
Pollution of the Marine Environment by Dumping: Legal Framework Applicable to Dumped Chemical Weapons and Nuclear Waste in the Arctic Ocean

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Abstract

The Arctic seas are the world's biggest dumping ground for sea-disposed nuclear waste and have served among the primary disposal sites for chemical warfare agents. Despite of scientific uncertainty, the Arctic Council has noted that this hazardous waste still affects adversely the Arctic marine environment and may have implications to the health of the Arctic people.

The purpose of this manuscript is to establish the rights and obligations of the Arctic States in connection with sea-dumped chemical weapons and nuclear material under international law of the sea, international environmental law and disarmament law. Such mapping is important for considering options to tackle the pollution to the Arctic ecosystems and because there seems to be yet no such analysis across the legal fields carried out.

This paper aims first at identifying the scale and approximate locations of sea-disposed nuclear waste and chemical weapons in the Arctic Ocean. The analysis will further focus on ascertaining the possibilities to minimize their adverse effects on the Arctic marine environment under the applicable legal framework.

It will be argued in this manuscript that due to the corrosion of the chemical weapons and nuclear material containers, recovering, rather than confining this hazardous waste might be counter-productive as it might cause a sudden and widespread release of chemical agents or radionuclides

when surfacing. In this regard, carrying out an environmental impact assessment prior to each such remediation operation would be necessary to determine the most suitable technique for minimizing or eliminating pollution.

1. Introduction

From 1945 to 1985 hundreds of thousands of tons of chemical warfare agents were dumped at world oceans in addition to approximately 150 PBq of radioactive waste.¹ In particular, the fragile marine environment of the Arctic Ocean served as one of the main dumping grounds for disposing chemical and nuclear waste. Containers that hold the hazardous material are prone to corrosion. The exact effects of leakage on the Arctic marine environment and the associated legal implications to the Arctic Ocean littoral States are subject to controversy since it is very difficult to assess the impact of dumped chemical munitions and nuclear waste to a particular marine area.²

Yet, the magnitude of harm that the sea-dumped hazardous waste may cause to the local food chain and marine environment is illustrated

¹ J. M. Broadus, R. V. Vartanov. *The Oceans and Environmental Security: Shared U.S. and Russian Perspectives*. Washington DC: Island Press 1994, p. 126.

² M. R. Abbott *et al.* *Ocean Dumping of Chemical Munitions: Environmental Effects in Arctic Seas*. McLean: MEDEA 1997, p. 10–13. C. Behney *et al.* *Nuclear Wastes in the Arctic: An Analysis of Arctic and Other Regional Impacts from Soviet Nuclear Contamination, OTA-ENV-623*. Washington, DC: U.S. Government Printing Office 1995, p. 108.

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by the sudden death of more than two million starfish washed ashore and thousands of other marine species that inhabited the polluted marine areas of the White Sea in 1990.³ In addition, the Arctic States have noted with regard to sea-dumped hazardous waste that: "This is of particular concern in the Arctic because of the high level of consumption of lipid-rich wildlife foods by residents, resulting in a pathway of these contaminants to humans."⁴ Thus, sea-dumped chemical warfare agents and nuclear matter may potentially also have adverse impacts on humans via food chain.⁵

In 1991 the eight Arctic States committed themselves under the Arctic Environmental Protection Strategy to a joint Action Plan of the Arctic Environmental Protection Strategy which included "cooperation in scientific research to specify sources, pathways, sinks and effects of pollution, in particular [...] radioactivity [...] as well as sharing of these data".⁶ This was regarded as an initial priority.⁷ The Arctic Council continuously addresses matters pertaining to sea-dumped hazardous waste in the framework of the Arctic Contaminants Action Program. This is necessary because radioactive contamination in the Arctic marine environment has been described as "a long-term, chronic problem".⁸ In

2013, the Arctic Biodiversity Assessment concluded that: "Legacy contaminants and radioactivity from past military and other human activity have impacted and will continue to impact biodiversity in the region."⁹ Hence, this paper addresses past, present as well as future dangers to the Arctic marine environment caused by anthropogenic pollution.

The aim of this manuscript is to establish the general legal framework applicable to dumped chemical weapons and nuclear material in the Arctic Ocean under the international law of the sea, international environmental law and disarmament law. Thus, the paper focuses on the rights and obligations of States in connection with sea-dumped chemical weapons and nuclear material as well as on the possibilities under the legal framework to minimize their adverse effects on the marine environment. In the course of the research, the author also addresses the relevant legal framework applicable to the recovering or confining of sea-dumped chemical weapons and nuclear material.

2. The Scale of Dumping Activities in the Arctic

The practice of dumping war remnants at sea commenced at a large scale pursuant to a decision made by the leaders of France, the Soviet Union, the United Kingdom and the United States under the framework of Article 3 of the 1945 Potsdam Agreement.¹⁰ Subsequently, other

³ S. S. Yufit, I. V. Miskevich, O. N. Shtemberg. Chemical Weapons Dumping and White Sea Contamination. – A. V. Kaffka (ed.). *Sea-Dumped Chemical Weapons: Aspects, Problems and Solutions*. Dordrecht: Kluwer Academic Publishers 1996, pp. 158–160.

⁴ Declaration of the Protection of Arctic Environment. Arctic Environmental Protection Strategy 1991, Preface. Available at: <http://www.arctic-council.org/index.php/en/document-archive/category/4-founding-documents> (most recently visited on 20.05.2015). See also C. Behney *et al.* (See Note 2), p. 12.

