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# RADIOACTIVE WASTE AND RUSSIA'S NORTHERN FLEET: SINKING THE PRINCIPLES OF INTERNATIONAL ENVIRONMENTAL LAW

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Communication with the Russian military on the Kola Peninsula is poor. We can understand their situation, but the problems of nuclear waste there are so great that they have to be solved. A catastrophe in the North would affect the whole of Europe.

Jorgen Kosmo, Norwegian Defense Minister[1]

## I. INTRODUCTION

In 1959 the first Soviet nuclear submarine, the Leninski Komsomol (K-3), entered into service and since that time the former Soviet Union (FSU) has launched a total of 248 nuclear powered submarines.[2] The majority of these vessels have served with Russia's Northern Fleet, based in Murmansk in the Barents Sea region.[3] At the height of the Cold War the Barents region was home to the highest concentration of nuclear weapons and nuclear powered submarines in the world, due, in part, to the fact that the region contained the only ice free ports on the Russian Arctic.[4]

The Soviets, like their NATO counterparts, began their nuclear

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1. Michael Bond, *Arctic Standoff*, NEW SCIENTIST, Oct. 4, 1997, at 22.

2. Joshua Handler, *The Lasting Legacy: Nuclear Submarine Disposal*, JANE'S NAVY INT'L 11, Jan. 1, 1998, at 15 (in NATO nomenclature the K-3 was referred to as November class).

3. In the early 1990s, 84 of the former Soviet Union's submarines were serving with the Northern Fleet. *See* A. BAKLANOV ET AL., INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS ANALYSIS, RADIOACTIVE SOURCES IN THE KOLA REGION: ACTUAL AND POTENTIAL RADIOLOGICAL CONSEQUENCES FOR MAN 36 (1996).

4. Gennady P. Luzin et al., *The Kola Peninsula: Geography, History and Resources*, ARCTIC, Mar., 1994, at 1.

building program with little thought to how the nuclear vessels would be decommissioned without creating serious environmental damage.[5] As these submarines have reached the end of their natural service lives, they have become environmental hazards.[6] The spent fuel from the submarines, and the reactor compartments themselves, pose serious health and environmental risks.[7] Since the end of the cold war, a combination of factors, including financial restraint, maintenance problems and arms control, have accelerated the rate of decommissioning, thereby aggravating the problem.[8] At present, the Northern Fleet's interim storage facilities are exhausted and much of the waste is being stored in an unsafe manner.[9] Though immediate damage from Russian activities may not be obvious, exposure to even low levels of radiation may have grave consequences for the health and well being of people in neighboring states.[10]

International, regional and bilateral initiatives have been created in response to the nuclear waste problems generated by the Russian Navy.[11] Many of these have provided funds for studies and initial aid towards solving the problems of waste disposal.[12] The Rovanniemi Dec-

5. Alexi Yablokov the head of the Center for Russian Environmental Policy in Moscow indicated that despite the centralized economy of the Soviet Union, "when they produced nuclear submarines,. . .nobody thought about how to decommission them." *See* David Hoffman, *Russia Suffering Fallout Over Nuclear Submarines: Disposal Problems Causing Worries Worldwide*, DALLAS MORNING STAR, Nov. 27, 1998, at 55A.

6. Handler, *supra* note 2, at 17-18. Environmental hazards include: leakage of fuel, inappropriate storage of fuel when decommissioning the submarines, reactor accidents, and sinkings of submarines.

7. Geoffrey York, *Russia's "Floating Chernobyls" Part of Deadly Nuclear Mix: Disaster in the Making*, GLOBE AND MAIL, Jan. 2, 1996, at A1.

8. Handler, *supra* note 2, at 16-18.

9. H.-J. ENGELMANN, ET AL., INVENTORY OF RADIOACTIVE WASTE AND SPENT FUEL AT THE KOLA PENINSULA REGION OF NORTH-WEST RUSSIA 115 (1996) [hereinafter INVENTORY].

10. Apart from long latency periods for certain kinds of cancer, it has also been suggested that exposure to radiation may produce cumulative genetic damage with mutated genes being passed on from one generation to the next. *See* Herman Muller, *Radiation and Heredity*, 54 AM. J. PUB. HEALTH 42, 44 (1964). Russia's neighbors should be concerned given the example of the Isle of Man where low level exposure from the UK's Sellafield nuclear reprocessing plant has been linked to increases in childhood cancer in Ireland and the Isle of Man. *See* Terry Hall, *". . .Carried by the Wind Out to Sea" Ireland and the Isle of Man v. Sellafield: Anatomy of a Transboundary Pollution Dispute*, 6 GEO. INT'L ENVTL. L. REV. 639, 649-53 (1994).

11. *See Declaration on the Protection of the Arctic Environment*, *in* ORAN YOUNG, CREATING REGIMES: ARCTIC ACCORDS AND INTERNATIONAL GOVERNANCE 200 (1998) [hereinafter Kirkenes Declaration]; *Declaration on Cooperation in the Barents Euro-Arctic Region*, *in id.* at 217.

12. The problem has been studied extensively. For example: IAEA funded International Arctic Seas Assessment Project (1993), Arctic Monitoring and Assessment Program, International Science and Technology Centre established by Japan, EU, U.S., Arctic Nuclear Waste Program (ANWAP), Euro-Arctic Barents-Region, and NATO. For a more detailed description of studies and initiatives, see BAKLANOV ET AL., *supra* note 3,

laration on the Protection of the Environment[13], signed by the eight Arctic nations,[14] cited the importance of international co-operation and financial support in the "rehabilitation of areas that have been polluted as a result of the operation of nuclear facilities."[15] Similarly, the Barents Euro-Arctic Council in the Kirkenes Declaration recognized it as a serious problem that requires international co-operation.[16] Despite this push towards international co-operation and aid for dealing with its spent fuel problem, the Russian Navy has continued to operate nuclear powered submarines and is presently engaged in building and launching new vessels that rely on nuclear propulsion.[17]

This paper argues that the international community is undermining principles of international environmental law, such as state responsibility and co-operation. Russia has not been admonished for its violation of existing treaty law, such as the London Convention,[18] and has instead become the beneficiary of international aid.[19] By reconstructing the problem as regional, Russia has avoided the issue of state responsibility. It has further ignored the precautionary approach and has launched new submarines as well as proposing the creation of floating nuclear plants for the Arctic communities based on naval reactor designs.[20] Regional co-operation has become nothing more than a military subsidy in that it allows the Russian Navy to avoid diverting portions of its operational budget into nuclear waste disposal and treatment.

Before analyzing this problem from the principles of state responsibility and co-operation, it is first necessary to outline the scope and magnitude of the nuclear waste problem.

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at 15-21.

13. Kirkenes Declaration, *supra* note 11, at 200.

14. The eight Arctic nations are Denmark, Finland, Sweden, Norway, Iceland, the Union of Soviet Socialist Republics, Canada, and the United States of America. *See* Kirkenes Declaration, *supra* note 11, at 200.

15. *Id.*

16. *Declaration on Cooperation in the Barents Region, reprinted in* YOUNG, *supra* note 11, at 217.

