

RESEARCH/REVIEW ARTICLE

Oil spill emergency preparedness in the Russian Arctic: a study of the Murmansk region

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Abstract

The issue of oil spill emergency response in north-west Russia has become increasingly important following a substantial increase in maritime transport and major offshore developments in Russian waters. This study is an initial effort to outline the public and private agencies and organizations involved in handling oil spills in the Murmansk region and the structure of the oil spill emergency response system in the region. This study examines the formal relationships between federal and regional authorities and between the different subsystems at the regional level. Due to the paucity of academic literature and public documentation on this topic, this study to a large extent bases itself on interview data. A main finding is that the regional oil spill response system has not been fully developed. It further concludes that the system lacks a clearly formulated state policy, a single governing authority and a unified structure. Finally, the study demonstrates that the agencies and organizations involved in tackling oil spill emergencies in the Murmansk region are hampered by insufficient funding, which probably reduces their preparedness to combat oil spills.

Interest in oil and gas developments in the Russian Arctic has increased significantly in recent years, with the Murmansk region receiving special attention due to the petroleum industry's large-scale development plans, such as the Stockman gas field, and a substantial increase in oil transportation. In the early 2000s, tankers began to deliver oil from the Russian Arctic through the Barents Sea and along the Norwegian coast to Europe. The annual volumes of transported oil have increased steadily since then and are expected to increase further (Bambulyak & Frantzen 2005, 2007, 2009; AMAP 2007).

The petroleum industry's projected developments may have considerable socio-economic benefits for the Russian Arctic. However, they also pose an increased risk of oil spills, with potentially detrimental effects on the natural environment (Andreyeva & Kryukov 2008). The Arctic is particularly sensitive to oil spills because of its vulnerable ecosystem, slow recovery patterns and difficulties associated with clean-up operations in remote cold regions (AMAP 2007; Patin 2008). The threat to

the marine environment from petroleum activity in the Barents Sea is considered to be higher than in other far northern regions (Kalinka et al. 2008; Shavykin et al. 2008; Forsgren et al. 2009). The shipping routes are close to shore and oil spills may reach the shorelines of the Murmansk region in less than 24 hours. If a spill occurs in the Kola or Kandalaksha bays, oil will reach its shore within just a few hours (Baharev & Glazov 2007).

One recent example of an oil spill incident in Russia is the tragedy that occurred in the Kerch Strait, a narrow passage connecting the Black and Azov seas, on 11 November 2007, when a severe storm hit the strait. Eleven vessels were damaged; five sank and eight sailors were killed. The tanker *Volgoneft-139*, loaded with heavy fuel oil, ran aground and broke apart, spilling oil into the waters of the strait (Spiridonov 2008). The oil spread quickly, heavily contaminating the water and coastline and causing the deaths of thousands of birds and fish (Bambulyak & Frantzen 2009). The incident exposed the absence of a functioning oil spill emergency response

(OSER) system in the region and highlighted the lack of coordination between the agencies taking part in the emergency response operation (Cay 2008).

The Kerch Strait incident illustrates what can happen if an OSER system is not in place or fails to perform. Environmentalists have called the Kerch Strait disaster “the prologue to the impending tragedy of the Northern Seas” (Greenpeace 2007). So far no major accidents have occurred in the Murmansk region. However, cases of oil pollution in the region are regular (AMAP 2007; Andreyeva & Kryukov 2008; Bambulyak & Frantzen 2009; INF 7 [see Table 1 for details about informants]), particularly in the Kola Bay (Committee 2009), where oil concentrations in the waters greatly exceed legal levels (Denisov 2002 cited by Andreyeva & Kryukov 2008).

The risk of oil spills cannot be eliminated entirely (Ornitz & Champ 2002), but it is possible to establish preventive measures to reduce their likelihood and also to reduce the impacts of spills that do occur. This study is an initial research effort to analyse the OSER system in the Murmansk region of the Russian Arctic. The main question addressed in this paper is how the OSER system in the Murmansk region is organized in terms of its formal structure and the roles and functions of the key actors ascribed by their mandates. It must be noted that the system discussed here has never been involved in a large oil spill emergency operation, so there are no incidents on which to base an evaluation of its actual performance in a large-scale emergency. As noted by informants, particularly representatives of emergency response organizations, small-scale oil spills are regular events and response organizations conduct operations to deal with them. However, the question of how the system performs in a major emergency situation remains theoretical.

This study is inspired by systems theory in which the system itself is regarded as a unit of the analysis, although a system is first and foremost “a set of elements standing in interaction” (Von Bertalanffy 1956: 39). The primary objective of this paper is to analyse the roles and functions of the main actors and how they are connected in the OSER system. This study approaches the OSER system from two dimensions: the vertical, which analyses the delineation of authority and functions between the federal centre and the region; and the horizontal, which focuses on the relationships between different sectors, sectoral agencies and other actors in the OSER system at the federal and the regional level. For a discussion of vertical and horizontal analyses of organizations, see Christensen et al. (2007). Lie (2010) applies this approach to a study of the inter-organizational coordination of food safety policies in Norway.