⁵ See also M. R. Abbott *et al.* (See Note 2), p. 10–7.

⁶ Declaration of the Protection of Arctic Environment (See Note 4), Problems and Priorities 3.1.

⁷ *Ibid.*, Arctic Monitoring and Assessment Program – Actions.

⁸ C. Behney *et al.* (See Note 2), p. 18.

⁹ Arctic Council. Key Finding 5: Pollution from both long-range transport and local sources threatens the health of Arctic species and ecosystems. – Arctic Biodiversity Assessment, Conservation of Arctic Flora and Fauna 2013. Available at: <http://arcticbiodiversity.is/the-report/report-for-policy-makers/key-findings#KF5> (most recently visited on 20.05.2015).

¹⁰ T. Stock, K. Lohs. Introduction. – T. Stock, K. Lohs (eds.). *The Challenge of Old Chemical Munitions and Toxic Armament Wastes*. Oxford: Oxford University Press 1997, p. 4.

States also adopted this practice with regard to chemical weapons or nuclear material. In the Arctic Ocean, chemical weapons and nuclear material have been dumped only by the Soviet Union in areas that range from tens to hundreds of meters in depth.

The precise scope of dumping of chemical weapons by the Soviet Union from 1940s to 1980s at the Arctic Ocean is unclear. However, it has been established that the Soviet Union dumped in the Barents Sea and in the Kara Sea approximately 75 000 agent metric tons of mustard and lewisite; 40 000 agent metric tons of these chemicals into the White Sea; additionally around 2 000 agent metric tons of sarin and 30 000 agent metric tons of tabun in the Barents Sea and in the Kara Sea.¹¹ This amount is far greater compared to, for example, at least 220 000 tons of remnants of German chemical warfare (thus including the weight of the munitions body in addition to the chemical agent¹²) dumped by the Soviet Union, the United Kingdom and the United States in the Baltic Sea and Skagerrak.¹³

¹¹ M. R. Abbott *et al.* (See Note 2), p. 2-2. J. Hart. A Review of sea-dumped chemical weapons, Presentation Paper: Greenwich Forum 2000, p. 7. For their characteristics in marine environment see N. Theobald. Chemical munitions in the Baltic Sea. – T. Missiaen, J.-P. Henriët (eds.). Chemical munition dump sites in coastal environments. Brussels: Federal Office for Scientific, Technical and Cultural Affairs (OSTC), Federal Ministry of Social Affairs, Public Health and the Environment 2002, p. 97.

¹² The German stockpiles included approximately 85 thousand tons of chemical agents out of which approximately 85 % were dumped at sea. B. T. Surikov. History. – E. K. Duursma (ed.). Dumped Chemical Weapons in the Sea: Options. Groningen: Drukkerij van Denderen BV 1999, pp. 4–5. T. Stock. Sea-Dumped Chemical Weapons and the Chemical Weapons Convention. – A. V. Kaffka (See Note 3), pp. 51, 53.

¹³ See J. Beldowski *et al.* CHEMSEA Findings: Results from the CHEMSEA Project – Chemical Munitions Search and Assessment. CHEMSEA 2014, p. 11. Available at: <http://www.chemsea.eu/> (most recently visited on 20.05.2015).

Notably, according to some estimates the rate of, for example, mustard gas leakage in the Baltic marine environment peaks in about 125 years after dumping.¹⁴ It has been also argued that depending on the conditions, munitions in the North Sea and the Baltic Sea may be degraded in the period between five to hundreds of years.¹⁵ However, it is also estimated in regards to dumped chemical munitions in the Arctic that the primary release period varies from 5 to 50 years.¹⁶

That implies that the dangers posed by the sea-dumped chemical weapons also to the Arctic ecosystems will remain relevant in the coming decades analogously to the Baltic Sea. In the Baltic Sea region, large-scale research projects have already been undertaken by the littoral States to locate and assess the sea-dumped chemical weapons in co-operation with the EU and the NATO.¹⁷ Similar studies have been carried out in the Arctic.

With regard to the sea-dumped nuclear waste, the International Atomic Energy Agency (IAEA) estimated in 1991 that between 1949 and 1982 States dumped at the world oceans 46 PBq of radioactive material of which 42,31 PBq was disposed of at the North-East Atlantic.¹⁸ Another IAEA estimate from 1989 sets the combined

¹⁴ P. O. Granbom. Dumped Chemical Ammunition in the Baltic: A Rejoinder. – Security Dialogue 1994(25), p. 107.

¹⁵ N. H. A. Van Ham. Investigations of risks connected to sea-dumped munitions. – T. Missiaen, J.-P. Henriët (See Note 11), p. 89.

¹⁶ M. R. Abbott *et al.* (See Note 2), pp. 5-1, 5-6.

¹⁷ CHEMSEA Findings (See Note 13). NATO Science for Peace and Security (SPS) Programme. SPS Award Recommendation – Proposed Multi-year Project: Towards the Monitoring of Dumped Munitions Threat (MODUM), NATO Doc. PPC-N(2013)0054 2013.