17. The SSBM Yuri Dolgoruky, the lead boat of the new Borey class, is under construction at Severodvinsk. *See* Alison Clayton & Ian Kemp, *Russian Navy Readiness Remains Despite Cuts*, JANE'S DEFENCE WKLY, Sept. 9, 1998, at 8.

18. *Intergovernmental Conference on the Convention on the Dumping of Wastes at Sea: Final Documents*, Nov. 13, 1972, 11 I.L.M. 1291 (as amended in 1996, the chief international convention for the control of deliberate disposal of substances at sea). The 1996 Protocol takes an even greater precautionary approach to dumping by creating a reverse listing. Article 4(1)(c) "prohibits the dumping of any wastes" other than those listed in annex 1. *Id.* at art. 4(1)(c).

19. *Id.* at art. VIII, X.

20. *Russia Nuclear Power Plant in Works*, GLOBE AND MAIL, Sept. 11, 1997, at A17.

## II. DEFINING THE NORTHERN FLEET'S WASTE PROBLEM

Throughout the 1970s and 1980s, the Former Soviet Union (FSU) engaged in an extensive submarine building program, culminating in the construction of 248 submarines.[21] Over the years, the FSU has suffered fifty-two known accidents involving nuclear submarines or vessels.[22] Before 1992, the navy often dumped spent fuel and reactor compartments, along with low level waste, into the Barents Sea.[23] In the area surrounding Novaya Zemlia, the navy has dumped two submarines, one with two loaded reactors, the other with a reactor containing spent fuel.[24] In total, thirteen submarine reactors were disposed of in the area;[25] six of them containing varying amounts of spent fuel.[26] Dumping was typically carried out when a submarine was damaged or when its fuel could not be extracted safely and put into interim storage to await reprocessing.[27] This occurred despite domestic and international prohibitions against dumping.[28]

Due to a combination of fiscal restraint and the START agreements, the rate of decommissioning has rapidly accelerated.[29] By 1998 the FSU had retired approximately 167 submarines and was averaging about twenty submarines per year.[30] In the Northern Fleet alone, there are presently 132 inoperative reactors in decommissioned vessels,[31] many of which have fuel assemblies remaining in the reactors because of the critical shortage of storage space.[32]

The FSU procedure for dealing with spent fuel involves off loading the fuel onto service ships, which then transport it to fuel depots for temporary storage. After cooling, the spent fuel is transported by rail to the Mayak reprocessing plant in the Urals.[33] The contaminated reactor

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21. Handler, *supra* note 2, at 15.

22. BAKLANOV ET AL., *supra* note 3, at 44.

23. *Id.*

24. Jason H. Eaton, *Kicking the Habit: Russia's Addiction to Nuclear Waste Dumping at Sea*, 23 DEN. J. INT'L L. & POL'Y 287, 293 (1995).

25. Handler, *supra* note 2, at 16.

26. *Id.*

27. *Id.*

28. International concern provoked numerous reports of radioactive waste dumping. *Id.*

29. *Id.* at 16. The two START agreements are: Treaty on the Reduction and Limitation of Strategic Offensive Arms, July 31, 1991, U.S.-U.S.S.R., *reprinted in* JOZEF GOLDBLAT, ARMS CONTROL: A GUIDE TO NEGOTIATIONS AND AGREEMENTS 591 (1994) [hereinafter START I]; Treaty on Further Reduction and Limitation of Strategic Offensive Arms, Jan. 3, 1993, U.S.-U.S.S.R., reprinted in *id.* at 697 [hereinafter START II].

30. Handler, *supra* note 2, at 15.

31. *Id.* at 16.

32. INVENTORY, *supra* note 9, at 90.

33. Handler, *supra* note 2, at 16.

compartments are then sealed up and stored afloat.[34] Due largely to fiscal problems, the FSU has not been able to afford the cost of transportation and reprocessing.[35] Consequently, approximately 49,000 spent fuel assemblies are now sitting in interim storage,[36] some being stored improperly at outdoor sites.[37]

It is difficult to assess the extent of the environmental damage from the FSU submarine program. It is generally believed that there is wide spread "low level contamination" throughout the entire fleet support facility.[38] Some recent reports have found an eight-fold increase in radioactivity in the sediment found around the Kola bases in the last three years.[39] The amount of Cobalt 60 found in the vicinity of the naval base at Poljarny has increased from 10(bq/kg) to 80 (bq/kg).[40] Scientists from the Russian Academy of Science's Marine Biology Institute discovered that levels of Caesium 137 in Andreeva Bay near Norway had also increased.[41] These increases are likely due to deteriorating storage facilities.[42] A recent European Commission report concluded, "the storage situation constitutes a major hazard to the population of the area and the environment."[43]

However, a 1996 review of studies carried out on radioactive nuclides in the region concluded that most of the marine pollution was composed of Caesium 137 and Strontium 90, both of which could be traced directly to the Chernobyl accident and nuclear atmospheric tests carried out in the Soviet north.[44] This finding lends support to an early International Atomic Energy Agency (IAEA) study that found fine grain ocean sediment actually traps radioactivity and limits environmental damage.[45] This has led some to suggest that the dumping option may be

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34. *Id.* at 16. It is important to differentiate between the high level waste (the spent fuel) and the low level radioactive waste (reactor compartments). For a description of what is involved in decommissioning a nuclear submarine. *See Committee on Merchant Marine and Fisheries House of Representatives on Oversight of the Ocean dumping Act and National Ocean Pollution Planning Act and the Disposal of Defueled, Decommissioned Nuclear Submarines*, 97th Cong. 16-17 (1982) (statement of Carl Schmidt, U.S. Naval Nuclear Propulsion Program Director).

35. Handler, *supra* note 2, at 16.

36. INVENTORY, *supra* note 9, at 92.

37. York, *supra* note 7, at A1.

38. Handler, *supra* note 2, at 18. The storing of waste outside creates the risk that the containers will develop cracks as a result of thawing and freezing. *See* Thomas Nilsen, *Nuclear Waste Storage in Andreeva Bay* (visited Oct. 9, 1999) <http://www.Belona.no/e/fakta/fakta87.htm>.

39. Rob Edwards, *Hot Waters*, NEW SCIENTIST, May 9, 1998, at 11.

40. *Id.* (According to Bellona these high levels of Cobalt are indications that storage of submarine reactors holding liquid waste in the vicinity are corroding.)

41. *Id.*

42. *Id.*

43. INVENTORY, *supra* note 9, at 119.

44. BAKLANOV ET AL., *supra* note 3, at 100.

45. David Schneider, *Not In My Backyard: Could Ocean Mud Trap Nuclear Waste*

a safe environmental solution to Russia's problem.[46]

The immediate absence of extensive radioactive marine contamination does not mean that a problem does not exist. Almost all of the dumped naval reactors were filled with a special hardening solution to prevent salt-water deterioration, which means it may be some time before the effects of the contamination begin to appear in the environment.[47] The potential for an accident also increases as more submarines await decommissioning or are scrapped.[48] The shortage of interim storage facilities poses grave hazards and there have already been reports of leakages and accidents.[49] Russian Deputy Atomic Energy Minister Nikolay Yegorov has stated that "matters worsen every year . . . and could turn into a catastrophe worse than Chernobyl."[50] Government statements such as this are of obvious concern to Russia's northern neighbors.

