

# International Conference on the Management of Naturally Occurring Radioactive Materials (NORM) in Industry

## VIRTUAL EVENT

International Conference on  
**Management of Naturally  
Occurring Radioactive  
Material (NORM) in Industry**

19–30 October 2020

#NORM2020



Contribution ID: 2

Type: Poster

## Experience of the Republic of Azerbaijan on the Management of Naturally Occurring Radioactive Material (NORM) in Industry

### **Background:**

At the beginning of the 20th century, due to the rapid development of the oil industry and the presence of rich oil fields in Azerbaijan, the rapid development of related industrial petrochemical industries began. One of such areas was the construction and commissioning of iodine and bromine production plants.

### **Associated radiological problems:**

The iodine production plants deployed activated charcoal as absorbents that, among other elements, absorbed and accumulate the different natural radioisotopes. According to the technology processing, the natural iodine was extracted from oilfield water, which was pumped out together with oil. Production technology included next main steps: first is extraction of iodine from water by its adsorption on activated charcoal, next: is further recovery of iodine from charcoal. Besides iodine, other substances, including isotopes of radium and their decay products were accumulated in charcoal. Chemical state of radium compounds and their strong bonding to charcoal did not allow their removal from charcoal by implemented methods. Spent charcoal with a high content of natural radionuclides (naturally occurring radioactive materials (NORM) was simply dumped in the production sites without proper disposal. As results, in more than 60 years' operating production plants, was accumulated a huge amount of spent charcoal with a high content of natural radionuclides. Thus the rehabilitation of the radioactively contaminated sites and management of accumulated NORM was a critical environmental concern for the Republic of Azerbaijan.

### **Approach:**

Decision on decommissioning of iodine production plants was made considering the high radiation risks, the negative impact to the environment and the inexpediency of the production process. In 2006 a Complex Plan of Measures for improvement of Ecological Situation in the country was approved by the President of the Republic of Azerbaijan. Rehabilitation of territories of the former Iodine Production Plants and management of accumulated NORM was included to item 4.12 of this plan. Through an IAEA technical cooperation project, the IAEA supported to the training of local specialists and fielded expert missions to provide technical guidance and recommendations on decontamination technology, waste transportation and disposal before and during clean-up of the affected sites.

### **Challenges:**

The site rehabilitation and NORM management procedures were accompanied by the several major difficulties. Presence of a lot of premises, underground communication and drainage systems, sedimentation tanks and interim storage premises, the presence of adjacent lakes that flooded some nearby structures and premises, as well as lack of documented data's on underground communications and previously onsite disposed wastes locations can be described as some of the such challenges. The paper will reflect both the difficulties encountered during the rehabilitation of the territories and the management of the NORM, as well as the implemented consistent ways to solve the tasks for their comprehensive implementation.

### **Conclusion:**

As a result of the clean-up activities, which were supported by the Ministry of Emergency Situations more than 150 000 cubic meters of NORM contaminated soil and industrial wastes were transported and disposed at dedicated disposal near-surface cells, constructed near the national radioactive waste storage facility.

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**Session Classification:** Session III - Experiences Related to Decommissioning of Facilities and Remediation of Contaminated Sites

**Track Classification:** NORM Decommissioning and Environmental Remediation