



Joint Norwegian-Russian monitoring of radioactive contamination in Barents Sea area

The Joint Norwegian- Russian monitoring programme «Investigation of marine environmental radioactive contamination of the Barents Sea area» was established in 2006. Over the last ten years of the monitoring programme valuable information on the status of radioactive contamination in the Barents Sea area has been acquired.



Figure 1: Stations included in the joint Norwegian-Russian monitoring programme.
Blue=marine stations and green=terrestrial and freshwater stations

Objectives

The main aim of the joint Norwegian-Russian monitoring programme is to provide information from both sides of the border about the status of radioactive contamination in the Barents Sea area. By making this joint information available, it is possible to follow trends and observe any changes in radioactive contamination levels in the Barents Sea area. This work has been supported through the

development and use of common indicators and analytical methods on both sides of the border. The main sources of radioactive contamination to the area are fall-out from atmospheric nuclear testing in the 50s and 60s, more recent authorised discharges from European reprocessing facilities and also fall-out from the Chernobyl accident. Due to decreases in authorised discharges from European reprocessing facilities, physical decay and environmental processes, transport of radionuclides

to the Barents Sea area is declining. However, there are numerous local sources of potential radioactive contamination. These include terrestrial sources such as the nuclear waste storage sites at Andreeva Bay and Gremikha as well as other military and civilian nuclear facilities in the area. Potential sources also include radioactive waste previously dumped in the Barents Sea and the sunken nuclear submarine K-159, which lies at the entrance to Kola Bay.

Programme management

In Russia, the monitoring programme is administrated by the Research and Production Association Typhoon (RPA Typhoon) in collaboration with the Murmansk Department for Hydrometeorology and Environment Monitoring (Murmansk Hydromet) and Knipovich Polar Research Institute of Marine Fisheries and Oceanography (PINRO).

Marine monitoring of radioactive substances in Norwegian waters is organised through the national monitoring programme, Radioactivity in the Marine Environment (RAME). This programme is coordinated by NRPA in close cooperation with the Institute for Marine Research (IMR). All Norwegian marine data reported to the joint Norwegian-Russian monitoring programme originates from the RAME programme. The terrestrial data reported from Norway is collected by the Section High North within NRPA.

The joint monitoring programme is organised through three-year work plans, that follow the programme of the Joint Norwegian-Russian Environmental Commission. National coordinators and contributors to the joint monitoring programme are in regular contact to exchange information and experience and to plan work in the ongoing year.

Results

The joint monitoring programme started as a purely marine monitoring programme with data collected for open sea and coastal stations in Norwegian and Russian waters of the Barents Sea. As a result of this, time-series of more than 10 years of data have been established for several marine indicators, such as the activity concentration of Cs-137 in seawater and cod (Figure 2).

The current activity concentrations of Cs-137 in cod from the Barents Sea are well below the national Norwegian food safety limit of 600 Bq/kg.

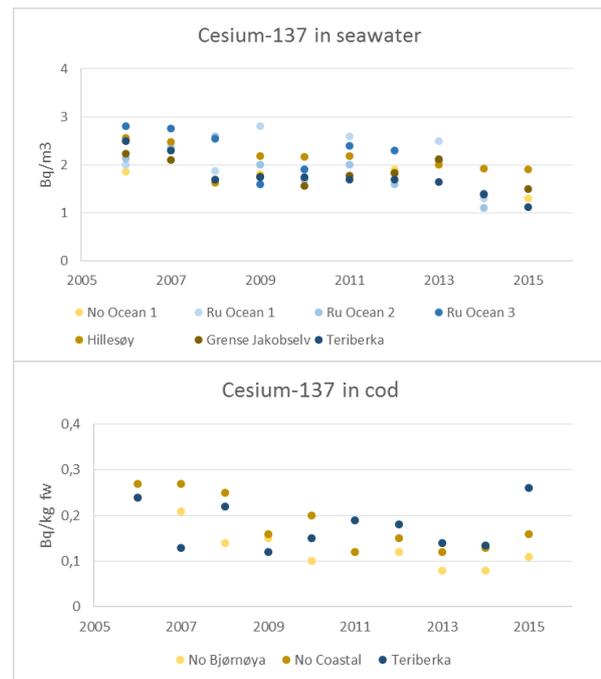


Figure 2: The activity concentration of Cs-137 in seawater (upper panel) and North Atlantic cod (*Gadus morhua*) (lower panel) measured at Russian and Norwegian stations (see Figure 1) 2006-2015.

Data from the joint Norwegian-Russian monitoring programme have shown that activity concentrations of anthropogenic radionuclides in the Barents area marine environment are low and declining.

Only limited data have so far been collected from selected terrestrial sites, with no unexpectedly high levels of anthropogenic radionuclides having been detected.

A report summarizing all marine data collected under the joint Norwegian-Russian monitoring programme will be published later in 2017.

Recent developments to the monitoring programme

- Publication of results on www.barentsportal.com
- Inclusion of a water sampling station near K-159.
- Exchanging data on air monitoring
- Expansion of the terrestrial monitoring work to contain data from the Pasvik valley and Verkhnetulomsky.