The lack of Russian government funding resulted in only two submarines being scrapped in 1997 for both the Pacific and Northern Fleets.[51] In addition, at the current rate of fuel shipment, it will take thirty to forty years to reprocess all of the spent fuel.[52] In spite of these facts, the Russian Navy has continued operations and a nuclear building program. In 1996 the Navy launched the much delayed nuclear powered cruiser, Peter the Great, with an estimated operating cost of U.S. $50-100 million per year,[53] as well as laying the keel of the nuclear submarine Yuri Dolgoruki.[54] The Russian Navy announced in 1998 that it hoped to launch two nuclear submarines in 1999[55] and Admiral Oleg Yerofeyev indicated that Russia's building program will now focus on higher technology boats because it makes "sense to have fewer vessels but of a higher quality."[56] The Russian Navy demonstrated its opera-

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*from Old Russian Subs*, SCIENTIFIC AMERICAN, Mar. 1997 at 20, 21.

46. The IAEA has studied plutonium that was dispersed by a downed B-52 bomber of the coast of Greenland. Charles D. Hollister of the Woods Hole Oceanographic Institute has been vocal in supporting a study of the dumping option for subs. *Id.* at 22.

47. Eaton notes that witness accounts indicate that the navy often fired at nuclear waste containers to quicken their sinking. Eaton, *supra* note 24, at 293.

48. In December 1995 the Northern Fleet failed to pay its electricity bill and had its power cut resulting in a failure of the cooling system and overheating of one reactor. *See* York, *supra* note 7, at A12.

49. BAKLANOV ET AL., *supra* note 3, at 188. One defueled reactor compartment was lost at sea in 1995 whilst being towed from Severodvinsk to Murmansk for storage. Handler, *supra* note 2, at 17.

50. Al Venter, *Russian Nuclear Neglect May Cause Next Chernobyl*, JANE'S DEFENCE WKLY., Apr. 7, 1999, at 8.

51. Handler, *supra* note 2, at 19.

52. *Id.*

53. *Russia Arms for Oblivion*, ECONOMIST, Nov. 30, 1996, at 47.

54. *Id.*

55. Clayton & Kemp, *supra* note 17, at 8.

56. *Id.*

tional capability in December 1997 when the Russians tested ballistic missiles from submarines in the Barents Sea.[57] All of this information supports the conclusion that severely limited Russian Navy funds have been directed towards operations and building as opposed to dealing with the waste problem.

Though construction of new boats has fallen behind schedule[58] and operations for the Northern Fleet have declined as a result of recent troubles in the Russian economy,[59] analysts still believe that submarine and anti-submarine warfare will continue to have the "highest priority" in terms of Russia's defense expenditures.[60] Recent government documents indicate that Russia is still planning to allocate three and-a-half percent GDP for defense appropriations in the 1998-2025 period.[61] Russia has sought extensive foreign co-operation in dealing with its nuclear problems.[62] As early as 1992, it began seeking aid from the United States; but despite its pleas for assistance in dealing with nuclear waste, Russia has still commissioned several nuclear vessels in ensuing years.[63] Much of the Russian interest in Arctic co-operation has been in attempt to obtain environmental aid to deal with self-inflicted problems.[64] As part of a recent Russian-Norwegian bilateral agreement, the Norwegian government has agreed to provide assistance to clean up the Andreeva Bay sight, build rail cars for shipping waste and begin a pilot project to deal with a contaminated submarine tender named the *Lepse*.[65] The Norwegian parliament has been adamant that it will not provide financial assistance if the money can be used to support the operations of the Russian Navy.[66] However, simply by paying for a portion of the clean up, the Norwegians are relieving the Russians of the need to divert resources from their naval operations budget into waste management. In that sense, co-operation and aid serve as indirect military subsidies.

The increase in international co-operation has not changed Russian

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57. *Cold Wars in Cold Waters*, U.S. NEWS & WORLD REP., Mar. 23 1998, at 19.

58. Clayton & Kemp, *supra* note 17, at 8.

59. *Id.*

60. Norman Polmar, *The Soviet Navy*, PROCEEDINGS, Feb. 1998, at 88.

61. *See* Richard F. Staar, *Russia's New Blueprint For National Security*, 26 STRATEGIC REV., 31, 34 (1998).

62. *Japan Asks U.S., Russia, IAEA for Help in Nuke Accident*, MALAY. GEN. NEWS, Oct. 1, 1999, at A1; *Democracy and Investment New Focus of EU Assistance to Russia, Ukraine and Other Newly Independent States*, RAPID, Dec. 22, 1998, at 1.

63. Gabriel Schonfeld, *Underwatergate*, NEW REPUBLIC, Apr. 27, 1992, at 20.

64. YOUNG, *supra* note 11, at 66.

65. Igor Kudrick, *Russian-Norwegian Commission on Radwaste Holds First Meeting in Moscow*, (July 31, 1998) (visited Nov. 8, 1998) <http://www.bellona.no/e/russia/nfl/news/98073>.

66. Thomas Nilsen, *Nuclear Waste Cleanup to Start in Russian Arctic*, (Jun. 2, 1998) (visited Nov. 3, 1998) <http://www.bellona.no/e/russia/nfl/news/980731>.

behavior or policy on contamination in the Barents.[67] The Northern Fleet continues to generate 5000 tons of solid radioactive waste each year despite the absence of a comprehensive plan to deal with it.[68] In October 1997, the Russian government announced that it planned to build a series of floating nuclear power plants, based on naval reactor designs, to supply Siberian towns with electricity.[69] This plan would require the barges to be towed to Murmansk for servicing and refuelling.[70] The Norwegian Defense Minister, Jorgen Kosmo, condemned the initiative, stating, "[t]his is not the kind of progress I am hoping for from Russia. . . . They should use their first class engineers to make existing power plants more secure, rather than try to realise a vision of floating plants."[71]

As well as creating problems in the Barents region with nuclear waste, Russia has also been complicit in the proliferation of the problem in the developing world. In the late 1980s, Russia leased a nuclear attack submarine (SSN) to India, as well as providing technicians and assistance, which served as basis for the development of an indigenous Indian SSN project.[72] This occurred in spite of Russia's own problems with the disposal of waste from the Northern Fleet[73] and is indicative of the blind nature of Russian policy on the costs and impacts of nuclear technology.[74]

Despite Russia's willingness to accept financial aid to deal with the Barents problem, it has been less than forthcoming with information about the situation. It has refused Norwegian experts access to the fuel depot at Andreeva Bay, fifty kilometers from Norway.[75] As one senior official stated, "[n]o nation would want this kind of storage facility so close to its border. We would like to see it for ourselves, and it concerns us that we cannot."[76] The cloak of secrecy extends not only to foreign, but also to domestic authorities. In 1996, inspectors from Gosatomnadzor, the civil radiation protection agency, were barred from inspecting the site.[77]

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67. Ethirajan Anbarasan, *Nuclear Watch in the Far North; Scandinavian Countries Concerned Over the Concentration of Russian Nuclear Material on the Kola Peninsula*, UNESCO COURIER, Nov. 1, 1998, at 10.

68. INVENTORY, *supra* note 9, at 92.

69. *Norway goes Critical over Floating Reactors*, NEW SCIENTIST, Oct. 4, 1997, at 22.