OSER is defined as “[a]ny action undertaken to prevent, reduce, monitor or combat oil pollution” (IMO 1995: 15). This definition emphasizes the complexity of oil spill response and the wide range of issues and tasks it has to address (Ornitz & Champ 2002; Tuler et al. 2007; Taylor et al. 2008; IOSC 2008; Bambulyak & Frantzen 2009). Task complexity provides for a complex organizational system in which activities of numerous organizations are integrated. Good organization is one of the key elements that are crucial for successful oil spill response (Ott et al. 1999).

Method of data collection

With few public documents on the subject, this study relied greatly on interview data. Semi-structured interviews were conducted with 13 informants between August 2007 and April 2009 in Murmansk (Table 1). The formal role of the organizations that the informants represented was a general criterion for selecting them. Prior to interviews, the informants were provided with a short description of the research project and those who required the interview questions in advance received them. Informants were assured that they would be anonymized in publications reporting the research findings. The author asked for permission to record interviews with a dictaphone, which two out of 13 informants refused. Eleven interviews were recorded and later transcribed, while in two cases notes were taken by hand. The author was the sole interviewer, and the informants were interviewed singly, in Russian. After the initial interviews were carried out, the author contacted several informants to clarify issues that arose during the analysis of the interviews and other sources of information.

In addition to the interview data, the study draws on such texts as law documents publicly available on the website of the Russian government. Other sources were gathered through literature searches and were provided by the informants.

The OSER system: the federal level

There is no Russian legislation that clearly states that an OSER system has to be established or that specifies the authority responsible for its implementation. There are several governmental resolutions and orders that assign certain functions of oil spill protection to particular organizations, yet none provides a clear picture of the system as a whole.

All questions related to emergency situations in Russia, including OSER activity, are the remit of federal authorities. OSER in Russia is a tiered system conducted at

Table 1 Informants interviewed in the study.

Type of organization	Name of organization	No. of informants	Level of seniority	Code in this paper	Month and year of interview
Government bodies	Committee of Nature Use and Ecology of the Murmansk region	2	High (both)	INF 1; INF 12	(1) Aug 2007; (2) Oct 2008
Controlling/coordinating authorities	Department of the Federal Supervisory Natural Resources Management Service in the North-West federal district. Department for Surveillance at Sea (Murmansk region)	1	High	INF 8	Oct 2008
Response organizations	The Main Department of the Ministry of Emergencies of Russia in the Murmansk region	1	High	INF 10	Oct 2008
	Murmansk Basin Emergency Rescue and Salvage Department	2	High (both)	INF 2; INF 13	(1) Oct 2008; (2) Apr 2009
	Emergency Rescue Unit Navecoservice Ltd.	1	High	INF 4	Aug 2007; Oct 2008; Oct 2009
Scientific and research institutions	Murmansk Marine Biological Institute	1	High	INF 9	Oct 2008
	Central Marine Research and Design Institute Ltd.	1	High	INF 11	Oct 2008
Non-governmental organizations	World Wide Fund for Nature–Russia Barents Sea Regional Office Bellona, Murmansk office	1	Middle	INF 6	Oct 2008
	Environmental Harmony Evolution Fund	1	Middle	INF 5	Oct 2008
Operators of oil terminals	Belokamenka Oil Reloading Complex	1	High	INF 7	Aug 2007; Oct 2008
					Oct 2008

multiple levels by the federal executive authorities, the administrations of the Russian Federation's subunits (including local administrations) and oil companies (Government of Russia 2002; Semanov & Ivanchin 2004). Russian legislation classifies an oil spill as a 'state of emergency' (Government of Russia 2000) and to understand the OSER system one has to relate it to the general system of emergency prevention and response in Russia.

All issues related to emergency prevention and response and security are addressed by the Unified State System of Emergency Prevention and Response as defined in a government resolution passed in 2003 (Government of Russia 2003). The OSER system is part of this Unified State System and all legislation on oil spill emergency prevention and response stems from it.

Key actors

Three ministries are key actors at the federal level. The Ministry of Emergencies is responsible for civil defence, the protection of the population and territories from emergencies and fire, and the safety of water facilities (President 2004). It is also responsible for the Unified State System (Government of Russia 2003; President 2004). The Ministry of Emergencies is the main co-ordinating authority for all emergency rescue units and services (Government of Russia 2003). This makes the Ministry of Emergencies the de facto coordinating authority for the OSER on land (Government of Russia 2003).

