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**Northwest Russia and the
Dumping of Radioactive Waste:
The London Convention
Implemented**

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Northwest Russia and the Dumping of Radioactive Waste: The London Convention Implemented

Olav Schram Stokke

1. Introduction

During the 1990s, protection of the Arctic marine environment has become a matter of intense political attention, engaging diplomats, parliamentarians, researchers and non-governmental organizations across the Arctic rim - and even well beyond.¹ The disclosure of Soviet dumping of radioactive waste in the Barents and Kara Seas is among the main reasons for this. It is now clear that such dumping has been conducted for decades by the Northern Fleet as well as the civilian Murmansk Shipping Company, operator of nuclear-run icebreakers in the Northern Sea Route. Measured at the time of disposal, the total radioactivity dumped into Arctic seas by the Soviet Union is twice as high as that of all previously known dumping worldwide.² The most intensely radioactive type of waste is a number of nuclear vessel reactors which still contain high-level spent fuel.

Parts of this dumping had occurred in violation of Soviet commitments to the 1972 London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter,³ and this is the point of departure in this report. In particular, the focus will rest on how international regimes may affect the domestic implementation in member states. Implementation is understood here as the process of converting international agreements into behavioural adaptation on the part of target groups. The core of the argument here is that Soviet and later Russian management of nuclear waste in the north has been significantly influenced by regulations and programmes generated under international dumping instruments.

¹ I would like to thank Davor Vidas for very helpful comments. Parts of the material in this Report draws upon O. S. Stokke, "Nuclear Dumping in Arctic Seas: Russian Implementation of the London Convention", in D. G. Victor, K. Raustiala and E. B. Skolnikoff (eds.), *The Implementation and Effectiveness of International Environmental Commitments: Theory and Practice*, Cambridge, MA: MIT Press, 1998, pp. 475-517.

² Of a total activity of 136,682 TBq, Soviet dumping in Arctic seas from 1960 to 1991 accounted for 90,152 TBq; see K.-L. Sjöblom and G. Linsley, "Sea Disposal of Radioactive Wastes: The London Convention 1972", *IAEA Bulletin*, Vol. 37, No. 2, 1995, p. 14.

³ *International Legal Materials*, Vol. 11, pp. 1291 ff. The Convention was adopted 13 November 1972 and entered into force 30 August 1975; the Soviet Union ratified the Convention in 1976. The official short name of the Convention was changed from the London Dumping Convention (LDC) to the London Convention (LC) in 1992.

2. Radioactive Waste: What is the problem?

More than five decades after the first controlled nuclear fission, nobody has come up with a widely accepted solution to the problem of how to deal with the most radioactive products - high-level waste and spent nuclear fuel.⁴ Globally, the spent fuel produced in the military sector is modest compared to the civilian one, but the nuclear waste dumped by the Soviet Union in Arctic seas is chiefly of military origin. As documented in the Yablokov Report, a governmental White Paper published in 1993, as many as sixteen nuclear reactors have been disposed in the Kara Sea since 1965; seven of these are especially dangerous because of failure to remove spent fuel prior to disposal.⁵ In addition, large amounts of low- and medium-level solid waste have been dumped by the Northern Fleet in flimsy metal containers that are highly liable to corrosion. And liquid waste, like water used in cooling, incineration or disactivation of radioactive installations, has been disposed of in the Barents Sea since the mid-1960s. This past dumping is a matter of substantial concern both in Russia and its neighbouring states, and various remedial measures have been considered, including sealing, capping, and retrieval for storage on land.⁶ Such action, however, may itself involve great hazards and would definitely be very costly. Measurements at a number of sites in the Barents and Kara Seas, including the dump-sites for hot reactors in some of the bays in Novaya Zemlya, indicate that so far there has not been significant release of radioactivity into the marine environment;⁷ indeed, the level of radioactivity in these seas are comparatively low, and certainly much lower than the Black Sea and the Baltic.⁸ Simulation models suggest that even a worst-case scenario of rapid release of all the dumped activity would not result in considerable exposure from use of marine food-chains, although local-scale effects would need to be studied

⁴ According to the International Atomic Energy Agency, high-level waste comprises irradiated reactor fuel, liquid or solidified wastes from the first solvent extraction cycle of chemical reprocessing (or equivalent processes) of such fuel, or any other matter of activity concentration exceeding certain limits specified for alpha, beta/gamma, and tritium emitters (IAEA Safety Series No. 78, reproduced in *The London Dumping Convention: the first decade and beyond*. London: International Maritime Organization (IMO), 1991.

⁵ A. V. Yablokov, V. K. Karasev, V. M. Ruyantsev, M. Y. Kokeyev, O. I. Petrov, V. N. Lystsov, A. F. Yemelyanenko and P. M. Rubtsov, *Fakta og problemer forbundet med deponering av radioaktivt avfall i havet som omgir den russiske føderasjons territorium*. Moscow: Office of the President of the Russian Federation, 1993.

⁶ See OTA (Office of Technology Assessment), *Nuclear Wastes in the Arctic: An Analysis of Arctic and other Regional Impacts from Soviet Nuclear Contamination*, Washington, DC: Office of Technology Assessment, Congress of the United States, 1995, p. 68-9.

⁷ Joint Russian-Norwegian Expert Group for Investigation of Radioactive Contamination in the Northern Areas, "Dumping of Radioactive Waste and Investigation of Radioactive Contamination in the Kara Sea: Results from 3 years of investigations (1992-1994) in the Kara Sea", Østerås: Norwegian Radiation Control Authority, 1996, pp. 42-9.

⁸ North Atlantic Treaty Organization, "Cross-Border Environmental Problems Emanating from Defence-Related Installations and Activities: Volume 1, Radioactive Contamination" (Final Report). Brussels: North Atlantic Treaty Organization, 1995, p. 287.

more.⁹ These conclusions should be seen as preliminary due to considerable uncertainty regarding both the rate of release and the transport models underlying them.¹⁰

However, it is not only past dumping that is disturbing about the nuclear waste situation in the Russian Northwest. Even more alarming is the current imbalance between the steady generation of new waste and the Russian capacity to deal with it in a proper way. First, the more than a hundred nuclear-powered vessels currently operated by the Northern Fleet generate on a regular basis large amounts of both solid and liquid waste; yet adequate storage or treatment facilities are lacking. As for spent nuclear fuel, the highly deficient temporary storages for removed fuel assemblies are already full to capacity. Second, the compilation of waste will accelerate further in the coming years as part of the decommissioning of submarines which will be taken out of operation due to old age or to comply with commitments under the Strategic Arms Reduction Treaty regime.¹¹ Sixty Northern Fleet vessels were laid up in the period from 1989 to 1993, and it is expected that another thirty will be scrapped within the next few years.¹² Only a fraction of the vessels taken out so far have been properly decommissioned by removal of reactor fuels and reactor section. According to Western sources, in 1994 the dismantlement capacity of the Northern Fleet was only one submarine a year,¹³ partly due to a lack of storage facilities for the reactor cores and inadequate system of transporting the waste out of the region;¹⁴ but also because of a tendency to allocate scarce dockings to reloading of operative vessels rather than unloading of laid-up ones.

Hence, the backbone of radioactive waste management, a key problems addressed by the London Convention, is adequate storage. This involves interim storage on the site where waste is generated, as well as a satisfactory system for transporting high-level waste and spent fuel for final deposition, or, in the case of spent fuel, reprocessing.¹⁵ In practice, it also involves treatment capacity to concentrate or solidify liquid waste and compact solid waste to facilitate storage. Ever since the 1960s especially the Northern Fleet, but the Murmansk Shipping Company as well, have

⁹ See A. Baklanov, R. Bergman and B. Segerstål, "Radioactive Sources in the Kola Region: Actual and Potential Radiological Consequences for Man." Final Report of the Kola Assessment Study of the RAD Project. Laxenburg: International Institute for Applied Systems Analysis, 1996

¹⁰ OTA, *Nuclear Wastes in the Arctic*, pp 89,108.