70. *Id.*

71. *Id.*

72. Rahul Bedi, *India Presses Ahead with SSN to Boost Navy's Nuclear Profile*, JANE'S DEFENCE WKLY., July 22, 1998, at 26.

73. INVENTORY, *supra* note 9.

74. *Id.*

75. Bond, *supra* note 1, at 22.

76. *Id.*

77. Deborah MacKenzie, *Russian Secrecy Could Sink Nuclear Aid*, NEW SCIENTIST, Apr. 20, 1996, at 4.

The Russians have effectively ignored the principle of state responsibility and twisted the concept of co-operation. The Northern Fleet situation demonstrates the contradictory nature of state responsibility and co-operation and shows how a country may become the beneficiary of co-operation without having to accept liability or even modify its hazardous behavior.[78] As the following sections will demonstrate, international environmental law is inadequate to deal with this type of situation.

## III. ISSUES OF STATE RESPONSIBILITY

In order to examine the effect of Russian policy regarding nuclear waste, it is necessary to look at both treaty law and customary international law in the area of state responsibility.

### *A. Treaty Law*

Part of the difficulty with imposing any liability on the FSU for contamination in the Barents Sea is that the pollution source is military based, not civilian. Many treaties specifically exclude military pollution sources.[79] The 1972 London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter[80] prohibits marine dumping in Article 4,[81] but Article 7 specifically excludes vessels that are entitled to sovereign immunity under international law.[82] Article 10(4) of the 1996 Protocol to the London Convention[83] also exempts those vessels with sovereign immunity.[84] Because military vessels are subject to such immunity, these articles effectively remove the Barents

78. *Id.*

79. *See* Third United Nations Conference on the Law of the Sea: Final Act, Nov. 1982, 21 ILM 1245 [hereinafter Third United Nations]; Contracting Parties to the Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter (London Convention), 1972: Final Act, 1996 Protocol and Resolutions, 36 ILM 1 [hereinafter London Convention].

80. London Convention, *supra* note 79.

81. *Id.* at 9.

82. *Id.* at 10.

83. Protocol to the Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter, 1972 and Resolutions Adopted by the Special Meeting (as adopted by the Special Meeting of the Contracting Parties to the London Convention 1972 on Nov. 7, 1996) LC/SM 1/6, Nov. 14, 1996.

84. Article 10 (4) states:

> Application and Enforcement: This protocol shall not apply to those vessels and aircraft entitled to sovereign immunity under international law. However, each Contracting Party shall ensure by the adoption of appropriate measures that such vessels and aircraft owned or operated by it act in a manner consistent with the object and purpose of this Protocol and shall inform the Organization accordingly.

*Id.*

problem from the reach of the conventions, since most of the threat stems from submarines awaiting de-fuelling.

Some commentators have suggested that once a submarine is decommissioned it loses its sovereign immunity and that a de-fuelled submarine dumped at sea would be subject to London Convention regulation.[85] This argument is based on the definition of "warship" contained under Article 29 of the United Nations Law of the Sea Convention,[86] which requires the ship to be under the command of an officer.[87] But this argument leads one to make fine distinctions in order to identify the point at which decommissioning takes place; something that is very difficult to do in the Russian case, where much of the submarine scuttling occurred in an emergency context.[88]

Even if the London Convention was applicable to waste that was dumped into the Barents Sea; the convention would still be of little use in attempting to impose state responsibility. First, the Convention did not come into effect until 1976 for the Soviet Union, by which point considerable amounts of dumping had already occurred.[89] Second, even under the 1996 Protocol, there are no specifics on responsibility and liability for dumping.[90] Article 15 simply states that "the Contracting Parties undertake to develop procedures regarding liability arising from the dumping or incineration at sea of wastes."[91] This means that countries in the Barents Region have no recourse against the FSU should the contamination problem increase, as previously dumped waste begins to work its way into the environment and existing storage sites deteriorate.

The one convention that could have effectively imposed state responsibility on the FSU for contamination in the Barents Sea was the Brussels Convention on the Liability of Operators of Nuclear Ships.[92] It applied to both civil and naval vessels[93] and, under Article 2(1), held that "[t]he operator of a nuclear ship be absolutely liable for any nuclear damage upon proof that such damage has been caused by a nuclear incident involving the nuclear fuel of, or radioactive products or waste

85. *See* W. Jackson Davis and Jon M. Van Dyke, *Dumping of Decommissioned Nuclear Submarines at Sea*, 14 MARINE POL'Y 467, 475 (1990).

86. *See* Third United Nations, *supra* note 78, at 1275.

87. *Id.*

88. For example, in April 1970 the Soviets scuttled a November Class SSN off the coast of Spain following a loss of stability in pitch caused by a fire on board. *See* BAKLANOV ET AL., *supra* note 3, at 44.

89. *See generally* London Convention, *supra* note 79.

90. *See id.*

91. *Id.* at art. 15.

92. Convention on the Liability of Operators of Nuclear Ships, May 25, 1962, 57 AM. J. INT'L L. 268 (1963), *reprinted in* PHILLIPPE SANDS, CHERNOBYL: LAW AND COMMUNICATION 82 (1988).

93. *Id.* at art. 1(1).

produced in such a ship."[94] However, the convention was never signed by either the U.S. or the U.S.S.R. and did not enter into force.[95] The fact that none of the countries with naval programs relying on nuclear propulsion signed the treaty indicates the ultra-hazardous nature of the activity.[96]

Similarly, Russia is not a party to the recently concluded Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.[97] Even if it were a party, the agreement would be of little use in imposing responsibility and liability on the FSU's government. In the preamble, the Convention reaffirms "the ultimate responsibility for ensuring the safety of spent fuel and radioactive waste management rests with the States."[98] However, Article 3(3) of the Convention explicitly exempts "radioactive waste within military or defence programmes" unless the Contracting Party decides to bring it within the Convention.[99] In the Russian case, it would be difficult to evaluate the applicability of the Convention since the decommissioning of nuclear submarines is in the process of being transferred from the Ministry of Defense to the civil Ministry of Atomic Energy.[100]

Even presuming the applicability of the Convention, the agreement is lacking in substance. There are no provisions within the Convention to impose liability on a state or civil operator for transboundary pollution caused by the mishandling of spent fuel.[101] The Convention does not even specify exact standards of storage for spent fuel. Rather, it simply requires that the contracting parties take appropriate steps to "ensure that . . . individuals, society, and environment are adequately protected against radiological hazards."[102] It then provides some very

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94. *Id.* at art. 2(1).

95. *Id.* at 83.

96. *Id.*

97. *Signing of Conventions: Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management* (visited Oct. 9, 1999) <http://www.iaea.org/worldatom/updates/jointa.html>.

98. Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, Sept. 5, 1997, 36 I.L.M. 1436, 1437, preamble (vi) [hereinafter Spent Fuel Convention].

99. *Id.* at 1440, art. 3(3). Article 3(3) states:

> This Convention shall not apply to the safety of management of spent fuel or radioactive waste within military or defence programmes, unless declared as spent fuel or radioactive waste for the purposes of this Convention by the Contracting Party. However, this Convention shall apply to the safety of management of spent fuel and radioactive waste from military or defence programmes if and when such materials are transferred permanently to and managed within exclusively civilian programmes.