The Ministry of Transport is responsible for the establishment of the OSER at sea (Government of Russia 2003). This is a huge authority composed of several federal agencies. Subordinate to the Ministry of Transport are the Federal Agency of Marine and River Transport and the State Marine Emergency Rescue and Salvage Coordination Service (Gosmorspasslužba [the ISO 9:1995 Cyrillic–Roman transliteration system is used throughout this article]; Ministry 2009b). The Federal Agency of Marine and River Transport carries out the general management of the OSER system at sea, while the State Marine Emergency Rescue and Salvage Coordination Service controls the daily operational activity of the system (Ministry 2009b).

The third main actor is the Ministry of Natural Resources and Ecology, which is responsible for policy-making, control and supervision related to the study, use, reproduction and protection of natural resources and the environment. Control and supervision are performed by two federal services: the Federal Supervisory Natural Resources Management

Service (Rosprirodnadzor) and the Federal Service for Ecological, Technological and Nuclear Surveillance (Ros-tehnadzor). Both services were subordinate to the Ministry of Natural Resources and Ecology until 23 June 2010, when the Federal Service for Ecological, Technological and Nuclear Surveillance was placed directly under the government. Together with the Ministry of Emergencies, the Ministry of Natural Resources and Ecology classifies oil spills and thereby decides how much the polluting party will be fined (Ministry 2003a).

Legislation and contingency planning

There are currently more than 50 legal documents, including federal laws, governmental resolutions, presidential decrees, ministerial orders and regional law documents, regulating different aspects of oil spill response in Russia (Sokolova 2008). Nevertheless, it is difficult to identify a unified state policy regarding oil spill protection that clearly defines the system and delineates the main actors and their functions.

All activities related to oil spill response are carried out according to oil spill contingency plans (Government of Russia 2002; Commission 2008). All enterprises whose activities involve operations with oil are obliged to have contingency plans (Government of Russia 2002). Contingency plans are developed according to the requirements and take into account the maximum possible volumes of oil spilled (Government of Russia 2000). Since oil spills are classified depending on the volume of oil spilled, contingency plans are worked out for combating spills of different levels, as is explained below, and are enacted depending on the category of oil spill. Inter alia, the oil spill contingency plans provide an algorithm of actions to be taken during an emergency response operation and thus are meant to facilitate preparedness. The Ministry of Emergencies has set the general requirements and endorsement procedure for the plans (Ministry 2004).

Oil spills are classified by the Russian legislation in terms of their potential severity. There are five categories of oil spills on land: local—up to 100 tonnes; municipal—from 100 to 500 tonnes within the borders of the municipality or up to 100 tonnes outside the facility border; territorial—from 500 to 1000 tonnes within the administrative borders of the subunit or 100–500 tonnes outside the border of a municipality; regional—from 1000 to 5000 tonnes or 500–1000 tonnes outside the administrative borders of the subunit; federal—more than 5000 tonnes or the spill crossing state borders irrespective of the size of the spill (Government of Russia 2000). The classification of spills at sea is less

complex and includes only three categories: local—up to 500 tonnes; regional—from 500 to 5000 tonnes; and federal—exceeding 5000 tonnes (Government 2000). By law, oil spills at sea are supposed to be contained within four hours and spills on land within six hours (Government of Russia 2000, 2002). These time limits are unconditional. However, in the majority of incidents they are impossible to abide by even in theory (Semanov 2005; Glazov 2008 cited by Cay 2008).

The International Petroleum Industry Environmental Conservation Association distinguishes three levels of oil spill emergency preparedness (IPIECA 2007). In Russia, the first level responds to local and municipal spills, the second to territorial and regional spills and the third to federal spills. Oil operators are primarily responsible for oil spill containment. However, very few such operators have their own response teams and the majority prefer to buy these services from professional response providers. In practice, with few exceptions, professional response organizations conduct operations at all levels.

In sum, the organization of oil spill emergency preparedness and response in Russia is a federal responsibility. An extensive legislation base formalizes and regulates the activity of state authorities and oil companies, and oil spill contingency plans are used to govern the activities during oil spill response operations. However, the regulations are not coherent. Moreover, the very foundation of the system is lacking since there is no law stipulating the need for an OSER system. There is no unified state policy, no unified approach on how to provide oil spill response, and no single document that would define the OSER system. There are federal authorities that carry out certain responsibilities pertaining to OSER but it is not obvious how their mandates are coordinated.

The OSER system: the regional level

The general structure of the OSER system at the regional level largely reflects the structure at the federal level. Although federal authorities are formally responsible for the establishment of the OSER system, regional authorities are in charge of actual oil spill operations (Government of Russia 2003). The region's deputy governor—as head of the Emergency Commission established in the event of an incident—leads the operation. The functions of the Emergency Commission are considered in greater detail in later sections.