¹¹ See, respectively, Treaty on the Reduction and Limitation of Strategic Offensive Arms (START I Treaty) (Moscow, 31 July 1991; in force 5 December 1994) and Treaty on Further Reduction and Limitation of Strategic Offensive Arms (START II Treaty) (Moscow, 3 January 1993).

¹² St.meld. 34 (1993-94), *Atomvirksomhet og kjemiske våpen i våre nordlige nær,områder*, p. 20. For Russia as a whole, the total number is 170 by the year 2000; the comparative figure for the United States is 120; see NATO (North Atlantic Treaty Organization), "Cross-Border Environmental Problems", p. 276.

¹³ NATO, "Cross-Border Environmental Problems", p. 283.

¹⁴ N.N. Yegorov, "Plenary Address", *International Cooperation on Nuclear Waste Management in the Russian Federation*, Vienna: International Atomic Energy Agency, 1995, pp. 15-26.

¹⁵ While a number of states have programmes for final disposal underway, mostly opting for deep underground sites in stable geological strata, the first operative repository is still at least twenty years away; see *IAEA Yearbook 1995*, Vienna: International Atomic Energy Agency, 1995, pp. C83.

experienced a widening gap between actual and needed capacity along those dimensions; and this is the basic reason why both have resorted to dumping parts of the waste generated in the nuclear complex in Russia's Northwest.

3. The Global Dumping Regime and Radioactive Waste

The basic principle of the regime based on the London Convention 1972 is that disposal at sea of hazardous waste, defined in terms of toxicity, persistence, and tendency to bioaccumulate in marine organisms, must be forbidden save in cases where all other options are deemed more harmful.¹⁶ Putting this into practice involves at least three types of activities: generating the knowledge necessary to make informed choices; adopting regulative measures which give life to the principles and take heed of existing knowledge; and sustaining a collective system to further compliance, including reporting and verification of whether international commitments are matched by behavioural adaptation. While radioactive waste is only one of the substances dealt with by this Convention, it has been the single most politicized issue.

The main decision-making body is the Consultative Meeting of the Parties, usually held every year. A black and grey list system is applied, in which black items may not be dumped whereas grey ones require special permits from a designated national authority to be reported to the secretariat of the Convention,¹⁷ located with the International Maritime Organization (IMO). Members are obliged to monitor and keep a record of the nature and quantities of matter permitted to be dumped as well as when, where and how it occurred and the condition of the seas where it occurred.¹⁸ When a 1996 Protocol enters into force, a reverse listing will be introduced implying that all dumping is prohibited unless explicitly permitted; the impact of this is further enhanced by a strong statement of the precautionary principle.¹⁹ Unlike many other international arrangements, the London Convention permits regulative decisions to be taken without unanimity: amendments

¹⁶ See Report of the Fourth Consultative Meeting of Contracting Parties to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (IMO Doc. LDC 4/12), Annex 2; also the discussion in P. Birnie and A. E. Boyle, *International Law and the Environment*. Oxford: Clarendon Press, 1992, p. 321; those main criteria also guide regulative decisions under regional conventions such as the 1992 OSPAR and 1974 Helsinki Conventions; see, respectively, Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki, 22 March 1974), *International Legal Materials*, Vol. 13, 1974, pp. 546-84 and Convention for the Protection of the Marine Environment of the North-East Atlantic (Paris, 22 September 1992), reproduced in *International Legal Materials*, Vol. 32, 1993, pp. 1069ff.

¹⁷ Art. IV, paras. 1-2, and Art. VI respectively.

¹⁸ Art. VI, para. 1

¹⁹ Compare 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other matter, 1972 and Resolutions Adopted by Special Meetings (London, 7 November 1996), reproduced in *International Legal Materials*, Vol. 36, No. 1, 1997, pp. 7-30, Arts. 4 and 3 with the London Convention 1972, Art. IV. On the emergence of the precautionary principle, see in general Birnie and Boyle, *International Law and the Environment*, pp. 97ff.

to the lists may be passed by a two thirds majority, balanced however by an opting-out clause allowing states to avoid being legally bound by provisions they do not wish to adhere to.²⁰ A tacit consent procedure, implying that amendments become binding on the parties after a hundred days unless they file a reservation, adds speed to the implementation process;²¹ in addition, the Meeting may adopt by simple majority non-binding resolutions. As to enforcement, the London Convention sets out a broad range of provisions for prevention, discovery and punishment of violations, obliging members to enforce rules in their capacities as, respectively, flag states, port states and coastal states; the latter can apply the Convention not only to their territorial waters but to the exclusive economic zone and continental shelf as well.²² A dispute settlement arrangement provides for arbitration or submission to the International Court of Justice was adopted in 1978, but is yet to enter into force.²³

While the London Convention forms the core of the international dumping regime, other global and regional processes are complementing it. The obligation to control dumping is confirmed by the 1982 Law of the Sea Convention, which in Article 210 refers implicitly to the London Convention and its annexes when requiring that national regulation shall be no less effective than the rules and standards set globally.²⁴ As to radioactive waste, an environmental agreement targeting the Baltic Sea banned dumping of radioactive waste already in 1974;²⁵ and in 1992, a Northeast Atlantic agreement elicited commitments to this effect from two of the most outspoken recalcitrants in the London process, the United Kingdom and France.²⁶

Since the late 1980s, a number of cooperative political vehicles have been set running in the Arctic realm, and those processes, including their interaction with activities under the London

²⁰ Art. XV, paras. 1 and 2.

²¹ Art. XV, para. 2; see also A. Kiss and D. Shelton, *International Environmental Law*. Ardsley-on-Hudson, NY: Transnational Publishers, 1992, p. 102; a more general discussion of procedural mechanisms designed to get around the "slowest-boat" problem in international regimes is provided by P. H. Sand, "Lessons Learned in Global Environmental Governance", *Environmental Affairs Law Review*, Vol. 18, 1991, pp. 213-77, pp. 236-47.

²² See IMO Doc. LDC 11/14, p. 32.

²³ IMO Doc. LDC 3/12, p. 11; also annex 4.

²⁴ Birnie and Boyle, *International Law and the Environment*, p. 320; UN Convention on the Law of the Sea (Montego Bay, 10 December 1982) UN Doc. A/Conf.62/122, reproduced in *International Legal Materials*, Vol. 21, 1982, p. 1261 ff. For a condensed analysis of this relationship between the London Convention and the Law of the Sea Convention, see J. L. Canfield, "Soviet and Russian Nuclear Waste Dumping in the Arctic Marine Environment: Legal, Historical, and Political Implications", *Georgetown International Environmental Law Review*, Vol. 6, No. 2, 1994, pp. 353-444, especially pp. 358-60.

²⁵ Helsinki Convention 1974, Art. 9.

²⁶ OSPAR Convention 1992, Annex 2, Art. 3, para. 3; the OSPAR prohibition would expire after 15 years; France and the United Kingdom unsuccessfully opted for this solution also in the London Convention; see IMO Doc. LC 16/14, p. 16. The International North Sea Conference had agreed already in 1990 that the North Sea was unsuitable for dumping of radioactive waste; see Birnie and Boyle, *International Law and the Environment*, p. 324.

Convention, are also important to current management of marine disposal of nuclear waste. At a bilateral level, a number of Russo-Norwegian research cruises into the Barents and Kara Seas have been launched in the 1990s, endorsed rather than initiated by London Consultative Meetings, for purposes of gauging nuclear contamination in water masses and subsoil sediments in the areas close to the dumping sites. For its part, the trilateral Arctic Military Environmental Cooperation, involving the foreign ministries of Russia, Norway and the United States, have framed several projects aimed at enhancing nuclear safety practices in Northwest Russia.²⁷ And the fairly ambitious Arctic Monitoring and Assessment Programme under the 1991 Arctic Environmental Protection Strategy, which has singled out radionuclides as a priority area, submitted a state of the Arctic environment report in 1997.²⁸ Thus, both on the regulative and the programmatic side, the London Convention interlocks with a range of other cooperative processes, largely on a regional and sometimes bilateral level.