*Id.*

100. It appears that reallocation of responsibility was made in May 1998. *See* Clayton & Kemp, *supra* note 17, at 8.

101. *See generally* Spent Fuel Convention, *supra* note 98.

102. *Id.* at art. 4.

general recommendations on storage.[103] The absence of precise rules and a provision for liability in the case of an accident results in hard law becoming soft law due to the absence of content.[104] Further, under Article 36(3),[105] the Convention allows a contracting party to impose a veil of secrecy around information dealing with military waste that the party chooses to bring under the auspices of the Convention.[106] This makes proving the negligence of a contracting party extremely difficult.

Conventions like the Spent Fuel Convention that rely largely on the domestic law of contracting states to enforce standards of safety and responsibility are of limited worth. The Russian Navy dumped spent fuel despite its own regulations and those of other domestic agencies against it.[107] The present Russian Constitution contains provisions under Article 42 that hold the state liable for domestic ecological damage.[108] It states that "[e]veryone has the right to a favourable environment, to reliable information about its conditions, and to compensation for any loss caused by ecological damage to his health or property."[109] The constitution also indicates that the general principles and norms of international law are an integral part of Russian law if the Russian Federation is party to an agreement.[110] However, this is of little use in attempting to enforce state responsibility since the Russians have vigorously avoided conventions that impose liability and most nuclear law is now based on the concept of "incentives" as opposed to punitive sanctions.[111]

Western states, in providing assistance to deal with Russia's military waste problem, need to tie the aid to specific hard law provisions concerning state responsibility. One particular model might be the

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103. *Id.*

104. Katia Boustany, *The Development of Nuclear Law or the Art of Legal Evasion*, 51 NUCLEAR L. BULL. 39, 44 (1998).

105. Spent Fuel Convention, *supra* note 98, at 1450, art. 36(3). Article 36(3) states:

> With respect to information relating to spent fuel or radioactive waste falling within the scope of this Convention by virtue of paragraph 3 of Article 3, the provisions of this Convention shall not affect the exclusive discretion of the Contracting Party to decide: (i) whether such information is classified or otherwise controlled to preclude release (ii) whether to provide information referred to in sub-paragraph (i) above in the context of the Convention; and (iii) what conditions of confidentiality are attached to such information if it is provided in the context of this Convention.

*Id.*

106. *Id.*

107. Eaton, *supra* note 24, at 297.

108. KONST. RF. art. 42, *reprinted in* S. E. FINER ET. AL., COMPARING CONSTITUTIONS 257 (1995).

109. *Id.*

110. *Id.* at art. 15.4.

111. *See, e.g.*, *Convention on Nuclear Safety*, 1994, 33 I.L.M. 1514 *reprinted in* INTERNATIONAL ATOMIC ENERGY AGENCY, CONVENTION ON NUCLEAR SAFETY: LEGAL SERIES NO. 16, 1 (1994) (This Convention lacks "hard" standards or any liability for radiological transboundary pollution).

Nordic Convention on the Protection of the Environment.[112] Article 3 gives citizens of contracting parties the right to bring cases before each other's courts in order to obtain compensation or to question the permissibility of an activity.[113] This would allow individuals in other Barents countries the right to seek redress within the Russian legal system for damage done by the nuclear activities of the Northern Fleet.

It may be argued, however, that some treaty law on nuclear matters works in direct opposition to the concept of state responsibility. For example, the Russians are party to the Vienna Convention on Early Notification of a Nuclear Accident,[114] which requires that notification be given to those states that are affected by a nuclear accident at any "radioactive waste management facility."[115] The state must also furnish information on the characteristics of the accident to the International Atomic Energy Agency (IAEA)[116] and to those "States which are physically affected."[117] Whilst, on the surface, the early notification appears to be a positive step, it may be argued that by providing notification of a nuclear accident involving the Northern Fleet, the Russians may claim that they have fulfilled their procedural obligations and that their liability is limited. In that case, the Convention shifts the onus and may result in a victim being accused of not acting to prevent damage and

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112. Nordic Convention on the Protection of the Environment, Feb. 19, 1974, 1092 U.N.T.S. 279, *reprinted in* SANDS, *supra* note 92, at 144.

113. *Id.* at 145. Article 3 states:

> Any person who is affected or may be affected by a nuisance caused by environmentally harmful activities in another Contracting State shall have the right to bring before the appropriate Court or Administrative Authority of that State the question of the permissibility of such activities, including the question of measures to prevent damage, and to appeal against the decision of the Court or the Administrative Authority to the same extent and on the same terms as a legal entity of the State in which the activities are being carried out. The provisions of the first paragraph of this Article shall be equally applicable in the case of proceedings concerning compensation for damage caused by environmentally harmful activities. The question of compensation shall not be judged by rules which are less favorable to the injured party than the rules of compensation of the State in which the activities are being carried out.

*Id.*

114. Vienna Convention on Early Notification of a Nuclear Accident, Sept. 26, 1986, 1439 U.N.T.S. 276, 25 I.L.M. 1370 (1986).

115. *Id.* at art. 1.

116. *Id.* at art. 2(a). The International Atomic Energy Agency is a specialized agency within the United Nations system, comprised of 129 Member States. The IAEA serves as the world's central intergovernmental forum for scientific and technical cooperation in the nuclear field, and as the international inspectorate for the application of nuclear safeguards and verification measures covering civilian nuclear programs. *Profile of the IAEA* (visited Oct. 9, 1999) http://www.iaea.org/worldatom/About/profile.shtml>.

117. Vienna Convention on Early Notification of a Nuclear Accident, *supra* note 114, at art. 2(a).

therefore being contributorily negligent.[118]

The recent Norwegian-Russian agreement on waste clean up specifically insulates the parties involved from any form of liability in case of an accident during the clean up.[119] This means that there is absolutely no recourse for liability either against the state, using treaty law, or on a civil basis against the companies participating in the project.

Treaty law in the areas of spent fuel management and liability for nuclear accidents are either non-applicable, in the case of the Russian Navy, or are based on incentive conventions and impose no requirements for state responsibility.[120] Therefore, the Northern Fleet and its environmental problems are beyond the reach of international treaty law.[121] This leaves only customary international law as a means of imposing liability should an accident occur.[122]

### *B. Customary Law*

There are many sources of customary international law that could impose a duty of state responsibility on the Russians for any transboundary pollution that might result from their nuclear activity in the Barents Sea.[123] In 1961, the United Nations passed Resolution 1629, which dealt with the issue of nuclear pollution.[124] It stated that "the fundamental principles of international law impose a responsibility on all States concerning actions which might have harmful biological consequences for the existing and future generations of peoples of other states."[125] The most frequently cited source of customary state responsibility is Principle 21 of the Stockholm Declaration,[126] which holds that states have a "responsibility to ensure that activities within their juris-

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118. This idea of notification limiting liability may also be applied to Ukraine and the existing situation with Chernobyl. *See* Justin Mellor, *The Negative Effects of Chernobyl on International Environmental Law: The Creation of The Polluter Gets Paid Principle*, 17 WIS. INT'L L. J. 65, 73-74 (1999).

