (Art. 192). In order to fulfil it, it must jointly or separately implement all measures (consistent with this Convention) necessary to control, reduce, and prevent any pollution of the sea environment. For this purpose, the states should act accordingly to their capabilities and use whatever best practicable means they have at their disposal. They should also coordinate their policies in this area with other states-parties. The measures consistent with Part XII ought to deal with all causes of marine environment pollution, limit as far as possible the release of any harmful substances from land and air, and prevent dumping pollutants in the sea (Art. 194). These provisions, at the least, oblige Poland to constantly monitor the wrecks to prevent and react to possible leaks of toxic materials and the resulting ecological disaster. According to the Polish SAO, even this minimal obligation is not fulfilled. Measures intended to reduce pollution should include efforts aimed at removing the wrecks or their toxic cargo or fuel. According to Art. 195, it is also important that while attempting to control, reduce and prevent pollution of the marine environment, states should avoid transforming one type of pollution into another and transferring risks from one area to another, directly or indirectly. UNCLOS also provides the legal basis for global and regional cooperation in protecting the marine environment (Art. 197) and adopting contingency plans against pollution (Art. 199). These regulations envision a possibility of cooperation with international organisations (such as the European Union (EU) or the International Maritime Organisation) in eliminating the consequences of pollution incidents.

Nairobi International Convention on the Removal of Wrecks, 2007

Sea administration is entitled to set for a shipowner the conditions of eliminating hazards caused by the pollution in Polish territorial waters, up to and including the order to remove a shipwreck. In other sea areas, such issues are regulated by the International Convention on the Removal of Wrecks, signed on May 18, 2007 in Nairobi, which entered into force in 2015. As Poland has not joined this Convention, it has limited possibilities of action concerning shipwrecks sunk in the Polish Exclusive Economic Zone. Even though Poland has not ratified this Convention, the document is worth mentioning as it envisions some possibilities which – if outlined clearly – may at least contribute to convincing Polish authorities to ratify the Convention. What follows from the preamble to the Convention is that as remaining shipwrecks may pose a danger for ships and the marine environment, it is advisable to adopt uniform international rules on procedures for quick and efficient wreck removal and bearing the costs of such actions.

Art. 1 defines a wreck as a sunken or stranded sea vessel; or any part thereof, as well as any object on or from the board of such a ship; or any object that has been lost at sea from

a ship and is sunken, stranded or adrift; or a vessel reasonably expected to sink or to strand as a result of a marine incident, when assistance is not or cannot be provided. Removal means “any form of prevention, mitigation or elimination of the hazard created by a wreck”.

An affected state-party may take measures compliant with this Convention to remove a wreck creating danger in the Convention area; such measures must be in proportion to the said danger, not going beyond reasonably necessary actions aimed at removing the wreck and ceasing when it has been done; nor should such measures interfere with other states’ rights and interests (including the state in which the vessel was registered), or with the rights of any physical or corporate person concerned. States-parties should strive to cooperate when a state other than the affected state is involved in the effects of a maritime incident leading to a wreck (Art. 2 of the Nairobi Convention).

Art. 1 paragraph 1 of the Nairobi Convention assumes that the area where the Convention applies is the Exclusive Economic Zone of any state-party; if a state has not established an exclusive economic zone, this means the sea area adjacent to the state’s territorial waters, up to 200 sea miles from the basic line. However, the Convention also includes Art. 3, which allows for expanding the Convention’s applicability to a state’s territory, including its territorial waters, as long as such matters are properly notified. Generally, wrecks are most often located in the coastal waters and areas of difficult navigation on popular sea routes (Koziński, 2008, p. 56). In the case of Poland, many wrecks can also be found within the Exclusive Economic Zone, so the Convention would apply to them, while those in territorial waters could be included in the mentioned optional expansion of the Convention’s scope.

As to the substantial regulations, according to Art. 9, if the affected state assesses a wreck as constituting a hazard, that state should at once: (a) notify the registered ship’s owner and the state of its registry; and (b) consult the latter as well as other states affected by the wreck as to the course of dealing with the wreck. The registered owner is obliged to remove a wreck determined to be a hazard. Art. 10 adds that the “registered owner shall be liable for the costs of locating, marking and removing the wreck”; but this provision is excluded when the registered owner proves that the maritime casualty that caused the wreck resulted from an act of war, hostilities, civil war, insurrection, or a natural phenomenon of an exceptional, inevitable and irresistible character. In the discussed case, however, it might be argued that WW II ships did not sink due to the marine casualty, the act of war or hostilities; this was done on purpose to eliminate them and their cargos, however short-sighted such an action may have been. In practice, it might still not be possible to charge only Germany – as the registered owner – for the removal of wrecks, but ratification of the Convention may give other arguments for negotiation and cooperation with Germany and former WW II Allies, today the EU members. According to some researchers, the obligation to ensure payment for the removal of the wreck by the registered-state owner has no retroactive effect (Tsimplis, n.d.). Considering these facts, Poland should decide about joining the Convention as it would facilitate enforcing the obligation to remove from Polish Exclusive Economic Zone

the shipwrecks that endanger the natural environment and economic activities at sea and in the coastal area.

Ultimately, all the analysed Conventions aim to protect the marine environment and are a very strong argument in negotiating and cooperating with Poland's neighbouring states to remove the wrecks. It would be a step in the right direction to increase different aspects of Poland's security.

Conclusions

This article attempted to show that the subject of the threats resulting from hazardous toxic materials coming from World War II wrecks sunk in the Baltic Sea and their cargo of chemical ammunition is very urgent and affects not only Poland but also its neighbours. This transnational or regional component is very visible. As such, it may be an argument in favour of regional cooperation, necessary to comprehensively deal with the problem examined here. Without it, any possible actions undertaken alone by some countries will bring, at best, very limited effects. The present case also shows how multidimensionally dangerous long inactivity and neglect can be.

In this paper, the authors focused on Poland, indicating and specifying threats posed by Baltic Sea hazardous toxic materials to various levels of security in the country. Regarding the research questions, the authors classified the threats from hazardous materials left in the Baltic Sea into a coherent set, including manifold threats connected with such levels of security as environmental security, economic security, human and health security, and food safety. The authors also pointed to international legal regulations delineating Polish legal obligations and opportunities for cooperating with other states. Based on these, Polish authorities should at least cooperate and implement the SAO's report recommendations. The article also recommends that Poland accede to the Nairobi Wreck Removal Convention as this would give Poland some additional legal arguments in negotiating and cooperating with its neighbours to remove the wrecks. As the examined problem gives rise to multiple threats to various levels of security, the time is ripe for the Polish authorities to start solving it more decisively, eschewing their current and very convenient tardiness and negligence.

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