¹⁸ IAEA. Inventory of radioactive material entering the marine environment: Sea disposal of radioactive waste. Vienna: IAEA 1991, pp. 7, 13.

figure at 63 PBq.¹⁹ The material was mostly enclosed in metal drums lined with a concrete and bitumen matrix.²⁰

Yet, these estimates did not include data from the Soviet Union. Subsequent to the dissolution of the Soviet Union, the Russian Federation disclosed its 13 dumping sites in the Arctic Ocean, which according to the IAEA's 1993 estimate hold twice the amount of radioactive waste (90 PBq) as all previously known dumping sites in the world combined.²¹ The primary dumping sites used between 1959 and 1992 are located in the Barents and Kara seas.²²

According to the Russian official figures approximately 17,000 containers of nuclear waste were dumped at the Arctic Ocean in addition to 19 scuttled vessels with solid radioactive waste and 5 nuclear reactor compartments, 1 nuclear reactor, 1 container with shielding assembly of a nuclear icebreaker, 735 radioactive constructions and units as well as 3 nuclear submarines.²³ The Soviet nuclear submarine K-278 Komsomolets lies in the Norwegian Sea and is believed to be too deep (1 655 m) to be salvaged.²⁴ K-159 lies in the Barents Sea at a depth of 250 meters.²⁵ Another Soviet nuclear submarine K-27 was scuttled in

1981 off Novaya Zemlya – an Arctic archipelago that served as one of the primary nuclear test sites in the Soviet Union – lying 33 m beneath the surface of Stepovogo fjord.²⁶ The Norwegian specialists have not ruled out the possibility that more nuclear material has been dumped at the Arctic seas.²⁷ For many dumped structures the primary rate of radionuclide release has already passed whereas for some it is not expected before 2400.²⁸

3. The Legal Framework Applicable to the Sea-Dumped Chemical Weapons and Nuclear Material in the Arctic Ocean

Establishing the legal framework applicable to sea-dumped chemical weapons and nuclear material is necessary in order to effectively tackle the pollution to the Arctic ecosystems. The applicable legal framework is a complicated combination of the law of the sea, environmental law, as well as disarmament law.

The 1982 United Nations Convention on the Law of the Sea²⁹ (UNCLOS) and its part XII (Protection and Preservation of the Marine Environment), in particular, serve as a foundation for research in the field. Thus, the Arctic States agreed under the 1991 Rovaniemi declaration to “[a]pply the principles concerning the protection and preservation of the Marine Environment as reflected in the 1982 United Nations Convention on the Law of the Sea, and, in accordance with the continuing development of international environmental law, to further strengthen rules in order to protect the Arctic” as well as to “[t]ake measures as soon as possible to adhere to the strictest relevant international standards within the conventions, to which the countries

¹⁹ D. P. Calmet. Ocean disposal of radioactive waste: Status report. – IAEA Bulletin 1989(4), p. 47.

²⁰ *Ibid.*, p. 17.

²¹ J. M. Broadus, R. V. Vartanov (See Note 1), p. 126.

²² *Ibid.*, p. 135.

²³ Y. V. Sivintsev, V. L. Vysotskiy. Preparing Nuclear- and Radiation-hazardous Structures to Dumping, Long-term Storage and Ultimate Disposal at Sea. Actual Status of Shielding Barriers and Predictions of their Efficiency. КЭГ-210 (B3). Available at: <http://www.iaea.org/OurWork/ST/NE/NEFW/CEG/documents/ws022010/eng/5.3VysotskiySivintsevPaperEngl.pdf> (most recently visited on 20.05.2015). For locations of nuclear waste dumping in the Arctic see C. Behney *et al.* (See Note 2), p. 7.

²⁴ L. Peter, Russia Explores Old Nuclear Waste Dumps in Arctic. BBC News 25.11.2013. Available at: <http://www.bbc.co.uk/news/world-europe-21119774> (most recently visited on 20.05.2015).

²⁵ Y. V. Sivintsev, V. L. Vysotskiy (See Note 23), p. 3.

²⁶ *Ibid.*

²⁷ L. Peter (See Note 24).

²⁸ Y. V. Sivintsev, V. L. Vysotskiy (See Note 23), p. 14.

²⁹ United Nations Convention on the Law of the Sea, signed on 10.12.1982 in Montego Bay, e.i.f. 16.11.1994.

are parties, regarding discharges irrespective of origin.”³⁰

Furthermore, there is also a human rights dimension. Yet, in the case of *Dr S. v. Federal Republic of Germany* the European Commission of Human Rights concluded that a claim, according to which nuclear tests and dumping of radioactive waste at sea were contrary to the right to life and the right to liberty and security, was manifestly ill-founded with no appearance of a violation of the European Convention on Human Rights³¹ on the facts of the case.³²

3.1 The ban on dumping nuclear waste and chemical weapons at sea

At the time of large-scale dumping activities States were generally not legally prohibited from dumping nuclear material or chemical weapons at sea. Overall, it was regarded as a safe and sound technique for the disposal of hazardous waste.³³ A wide-range ban on dumping of hazardous waste at sea was stipulated under Article 5 of the 1974 Oslo Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft,³⁴ which was superseded by the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic

(OSPAR).³⁵ Yet, this Convention did not apply to the Russian Arctic as the Soviet Union was not a State Party to this Convention and neither is the Russian Federation.

Under the 1972 London Convention³⁶ contracting States, including the Soviet Union, were prohibited only from dumping of high-level radioactive wastes or other high-level radioactive matter, defined on public health, biological or other grounds by the IAEA as unsuitable for dumping at sea. Additionally, according to the 1958 Convention on the High Seas³⁷ States Parties were at the time required only to co-operate in tackling the harmful effects of dumping of harmful substances.

Similarly, in accordance with Article 210 of UNCLOS, States must have laws and regulations in place to prevent, reduce and control pollution of the marine environment by dumping³⁸ and they are to take other measures as may be necessary to prevent, reduce and control such pollution.³⁹ Such laws, regulations and measures, no less effective in preventing, reducing and controlling pollution than the global rules and standards,⁴⁰ are to ensure that dumping is not carried out without the permission of the competent authorities of States.⁴¹ Thus, UNCLOS

³⁰ Arctic Environmental Protection Strategy 1991 (See Note 4), Protection of the Arctic Marine Environment, pp. i), ii).