119. Igor Kudrick, *Russian-Norwegian Commission on Radwaste holds first meeting in Moscow*, (visited Nov. 8, 1998) <http://www.bellona.no/e/russia/nfl/news/98073>.

120. Spent Fuel Convention, *supra* note 98, at art. 3.

121. *Id.*

122. Customary international law, in contrast to treaty law, is a consequence largely of uniformities in state behavior rather than formal writings resulting from extensive deliberation and negotiation. BURNS H. WESTON ET AL., INTERNATIONAL LAW AND WORLD ORDER 107 (3rd ed. 1997).

123. *See* G.A. Res. 1629, Nov. 28, 1961, *reprinted in* UNITED NATIONS RESOLUTIONS, Series I, Vol. VIII 241 (Dusan J. Djonovich ed., 1974)

124. *Id.*

125. *Id.*

126. *See* Stockholm Declaration of the United Nations Conference on the Human Environment, The United Nations Conference on the Human Environment, June 5-16, 1972, U.N. Doc. A/Conf.48/14 and Corr. 1, *reprinted in* 11 I.L.M. 1416 (1972) [hereinafter Stockholm Declaration].

diction or control do not cause damage to the environment of other States or of areas beyond their national jurisdiction."[127] The Rio Declaration,[128] in Principle 2, reaffirms the issue of state responsibility.[129] It also recognizes, under Principle 16, that "the polluter in principle should bear the cost of pollution."[130]

Besides the Rio Declaration and Stockholm Declaration, there are also legal precedents such as the *Trail Smelter* arbitration[131] and the *Corfu Channel* case,[132] which imply a custom of state responsibility. The *Trail Smelter* arbitration established the principle that "no state has the right to permit the use of its territory in such a manner as to cause injury . . . in or to the territory of another or the properties or persons there in."[133] The *Corfu Channel* case held that every state has an "obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States."[134]

However, the weight of these precedents has been undermined in recent years by the Sandoz chemical fire[135] and the Chernobyl accident,[136] in which liability for damage was not imposed on the polluter states.[137] In fact, it can be argued that Chernobyl has resulted in a "polluter gets paid principle," in which the polluter becomes the recipient of aid rather than compensating those states that are harmed.[138] By 1995,

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127. *Id.* at princ. 21.

128. The Rio Declaration on Environment and Development, U.N. Conference on Environment and Development, Agenda Item 9, U.N. Doc. A/Conf.151/5/Rev.1 (1992), *reprinted in* STANLEY P. JOHNSON, THE EARTH SUMMIT: THE UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT (UNCED), 117-121 (1992) [hereinafter Rio Declaration].

129. *Id.* at 118.

130. *Id.*

131. *See* Trail Smelter Arbitration (U.S. v. Can.) 1931-1941, 3 R.I.A.A. 1905, *reprinted in* INTERNATIONAL LAW: CHIEFLY AS INTERPRETED AND APPLIED IN CANADA 1209 (Hugh K. Kindred et al., eds, 4th ed., 1987).

132. *See* Corfu Channel (U.K. v. Alb.) 1949 I.C.J. Rep. 4, *reprinted in* INTERNATIONAL LAW: CHIEFLY AS INTERPRETED AND APPLIED IN CANADA, *supra* note 131, at 1229.

133. *Trail Smelter Arbitration*, 3 R.I.A.A. 1905, at 1212.

134. *Corfu Channel*, 1949 I.C.J. 4, at 1231.

135. *See generally* Devereaux F. McClatchey, *Chernobyl and Sandoz One Decade Later: The Evolution of State Responsibility for International Disasters, 1986-1996*, 25 GA. J. INT'L & COMP. L. 659, at 661 (1996). On November 1, 1986, a fire broke out in a chemical warehouse owned and operated by the Sandoz Corporation in Schweizerhale, near Basel, Switzerland. *Id.* The fire spread quickly and because of all the water used water used by the fire departments to combat the fire, between 10,000 to 15,000 cubic meters of chemically-infested water seeped into the Rhine River through the Sandoz sewer system. *Id.*

136. *Id.* On April 26, 1986, a reactor exploded at a nuclear power plant located in Chernobyl, U.S.S.R. *Id.* As a result of the explosion, a devastating amount of radioactive emissions were released into the atmosphere, spreading quickly throughout the Soviet Republic and eventually across the entire face of Europe. *Id.*

137. *See* Mellor, *supra* note 118, 65-66 (1999).

138. *Id.*

the Ukraine had secured U.S. $2.3 billion from western nations to close the Chernobyl plant and begin a full cleanup.[139] The recent Norwegian-Russian agreement on dealing with pollution from the Northern Fleet provides U.S. $60 million for clean up purposes, but fails to attach any meaningful provisions surrounding state responsibility.[140] This serves only to reinforce the polluter gets paid principle, rather than one of state responsibility. It can be argued that the indulgences shown by the West in the Chernobyl affair have been counterproductive in trying to get the FSU to accept responsibility for its own nuclear contamination.[141] As one commentator has suggested, one must wonder "given the Russian Federation's persistent delay in adopting legislation on nuclear third party liability and on safety, whether such indulgence has not in fact been counterproductive."[142] At the very least, there is no incentive to change or modify their current behavior. This reluctance to change was confirmed at the recent conclusion of the Russian-Norwegian agreement, when the Russian Foreign Minister, Yevgeny Primakov, clearly indicated that the agreement in no way applies to "those submarines that are patrolling the region, that are on active duty."[143]

A further source of customary law for imposing state responsibility is found in the ILC's *Report of the Working Group of International Liability for Injurious Consequences Arising Out of Acts Not Prohibited by International Law*.[144] Article 1(a) indicates that draft articles apply to activities that are not prohibited by international law but involve the risk of transboundary harm.[145] This would clearly bring Russia's fuel storage at Andreeva Bay, fifty kilometers from Norway, within its scope. Article 3 acknowledges that states do not have unlimited freedom to carry on activities within their jurisdiction and that they have "a general obligation to prevent or minimize the risk of causing transboundary harm."[146] The draft articles also make states liable to pay compensation for activities that create harm.[147] However, Article 16 specifically allows data and information on national security to be withheld by the state.[148] This exemption for national security purposes

139. *See* Jeff Sallot, *G-7 Nations to Finance Chernobyl Closing*, GLOBE AND MAIL, June 19, 1995, at A13.

140. *Id.*

141. Boustany, *supra* note 104, at 53.

142. *Id.*

143. Richard Paddock, *Russia Signs Accord With Norway to Dismantle Aging Nuclear Subs*, L.A. TIMES, May 27, 1998, at A4.

144. Report of the Working Group of International Liability for Injurious Consequences Arising out of Acts not Prohibited by International Law and Draft Articles from Report of the International Law Commission on the Work of its Forty-Eighth Session, U.N. GAOR, 51st Sess., Supp. No.10, at 235-244, U.N. Doc. A/51/10 (1996).

145. *Id.* at art. 1(a).

146. *Id.* at art. 3.

147. *Id.* at art. 5.

148. *Id.* at art. 16.

would allow the FSU to put the Northern Fleet beyond the reach of the articles.[149] Absent information on the matter, legal causation would be very difficult to prove.