Since the adoption of the London Convention, a system of *scientific advice* has been elaborated, with three strands. The broadest advisory mechanism is the Scientific Group on Dumping, comprising experts nominated by the Contracting Parties, which achieved permanent status in 1984.²⁹ Second, a range of *ad hoc* groups of experts has been set up to compile information and further recommendations on particularly vital or controversial matters, such as the Panels on Sea Disposal of Radioactive Waste formed in 1983 and 1985.³⁰ Similarly, in 1987 an Inter-Governmental Panel of Experts on Radioactive Waste Disposal at Sea (IGPRAD) embarked on a process of addressing the wider political, legal, economic and social aspects of radioactive waste dumping, the comparative costs and risks of dumping as compared to land-based disposal, and whether it can be proven that radioactive dumping is not harmful to human life or the marine environment.³¹ IGPRAD's final report in 1993 paved the way for the subsequent global prohibition of all dumping of radioactive waste at sea.³²

²⁷ See "Erklæring mellom Kongeriket Norges Forsvarsdepartement og De Forente Staters Forsvarsministerium og Den Russiske Føderasjons Forsvarsministerium om forsvarsrelatert miljø samarbeid i Arktis" (Arctic Military Environmental Cooperation - AMEC) (Bergen, 26 September 1996), available from Ministry of Defence, Oslo.

²⁸ Arctic Monitoring and Assessment Program, *Arctic Pollution Issues: A State of the Arctic Environment Report*, Oslo: The Arctic Monitoring and Assessment Program Secretariat, 1997.

²⁹ IMO, *The London Dumping Convention*, p. 117.

³⁰ See, respectively, IMO Doc. LDC 7/12, pp. 19-30, also annex 6; IMO Doc. LDC 8/10, pp. 19-20, also annex 4; and IMO Doc. LDC 9/12, pp. 19-29.

³¹ IMO Doc. LDC 10/15, annex 11

³² IMO Doc. LC 16/14, pp. 19-20. Other similar groups set up under the Convention are the *Ad hoc* Group of Experts on the Annexes, the *Ad hoc* Working Group on Dredged Materials Disposal and that on Incineration at Sea, and the Task Team on Liability.

A third strand of the knowledge-related activities generated by the London Convention is the work conducted by external organizations at the request of the Consultative Meetings. The significance of being able to trigger or forward investigations conducted by others becomes clear when we note that in 1990, the budget of the London Convention was a mere \$0,76 million and the IMO staff allocated to it was five.³³ The IAEA, with a budget of roughly \$200 million and a staff of some two thousand,³⁴ has been vital to the work of IGPRAD by conducting a number of specialized technical and scientific studies.³⁵

In terms of *regulative provisions* pertaining to radioactive waste, high-level radioactive waste was placed on the original black list in 1972 - and state parties are thus obliged to abstain from any dumping of such material.³⁶ While that prohibition had been highly controversial, at first strongly opposed by the United Kingdom and the United States,³⁷ subsequent regulative discussion on nuclear matters revolved around extending it to low- and medium-level waste as well. The Parties to the London Convention had designated the International Atomic Energy Agency (IAEA) as the competent international advisory authority on whether given nuclear materials are unsuitable for dumping. Accordingly, the IAEA set up geographic criteria for the localization of such dumping,³⁸ including requirements that it should only occur in the belt between 50 degrees north and 50 degrees south latitude, beyond the continental shelf and at depths greater than 4000 metres. In comparison, the Barents and Kara Seas are roughly located between 70 and 80 degrees north and most of the area is placed on a continental shelf with depths rarely exceeding a few hundred metres.

In 1983, while a proposed ban failed to gain sufficient support, Spain, strongly backed by South Pacific and Nordic countries, successfully sponsored a resolution on a *voluntary moratorium* on all dumping of radioactive materials until an expert meeting had presented their final report to the Contracting Parties.³⁹ While not joining the six states which voted against, the Soviet Union

³³ P. H. Sand (ed.), *The Effectiveness of International Environmental Agreements: A Survey of Existing Legal Instruments*, Cambridge: Grotius, 1992, p. 16.

³⁴ *Green Globe Yearbook 1995*, Oxford: Oxford University Press, 1995, pp. 233-35; of those, more than eight hundred are professional scientists.

³⁵ IMO Doc. LDC 13/15, p. 32.

³⁶ The London Convention, Annex 1.

³⁷ For its part, the Soviet Union had favoured an even more comprehensive prohibition, including not only high-level but also low- and medium-level waste; see L. Ringius, *Radwaste Disposal and the Global Ocean Dumping Convention: The Politics of International Environmental Regimes*, Florence: Thesis submitted for assessment with a view to obtaining the Degree of Doctor of the European University, Department of Political Science, 1992, pp. 9,114. This view was repeated by Soviet delegations on later occasions; see for instance IMO Doc. LDC 5/12, p. 12.

³⁸ IAEA Doc. INF CIRC/205/Add.1/Rev 1, Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter: The Definition Required by Annex I, paragraph 6 to the Convention, and the Recommendations Required by Annex II, section D. Vienna: International Atomic Energy Agency, 1978.

³⁹ IMO Doc. LDC 7/12, pp. 19-30. The voluntary moratorium was established by Resolution LDC 14 (7), reproduced in IMO Doc. LDC 7/12, annex 3.

abstained from voting,⁴⁰ as it also did when the moratorium was prolonged in 1985; reasons cited were that the moratorium lacked adequate scientific basis and violated the spirit of consensus underlying the Convention.⁴¹ Four years later, the Soviet delegation officially declared that it had not dumped such materials in the past, and would not do so in the future.⁴² But when in 1993 a binding prohibition on dumping of low- and medium-level waste was established by a unanimously decision, Russia was among the five states abstaining from the vote.⁴³ Having tried in vain to obtain a two-year delay, Russia filed, as the only Contracting Party, a formal reservation to the amendment implying that it is currently not formally bound by this prohibition.⁴⁴

The *compliance system* of the London Convention is the weak part of its implementation profile.⁴⁵ This system is largely based on self-reporting, and in addition to a widespread inclination to ignore existing obligations to file reports, there is scant opportunity for the Secretariat or other members to subject reports to critical assessment. Nor can the regime, at least directly, provide significant positive incentives to comply with its requirements. It should be noted here that relatively undeveloped compliance systems are quite common for environmental and resource management regimes.⁴⁶ To some extent and in some situations, the formal reporting system of the Convention is complemented by information made available to the Meetings by non-governmental organizations with access to the deliberations. Thus, it was a document presented by Greenpeace International which triggered the animated discussion at the 1991 Consultative Meeting on Soviet dumping in Arctic seas, which produced a Soviet pledge to submit more information on the matter to the Secretariat.⁴⁷

⁴⁰ The states voting against were Japan, the Netherlands, South Africa, Switzerland, the United Kingdom and the United States; see IMO Doc. LDC 7/12, p. 29.

⁴¹ See IMO Doc. LDC 9/12, p. 41; also annex 5.

⁴² Yablokov et al., *Fakta og problemer*, p. 10.

⁴³ See resolution LC 51 (16), reproduced in IMO Doc. LC 16/14, annex 5. IMO Doc. LC 16/14, p. 17. The other abstainees were the United Kingdom, Belgium, France, and China.

⁴⁴ IMO Doc. LC 17/14, p. 6.

⁴⁵ See also M. Nauke and G. L. Holland, "The Role and Development of Global Marine Conventions: Two Case Histories", *Marine Pollution Bulletin* (Special Issue on Progress and Trends in Marine Environmental Protection), Vol. 25, No. 1-4, 1992, pp. 75-9.

⁴⁶ For an overview of a range of environmental agreements in this respect, see S. Andresen, "International Verification in Practice: A brief Account of Experiences from Relevant International Cooperative Measures", in E. Lykke (ed.), *Achieving Environmental Goals: The Concept and Practice of Environmental Performance Review*, London: Belhaven Press, 1992, pp. 101-121.

⁴⁷ IMO Doc. LDC 14/16, pp. 36-7.