Subordinate departments of the federal Ministry of Transport and Ministry of Emergencies operate at the regional level and are responsible for the OSER system in the Murmansk region. The structure of the operational part of the OSER system is presented in Table 2. The table

illustrates the vertical and horizontal differentiation in the OSER system between levels of authority and between OSER at sea and on land. Two response organizations are listed in the table: the majority of the informants regarded them as the main response providers in the Murmansk region. The actual number of search-and-rescue organizations in the region is 10 (Commission 2008). They include not only specialized oil spill response units but also organizations engaged in other types of rescue activity.

OSER at sea

The Ministry of Transport provides OSER at sea through two subordinate agencies that operate in the region: the Murmansk Marine Salvage Coordination Centre and the Murmansk Basin Emergency Rescue and Salvage Department (hereafter MBERSD; Ministry 2009b). The Murmansk Marine Salvage Coordination Centre is the main communication point during offshore oil spill incidents. It receives information about spills and communicates it further to the State Marine Salvage Coordination Centre in Moscow, a body that is part of the State Marine Emergency Rescue and Salvage Coordination Service, and notifies the appropriate authorities in the region.

The MBERSD operates in accordance with the Regional Oil Spill Contingency Plan for the Western Arctic Sector (Ministry 2003b). The plan is worked out by the Central Marine Research and Design Institute. This plan covers, inter alia, the amount of oil transported, types of transportation vessels, assessment and statistical risks of possible oil spills, hazardous areas, oil spill preventive measures and organization of emergency response, notification and communication, emergency response logistics, safety measures, specialists training, cost assessment and compensation for environmental damage (Ministry 2003b). The MBERSD is responsible for hand-

ling oil spills from 500 up to 5000 tonnes in the Western Arctic Sector, including the Barents and Kara seas and the shorelines of the Murmansk and Arkhangelsk region, as well as the Nenec, Yamalo-Nenec and Tajmyr (Dolgano-Nenec) autonomous regions (Ministry 2003b). The MBERSD has also received a licence for conducting oil spill response operation on land (INF 13).

The MBERSD has nine rescue vessels at its disposal in Murmansk (INF 13). One vessel is leased out on a commercial basis and operates in the Black Sea. At any one time, about two vessels are usually undergoing routine maintenance or are being repaired (INF 13). Interviewees in the MBERSD considered the number of vessels to be sufficient (INF 2; INF 13). However, it was noted that it is not possible to meet the legal four-hour limit for oil spill containment due to the size of the territory (INF 2; Glazov 2008 cited by Cay 2008).

As a Federal State Unitary Enterprise, the MBERSD is permitted to engage in commercial activities (Russian Federation 2002) to supplement the financing it receives from the state, which covers merely 25–30% of the MBERSD’s budget (INF 2; INF 13). The MBERSD’s commercial activities include towages, diving services, underwater technical projects, offshore installation building and repair, other services for oil companies and accident prevention and response activities during re-loading and transshipment operations (INF 13). The MBERSD is also responsible for implementing the Joint Russian–Norwegian Contingency Plan for the Combatment of Oil Pollution in the Barents Sea (Bambulyak & Frantzen 2005). The department had taken part in annual joint oil spill combating exercises since 1994.

OSER on land

The federal authority responsible for the OSER system on land is not explicitly specified by any legal or policy

Table 2 Agencies and organizations responsible for different aspects of the oil spill emergency response system (OSER) in the Murmansk region.

Levels of the OSER system/plans	Sea	Land territory
Authorities	Ministry of Transport	Federal Ministry of Emergencies
		Regional
Response organizations	Subordinate authorities of the Ministry of Transport (1) Murmansk Basin Emergency Rescue and Salvage Department (state) (2) Emergency Rescue Unit Navecoservice Ltd. (private)	Subordinate authorities of the Ministry of Emergencies (1) Emergency Rescue Unit Navecoservice Ltd. (private) (2) Murmansk Basin Emergency Rescue and Salvage Department (state)
Oil industry	Own or contracted response units	Own or contracted response units
Contingency plans	Regional oil spill contingency plan for the Western Arctic Sector	Murmansk regional oil spill contingency plan

document. However, the responsibility of the Ministry of Emergencies for coordinating all emergency rescue units and services on Russian territory (Government of Russia 2003) makes it the de facto coordinating authority for the OSER system on land. The Main Department of the Ministry of Emergencies of Russia in the Murmansk region represents the Ministry of Emergencies in the region and is a central actor in the regional OSER system.