Even if causation could be proved and state liability imposed by means of customary law, the present economic state of Russia would prevent the payment of any form of compensation to states suffering transboundary harm. Recent studies indicate that Russia has a "virtual economy," with its economy appearing larger than it actually is.[150] Businesses frequently operate without paying taxes to the central government, which acts as a type of subsidy to unproductive sectors of the economy, further worsening the crisis.[151] The Red Cross has gone as far as warning that starvation is possible if the economy does not improve in the near future.[152] In Russia's case, the impecuniosity of the polluter may serve to make liability for its actions meaningless.

Russia's obligations of customary state responsibility come into direct conflict with its existing treaty obligations. Under the Treaty Between the USA and the USSR on the Reduction and Limitation of Strategic Offensive Arms (START I),[153] there are restrictions on the total number of submarine launched ballistic missiles (SLBM) and launchers that Russia may posses in conjunction with other parts of its strategic deterrent.[154] Under Article 1(3) of the Treaty Between the USA and Russia on Further Reduction and Limitation of Strategic Offensive Arms (START II),[155] the Russians are required, by 2003, to reduce the number of deployed warheads on SLBMs to 1750.[156] Compliance with the provisions of START I & II has aggravated the Russian Navy's problems with radioactive waste by requiring the decommissioning of nuclear powered submarines.[157] A European Commission report found that future projections on the quantity of solid nuclear waste produced

149. The Barents Region has always held great strategic importance for the Russians and would clearly qualify as a matter within national security. This was recognized by the Russian minister for foreign affairs, Vyacheslav Molotov, in his dealings with his Norwegian counterpart in 1944 and it remained critical during the cold war. *See* GEOFFREY TILL, NORTHERN WATERS 69 (Clive Archer & David Scrivener eds., 1986).

150. Clifford G. Gaddy & Barry W. Ickes, *Russia's Virtual Economy,* 77 FOREIGN AFF. 53, 54 (1998).

151. *Id.* at 56-57.

152. Geoffrey York, *Red Cross Warns of Starvation in Russia,* GLOBE AND MAIL, Oct. 1, 1998, at A1.

153. START I, *supra* note 29, at 591.

154. The total number of deployed ICBMs, ICBM launchers, SLBMs and launchers cannot exceed 1600. *See id.* at art. II(1)(a).

155. START II, *supra* note 29, at 697.

156. The aggregate numbers for each Party shall not exceed a number between 1700 and 1750, for warheads attributed to deployed SLBMs or such lower number as each Party shall decide for itself, but in no case shall such number exceed 1750. *See id.* at art. I(3), I(4)(a).

157. INVENTORY, *supra* note 9, at 98.

would depend on the extent of Russian compliance with the START agreements before 2003.[158]

The START agreements put Russia in a legal double bind: the state can comply with the agreements despite inadequate storage facilities for waste and thereby violate the principle of state responsibility by creating potential transboundary pollution,[159] or it can comply with the customary principle of international environmental law and suffer the ramifications of violating the arms control agreements. Russia is essentially caught between two different forms of state responsibility.

The effects of disarmament on the normative values of international environmental law are largely ignored. There is little recognition of Russia's legal double bind. Also, U.S. assistance under the Cooperative Threat Reduction Program has been limited to providing tools for scrapping the submarines and the program has focused more on the safeguarding and storing of fissionable material from Russian nuclear weapons.[160]

State responsibility can not be achieved by means of treaty law, nor is it realistic to impose state responsibility by way of customary law. As the next section demonstrates, the weak concept of state responsibility for transboundary harm has been further diluted by the principle of co-operation.

## IV. CO-OPERATION

Mikhail Gorbachev, in a 1987 speech in Murmansk, spoke of the need for co-operation amongst Arctic nations and the urgent need to draw up an "integrated comprehensive plan for protecting the natural environment of the North."[161] This proposal echoes the customary principle of co-operation as stated in the preamble to the Stockholm Declaration, which holds that "[a] growing class of environmental problems, because they are regional or global in extent or because they affect the common international realm, will require extensive co-operation. . .by international organizations in the common interest."[162] The concept was further recognized in Principle 7 of the Rio Declaration, which affirmed that "States shall cooperate in a spirit of global partnership to conserve,

158. *Id.*

159. *Id.*

160. Handler, *supra* note 2, at 19. The program of threat reduction (Nunn-Lugar program) has focused on the fear of proliferation of FSU warheads. *See Military Implications of START I and START II: Hearings Before the Committee on Armed Services*, 102nd Cong., Sess. 2, 89 at 90 (1992).

161. Mikhail Gorbachev, Speech in Murmansk at the Ceremonial Meeting on the Occasion of the Presentation of the Order of Lenin and the Gold Star to the City of Murmansk, Oct. 1, 1987 (visited Oct. 28, 1998) <http://www.sipri.se/projects/SAC/871001.html>.

162. Stockholm Declaration, *supra* note 126, at pmbl.

protect and restore the health and integrity of the Earth's ecosystem."[163]

These principles are given meaning by the Arctic Environmental Protection Strategy (AEPS) and the initiatives of the Barents Euro-Arctic Region (BEAR). AEPS was established in 1991 by the eight Arctic nations and focuses on co-operation in the areas of indigenous people, sustainable development, environmental protection and the role of science in the Arctic.[164] BEAR was established in Kirkenes, Norway in 1993, and involves co-operation among Denmark, Finland, Iceland, Norway, Sweden and Russia.[165] It has a two-tier structure involving a regional council comprised of county and indigenous representatives and a national council of government representatives.[166]

Both of these regimes recognize the importance of nuclear contamination in the Arctic and are involved in initiatives to assist with clean up. However, AEPS and BEAR are programmatic in nature, and focus on the co-ordination of activities as opposed to the "promulgation of regulatory measures intended to guide the behaviour of various classes of subject."[167] The hope with BEAR is that this approach will eventually lead to a dense web of co-operation in the region.

BEAR's Kirkenes Declaration specifically mentions that the participants recognize the importance of international co-operation in the areas of monitoring radioactivity, enhancing safety at nuclear facilities and rehabilitating areas polluted as a result of nuclear facilities.[168] It further emphasizes the need to create "international financial arrangements," as well as encouraging "national financial contributions."[169] Such provisions seem to indicate that increased regional and Arctic co-operation is in accord with the customary international legal principle of co-operation.

It can be argued, however, that the initiatives, rather than giving life to the customary principle of co-operation, simply redefine a Russian national problem as a regional problem and in doing so undermine the principle of state responsibility. Co-operation has come to be defined strictly as western funding. As the Barents Euro-Arctic Council environmental task force indicated, "[t]he funding requirement is great and the projects planned are under-funded."[170] Much of the funding for initial pilot projects has come through the Nordic Environment Finance

163. Rio Declaration, *supra* note 128, at princ. 7.

164. Davor Vidas, *Polar Marine Environment in Regional Cooperation*, *in* PROTECTING THE POLAR MARINE ENVIRONMENT 110 (Davor Vidas ed. forthcoming).

165. Kirkenes Declaration, *supra* note 11, at 217.

166. *Id.* at 218.

167. *Id.* at 123.

168. *Id.* at 220.

169. *Id.*

170. *The Barents Euro-Arctic Council, The Environment Task Force, Report to the Third Ministerial Conference*, St. Petersburg, Oct, 9, 1997, at 9.