³¹ The Convention for the Protection of Human Rights and Fundamental Freedoms, signed on 4.11.1950 in Rome, e.i.f. 3.09.1953. See Arts. 2(1) and 5(1).

³² See C. A. R. Robb (ed.). Human Rights and Environment. International Environmental Law Reports, vol. 3. Cambridge: Cambridge University Press 2001, pp. 708–709.

³³ See, e.g., J. R. McCullagh. Russian Dumping of Radioactive Wastes in the Sea of Japan: An Opportunity to Evaluate the Effectiveness of the London Convention 1972. – Pacific Rim Law & Policy Journal 1996, Vol. 5, No. 2, p. 402.

³⁴ Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft, signed on 15.02.1972 in Oslo, e.i.f. 7.04.1974.

³⁵ Convention for the Protection of the Marine Environment of the North-East Atlantic, signed on 22.09.1992 in Paris, e.i.f. 25.03.1998.

³⁶ Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, signed on 13.11.1972 in London, e.i.f. 30.08.1975. See Arts. 4(1)(a) in combination with Annex I.

³⁷ Convention on the High Seas, signed on 29.04.1958 in Geneva, e.i.f. 30.09.1962. See Art. 25(2).

³⁸ Art. 210(1) of the UNCLOS.

³⁹ Art. 210(2) of the UNCLOS. See for the definition of ‘pollution’ in Art. 1(1)(4) of the UNCLOS, Art. 1(10) of the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter and Art. 2(1) of the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic.

⁴⁰ Art. 210(6) of the UNCLOS.

⁴¹ Art. 210(3) of the UNCLOS.

does not provide for a ban on the dumping of chemical weapons or nuclear waste at sea. Instead, it links such matters with the development of global or regional standards under other legal instruments.

A voluntary moratorium on dumping of low-level radioactive waste at sea was imposed already in 1983 by the parties to the 1972 London Convention, but the United States had voted against this proposal and the Soviet Union abstained from voting continuing with its disposal activities in the Arctic seas until 1992.⁴² The Soviet Union also dumped high-level radioactive waste at the Arctic seas subsequent to and thus in breach of the 1972 ban.⁴³ A total ban on radioactive waste disposal at sea, thus including low-level radioactive matter, was stipulated by the 1993 Resolution on Amendments to the Annexes to the London Convention 1972 concerning the prohibition of dumping radioactive wastes and other radioactive matter.⁴⁴ However, the Russian Federation chose to opt out from the ban on the sea-disposal of low-level radioactive waste.⁴⁵

The overarching ban on the dumping of wastes and other matter at sea was first formulated in the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1996 London

Protocol).⁴⁶ This ban is incorporated into the Chemical Weapons Convention⁴⁷ (CWC) through paragraph 13 of Part IV(A) of the Verification Annex, whereby States Parties are not allowed to destroy chemical weapons by means of dumping in any body of water. The eight Arctic States are parties to the 1993 CWC,⁴⁸ whereas three of them – the Russian Federation, the United States and Finland – are not parties to the 1996 London Protocol.⁴⁹

Although the protection of the marine environment is not among the underlying characteristics of the CWC, the prevention of inappropriate destruction techniques may be seen in accordance with preambular paragraph 10 and Article I(2) of the CWC as one of the core obligations that the CWC imposes on States Parties. States Parties to the CWC are required to submit initial declarations to the Organisation for the Prohibition of Chemical Weapons (OPCW) in accordance with Article III(1)(a) and (b) in respect of chemical weapons under their jurisdiction or control.

Chemical weapons dumping sites in the Arctic seas are mostly situated in vicinity to the Russian coast.⁵⁰ In particular, the dumping site in the White Sea falls under the regime of internal waters due to the Russian straight baseline from the Kola Peninsula to the Kanin Peninsula (Art.

⁴² J. M. Broadus, R. V. Vartanov (See Note 1), pp. 153, 135.

⁴³ See chronology of the Soviet Union's dumping activities in the Arctic in Y. V. Sivintsev, V. L. Vysotskiy (See Note 23), p. 3.

⁴⁴ Resolution LC.51(16) adopted on 12 November 1993: Amendments to the Annexes to the London Convention 1972 concerning the prohibition of dumping radioactive wastes and other radioactive matter. Available at: http://www.imo.org/KnowledgeCentre/ReferencesAndArchives/IMO_Conferences_and_Meetings/London_Convention/LCandLDCReports/Documents/Report%20of%20LC%2016%20November%201993.pdf (most recently visited on 20.05.2015).

⁴⁵ J. R. McCullagh (See Note 33), p. 408.

⁴⁶ 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter, adopted on 17.11.1996 in London, e.i.f. 24.03.2006. See Art. 4(1).

⁴⁷ Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, signed on 13.01.1993 in Paris and New York, e.i.f. 29.04.1997.

⁴⁸ OPCW. OPCW Member States. Available at: <http://www.opcw.org/about-opcw/member-states/> (most recently visited on 20.05.2015).

⁴⁹ IMO. Parties to the London Convention and Protocol. Status as of 15 September 2014. Available at: <http://www.imo.org/OurWork/Environment/LCLP/Documents/Map%20of%20Parties%20Sept%202014.pdf> (most recently visited on 20.05.2015).

⁵⁰ M. R. Abbott *et al.* (See Note 2), p. 2–3.