OSER operations on land are conducted in accordance with the Murmansk Regional Oil Spill Contingency Plan (Commission 2008). This plan is developed by the regional Emergency Commission and finalized by the Main Department of the Ministry of Emergencies in the Murmansk region. It defines the order of actions to be taken in case of an oil spill and is valid for five years (Ministry 2004). As the Emergency Commission is a joint body, the regional contingency plan is the product of several authorities (Government of Russia 2003), including the Department for Surveillance at Sea—Murmansk Region of the Federal Supervisory Natural Resources Management Service in the North-West federal district, the MBERSD, the Administration of the Murmansk Marine Port and the Murmansk Regional Centre of Emergency and Ecological Operations (INF 10).

Although the Main Department is largely engaged in the OSER activity in the region (Government of Russia 2003), it has no specialized OSER unit. This task is mainly performed by private emergency response companies. Navecoservice Ltd., established in 2002 (INF 4), is the one that most informants referred to: Navecoservice can handle oil spills of up to 500 tonnes on land (INF 4). The company is also certified to provide oil spill response at sea and on inland water bodies for oil spills up to 100 and 500 tonnes, respectively (INF 4). In addition, Navecoservice drafts contingency plans for oil companies.

By law, each oil company is obliged to establish its own OSER unit or to have a contract with a licensed response organization (Government of Russia 2002). In the majority of cases operators prefer to outsource these services. The inclusion of a response provider in a contingency plan implies that it has a license and the available resources to provide oil spill response services for a particular company in case of an incident. The MBERSD and Navecoservice are the main OSER providers in the Murmansk region. However, both organizations are constrained by a lack of funding despite their commercial activities (INF 2; INF 4; INF 13). The MBERSD currently provides services for seven oil reloading terminals (INF 13) while Navecoservice has contracts with more than 60 companies in the Murmansk region (INF 4). Navecoservice has 17 contracts with other

organizations and companies that will provide additional equipment and personnel in case of emergency (INF 4).

While professional response organizations are the first to respond to contain and clean up a spill, potential third parties can be engaged in response operations at later stages. This includes diverse organizations that have the equipment required for response operations on shore, municipal search and rescue services and fire brigade teams (Commission 2008). Finally, the military, environmental organizations, the civil population and volunteers can be mobilized during an operation. The work of all parties is to be coordinated and governed by the Emergency Commission.

The Emergency Commission

The Emergency Commission, established by the regional government, plays a central role in the OSER system at the regional level. Its full name is the Commission on Emergency Prevention and Response and Provision of Fire Security of the Government of the Murmansk Region. Headed by the first deputy governor (Government of Russia 2009), it functions as a permanent body that convenes in the event of an oil spill or other emergency (Government of Russia 2002).

The commission is primarily a coordinating body for the Murmansk territorial subsystem of the Unified State System of Emergency Prevention and Response (Government of Russia 2003). Its primary function is to mobilize, organize and bring together all available resources and organizations necessary for a successful emergency response operation in the Murmansk region. The structure of the commission is approved by the governor of the Murmansk region (Government of Russia 2009). The commission has 48 permanent members (Government of Russia 2009), including representatives of the regional and city administrations, the Ministry of Emergencies, the MBERSD, the military and the Russian Navy's Northern Fleet, the Federal Security Service, the Federal Service for Ecological, Technological and Nuclear Surveillance, the Federal Supervisory Natural Resources Management Service, the regional Department of Internal Affairs and the Russian Railways. In addition, experts in such fields as law, hydrometeorology, oceanography and marine bio-resources may be called upon.

Monitoring and science

Monitoring and science are essential parts of any OSER system (Ornitz & Champ 2002). This section examines

how monitoring and research pertaining to oil spill management are carried out in the Murmansk region.

The Murmansk Centre for Standardization and Metrology and Certification and the Murmansk regional office of the State Service for Hydrometeorology and Environmental Monitoring are both federal authorities that operate in the Murmansk region. The Murmansk Centre for Standardization and Metrology and Certification is under the Ministry of Industry and Energy while the State Service for Hydrometeorology and Environmental Monitoring is under the Ministry of Natural Resources and Ecology. In January 2007, the Norwegian oil company Statoil gave the administration of Murmansk oil spill recovery equipment as well as a laboratory to study oil properties and a computer programme that models the behaviour of oil spills. Opened in June 2008 at the Murmansk Centre for Standardization and Metrology and Certification, the laboratory was the first of its kind in Russia (Dedkov 2008). The aim was that oil companies would submit oil samples for analysis and the State Service for Hydrometeorology and Environmental Monitoring would use the data to make predictions about the behaviour of different kinds of oil under varying conditions (Syč 2009). However, these analyses are not being conducted at present (Syč 2009; Pavlov 2010; INF 4; INF 13) due to a lack of funding. Because oil companies are not legally obliged to deliver oil samples to the laboratory for analysis, there is little income derived from this service. Because the Murmansk Centre for Standardization and Metrology and Certification is a federal institution the laboratory is not funded by local authorities (Syč 2009). At the federal level, funding is hampered by a general reluctance to pay for environmentally oriented initiatives (Hønneland & Jørgensen 2006). The laboratory thus represents an unused resource that could be employed to gain knowledge that would aid in managing oil spills.

