

WM2014 Conference Panel Report

PANEL SESSION 16: Worldwide Regulatory Challenges of Radioactive Legacy Sites – IAEA International Working Forum on Regulatory Supervision of Legacy Sites

Co-Chairs: **Malgorzata K. Sneve**, *Norwegian Radiation Protection Authority*;
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Panel Reporter: **Graham Smith**, *GMS Abingdon Ltd, UK*

Panelists:

1. **Per Strand**, *Norwegian Radiation Protection Authority, Norway*
2. **Stuart Walker**, *US Environmental Protection Agency*
3. **Evgeny Metlyaev**, *Burnasyan Federal Medical Biophysical Centre, Russian Federation*
4. **Sergei Romanov**, *Southern Ural Biophysics Institute, Russian Federation*
5. **Alexander Akleyev**, *Urals Research Center for Radiation Medicine, Russian Federation*

This panel focused on abnormal situations at legacy sites remaining from military and civilian nuclear technology developments in the 20th century, which raise many questions about safety and security, as well as environmental and human health protection. These complex legacy situations present significant challenges to comprehensive but balanced regulatory supervision. They have therefore become the subject of major bi-lateral agreements between national regulatory authorities, as illustrated in the panelist presentations.

Per Strand: Regulatory challenges from intentionally/accidentally sea-dumped radioactive wastes. Mr. Strand began by reviewing legacy sites and continuing radiation threats to the Arctic. These include: sites of nuclear accidents, storage depots for spent fuel and radioactive waste, and sites in the arctic where radioactive waste has been dumped on the sea floor. He highlighted the case of the K27 submarine, which was scuttled in 1982. Mr. Strand emphasized that Norway has no responsibility for these wastes, but is a keen stakeholder in protection of the arctic environment. Accordingly, Norway began cooperation in the area with Russian agencies in the early 1990s with the objectives: Locate dumped objects; assess their condition; measure radioactivity in samples collected in vicinity; undertake risk and impact assessments; identify possible remediation options including a “no-action option”; and inform the public and other stakeholder groups. The main conclusions were that: levels of radionuclides were generally very low; elevated levels occur in the immediate vicinity of some objects; some signs of corrosion were seen; remediation was not deemed necessary; controls on the use of coastal marine resources must be maintained, and monitoring should be continued due to the potential future impacts which might be influenced by changing circumstances in the Arctic. Further cooperative investigations have taken place in 2012, bearing in mind the changes in environmental conditions and growing interest in resource exploitation in the area. Mr. Strand noted that remediation actions can involve their own risks, but that taking no action might eventually result significant impacts. Further consideration is therefore being given to remediation, for example in relation to the K27, and decisions will be supported by the results of environmental impact assessments.

Stuart Walker: U.S. EPA Superfund remedial program collaboration with international community on radiation sites issues: Mr. Walker provided an overview of the EPA’s Superfund site remediation international collaboration efforts, including a synopsis of research collaboration with Japan in response to the Fukushima Daiichi accident. He noted that the international

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community is focusing more on remediation of legacies and uranium mines, both issues with which the EPA is involved. International work includes sharing of information at specialist workshops and exchange visits of staff. In addition EPA runs an annual meeting with staff and site visits, to which representatives from other countries are invited. Concerning collaboration with Japan, the EPA Superfund remediation program supported an effort of the US State Department designed to share experience with Japanese colleagues in remediation methods and lessons learned and to provide suggestions for decontamination methods. Future collaboration activities were identified.

Evgeny Metlyaev: Progress in Bi-Lateral Cooperation between Federal Medical Biological Agency and Norwegian Radiation Protection Authority. Mr. Metlyaev noted that the Russian nuclear legacy includes: areas of legacy works with radionuclides; radiological accident areas; former naval support technical bases; areas affected by peaceful nuclear explosions and uranium mine and ore processing tailing dumps. Regulatory supervision of these legacies is supported through the bilateral regulatory cooperation program between the Federal Medical Biological Agency of Russia and the Norwegian Radiation Protection Authority. Supervision work includes: independent analysis of the situation, dose assessment to workers and the public; radiological threat assessments; development of regulatory documents; control and monitoring of radiation exposures; emergency preparedness and response, and review of operator submitted documents. Mr. Metlyaev provided a range of examples of this work, including examples of regulatory documentation developed under the cooperation program which has now been adopted officially. He also provided illustrations of how the radiation situation had improved at the former support technical base at Andreeva Bay. Finally, he noted the range of regulatory projects in progress, paralleling the developments in industrial remediation activities at the bases.

Graham Smith on behalf of Sergei Romanov and Alexander Akleyev : Scientific Support to Regulation of Remediation of Areas Affected by Historic Mayak PA Activities: Surface Water Bodies, Human Exposure, and Environmental Effects. Mr. Smith presented material provided by Mr. Romanov and Mr. Akleyev since they had been unable to attend at the last minute. The presentation also included material provided by Mr. Yu G. Mokrov of the Mayak PA. The presentation began with a summary of information of the major off-site releases, including the East Urals Radioactive Trace (1957), the Karachai Lake Trace (1967) and the releases from the Techa River Cascade. The main subject was a description of three projects designed to provide scientific underpinning to remediation work, part of a cooperation program between Russian agencies and the NRPA: “Study on Natural and Anthropogenic Treatment of Surface Water Bodies Contaminated, carried out through Rosatom; “Study of Internal Exposure Levels of the Public in the Mayak PA Area due to Protracted Exposure to Long-Lived Nuclides” and “Characterization of the Current Status of Ichthyofauna in the Techa River”, both carried out through the FMBA of Russia. Results of a range of water body decontamination investigations were presented, alongside investigations of the ecological factors affecting exposure of fish, and results of autopsies and other methods used to determine long term exposure and exposure mechanisms. These projects illustrate the links between: environmental radioactivity and its dynamic behavior in ecosystems, exposure modes and environmental factors which affect them, and radiation doses and dose rates, and metabolic factors which affect them, both for humans and other biota. The projects support regulation and planning of remediation in the area around Mayak PA, and provide basic science support for management of other sites.