4. Implementing the Dumping Regime: The Russian Case

The Soviet and later Russian Northern Fleet, based on the Kola Peninsula, is the major source of the radioactive waste dumped into Arctic seas and thus the key target for regulations in this field. A second regional target is the Murmansk Shipping Company, which operates seven nuclear icebreakers engaged in keeping the Northern Sea Route open, especially the western part between Murmansk and the Siberian city of Dudinka on the banks of the Yenisei.⁴⁸

As to domestic regulative agencies, two sets of distinctions are particularly relevant. One is the classical differentiation between legislative, executive and judicial powers. In matters directly related to foreign affairs and international commitments, the normal situation in most countries is that the executive will be in charge unless the matter becomes politicized enough to engage one or both of the others. In the Soviet case, the judiciary has failed to play an independent role. And for most of its lifetime, the Soviet political system was definitely marked by a strong executive: while the formal apex of power was placed in the legislative Supreme Soviet, real power resided in the Communist Party and was wielded primarily through the huge bureaucratic apparatus coordinated by the Council of Ministers.⁴⁹ When a Decree was issued in 1990 on measures to improve implementation of previous legislation to protect the northern environment, the cognizant Supreme Soviet committee was not even consulted.⁵⁰ The introduction of presidential rule the same year implied some executive delinking from the Communist Party;⁵¹ the 1993 Constitution endowed the President of the Russian Federation with extensive powers, including the right to overrule legislative initiatives and to issue legally binding decrees. However, in the period from the dissolution of the Union to the 1993 assault on the Parliament by troops loyal to President Yeltsin, the legislative was very active on nuclear matters in the north, especially regarding nuclear tests on the Novaya Zemlya site.⁵²

A second distinction regarding regulative agencies may be coined territorial; in the Soviet and later Russian context, it is generally helpful to scrutinize both federal and regional levels of

⁴⁸In addition, the nuclear icebreakers "Lenin" is taken out of operation; see A. E. Berkov, "Ministry of transport of the Russian federation (Mintrans)", *International Cooperation on Nuclear Waste Management in the Russian Federation*, Vienna: International Atomic Energy Agency, 1995, p. 63. The civilian nuclear power plant in Polyarny Zori in Murmansk oblast, has not been engaged in dumping of waste in Arctic seas and is not among the relevant target groups in our context.

⁴⁹For a portrait of the Soviet political system, see B. Kerblay, *Modern Soviet Society* (translated by R. Swyer; original version, *La société soviétique contemporaine*, 1977, by Armand Colin, Paris), London: Methuen, 1983; on the relations of power between the various branches of government and the party, see in particular pp. 242-48.

⁵⁰Canfield, "Soviet and Russian Nuclear Waste Dumping", p. 371.

⁵¹Å. Egge, *Fra Alexander II til Boris Jeltsin. Russlands og Sovjetunionens moderne historie*, Oslo: Universitetsforlaget, 1993, p. 270.

⁵²On the role of the legislative Supreme Soviet in this matter, see Canfield, "Soviet and Russian Nuclear Waste Dumping", pp. 375-379.

government.⁵³ However, in the case of nuclear waste management, we do not lose much by blackboxing the latter because while there have been a few recent attempts on the part of regional governments to regulate the nuclear safety practices of the military, they have been futile. In 1991, for instance, the governor of Murmansk set up operational rules for the removal of spent fuel from nuclear reactors in the naval bases;⁵⁴ those rules were stillborn, however, because physical access to the bases is up to the military to decide. The Northern Fleet flatly turned down a 1993 request from the environmental committee in the Murmansk *oblast* administration for information on nuclear waste management on the bases; although a visit was granted to one base two years later.⁵⁵ And when Yeltsin decreed in 1992 that the lands on which the Novaya Zemlya nuclear test site is located should be federalized, county authorities in Arkhangelsk were neither consulted nor informed prior to the decision.⁵⁶

4.1. The politics of publicity

Throughout the 1960s and -70s, Soviet handling of nuclear waste was a closed policy matter with few access points, and the pattern of inclusion clearly biased in favour of the Navy. Twelve of the sixteen reactors disposed in the Kara Sea were dumped in this period, all of them before the entry into force of the London Convention.⁵⁷ In addition, the liquid and solid low- and medium-level waste dumped in this period fluctuated between close to zero in some years and some 300 TBq in a peak year.⁵⁸

Largely because of their military significance, most aspects of the nuclear programmes of the former Soviet Union have been shrouded in a thick veil of secrecy. In the immediate post-war years, marked by a determined effort to catch up with the Americans, the nuclear programme was placed under the Minister for State Security, Lavrenti Beria, who directed the establishment of a number of closed nuclear laboratories in secluded cities.⁵⁹ In 1990, there were more than a hundred such “secret cities”, some with tens of thousands of inhabitants, omitted from official

⁵³ Under the 1993 Constitution, the Russian Federation has a total of 89 subjects, which may be either republics, counties (*oblast*), territories (*kray*) or autonomous areas (*okrug*).

⁵⁴ R. Castberg and O. S. Stokke, “Environmental Problems in Northwest Russia: Regional Strategies”, *International Challenges*, Vol. 12, No. 4, 1992.

⁵⁵ T. Nilsen, N. Bøhmer and A. Nikitin, *Den russiske Nordflåten. Kilder til radioaktiv forurensning*, Oslo: Bellona rapport nr. 2, 1996, p. 87.

⁵⁶ Canfield, “Soviet and Russian Nuclear Waste Dumping”, p. 376.

⁵⁷ Yablokov et al, *Fakta og problemer*, pp. 33-6.

⁵⁸ Due to very large discharges of liquid waste in the Kara Sea, 1976 was such a peak year. The total activity of low- and medium-level waste dumped by the Soviet Union in Arctic seas, measured at the time of disposal, is 1,342 TBq (NATO, “Cross-Border Environmental Problems”, pp. 17,33; as noted, the total activity dumped by the Soviet Union, including the reactors with spent nuclear fuel, is about 90,000 TBq.

⁵⁹ S. P. Weart, *Nuclear Fear: A History of Images*, Cambridge, MA: Harvard University Press, 1988, p. 122.

maps and where access remained strictly controlled. A number of them, such as Arzamas-16 or Chelyabinsk-65, are key components of the Russian nuclear-military complex today. Except for a short period in the late 1950s, when Sakharov corresponded with Khrushchev on the matter and was allowed to publish several critical articles, the public nuclear discourse in the Soviet Union before Chernobyl was either non-existent or silent about problems and hazards involved, implying that nuclear fears were expressed only through morbid jokes or indirectly and poetically as in Tarkovsky's *Stalker*.⁶⁰ Yet another illustration of the traditional difficulty of gaining access to information about the Soviet nuclear complex is the way crises and accidents have been handled by Soviet officials at home and abroad. An explosion at the nuclear facility in Kyshtym in 1957, for instance, was denied by Soviet officials until 1989,⁶¹ although details of the accident had been published in the West a decade earlier.⁶²

It should be noted that there is nothing very uncommon about a general line of secrecy in nuclear affairs. Even in the United States, which has a greater tradition for openness, organized opposition to nuclear waste management has largely been limited to the civilian sector, largely because access to information is confined to this sector.⁶³ Thus, a North Atlantic Cooperation Council report on cross-border environmental problems associated with military installation notes, before detailing the situation in Russia, that little is known about the temporary storage of spent nuclear fuel from Western naval vessels.⁶⁴

In the late 1980s, however, a sea change occurred regarding both access rules and patterns of participation in Soviet environmental affairs, and unlike in the past, the nuclear area was no exception. While semi-official organizations for nature protection had thrived throughout the Soviet period, a critical environmental movement independent of state authorities did not emerge until the mid-1980s; and when it did, nuclear fear was an important stimulus. These so-called "informals" were able to organize large street demonstrations and public hearings on the ecological situation in the Russian northwest.⁶⁵ A survey made in 1990 in 850 cities throughout the Union suggested that more than half were unhappy with the environmental situation, and

⁶⁰ Ibid, pp. 204, 239.