8 of UNCLOS).⁵¹ However, it is also important to note that some dumping sites in the Arctic Ocean are located outside the limits of 12 nautical miles of the territorial sea. In the context of Article III(1) of the CWC, neither the Exclusive Economic Zone (EEZ) nor the continental shelf are zones of sovereignty,⁵² which entails that States are not required to submit declarations to the OPCW in relation to chemical weapons dumped in these areas.

Each State Party was required to submit to the OPCW a declaration disclosing information on whether it had abandoned chemical weapons on the *territory* of other States.⁵³ The latter means that the EEZ, continental shelf and high seas are excluded from the scope of the provision. The declarations had to include also information about the location, type, quantity as well as the condition of the abandoned chemical weapons. Thus far, no confirmed chemical weapons dumping activities have been reported in areas under another State's jurisdiction.

3.2 Chemical Weapons Dumped in the Arctic Ocean prior to 1985

In accordance with Article III(2) and Article IV(17) of the CWC, a State Party to the CWC is not required to declare or destroy chemical weapons dumped at sea before 1 January 1985 or buried on its territory before 1 January 1977 and which remain buried. 'Dumped at sea' refers to chemical weapons dumped at all parts of sea (including territorial sea and archipelagic waters) except for internal waters that fall under a differ-

ent category which addresses chemical weapons 'buried by a State Party on its territory'.⁵⁴ As the dumping site in the White Sea composes of mustard and lewisite which were dumped in the late 1940s and 1950s,⁵⁵ the Russian Federation is not required under the CWC to declare or destroy the chemical weapons dumped in the internal waters of the White Sea due to the 1977 cut-off date.

The 1985 cut-off date is relevant in regards to other dumping sites in the Russian Arctic. The 1985 cut-off date was included in the text of the CWC at the very last moment during its drafting and the rationale behind this remains obscure and has never been publicly explained.⁵⁶ There are no indications that the chemical weapons dumping sites in the Arctic Ocean would not precede that date.

Therefore, J. P. Zanders has argued that the coastal State may destroy such chemical weapons which have been dumped at sea prior to 1985 underwater by following only the rules applicable to the protection of the marine environment and the safety of divers.⁵⁷ Furthermore, J. P. Zanders maintains that: "The exemption of declaration and destruction requirements is extended to sea-dumped CW that have been recovered for whatever reason."⁵⁸ He concludes:

"As a consequence, a state party may dispose of these weapons without notification

⁵¹ See map on the Russian straight baselines in the Arctic in W. V. Dunlap. *Transit Passage in the Russian Arctic Straits*. – *Maritime Briefing* 1996, Vol. 1, No. 7, p. 57.

⁵² *Maritime Delimitation* (Guinea/Guinea-Bissau), Arbitral Tribunal, 14.02.1985, para. 124. Available at: www.untreaty.un.org/cod/riaa/cases (most recently visited on 20.05.2015).

⁵³ See Arts. III(1)(b)(iii) of the CWC, as well as paragraph 10 of Part IV(B) of the Verification Annex.

⁵⁴ See also 'Understanding on the Terms "Buried by a State Party on its Territory" and "Dumped at Sea", Annex, C-I/DEC.31, dated 16 May 1997. See OPCW. *OPCW: The Legal Texts*, The Hague: TMC Asser Press 2015, pp. 111–112.

⁵⁵ M. R. Abbott *et al.* (See Note 2), p. 2–6.

⁵⁶ W. Krutzsch, R. Trapp. *A Commentary on the Chemical Weapons Convention*, Dordrecht: Martinus Nijhoff 1994, p. 58.

⁵⁷ J. P. Zanders. *Dealing with chemical weapons dumped in bodies of water*. – T. Missiaen, J.-P. Henriët (See Note 11), p. 150.

⁵⁸ *Ibid.*, p. 149.

of the Technical Secretariat [of the OPCW – A.L.] and might thus consider open-pit burning, land burial (including dumping in internal waters) or re-dumping at sea, or even storage on land. Re-dumping at sea might be subject to international environmental and maritime law (especially if the weapons were first moved onto land, e.g., for repackaging).⁵⁹

However, the CWC may also be interpreted differently by coming to the conclusion that this exemption applies only to such chemical weapons that remain dumped at the Arctic seas.

In this connection, the CWC does not explicitly address the obligations that might relate to such chemical weapons that have been dumped at the Arctic seas before 1 January 1985, but recovered from the sea or washed ashore thereafter. Therefore, the question posed by J. P. Zanders has particular relevance as he asks: “[B]earing in mind that the mere act of retrieval does not generate new responsibilities for states parties, can items that were totally exempt from the declaration and destruction obligations under the CWC become the subject of CWC regulations?”⁶⁰ In the opinion of the present author the answer should be affirmative.