The State Service for Hydrometeorology and Environmental Monitoring is responsible for monitoring environmental pollution in the region, including tracking oil spills. Challenges related to the absence of modern means of detection and forecasting the behaviour of oil spills are particularly emphasized by environmentalists as a weakness of the OSER system (INF 5; INF 7). The environmental non-governmental organization Bellona, which is based in Norway, claims that “[c]urrently, in Northwest Russia and in the northern sea route there is basically no State system . . . for tracking accidental oil spills by aeroplane or satellite” (Lesikhina et al. 2007: 26). The absence of technical means of control is a serious shortcoming that weakens the monitoring of oil spills. In practice, information about oil spills is only available when

reported by vessels passing by (INF 7), which implies that if an oil spill is not observed by a passing ship it is never registered. According to one informant, there have been cases of unreported oil spills (INF 8). Another informant claimed that there were six oil spills during 2007 that could have been classified as emergencies, but emergencies were not declared (INF 7).

Regional scientific organizations are another group of institutions that participate in oil spill management. The Murmansk Marine Biological Institute (MMBI) and the Polar Research Institute of Marine Fisheries and Oceanography (PINRO) are two major research institutions located in Murmansk mandated to study the Arctic ecosystem. The activities of both are partially focused on environmental safety in relation to the development of petroleum activities in the Barents Sea, including vulnerability to oil spills. PINRO has a specific focus on fisheries and is in particular concerned with ecological monitoring on the Arctic shelf (Egorov et al. 2008; Prishchepa & Titov 2008). MMBI has a wider research agenda. In cooperation with PINRO, MMBI has handled environmental impact assessment in the Barents Sea with financial support from the Barents Sea regional office of the non-governmental environmental organization, the World Wide Fund for Nature—Russia (Kalinka et al. 2008; Shavykin et al. 2008). MMBI is also engaged in developing new technology for biomonitoring (Gudimov & Denisov 2008).

Thus, organizations responsible for monitoring environmental pollution and scientific research on the environmental impacts of oil spills function in the region. The major challenge, as the later discussion shows, is in how to incorporate these functions in the OSER system in the Murmansk region.

OSER as a “system”

Having presented the elements (organizations and institutions), I shall now discuss how these elements fit together as an OSER system for the Murmansk region.

Law and policy

The OSER system in the Murmansk region is part of the Unified State System of Emergency Prevention and Response, based on federal legislation. However, as this study demonstrates, the OSER system in the Murmansk region is not fully developed (INF 1; INF 4; INF 6; INF 7; INF 12; Baharev & Glazov 2007).

The issue of oil spill emergency preparedness came onto the agenda in the beginning of the 1970s in Russia (INF 11) when environmental protection had re-

ached the national political agenda in the Soviet Union (Hønneland & Jørgensen 2006). The OSER system for the sea was created then (INF 11), although the legal order that describes the system was formalized by the Ministry of Transport much later—in 2009 (Ministry 2009b). The OSER system on land was not established before the early 2000s (INF 11). A working group was organized under the Ministry of Emergencies in 2006 to work out propositions on the establishment of the OSER system on land (Ministry 2006). However, as of yet, no law document has been issued that is comparable to, for example, Order 53 of the Ministry of Transport for the OSER system at sea. The legal structure of the OSER system on land remains unclear.

According to Cay (2008), “the government’s will” to create an adequate OSER system is insufficient. One of the interviewees laid the blame on the lacking will of the people, concluding that “the fundamentals of an [OSER] system are formulated from the requirements of society . . . If the will of the people was to create such system, it would have been established long ago” (INF 4). Years of economic and political reforms in Russia and continuous reorganizations of the environmental bureaucracy may have contributed to the slowness of the process (Hønneland & Jørgensen 2006).

Whatever the reason, the issue of oil pollution has clearly not attained a high position on the Russian political agenda. Clear and meaningful strategic goals are a precondition of success in responding to an oil spill (USCG Marine Safety School 1994 cited by Walker et al. 1995), but the absence of a clearly formulated, enacted and enforced state policy is emphasized by many key actors in the Murmansk region. The opinion that “there is no coordinator that establishes the policy” and therefore “there is no policy” on oil spill protection in Russia was emphasized by several informants (INF 4; INF 7; INF 12). That is why many informants see the roots of the problem as stemming from the federal level.

The lack of a well-defined state strategy on oil spill protection and response reflects the overall state of Russian environmental policy. The absence of any decisive federal environmental policy is regarded as a general characteristic of Russian environmental governance (Hønneland & Jørgensen 2006). It has been claimed that “the policy of Russian federal authorities in the environmental sector is to not have any policy at all” (Hønneland & Jørgensen 2006: 155). While the years after the dissolution of the Soviet Union and prior to 1991 were generally marked by the increased importance of environmental protection on the political agenda, later, especially in the beginning of 2000s, environmental concerns lost their relatively influential political position

in favour of economic growth (Oldfield 2002; Hønneland & Jørgensen 2006).