⁶¹ A. Blowers, D. Lowry and B. D. Salomon, *The international Politics of Nuclear Waste*, London: MacMillan Press, 1991, p. 40.

⁶² Z. Medvedev, *Disaster in the Urals*, London: Angus and Robertson, 1979.

⁶³ Blowers et al, *The International Politics of Nuclear Waste*, p. 240.

⁶⁴ NATO, "Cross-Border Environmental Problems", p. 283.

⁶⁵ On the emerging environmental movement in this region, see O. A. Andreev and M.-O. Olsson, *The Ecological Situation and Environmental Organizations in the Russian North-West*, Umeå: CERUM Working Paper No. 15, 1992.

radiation was on the top-three list of worries cited.⁶⁶ And while the present economic hardships are, quite predictably, making it more difficult for the environmental movement to command the political attention of the average Northwest Russian, such fluxes have been observed in the West as well and do not imply that the Russian greens are a thing of the past.

4.2. Assessing the hazards

When dumping of solid radioactive waste began in the early 1960s, the Northern Fleet was itself responsible for mapping the environmental situation around the sites used. This was conducted by four research institutions administered by the Defence Ministry, and all investigations proved very reassuring for the military.⁶⁷ The faintness of this praise is revealed by the fact that after 1967, no water or sedimentary measurements were taken closer than 50 kilometres away from the solid waste disposal areas around Novaya Zemlya.⁶⁸ This respectful distance to the most interesting dumping sites was kept even after *Goskomgidromet*, a civilian agency, was assigned responsibility for monitoring these areas, following a 1979 Council of Ministers resolution;⁶⁹ moreover, *Goskomgidromet*'s competence was never extended to military bases or repair yards.⁷⁰

In 1987, following Gorbachev's reshuffling of the Soviet apparatus, a State Committee on Nature Protection (*Goskompriroda*) was established, and two years later it took over from *Goskomgidromet* the leadership of Soviet delegations meetings under the London Convention.⁷¹ The domestic influence of this agency, under shifting names, would rise steadily to culminate in the adoption of a new Russian Environmental Law in 1991, and then recede. One might have expected that the growing clout of *Goskompriroda* would strengthen those actors in the Soviet system who opposed the dumping practices of the Northern Fleet and encourage the formation of an effective coalition to counter the hitherto predominant resisters in the implementation game. It is not, on the other hand, very surprising that instead, *Goskomgidromet* and *Goskompriroda* reportedly clashed in a disruptive turf struggle regarding responsibility for assessment of the radiological situation in the north;⁷² those two institutions had a series of closed meetings between

⁶⁶ M. Feshbach and A. Friendly Jr., *Ecocide in the USSR: Health and Nature Under Siege*, London: Arum Press, 1992, p. 238.

⁶⁷ Yablokov et al, *Fakta og problemer*, pp. 48,53-4.

⁶⁸ Ibid, p. 54.

⁶⁹ Resolution 222 on Measures to Ensure Performance of the Soviet Side's Obligations Following from the 1972 [London] Convention, cited in Canfield, "Soviet and Russian Nuclear Waste Dumping in the Arctic Marine Environment".

⁷⁰ Yablokov et al, *Fakta og problemer*, p. 49.

⁷¹ See List of Participants to the Eleventh Consultative Meeting of Contracting Parties to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (IMO Doc. LDC 11/INF.1) for the year 1988, and for subsequent years; the only exception is 1991. *Goskompriroda* had been represented in the delegation from 1988.

⁷² Canfield, "Soviet and Russian Nuclear Waste Dumping", pp. 371-2.

1988 and 1990 regarding the flagrant disregard of the IAEA guidelines without being able to generate action on the level of government.⁷³

By that time, military handling of radioactive waste was becoming an international issue. A former radiation safety engineer in the Murmansk Shipping Company, Andrei Zolotkov, who was also an activist in the non-governmental group "To a New Earth", played an important role in the disclosure of Soviet dumping activities in the Arctic.⁷⁴ Zolotkov was also a delegate from Murmansk to the Congress of People's Deputies, an assembly set up in the Gorbachev era as part of the effort to vitalize the legislative branch of government.⁷⁵ This stature, and his former employment in the northern nuclear complex, provided his detailed account of past and ongoing dumping activities with sufficient credibility to generate a huge scandal both domestically and internationally. When his allegations were neither withdrawn nor rejected by competent Soviet authorities, Greenpeace International compiled a report, primarily based on Zolotkov, tabled at a press conference in Moscow in September 1991 and circulated informally at the 1991 meeting under the London Convention complementing a Soviet-Norwegian information paper on plans for cooperative investigations of the radiological impacts of the alleged dumping.⁷⁶ These environmental activists were much helped by the fact that nuclear dumping became politically linked to the even more salient issue of nuclear tests on Novaya Zemlya; indeed, the establishment of the Yablokov Commission, so important to the subsequent Russian implementation game, resulted from a struggle between Yeltsin and the Congress of People's Deputies regarding access to information on the dumping conducted by the test site authority.⁷⁷ An earlier accomplishment of the nuclear activists, Yeltsin's 1991 decision on a unilateral moratorium on nuclear tests had been widely interpreted as a strategic move to match Gorbachev's Soviet-level decision to the same effect;⁷⁸ an interpretation which is supported by certain post-Soviet decisions on the part of Yeltsin seen as favouring the nuclear industrial complex, especially the federalization of the test site area in 1992.

The significance of the London Convention for the creation of the Yablokov Commission, and the subsequent leap in terms of information available on the Russian nuclear complex, should not be exaggerated. True, the 1991 Consultative Meeting had encouraged the compilation of information on past dumping operations,⁷⁹ but when the Meeting sharpened this to an actual

⁷³ Yablokov et al, *Fakta og problemer*, p. 26.

⁷⁴ Ibid, p. 6; in Russian, "Novaya Zemlya" means "New Earth".

⁷⁵ Canfield, "Soviet and Russian Nuclear Waste Dumping", p. 386; on the establishment of the Congress of People's Deputies, see Egge, *Fra Alexander II til Boris Jeltsin*, p. 268.

⁷⁶ IMO Doc. LDC 14/16, pp. 36-7.

⁷⁷ Canfield, "Soviet and Russian Nuclear Waste Dumping", p. 379.

⁷⁸ Ibid, p. 375.

⁷⁹ IMO Doc. LDC 14/16, p. 37.

request the year after, the Russian delegation could respond by outlining the broad composition and extensive tasks of an already established fact-finding commission headed by the distinguished scientist, Alexei Yablokov.⁸⁰ On balance, internal Russian dynamics were far more important than international requests for generation of support for the Yablokov Commission, especially the inter-institutional rivalries in the transition period which could be exploited by environmental activists and regulative agencies favouring adherence to the London Convention and greater openness on nuclear affairs.

Thus, it was not until the dumping issue was internationalized by the turn of the decade that assessment obligations under the London Convention were taken seriously in the Russian Northwest. Under the bilateral Russo-Norwegian Environmental Commission, three Russo-Norwegian cruises, with participation from *i.a.* the IAEA Marine Environmental Laboratory, were conducted from 1991 onwards and included measurements also in the fjords where reactors with remaining spent fuel had been dumped.⁸¹ Encouraged by the Consultative Meeting of the London Convention, the IAEA established an International Arctic Seas Assessment Programme. A combination of continuous political pressure in a range of international fora, including the Consultative Meetings under the London Convention,⁸² and the provision from Western participants of equipment, expertise and funds for conferences and working group activities, have been decisive for the generation of adequate knowledge about the hazards associated with the Soviet and Russian dumping of radioactive waste.

4.3. *Regulating dumping*

From the outset, domestic regulation of dumping had been largely left to the Northern Fleet itself and concerned safety precautions for the personnel involved in the operations. The first sanitary requirements were established in 1960, with the Navy in the driver's seat and the Ministry of Medium Machine Building next by;⁸³ the latter used to be the hub of the Soviet nuclear military-industrial complex, operating the network of closed nuclear research cities.⁸⁴ In addition, while not having regulative authority, an agency under the Ministry of Health was included in the drafting of

⁸⁰ IMO Doc. LC 15/16, pp. 38-40.