In this context, the principal objective of the CWC has particular relevance. Article I(1)(a) of the CWC stipulates that: “Each State Party to this Convention undertakes never under any circumstances: (a) to develop, produce, *otherwise acquire*, stockpile or *retain* chemical weapons, or transfer, directly or indirectly, chemical weapons to anyone” (emphasis added). Hence, in such circumstances, an Arctic Ocean littoral State would be required to destroy chemical weapons it owns or possesses in accordance with Article I(2) of the CWC. It thus follows that such recovered or dis-

covered chemical weapons fall under the scope of Article III(1)(a) and (b) of the CWC, whereby they have to be declared and subsequently destroyed in accordance with either Part IV(A) or Part IV(B) of the Verification Annex, depending on whether they fall under the category of old chemical weapons.⁶¹

An Arctic littoral State that has made a declaration for recovered or discovered sea-dumped chemical weapons would be required, *inter alia*, to provide the general chemical weapons destruction plan and the detailed annual plans for destruction.⁶² It would be also required to submit subsequent annual declarations.⁶³ Additionally, such State Party to the CWC would have to provide detailed facility information for each of its chemical weapons destruction facilities in order to assist the Technical Secretariat of the OPCW in developing preliminary inspection procedures for use at the facility.⁶⁴

3.3. Reducing and Eliminating the Pollution Emanating from the Sea-dumped Nuclear Waste and Chemical Weapons

In spite of the lack of legal obligation for States to recover sea-dumped nuclear waste and chemical weapons dumped at sea prior to 1985 or in internal waters before 1977 under disarmament law, such requirement may derive from other legal instruments, *a priori* treaties that relate to marine environment protection. In this regard, Article 194(1) of the UNCLOS requires States to take all measures consistent with this Convention that are necessary to prevent, reduce and control

⁶¹ OPCW. Note by the Technical Secretariat: Proposed Verification Measures for Old Chemical Weapons Produced Between 1925 and 1946, OPCW Doc. S/166/2000, para. 4.9.

⁶² See para. 6 of Part IV(A) of the Verification Annex.

⁶³ See paras. 29 and 36 of Part IV(A) of the Verification Annex.

⁶⁴ See paras. 30–32 of Part IV(A) of the Verification Annex.

⁵⁹ *Ibid.*, p. 151.

⁶⁰ *Ibid.*, p. 152.

pollution of the marine environment from any source, using for this purpose the best practicable means at their disposal and in accordance with their capabilities. It also requires States to endeavour to harmonize their policies in this connection.

Additionally, in accordance with Article 197 of the UNCLOS, States need to co-operate globally and regionally for the protection and preservation of the marine environment, taking into consideration characteristic regional features. In this context, the Arctic States have stressed the importance of the 1986 IAEA Convention on Early Notification of a Nuclear Accident⁶⁵ for cooperation and exchange of information in the Arctic region.⁶⁶ Furthermore, the Arctic States have underlined that: "Further consideration should be given to the development of more specific measures, consistent within the international legal framework of IAEA procedures, for cooperation amongst Arctic countries to deal with emergencies caused by the accidental release of radioactive substances and to provide mutual assistance in the harsh Arctic environment."⁶⁷ In this connection, the eight Arctic States have also set an objective to adopt a legally binding agreement on international scientific research cooperation in the coming years.⁶⁸

Furthermore, under Article 199 of the UNCLOS States are required to co-operate in eliminating the effects of pollution and preventing or minimizing the damage. The above-mentioned

⁶⁵ Convention on Early Notification of a Nuclear Accident, adopted on 26.09.1986 in Vienna, e.i.f. 27.10.1986.

⁶⁶ Arctic Environmental Protection Strategy 1991 (See Note 4), International Mechanisms for the Protection of the Arctic Environment 4.5.

⁶⁷ *Ibid.*, Actions 5.5.

⁶⁸ Arctic Council. Tromsø hosts 4th meeting of Scientific Cooperation Task Force. 12.11.2014. Available at: <http://www.arctic-council.org/index.php/en/resources/news-and-press/news-archive/952-tromso-hosts-4th-meeting-of-scientific-cooperation-task-force> (most recently visited on 20.05.2015).

provisions stipulated in the UNCLOS, however, refer to duties of due diligence. The recovery of sea-dumped chemical weapons or nuclear material from the Arctic marine environment could thus be required under the UNCLOS only if it would be technically and financially feasible as well as safe for the concerned States.⁶⁹ This depends on whether the Arctic littoral States have viable means at their disposal.

The importance of cooperation, in the spirit of Principle 7 of the 1992 Rio Declaration,⁷⁰ has been stressed by the UN General Assembly as well as the International Law Commission in connection with matters pertaining to the dumped chemical weapons.⁷¹ In 2010, the UN General Assembly acknowledged "the concerns about the potential long-term environmental effects related to waste originating from chemical munitions dumped at sea, including their potential impact on human health".⁷² It invited States and organizations to cooperate and voluntarily share relevant information about the environmental effects of the chemical weapons dumped at sea.⁷³ The UN General Assembly and the IAEA have similarly stressed the importance of the prohibition on the dumping of radioactive wastes.⁷⁴

⁶⁹ J. C. Duursma. Legal Responsibility of States. – E. K. Duursma (See Note 12), p. 43.

⁷⁰ The United Nations Conference on Environment and Development, The Rio Declaration on Environment and Development 1992, Principle 7. Available at: <http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm> (most recently visited on 20.05.2015).

⁷¹ UN. Fourth Report on international liability for injurious consequences arising out of acts not prohibited by international law, UN Doc. A/CN.4/373, Art. 8

⁷² UN. Cooperative measures to assess and increase awareness of environmental effects related to waste originating from chemical munitions dumped at sea, UN Docs. A/RES/65/149, p. 2 and A/RES/68/208, p. 3.

⁷³ *Ibid.*

⁷⁴ IAEA. Measures to Strengthen International Cooperation in Matters Relating to Nuclear Safety and Radiological Protection, IAEA Doc. GC(XXXIII)/RES/509. See also UN. General and Complete Disarmament, UN Doc. A/RES/48/75.

Furthermore, Article 194(5) of the UNCLOS stipulates that coastal States are required to adopt measures that are necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life. In such case, the Arctic coastal States have to undertake necessary preventive measures concerning the marine environment, which may be threatened by the sea-dumped chemical weapons and nuclear material.