The legislation that governs the OSER system is criticized, especially by environmentalists, for being inadequate for real-life circumstances and in some cases unclear and overlapping (Lesikhina et al. 2007; INF 2; INF 4; INF 7). That oil spill protection and response are regulated by more than 50 different legal documents may sound reassuring. However, they have been formulated in an uncoordinated manner by diverse governmental bodies pursuing their own interests and as a result inconsistencies flourish (Glazov 2008 cited by Sokolova 2008).

Although most legal acts regulating oil spill management were adopted recently, many require revision and improvement (Lihomanov 2008 cited by Sokolova 2008). This is, for example, the case for federal law no. 151 that regulates the activity of emergency response organizations. When this law was adopted, the majority of response organizations were state-owned. Today, there are around 30 private response organizations in north-west Russia. More than 20 are operating in the St. Petersburg and Leningrad regions. The budgets of these companies simply do not allow them to fulfil the obligations imposed by the federal law (Glazov 2008 cited by Sokolova 2008), including providing employees with pensions and an apartment at the age of 45 years and obligatory insurance while they are employed. Even some state-run companies lack the means to fulfil these requirements (INF 4).

The interviewees regard contingency plans as an indispensable component of oil spill emergency preparedness and response (INF 2; INF 4; INF 8). However, some environmentalists regard the regional plans as too “theoretical” and “complicated” and remark that they would “not contribute much in a difficult emergency situation [or] function as an instruction that is required is this circumstance” (INF 6). The claim—also made by interviewees in the response organizations—is that instead of a practical, regularly updated problem-solving tool to serve in an emergency situation, the plans are overly lengthy, outdated and impractical (INF 2; INF 4; INF 6; INF 12). One informant noted that the plans need to be updated more often since the quantity of transported oil is increasing substantially (INF 2). It has been noted that the contingency plans at different levels are not coordinated and there is no overall picture of emergency management (Yanchuk 2008 cited by Sokolova 2008). One explanation for this is a lack of adequate cooperation between the scientific community and the oil industry in Russia, which results in decision-makers receiving inadequate information on which to base their decisions (Matishov et al. 2008).

Horizontal and vertical

This study analyses the OSER system along two structural dimensions: vertical and horizontal. The former describes the delineation of roles and authority in the OSER system between the federal centre and the Murmansk region. Centre–region relationships have been a controversial issue in Russian politics since the establishment of the Russian Federation in 1991, with the power balance shifting continuously (Hønneland & Blakkisrud 2001). Within the sphere of oil spill emergency preparedness the authority to establish the OSER system is a federal task and the prerogative of the federal authorities. Meanwhile, the responsibility for an emergency response operation lies with the regional authorities.

The OSER system is divided into sea and land sectors under the auspices of different ministries. Both sectors sort under the regional Emergency Commission in case of an incident at the regional level. Otherwise the sub-systems work independently according to their mandates. As such there is no unitary approach or authority in charge of the system as a whole. This leads to a situation where the task is shared between different authorities that “have not achieved an agreement at their own level on who is in charge of the issue” (INF 7). It has also been claimed that the OSER system has a bias towards the sea sector (Glazov 2008 cited by Cay 2008). For the OSER system for land it is difficult to identify precisely how it is organized and which authority is responsible for it (INF 4; INF 7).

The functional tasks within the OSER system are clearly defined both between the federal and the regional authorities and between the sectors. Sectorization at the regional level is a reflection of sectorization at the federal level. However, unclear mandates of the federal ministries in some cases lead to frictions between the key actors.

Operative capacity

There are uncertainties about how the response system will function in an actual emergency. As one informant remarked, “Nobody is able to say for sure until an incident happens. All these issues that are described on paper look different in reality” (INF 4). It has been claimed that “in case of serious incidents when the shoreline is damaged, the system will not be able to respond adequately and quickly enough” (Glazov 2008 cited by Cay 2008). The obsolescence of the response equipment and old technical facilities have also been pointed out (Lesikhina et al. 2007; Glazov 2009 cited by Sokolova 2009; INF 4; INF 5). The problem will become

more acute as the volume of transported petroleum increases (INF 2).