⁸¹ A fourth cruise was conducted by the Norwegian Akvaplan-NIVA and the Murmansk Marine Biological Institute in 1992; see K.-L. Sjoebloom and G. Linsley, "The International Arctic Seas Assessment Project: Progress Report", *IAEA Bulletin*, Vol. 37, No 2., 1995, pp. 25-30.

⁸² See in particular IMO Doc. LDC 14/16, pp. 36-7, IMO Doc. LC 15/16, pp. 38-40, IMO Doc. LC 16/14, pp. 19,23-4.

⁸³ Yablokov et al, *Fakta og problemer*, pp. 20-1.

⁸⁴ OTA, *Nuclear Wastes in the Arctic*, p. 218; in 1989, this ministry was merged with the Ministry of Nuclear Power to the Ministry of Atomic Power and Industry, renamed in 1992 the Ministry for Atomic Power.

these sanitary standards throughout the Soviet period.⁸⁵ Involving the same agencies, these regulations were made more specific in 1962 and 1966,⁸⁶ but the key decisions in 1965 and 1967 which permitted dumping of liquid waste beyond 10 miles and dumping of solid waste in thin metal containers, or even without containment, settling on the Barents Sea for liquid and bays of Novaya Zemlya for solid waste, were made by the Navy itself.⁸⁷

When in 1979, three years after Soviet ratification of the London Convention, the Council of Ministers passed domestic implementing legislation, Goskomgidromet was designated as responsible not only for monitoring, but also for granting permits regarding dumping of low- and medium-level waste, as well as reporting them to IMO.⁸⁸ For the first time, radioactive waste management was extended beyond the military-industrial complex and at least formally, naval self-regulation was brought to an end. Since the Resolution introduced a new regulative agency in the nuclear waste arena, there is good reason to attribute this change to commitments under the London Convention rather than domestic Soviet processes. Radioactive waste was only one of a large number of compounds regulated by that Convention, and with its multisectoral nature and extensive environmental monitoring responsibilities, Goskomgidromet was the natural coordinating unit.

The IAEA geographic criteria for site selection regarding radioactive waste promulgated under the London Convention, according to which the Barents and Kara Seas were particularly poorly suited for the purpose, acquired considerable significance at this stage. In accordance with the new access rules, Goskomgidromet had participated in the elaboration of new standards on dumping of radioactive waste in 1983. However, its endorsement of these regulations, which permitted continued dumping of low- and medium-level waste, had been given on the understanding that the Northern Fleet would realize plans to build installations for treatment, i.e. concentration and solidification, of that waste, in order to phase out the dumping operations.⁸⁹ In the meantime, the Murmansk Shipping Company, which had far smaller volumes of waste to handle in the first place, had built such an installation at its Atomflot base outside Murmansk and was able to discontinue dumping of liquid waste in 1984 and solid waste two years later.⁹⁰ When the Northern Fleet failed to build similar capacity, Goskomgidromet first expressed disagreement

⁸⁵ Ibid, p. 219; this situation continues today; see O. I. Shamov, "Ministry of Health Care and the Medical Industry of the Russian Federation", *International Cooperation on Nuclear Waste Management in the Russian Federation*, Vienna: International Atomic Energy Agency, 1995.

⁸⁶ Yablokov et al, *Fakta og problemer*, p. 22.

⁸⁷ Ibid, p. 22.

⁸⁸ Ibid, p. 22; where appropriate, Goskomgidromet were to consult with the Ministry of Fisheries.

⁸⁹ Ibid, p. 25.

⁹⁰ Berkov, "Ministry of Transport of the Russian Federation (Mintrans)", p. 65.

with the selection of dumping sites, citing the IAEA guidelines, and then in late 1987 withdrew its endorsement of the permit to dump radioactive waste in the sites used by the Northern Fleet.⁹¹

While this regulative controversy between Goskomgidromet and the Navy was clearly related to norms produced under the London Convention, it is not fully explained by them. It is important to recall that in 1985, Gorbachev had ascended to power in the Soviet Union, rapidly embarking upon his project of gradually slackening restrictions on access to bureaucratic decision-making. The Chernobyl accident the following year had channelled much of the public disapproval into the environmental area, in particular activities involving nuclear risks. Thus, while Goskomgidromet had voiced its concern with the 1983 regulations because they deviated from the IAEA criteria, the boldness of its move four years later must be seen in the context of a rapidly changing society much more concerned with radioactive contamination and managed by a modernizing leadership encouraging criticism of bureaucratic malpractices.

The key target of regulation - the Northern Fleet - was at first less than impressed with this stricter policy line assumed by Goskomgidromet. In 1988, the year after Goskomgidromet had withdrawn its permission, the Northern Fleet dumped more low- and medium-level waste than it had in twelve years,⁹² and even more gravely in terms of potential release into the environment, two reactors were dumped the same year in a bay of Novaya Zemlya.⁹³

So again, effective measures were not taken before the dumping scandal became an international one. In terms of political influence, the establishment of the Yablokov Commission and the publication of its report in 1993 marked the highest point for the proponents of stricter controls regarding handling of radioactive waste. Despite the fact that leading representatives from the nuclear military complex took part in its preparation, the Yablokov Report was highly critical of both the dumping itself and the secrecy surrounding it. Indeed, the report itself reveals a strong belief, at least among the authors, in the domestic political clout of the global dumping regime - because in the report, Soviet commitments under the London Convention are systematically exaggerated. It makes no mention of the distinction between resolutions and amendments in the London Convention, nor of the opting-out clause pertaining to the latter. Thus, the Report does not bring out that the Soviet abstention from the votes on the voluntary moratorium in 1983 makes it very hard to argue that this country was legally or even politically bound by them in this period.⁹⁴ Likewise, while the Commission boldly states that the permission to conduct dumping of low- and

⁹¹ Yablokov et al, *Fakta og problemer*, p. 25.

⁹² NATO, "Cross-Border Environmental Problems", pp. 17,33.

⁹³ Yablokov et al, *Fakta og problemer*, p. 36.

⁹⁴ See IMO Doc. LDC 7/12, p. 29; the Soviet Union also abstained when the moratorium was prolonged in 1985; see IMO Doc. LDC 9/12, p. 41. As noted above, when the 1993 prohibition was adopted, Russia abstained from the vote and was the only state which subsequently filed a reservation.

medium-level waste in the Barents and Kara Seas was illegal,⁹⁵ in reality the IAEA guidelines have no more than quasi-legal status.⁹⁶

This notwithstanding, harsh criticism from a number of Parties to the London Convention, especially Japan, following a 1993 dumping operation of low-level liquid radioactive waste in the Sea of Japan, induced Russia to reverse a plan to conduct a second operation and pledged to cease operations such as this completely within a few years.⁹⁷ Russia is not known to have dumped any radioactive materials since.

In Russian decision-making on nuclear waste, the scope of participation has levelled off since the Yablokov peak. There are several reasons for this. At the level of societal organization, there is currently less enthusiasm for environmental matters than in the late 1980s, in part due to disillusionment with the early experiments of political activism and direct democracy. Also, as noted, the economic hardships and the political turmoil of the 1990s have pushed environmental affairs down the agenda. Perhaps more significantly, along with the political consolidation of presidential power, including stronger authoritarian features in the governance style,⁹⁸ the number of access points for those still interested in affecting nuclear developments have become fewer. Whereas the Russian Environmental Law from 1991 generally gives pride of place to Goskompriroda, now named the State Committee for of Environmental Protection, this agency has subsequently lost several important wages for regulative competence. While for a period, the mighty State Committee for Water and also those for Forestry and Chartography, were placed administratively under the environmental agency, they soon re-emerged as separate federal agencies.⁹⁹ In the nuclear safety area, the environmental agency is now seen as having very limited enforcement powers and its regulative role is impeded by the fact that it is a new agency with very limited financial backing, inadequate informational basis for making environmental decisions and poorly defined internal structures.¹⁰⁰

⁹⁵ Yablokov et al, *Fakta og problemer*, p. 26.