Although some research projects on the impact of sea-dumped chemical weapons to the Arctic marine environment and coastal regions have been undertaken,⁷⁵ the scientific uncertainty over their effects on the marine environment is still widely acknowledged.⁷⁶ The same applies to the environmental effects of sea-dumped nuclear waste.⁷⁷ In this connection, the precautionary approach has particular relevance. The importance of the precautionary principle in the Arctic has been underlined by the Arctic States, including the Russian Federation, in the *Guidelines for Environmental Impact Assessment (EIA) in the Arctic* in which it is stated that:

“This approach is particularly relevant in the Arctic, where baseline data are scarce and there are gaps in the understanding of the important ecological functions in the Arctic systems. The precautionary approach should therefore be encouraged when carrying out EIAs in the Arctic.”⁷⁸

⁷⁵ See M. R. Abbott *et al.* (See Note 2), pp. 8-2 – 8-33. See also L. A. Fedorov, *Chemical Weapons in Russia: History, Ecology, Politics*. Moscow: Moscow Center of Ecological Policy of Russia 1994.

⁷⁶ M. R. Abbott *et al.* (See Note 2), p. 10–13. See also T. Stock, *Sea-Dumped Chemical Weapons and the Chemical Weapons Convention*. – A. V. Kaffka (See Note 3), pp. 49, 58.

⁷⁷ See, e.g., C. Behney *et al.* (See Note 2), p. 108.

⁷⁸ *Guidelines for Environmental Impact Assessment (EIA) in the Arctic: Arctic Environmental Protection Strategy*. Helsinki: Finnish Ministry of the Environment 1997, p. 10. Adopted by the Arctic States, including the Russian

Furthermore, the precautionary principle is incorporated into Article 3(1) of the 1996 London Protocol, according to which “appropriate *preventative* measures are taken when there is reason to believe that wastes or other matter introduced into the marine environment are *likely* to cause harm even when there is no conclusive evidence to prove a causal relation between inputs and their effects” (emphasis added). However, as the Russian Federation is not a State Party to the 1996 London Protocol and the *Guidelines for Environmental Impact Assessment (EIA) in the Arctic* entail only recommendations it is not legally bound under these instruments to follow the precautionary approach in respect of the sea-dumped chemical and nuclear waste.

Similarly, albeit the 1992 Rio Declaration underlines that “[w]here there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation,”⁷⁹ it is not a legally binding document that the Russian Federation would be obliged to follow in regards to the hazardous material dumped at the Arctic seas. Nevertheless, it is reflective of the potential customary status of the precautionary principle. The International Court of Justice, nevertheless, has not considered the precautionary principle as part of customary international law.⁸⁰ Hence, absent of any legal obligation, the Russian Federation is not bound to follow the precautionary approach under international law in relation to its sea-dumped chemical weapons and nuclear material.

Federation, in the Alta Declaration on 13.06.1997. Available at: http://library.arcticportal.org/1271/1/The_Alta_Declaration.pdf (most recently visited on 20.05.2015).

⁷⁹ Rio Declaration (See Note 70), Principle 15.

⁸⁰ P. Sands, J. Peel. *Principles of International Environmental Law*. Cambridge: Cambridge University Press 2012, pp. 223–226.

Yet, it is still principally possible to invoke the above-mentioned provisions in combination with Articles 194, 197 and 199 of the UNCLOS, for requiring States to confine chemical weapons and nuclear material cargo and ships in the marine environment. The 1991 Rovaniemi declaration has also set as an objective of the Arctic Environmental Protection Strategy to “identify, reduce, and, as a final goal, eliminate pollution.”⁸¹ The elimination of pollution emanating from hazardous waste might necessitate the recovery of sea-dumped chemical weapons or nuclear material. Options for carrying out such remediation were considered in the 1990s by Norway and the IAEA in respect of the sea-dumped nuclear waste in the Arctic.⁸²

However, due to the corrosion of the chemical weapons and nuclear material containers as well as scuttled or sunk ships loaded with chemical weapons or nuclear material, lifting them might be counter-productive as it might cause a sudden and widespread release of chemical agents or radionuclides when surfacing.⁸³ This would be likely to cross the threshold of trivial or speculative harm and thus potentially involve a risk of causing significant transboundary harm in terms of Article 2(a) of the 2001 Draft Articles on Transboundary Harm⁸⁴ and transboundary impact as defined in Article 1(vii) of the 1991 Espoo Convention.⁸⁵

The International Court of Justice has recognised “the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control” as part of international environmental law.⁸⁶ Furthermore, unlike with regard to the precautionary principle, the International Court of Justice has accorded a status of customary international law to the practice of carrying out an EIA.⁸⁷ This implies that although the Russian Federation has not ratified the 1991 Espoo Convention and is thus not obliged to carry out a transboundary EIA in the Barents Sea, White Sea or Kara Sea region under the conditions provided in the convention,⁸⁸ it should nevertheless carry out a general EIA prior to a possible remediation of the sea-dumped chemical weapons or nuclear material.

This also follows from the fact that the Russian Federation is a signatory State to the Espoo Convention which implies that it should refrain from acts that would defeat the object and purpose of the treaty in terms of Article 18 of the Vienna Convention on the Law of Treaties.⁸⁹ Thus, for that purpose as well as to comply with the international customary law the Russian Federation should carry out an EIA in order to conform to the general aim stipulated in Article 2(1) of the Espoo Convention. According to this provision the Russian Federation would need to take all

⁸¹ Arctic Environmental Protection Strategy 1991 (See Note 4), Objectives 2.1 v).