The OSER system has been established by the state as a public good. However, part of its services are allocated to commercial service providers; even the activity of the MBERSD—a state agency with a public mandate—is partly commercial. The requirements that the state sets for these organizations, both public and private, are sufficiently high. Conforming to them requires substantial financial means and entails a time-consuming bureaucratic procedure (INF 4), which is why oil companies prefer to outsource these services. Although the market is limited, response organizations increasingly engage in commercial activities to bring in money. The fact that MBERSD’s rescue vessels are leased out to other parties on a contractual basis may potentially hamper the capacity in the Murmansk region in a situation with several simultaneous incidents. The engagement of response organizations in commercial activities, and their attempts to grab a bigger share of the market, may impede oil spill preparedness and response in a situation when the OSER system has numerous serious inadequacies. Commercialization of the OSER system in the Murmansk region is discussed in detail by Ivanova & Sydnes (2010).

Science and knowledge

In September 2009 the Ministry of Emergencies announced a plan to improve the system of emergencies monitoring and forecasting in Russia (Ministry 2009a). In particular, the ministry declared on its website that the “[i]mprovement of this system should provide until 2020 a change of priorities in the public policy on the ensuring of safety of the population and territory against the dangers and threats of different nature from the ‘response culture’ to ‘prevention culture’” (Ministry 2009a; author’s translation). The ministry thereby indirectly acknowledged that the current policy is focused on response rather than the prevention of emergencies. Although the intentions of the federal authorities may be good, actors at the regional level express much scepticism regarding when these intentions will actually be implemented (INF 4; INF 13).

The shortcomings of the state system of environmental monitoring are continuously pointed out, in particular by the environmentalists who claim that the system does not practically function in the Murmansk region (Lesikhina et al. 2007; INF 5; INF 6; INF 7). Although there are several scientific institutions in the region that perform various kinds of environmental monitoring, such as geophysical, geological, meteorological and

ecological monitoring, one informant claimed that their activities are scientific research rather than monitoring of environmental impacts caused by anthropogenic activity (INF 5). In addition, the activities of these organizations are characterized as uncoordinated, unsystematic and lacking a common agenda (INF 5). The system of oil spill behaviour forecasting and tracking—crucial for successful containment, dispersion and clean-up operations (Ornitz & Champ 2002)—does not function in the region.

Although the establishment of a system of environmental monitoring is a state prerogative, it has clearly not been a state priority. In addition, a long-term environmental policy in the field of oil and gas resources on the Russian Arctic shelf developments has still not been worked out (Matishov et al. 2008). An unclear state policy has resulted in gaps and inconsistencies in the legislation, exemplified by the absence of legal requirements to have oils samples analysed.

Conclusion

The current scale of petroleum activities, and their projected increase, in the Russian Arctic and the Murmansk region in particular has generated increased concerns about how well the region is prepared to tackle increased risks of oil pollution. Therefore, the major question asked in this paper is how the OSER system in the Murmansk region is organized in terms of its formal structure and roles and functions of the key actors.

This study concludes that an OSER system in the Murmansk region has not been fully developed. The process of its organization is being conducted in accordance with an extensive legislative framework developed by the Russian government and responsible federal authorities. The functional tasks within the system have been delineated between the federal centre and the region and between the sectors. The power to establish the system is held by the federal authorities, while the regional authorities' responsibility is to organize, conduct and coordinate emergency response operations. The system is divided into sea and land sectors that function under the auspices of two different ministries. Both subsystems work independently according to their mandates on a daily basis. Their formal interaction patterns are established through the contingency plans and the regional Emergency Commission. Yet, the OSER system has substantial shortcomings and there are numerous inadequacies that need to be addressed.

The major weakness on the OSER system is the absence of a statutory need to organize the system and as a consequence the lack of a clearly formulated, unified state policy. The functions and areas of responsibility of

the main federal authorities have to be more accurately defined. Contingency planning requires a more practically oriented approach. In addition, the two regional contingency plans need to be coordinated. Lack of funding affects the ability of response organizations to purchase new equipment and has become a constraining factor for their activity that may hobble the effectiveness of response operations. The commercialization of oil spill response services may further hamper the response in case of an emergency. With no system for monitoring or tracking oil spills, and no research being conducted on oil spill behaviour, the scientific component of OSER is almost completely absent.

Regarding how the system will perform in an actual emergency situation, some informants were optimistic while others were not. Despite the fact that the issue has received increased attention it is unclear how long it will take until the OSER system is fully developed in the Murmansk region. History shows that disasters often precipitate major policy and regulatory changes. The Oil Pollution Act 1990 in the US was adopted a year after the *Exxon Valdez* 1989 oil spill. Within a year of the blowout of the Deepwater Horizon drilling rig in the Gulf of Mexico, a new US federal agency—the Bureau of Ocean Energy Management, Regulation and Enforcement—was created to oversee energy exploration, replacing another agency that had been criticized for its conflicts of interests (Walsh 2011). The Kerch Strait tragedy occurred in November 2007. However, the federal law, On the Protection of the Seas of the Russian Federation from Oil Pollution, has not yet been adopted in 2011.

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