⁹⁶ Birnie and Boyle, *International Law and the Environment*, p. 324.

⁹⁷ See IMO Doc. LC 16/14, p. 22-5.

⁹⁸ See V. Baranovsky, "Russia and its Neighborhood: Conflict Developments and Settlement Efforts", *SIPRI Yearbook 1995: Armaments, Disarmaments and International Security*, Stockholm: International Peace Research Institute, 1995, pp. 231-264.

⁹⁹ Compare *Vsya Moskva: Informatsionno-reklamny ezhegodnik 1992/93* (All Moscow: information and advertisement yearbook 1992/93), Moscow: Vsya Moskva, 1992, p. 16 and *Novaya Rossiya: Informatsionno-statisticheskyy almanakh "94* (New Russia: information and statistical almanac "94), Moscow: Vsya Moskva/Mezhdunarodnaya akademiya informatizatsii, June 1994, pp. 53-5. The environmental agency had ministerial status between 1992 and 1996; by a Presidential Decree of 30 April 1998, Goskomgidromet was merged with the State Committee for Environmental Protection.

¹⁰⁰ OTA, *Nuclear Wastes in the Arctic*, p. 217.

In contrast, the Ministry of Atomic Power appears to have gradually recovered much of its strength after the setbacks associated with Chernobyl. A merger with the Ministry of Medium Machine Building in 1989 brought both the military and the civilian parts of the nuclear complex into its portfolio.¹⁰¹ In the following years, new reactors were put on line in the Russian nuclear programme partly to compensate for the loss of control over nuclear plants in the Ukraine. On matters related to nuclear issues in general, a sense grew in the environmental movement that Yeltsin was increasingly yielding to demands of the Ministry of Atomic Power and the nuclear-industrial lobby;¹⁰² Western observers now describe the ministry as "extremely large and powerful, noting also that the minister, Viktor Mikhailov, in July 1995 was appointed to the Russian Security Council.¹⁰³ Along with the failure of the State Committee for Environmental Protection to assert its authority in areas formally placed under it and the gradual recuperation of the Ministry of Atomic Power, secrecy is returning to the nuclear waste arena. Already in 1992, the latter ministry and the nuclear industry had managed to convince the Supreme Soviet to extend the secret status of governmental information on nuclear programmes.¹⁰⁴ Earlier that year, Yeltsin had reversed a decision to open up the nuclear city of Severodvinsk, home of one of the major military shipbuilding complexes in the Soviet era. Another indication of this trend towards less openness on nuclear matters is that *Gosatomnadzor*, the Federal Nuclear and Radiation Safety Authority of Russia, which in 1991 had been assigned the task of regulating and inspecting safety practices both at civilian and military facilities, lost the military part of its portfolio by a Presidential Decree of July 1995 after a very critical inspection report.¹⁰⁵ An even more direct indication that access rules are being sharpened is the new and tougher policy pursued toward environmental organizations in the nuclear field. In 1992, a representative of 'To a New Earth' had been included as senior expert and author in the Yablokov Commission, despite, or perhaps because of, the association of that organization with Andrei Zolotkov who was the first source of military malpractices on dumping. Only three years later, the institutional framework proved far more hostile. The Federal Security Bureau raided in late 1995 the homes and offices of a number

¹⁰¹ Ibid, p. 218.

¹⁰² Canfield, "Soviet and Russian Nuclear Waste Dumping", p. 425.

¹⁰³ OTA, *Nuclear Wastes in the Arctic*, p. 218.

¹⁰⁴ Canfield, "Soviet and Russian Nuclear Waste Dumping", p. 429; at that time, this agency was named the Ministry of Nuclear Energy.

¹⁰⁵ R. Vartanov, A. Roginko and V. Kolossov, "Russian Security Policy 1945-96: The Role of the Arctic, the Environment and the NSR", in W. Østreng (ed.), *National Security and International Environmental Security: The Case of the Northern Sea Route*, Lysaker: The Fridtjof Nansen Institute, INSRP Working Paper No. 83, 1997, pp. 57-112. In Y. I. Zubkov and A. I. Kislov, "Federal Nuclear and Radiation Safety Authority of the Russian Federation (*Gosatomnadzor*)", Vienna: International Atomic Energy Agency, 1995, pp. 27-8, the authors note that *Gosatomnadzor* had withdrawn permits from three enterprises engaged in processing of radioactive waste, including Mayak, due to a "...very complicated situation in radwaste management..."; the conference where this article was presented was held one month prior to the decision to reduce the area of competence of *Gosatomnadzor* itself.

of persons involved in the preparation of a report on the waste management of the Northern Fleet and later arrested one of them, a Russian citizen formerly with the Northern Fleet but currently employed at the Moscow office of the Norwegian environmental organization Bellona; the man was accused of espionage and high treason.¹⁰⁶

4.4 Enhancing compliance

Even during the period of military self-regulation, some efforts had been made on the part of Soviet authorities to stimulate *alternatives* to dumping of radioactive waste. For the Arctic waste problem, as noted, elaboration of alternatives to marine disposal means construction of adequate interim storage facilities combined with either on-site treatment facilities and a permanent repository or a smooth system for transporting parts of the waste out of the region for reprocessing. As noted, Soviet authorities early on went for the latter option, primarily in order to generate plutonium for weapon use. The first interim storage for spent fuel was ready for operation by the Northern Fleet in 1962; and it experienced considerable problems right from the outset.¹⁰⁷ Major leakages from the pools occurred from 1982 to 1983 and resulted in a gradual close-down of this storage, fuel assemblies being transferred to nearby storage tanks meant for low-level liquid waste.¹⁰⁸ Three other main interim storages for fuel assemblies were built as well.¹⁰⁹ In 1973, the Northern Fleet and the Murmansk Shipping Company began transporting spent nuclear fuel by barges to Murmansk and from there to Mayak by rail.¹¹⁰ There is an important catch to reprocessing in that the separation process also generates considerable volumes of high-level liquid waste that cannot be put back into the fuel cycle and that is more hazardous to store than spent nuclear fuel.¹¹¹ In the case of the Mayak complex, this catch has created one of the gravest environmental disaster areas in the entire Soviet Union, so the early investments in an infrastructure to permit reprocessing of spent fuel can hardly be seen as indication of a Soviet concern to avoid nuclear contamination.

¹⁰⁶ Bellona Press Release, Oslo: The Bellona Foundation, 7 February 1996; the case is still not closed.

¹⁰⁷ T. Nilsen, I. Kudrik and A. Nikitin, "Zapadnaja Litsa", Oslo: Bellona Arbeidsnotat 5, 1995, pp. 12-3.

¹⁰⁸ See V. N. Lystsov, "The Yablokov Commission report on Soviet Radioactive Waste Dumping at Sea: Additional Comments", *Arctic research of the United States*, Vol. 8, 1994, pp. 271-2 and Nilsen et al, "Zapadnaja Litsa", pp. 16-7.

¹⁰⁹ These other main storages for spent fuel assemblies are found the naval base Gremikha, the naval shipyard at Severodvinsk and at the Atomflot base of the Murmansk Shipping Company (T. Nilsen and N. Bøhmer, *Sources to Radioactive Contamination in Murmansk and Arkangelsk Counties*, Oslo: Bellona Report Volume 1, 1994, p. 46). Spent fuel is also stored on several other bases and on barges operated by the Murmansk Shipping Company.

¹¹⁰ However, the Mayak plant cannot reprocess spent fuel in defective assemblies or from reactors which are liquid metal cooled or have damaged fuel assemblies; see Baklanov et al, 1996, p. 52.

¹¹¹ See NATO, "Cross-Border Environmental Problems", pp. 266-7; in 1987, a pilot vitrification facility was opened at the Mayak complex which by 1993 had solidified 5000 cubic metres of high-level liquid waste; see Yu. K. Bibilashvili and F.G. Reshetnikov, "Russia's Nuclear Fuel Cycle: An Industrial Perspective", *IAEA Bulletin*, Vol. 35, No. 3, 1993, pp. 31-2.

