

NRPA Bulletin

Radiation Protection in the Andreeva Bay

Recently radiation protection experts and representatives of authorities and regional bodies in Russia, Norway, Sweden, Finland and the United Kingdom gathered at Svanhovd Environmental Centre south of Kirkenes to discuss radiation protection, environmental measurements and radiation doses in the Andreeva area. The participants were agreed on the immediate priority, that is, to put in place a system for monitoring radiation exposure to persons working in Andreeva before further activities are initiated in the area.



Making measurements and sampling at "Building 5" (Photo: SevRao)

Each country presented its current legislation and rules related to protection of workers in areas where radiation is present. It was concluded that similar rules, requirements and practices apply in the respective countries. Participants also reported from experience concerning work in areas with very high radiation levels, including decontamination and cleaning of buildings, equipment and ground. Careful planning is important. Such work should be done by highly trained people in order to keep down radiation

doses to personnel. This will be an important issue in future work in Andreeva Bay.

Andreeva Bay

Andreeva Bay is situated in Russia 50 km from the Norwegian border between Kirkenes and Murmansk. A base was established there in the 1960s for removing spent nuclear fuel from the Russian Navy's nuclear-powered ships and submarines for storage. Facilities for treating and

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storing radioactive waste were also located there. After active operations in the area were terminated in the 1980s, maintenance was minimal and today conditions there are very poor. About 3,000 containers of spent nuclear fuel are stored in the area in silo-like storage tanks. About 4,500 m³ of solid radioactive waste and about 1,600 m³ of liquid waste are also stored on the site.



“Building 5” (Photo: SevRao)

Spent nuclear fuel removed from submarine reactors were initially stored in “Building 5”, which was specifically built for the purpose. After five years’ storage in the building the spent fuel was transported to Majak for further treatment. An accident at “Building 5” in 1982 led to that the fuel had to be moved, and the three silos were converted to house the fuel. However, radioactive water leaked into the surroundings, contaminating large areas. Today “Building 5” is heavily contaminated both on the outside and inside and careful preparations need to be made for cleaning, and probably demolishing, the structure.



Radioactive waste (Photo: SevRao)

Operation and responsibility

Responsibility for running the Andreeva site has been transferred from the armed forces to the Ministry of Atomic Energy (Minatom). In 2001 Minatom established two bodies, Sevrao and DalRao, operative and responsible for clean up activities in former military sites in north-western Russia and in Vladivostok in the east. SevRao has day-to-day responsibility for operations in Andreeva and is responsible for carrying out the clean-up projects. SevRao currently has about 300 staff, including security personnel in the area and staff at the headquarters in Murmansk.



Storage tanks 2 and 3 for spent fuel (Photo: SevRao)

Security and environment

From a security and environmental viewpoint the situation at the Andreeva site is not satisfactory. Several steps have been taken to improve the situation. Finnmark's County Governor is collaborating on a broad front with the Governor and county administration in Murmansk on projects to improve the infrastructure. These include upgrading road connections, a new administration building ("the Norwegian village"), water, electricity, sewage and a control point and guardhouse for the security personnel. The projects, about NOK 55 million, are financed via the Norwegian Government's Plan of Action for Nuclear Safety Issues.

The Norwegian Radiation Protection Authority (NRPA) is implementing a project, "Radiation Protection in Andreeva Bay", to map radiation levels in the area and analyse ground contamination. In the course of the autumn 2002 about 2,000 measurements and 245 soil samples were taken.

The result will be a "radiation map" providing a basic information for building up a system for checking and monitoring people working in the area to ensure that no-one receives excessive radiation doses. According to Russian sources, doses to personnel participating in the mapping phase were lower than the dose limits of 20 mSv per year.

The way ahead

The next step will be to investigate the ground with depth profiles to examine to which depth the radioactivity has penetrated, and to survey geology and groundwater conditions in the area. These investigations are crucial since the results will form the basis for planning activities ahead.

However, the first step is to establish a personal dosimeter system and radiation control points to ensure that on-site personnel can do their work in safety.



Radiation protection experts and representatives from the authorities and regional bodies in Russia, Norway, Sweden, Finland and the United Kingdom discussed radiation protection, environmental measurements and person doses in Andreyev (Photo: NRPA).

International involvement

There is wide international concern related to fuel and radioactive waste present in Andreeva. In view of the danger of radioactive emissions to the environment and that nuclear and radioactive material could be unsecured, there is a wish to have the material removed.

The United Kingdom has assumed responsibility for managing the effort to establish a plan and strategy for dealing with the spent fuel and “Building 5”. Sweden has expressed its willingness to supervise solid radioactive waste issues, while Norway will continue to manage and carry out the work on infrastructure.



“Building 1” beside the fuel tanks (Photo: SevRao)

Cleaning up Andreeva will take a long time. Complex, difficult tasks are involved. The season for carrying out practical work is short, since little can be done during winter. Hence a steady progression of projects is important since delays can lead to projects being postponed until the next summer season.



NRPA in Andreev (Photo: SevRao)

