



Establishing a radioactive waste management system in Georgia

The challenge

Georgia has two operating facilities for radioactive waste management: the Centralized Storage Facility (CSF) located on the site of the former research reactor near the city of Mtskheta; and a 'Radon' type waste treatment facility located near Saakadze village which started operations as part of the former USSR. The Saakadze site was abandoned for over 20 years, and all documentary information related to it was lost. With IAEA support through a series of technical cooperation projects, a small waste processing facility was set up at the CSF to treat solid materials contaminated with radioactivity, especially waste generated during the decommissioning of the Georgian nuclear research reactor. During investigations conducted through a separate European Union (EU) project, additional liquid waste was discovered, and 41 cubic metres of liquid waste containing radionuclide $^{226}\text{Radium}$ was secured at the Saakadze radioactive waste disposal site. Additional investigations showed that tritium was present in water at the reactor site. All this waste required processing, so Georgia asked

for IAEA assistance to establish new treatment capabilities at the radioactive waste treatment facility, including for liquid waste.

The project

A new IAEA technical cooperation project was initiated in 2016 to improve the radioactive waste management systems at the two operating facilities in the country. Support was provided to set up a national system for the safe management of radioactive waste, including liquid radioactive waste, by enhancing capacity at the radioactive waste treatment facility near Saakadze. Infrastructure was improved, staff received training, and expert advice was provided on the processing of liquid radioactive wastes and on the conditioning of secondary waste. Two fellowships and three scientific visits expanded national knowledge of liquid radioactive waste processing: this included operational experience at facilities treating low level aqueous radioactive waste, and training on methods to process liquid radioactive waste (aqueous waste purification and sludge immobilization).



A view of abandoned repository in 2005 (left) and the new cover of disposal in 2017 (right) at the Saakadze site. (Photo: M. Ojovan/IAEA and G.Nabakhtiani/Nuclear and Radiation Safety Agency, Georgia)

The impact

With the support of the IAEA, and complementary projects with the US and EU, radioactive waste management capabilities at the CSF at Mtskheta have been improved. Sealed and unsealed radioactive sources have been collected from Georgian territory and characterized, and methods for liquid handling and purification have been defined. In addition, equipment for handling radioactive liquid waste was procured, and Georgia now has capacity to both process and safely store this kind of waste. Safety at the CSF has been enhanced with the installation of a radiation monitoring system, a cementation facility for handling radioactive waste, measuring equipment and a foot and hand radiological monitor device, installed at the facility exit. New security systems are in place, including radiation detectors and motion activated, night vision security cameras, fingerprint systems and 24-hour police security.

At the Saakadze disposal facility, IAEA support has increased general safety, and a radiation monitoring system has been installed. The security of the site has been improved through an IAEA security project. The main goal of the national strategy for radioactive waste for the next 15 years is to collect all radioactive waste at the Saakadze site in appropriate storage and disposal facilities.



The CSF located on the former research reactor site near the city of Mtskheta, Georgia. (Photo: M. Ojovan/IAEA and G.Nabakhtiani/Nuclear and Radiation Safety Agency, Georgia)

PROJECT INFORMATION

Project No: GEO9013

Project title: Developing Capability of the Waste Processing Facility to Treat Radioactive Waste, Including Liquid Radioactive Waste

Duration: 2016-2017 (2 years)

Budget: €332 800

Contributing to:



Partnerships and counterparts

The project counterpart was the operator of both sites: the Department of Radioactive Waste Management of the Nuclear and Radiation Safety Agency. Other project stakeholders included the Institute of Physics as the end user and the regulatory body.

Parallel complementary projects were implemented through a 2014 IAEA security project to upgrade the physical protection of the Saakadze disposal facility, funded by the United Kingdom. A separate EU project supported investigations at the CSF.

The science

The technologies deployed in Georgia were well known mature methods for radioactive waste management, adapted to the specific requirements of the site. The decontamination facility at the reactor site uses sand blasting to remove surface contamination accumulated over the years of operation of auxiliary facilities at the research reactor. The water purification unit deployed at Saakadze site uses a combination of membrane and sorption methods to remove radionuclides from the liquid waste stored in underground tanks. The modular cementation facility uses conventional immobilization of sludge from water purification in 200 litre drums.