Just like it was for assessment and regulation, internationalization of the dumping issue around the turn of the decade was a turning point for efforts to enhance the domestic capacity to avoid dumping of radioactive waste. After having ascribed a 1993 incident of dumping of liquid radioactive waste in the Sea of Japan to irresponsibility on the part of the Navy and the nuclear industry, the Russian Minister of Environment informed the Consultative Meeting of the London Convention that Western technology and financial resources would speed up the process of acquiring ability to do without such dumping in the future.¹¹² In response, an international Technical Advisory Assistance Team was set up to develop projects on treatment and storage facilities.¹¹³ The subsequent year, this Team could report to the Consultative Meeting that Japan and Russia had signed an agreement to build a treatment facility in the Far East for low-level liquid waste; and also that there was progress regarding a project to enhance the liquid processing capacity at Atomflot, the base of the Murmansk Shipping Company.¹¹⁴ Furthermore, Norway and Russia had reached agreement on a two-year assessment program on the nuclear waste challenges in the Mayak plant.¹¹⁵ In 1995, experts from six NATO countries were invited to an international scientific symposium in Moscow on decommissioning of nuclear submarines, involving leading figures in the State Committee for Defence Branches of Industry (*Goskomoboronprom*), the Ministry of Atomic Power, and the Northern Fleet.¹¹⁶ And the same year, thirty-two representatives of a dozen ministries and other agencies in Russia responsible for radioactive waste participated in an IAEA meeting on international cooperation on nuclear waste management.¹¹⁷

What seems to occur in the present situation is that the former backbone of the coalition resisting openness on nuclear matters, including the Navy and the Ministry of Atomic Power, have consolidated their control over domestic decision-making and are themselves becoming increasingly involved in cooperative programmes generated by the London Convention and in other fora. Thus, while the level of domestic participation is on its way down, international contacts are still thriving; and with the international focus shifting from regulating and mapping radioactive contamination to the development of practical measures to avoid it, the resisters of yesterday are turning up as today's supporters of international coordination in the nuclear waste area. The causal significance of the London Convention in this context should not be overstated,

¹¹² IMO Doc. LC 16/14, annex 6.

¹¹³ IMO Doc. LC 16/14:25.

¹¹⁴ IMO Doc. LC 17/14, annex 5; the project was placed in framework of the trilateral (Russian-Norwegian-U.S.) Arctic Military Environmental Cooperation mentioned in section 2 of this Report. A facility to concentrate and solidify low-level liquid waste had been built in 1991-2; see Castberg and Stokke, "Environmental Problems in Northwest Russia", p. 35.

¹¹⁵ IMO Doc. LC 17/14:30.

¹¹⁶ *NATO Science and Society Newsletter*, No. 45, 3rd Qtr. 1995.

¹¹⁷ Proceedings of the conference is published by IAEA, *International Co-operation on nuclear Waste in the Russian Federation*, Vienna: International Atomic Energy Agency, 1995.

however, since this development is supported by a range of other cooperative vehicles, including bilateral and regional ones as well as the International Atomic Energy Agency. The role of the London Convention has been partly to coordinate and partly to encourage and legitimize programmatic activities initiated or financed within other such processes.

5. Conclusions

We have seen in this report that the regime set up by the London Convention on dumping has served to lower domestic access barriers in the Soviet Union and Russia to decisions on disposal of nuclear waste and promoted a step-wise broadening of actual participation of regulative agencies and societal intervenor groups. After two decades of military self-regulation, Soviet implementing legislation of the Convention in 1979 elevated the nuclear waste issue to the cabinet level and added a civilian regulative agency, Goskomgidromet, in the management of low- and medium-level waste. This helped to reduce an access bias which had so far clearly favoured the target groups, primarily the Northern Fleet. The role of the regime was the decisive one of generating a set of routine-like bureaucratic responses to uncontroversial but explicit responsibilities defined internationally. While secrecy continued to shield military dumping from broader public scrutiny, this change brought about a cautious regulative competition which in the mid-1980s was further nurtured by the political turnabouts of *glasnost* and *perestroika*. Institutional upshots of particular significance in this stage of cautious expansion were an environmental bureaucracy, Goskompriroda, a more active legislative body, the Congress of People's Deputies, and a radiotoxically attentive green movement independent of the state apparatus.

When the handling of radioactive waste became politicized in the early 1990s, the international dumping regime was helpful to the successful efforts of critics of dumping, both among regulative agencies and intervenor groups, to enhance transparency on nuclear activities. Access to information on nuclear safety in the military sector, as well as participation in the associated policy-making processes, reached a high point with the publication of the 1993 governmental Yablokov Report, which also responded to demands articulated by the Consultative Meeting of the London Convention. The various prescriptions set forth in the latter Convention, moreover, appear to have enhanced the political clout of those critical of dumping as they figure very prominently in the unequivocal argument made in the Yablokov Report on the severity of past dumping and the need to invest more in storage and decontamination facilities to avoid future dumping.

Since then, access to military information, including nuclear waste practices, has been tightened at a time when public attention to environmental problems is ebbing. Moreover, the limits of the funds, personnel and experience of the environmental bureaucracy is becoming apparent as the nuclear-industrial complex is currently regaining much of its previous political strength and prestige. Importantly, the civilian regulative apparatus does not have physical access

to military bases or shipyards. This contraction in terms of domestic access and participation is the upshot of internal Russian developments, but it is to some extent balanced by steadily wider international participation in programmes designed to monitor the level of radioactivity in Arctic seas and, subsequently, to alleviate the operational needs in the Northern Fleet to continue dumping. These international programmes have required the consent, and increasingly the active participation, of the Navy itself; and this support has been secured primarily by the belief that such programmes will be conducive to the transfer of technology and financial resources to Russia from the West.

The consequences of these changes in access and participation for the effectiveness of the international dumping regime have been measured along three dimensions: monitoring, regulation, and compliance stimulation, including enhancement of target-group capacity to avoid dumping. The entry of Goskomgidromet, and later Goskompriroda, on the arena implied somewhat enhanced *monitoring* of the environmental situation, but until their internationalization during the politicization stage, these activities remained remarkably unintrusive as until 1993, measurements were not taken near the dumping sites. The same is true for behavioural monitoring of compliance: as noted, inspection of nuclear waste management in military facilities was, and remains, largely left to the Northern Fleet itself.

As to *regulations*, the entry of civilian agencies in the radioactive waste area during the period of cautious expansion after 1979 prepared the ground for controversy, as Goskomgidromet was increasingly critical of Naval practices and in 1987 withdrew its permit to continue dumping of low- and medium-level waste. However, this regulative discord did not force the Northern Fleet to halt dumping. On the contrary, unlike the civilian Murmansk Shipping Company, which had comparatively better treatment capacity and had been able to terminate dumping in the mid-1980s, the Navy has continued to dump nuclear waste well into the 1990s. We have seen that the contestedness of regulations was partly shaped by the guidelines set forth under the London Convention. However, we also noted that the articulation of those guidelines in the regulative process remained fairly meek until the nuclear complex, including its military part, was thoroughly, if temporarily, enfeebled by the ecological disaster of Chernobyl and the political reshuffles of *perestroika*. Thus, the international regime provided the direction but not the energy for this change in regulative implementation.

Regarding *compliance stimulation*, the entry of foreign participants into the implementation game in the late 1980s and especially after the turn of the decade, has been significant; not so much in its negative mode of improving compliance control by verification - as in the supportive form of helping to enhance the ability of the Northern Fleet to avoid dumping. This is achieved through cooperative international programmes designed to estimate the hazards involved and, subsequently, elaborate practical ways to enhance treatment and storage facilities for liquid and solid radioactive waste. Such foreign contribution is probably decisive to the realization of Russian

capacity to adequately treat and store radioactive waste because the domestic political fuel available for this matter appears to have been largely spent as the Navy and Russian authorities more generally are again shrouding waste management in secrecy.

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