⁸² C. Behney *et al.* (See Note 2), pp. 32, 63–64.

⁸³ J. G. de Vries. Confinement of wrecked ships and chemical weapons cargo. – E. K. Duursma (See Note 12), p. 13. See also C. Behney *et al.* (See Note 2), p. 31.

⁸⁴ International Law Commission. Prevention of Transboundary Harm from Hazardous Activities. UN: 2005. See also P. Birnie, A. Boyle, C. Redgwell. *International Law & the Environment*. Oxford: OUP 2009, p. 142.

⁸⁵ Convention on Environmental Impact Assessment in a Transboundary Context, signed on 25.02.1991 in Espoo, e.i.f. 10.09.1997. United Nations Treaty Collection. The Status of the Convention on Environmental Impact Assessment in a Transboundary

Context. Available at: https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-4&chapter=27&lang=en (most recently visited on 20.05.2015).

⁸⁶ Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1. C.J. Reports 1996, p. 226, para 29.

⁸⁷ See *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment, I.C.J. Reports 2010, p. 14, para 204.

⁸⁸ See further T. Koivurova, V. Masloboev, A. Petréttei, V. Nygaard, K. Hossain. Transboundary EIA in the Barents Region. – *Nordic Environmental Law Journal* 2014, No. 3, p. 47.

⁸⁹ Vienna Convention on the Law of Treaties, signed on 23.05.1969 in Vienna, e.i.f. 27.01.1980.

appropriate and effective measures to prevent, reduce and control significant adverse trans-boundary environmental impact from proposed activities once it might be weighing on options to reduce or eliminate marine pollution emanating from sea-dumped nuclear waste or chemical weapons.

Therefore, albeit the Russian Federation would not be obliged to comply with the international standards stipulated in the Espoo Convention for carrying out an EIA, it should still carefully consider alternatives when deciding on environmentally sound techniques for recovering or confining the sea-dumped hazardous waste. This is ever more important as the recovery of sea-dumped chemical munitions has been characterised as a “high cost – high risk operation” that may cause the release of great amount of chemical agents in the marine environment or even casualties.⁹⁰ In light of the foregoing, sarcophaging, whereby the chemical weapons agents or nuclear material would be isolated from the marine environment,⁹¹ may have potentially significant advantages over lifting the corroded containers and thus might be regarded in some instances as a more preferable, albeit still highly costly technique in the context of the precautionary approach.

4. Conclusion

The Soviet Union dumped in the White Sea, the Barents Sea and in the Kara Sea between 1945 and 1985 approximately 150 000 metric tons of chemical warfare agents (lewisite, mustard, sarin and tabun). Additionally, based on Russia’s

disclosed information the IAEA has estimated that 90 PBq of radioactive waste was dumped between 1959 and 1992 in the Barents and Kara seas. Thus, the Arctic Ocean dumping grounds hold twice the amount of radioactive waste as other previously known dumping sites in the world oceans combined.

The 1993 Chemical Weapons Convention prohibits the destruction of chemical weapons by means of dumping in any body of water. However, the Russian Federation is not legally obliged under this convention to declare or destroy the chemical weapons dumped in its internal waters and other maritime zones. Additionally, the overarching ban on the dumping of wastes and other matter at sea was stipulated under the 1996 London Protocol, i.e. subsequent to the dumping of chemical weapons at the Arctic seas.

Yet, the disposal of high-level radioactive matter at sea had been prohibited already under the 1972 London Convention. Such dumping operations were nevertheless carried out at the Arctic seas in breach of this ban. Nevertheless, the Russian Federation is also not legally bound to recover such nuclear waste.

However, the Arctic States declared in 1991 their objective in identifying, reducing and, as a final goal, eliminating pollution. In pursuance of this objective, the Russian Federation should carry out an EIA in case it might be weighing on remediation options in regard of the sea-dumped chemical weapons and nuclear waste. This would allow adopting the most suitable technique for eliminating or minimizing the marine pollution.

The sarcophaging of chemical agents and nuclear material in terms of eliminating or confining the chemical and radioactive pollutants in the Arctic marine environment might be regarded in comparison to recovering the corroded containers in many instances as a more viable, albeit expensive technique in the context of the

⁹⁰ Van Ham (See Note 15), p. 92.

⁹¹ Such construction techniques may even result in the formation of artificial islands. See *Ibid.*, p. 93. The coastal State has the exclusive right to construct artificial islands also in its EEZ. See Art. 60 of UNCLOS. For remediation options generally see also C. Behney *et al.* (See Note 2), pp. 68–72.

precautionary approach. It cannot be ruled out that this option may become of increasing relevance as the containers that hold the hazardous sea-pollutants further corrode.

The Arctic States enhanced their co-operation in scientific research on radioactivity in the Arctic Ocean under the Rovaniemi declaration of 1991. It is also a priority for the Arctic Council, which, in 2013, underlined the continuing impact of radioactivity on the Arctic biodiversity. However, there is still considerable scientific uncertainty as to the environmental effects of

the sea-dumped chemical weapons and nuclear waste. In this regard, the 1982 UNCLOS provides a general legal framework for on-going research and cooperation aimed at protecting and preserving the Arctic marine environment. Further, the eight Arctic States are aiming at adopting soon a legally binding agreement on international scientific research cooperation which would be potentially relevant also to more effectively monitor and evaluate the risks associated with the sea-dumped chemical weapons and nuclear material in the Arctic.