Corporation, which is supported by the governments of Nordic countries.[171] Oran Young has pointed out that the major attraction of AEPS for the Russians is the "prospect of western assistance" with environmental concerns.[172] When viewed in this light, regional co-operation becomes a means to create a conduit of funds and to reduce potential liability. Clearly subregional programmatic initiatives such as the Kola Smelter Works and the Nuclear Waste Management Program have resulted in the victim paying considerable amounts of the abatement costs.[173] Some have suggested that this is the "normal procedure" for environmental projects dealing with transboundary pollution and that the benefit to countries such as Norway is that it puts the issue on the agenda.[174] However, heightened political awareness of a problem is a high price to pay for the undermining of an essential principle of international environmental law.

Co-operation in dealing with the problem of naval waste has been largely one sided. Though willing to accept aid, the Russians have been extremely secretive about the problem. Jorgen Kosmo, the Norwegian defense minister, has repeatedly criticized the lack of Russian co-operation and the veil of secrecy surrounding the issue.[175] Russia has denied Norwegian and U.S. officials information regarding the situation in the Lista fjord and has refused to let Norwegian scientists take samples in the area.[176] Naval officials have also denied access to Russian civil inspectors, thereby violating Principle 10 of the Rio Declaration. Principle 10 requires, at a national level, that "each individual shall have appropriate access to information concerning the environment that is held by public officials."[177]

The need to maintain a cloak of secrecy has also resulted in the abuse of human rights. The Russian state security apparatus arrested a retired naval captain named Alexandr Nikitin for treason, due to his involvement in a report detailing the environmental problems of the Northern Fleet.[178] This occurred despite the fact that the report is based on public sources.[179] The issue of the arrest was raised by Norwegian Prime Minister Jagland at the Second Council of Europe Summit, but this failed to produce any change in Russian policy.[180] It has been ar-

171. BAKLANOV ET AL., *supra* note 3, at 198.

172. Kirkenes Declaration, *supra* note 11, at 66.

173. Olav Schram Stokke, *Subregional Cooperation and Protection of the Arctic Marine Environment: The Barents Sea*, *in* PROTECTING THE POLAR MARINE ENVIRONMENT *supra* note 164, at 176.

174. *Id.* at 152.

175. Bond, *supra* note 1, at 22.

176. Nilsen, *supra* note 38.

177. Rio Declaration, *supra* note 128, at princ. 10.

178. *Russia's Dangerous Game*, NEW SCIENTIST, Apr. 20, 1996, at 3.

179. MacKenzie, *supra* note 77, at 4.

180. *Russian Secret and Retroactive Decrees Violate Human Rights* (visited Nov. 8,

gued that this type of action by the Russian government deters Western industrial firms who may wish to become involved in the clean-up process.[181]

Co-operation is hampered further by Russia's diffusion of responsibility for the handling of nuclear waste within its own domestic government bureaucracy. The Russian Ministry for Atomic Energy is gradually taking over the management of naval radioactive waste.[182] However, involved at a subordinate level are the Ministry of Defense, the Committee of Defense Branches of Industry, the Ministry of Transport and the Ministry of Construction.[183] The large number of subordinate agencies does not enhance the ease at which bilateral and regional co-operation may occur.

Russia becoming a party to the Spent Fuel Convention would not solve the contradictory nature of the principles of responsibility and co-operation surrounding nuclear waste. Section (vi) of the preamble reaffirms that the state is ultimately responsible for spent fuel, yet in section (ix) it affirms the importance of international co-operation in the matter.[184] The Convention merely serves as a legal articulation of these two contradictory principles.

As this section has demonstrated, responsibility can ultimately be undermined by regional and bilateral co-operation. The initiatives of countries like Norway and organizations such as BEAR do have the positive effect of cleaning up the problem, but they do so at the expense of watering down state responsibility.

## V. CONCLUSION AND FUTURE DIRECTIONS

The problem of nuclear waste from Russian naval sources is a pressing problem that requires immediate attention. It is not possible for other countries to impose state responsibility on the Russians for their nuclear waste habit through the use of treaty law. The Russians have vigorously avoided conventions that impose any form of liability and those conventions that do apply, such as the London Convention, either exempt ships or are not applicable to the military.[185] Any future

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1998) <http://www.bellona.no/e/press/9710.htm>. Nikitin was acquitted of all charges by a St. Petersburg City Court on December 29, 1999. However, prosecutors have appealed the case to the Supreme Court of the Russian Federation and the Russian Security Police have blocked his attempts to obtain a travel passport. *See* Igor Kudrik, *Nikitin Denied Travelling Abroad* (visited Feb. 22, 2000) <http://www.bellona.no/imaker?id+15508$sub=1>.

181. *Russia's Dangerous Game*, *supra* note 178, at 3.

182. Igor Kudrik, *Minatom Takes Over Naval Radwaste* (visited Nov. 8, 1998) <http://www.bellona.no/e/russia/nfl/news80930.htm>.

183. INVENTORY, *supra* note 9, at 10.

184. Spent Fuel Convention, *supra* note 98, at pmbl.

185. *See generally* Protocol to the Convention on the Prevention or Marine Pollution

treaty law will have to confront the problem of imposing state responsibility for military based pollution and not simply avoid the matter, as AEPS has tended to do.[186] There should be no differentiation between civil and military sources of pollution in terms of the issue of state responsibility.

Reliance on customary principles to produce a duty of state responsibility has become more difficult in light of the Sandoz and Chernobyl precedents.[187] Though much academic discussion is dedicated to this supposedly expanding concept, the practical realities of imposing responsibility by customary means are very difficult. In fact, it can be argued that the international assistance provided to deal with the Northern Fleet's waste problem serves as another counter precedent to the principle of state responsibility.

There is a definite need for regional and international cooperation in dealing with Russia's problem, but this should not come at the cost of ignoring the normative values of international environmental law. The focus of organizations such as BEAR on producing cooperation rather than a corresponding regulatory scheme has allowed Russia to continue to produce nuclear waste and further exacerbate the problem. Future cooperation should bear in mind the complementary principle of state responsibility. Though it may be unrealistic to expect Russia to make a substantial contribution to the cost of the clean up, it should at least be required to cease its harmful behavior. A failure to do so results in other states providing a military subsidy under the guise of environmental cooperation. States must be forced to confront the environmental consequences of their own militarization.

Future arms control agreements must also take into account the principles of international environmental law. In the case of the START agreements, no thought was given to the environmental consequences of disarmament. These concerns were secondary to the issues surrounding safeguarding and the proliferation of weapons as a result of arms reduction. Any future treaty law should specifically recognize the values of the Stockholm Declaration and the Rio Declaration, and frame the agreement within the values of these two conventions. States should not be forced to choose between the conflicting responsibilities of arms reduction agreements and international environmental law.

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by Dumping Waste and Other Matter, *supra* note 83.

186. Vidas, *supra* note 164, at 111. Vidas notes, "[s]trict separation from military security issues has pervaded this approach [AEPS], and may be seen by some as an important precondition for success thus far. On the other hand, it might also be a valid reason for others to fear a stalemate in particular segments of current Arctic cooperation." *Id.*

187. McClatchey, *supra* note 135, at 670.