

**Record of Meeting  
JCCEM U.S./Russian Workshop on  
Demonstration of Electrochemical and  
Foam-decontamination processes**

**21-24 October 2002  
St. Petersburg, Russia**

**Russian Participants:**

*V.G. Khlopin Radium Institute (KRI):*

Valery Romanovsky, Deputy Director

Vadim Starchenko, Project Manager

Igor Smirnov, Senior Scientist

Nikolai Firsin, Senior Scientist

Andrei Murzin, Senior Scientist

Mikhail Moshkov, Head of International Department

Elena Kovrigina, Senior Researcher

Sergei Bartenyev, Division Manager

Galina Tulga, Company "FUELEC"

*The All Russian Design and Scientific Research Institute of Complex Power Technology  
(VNIPIET):*

Valery Shilov, Department Head

Sergei Vladimirov, Deputy Department Head

Alexander Pavlov, Team Lead

Genrich Zakharchuk, Senior Researcher

Sergei Golikov, Researcher

Ludmila Petrova, Researcher

**U.S. Participants:**

John McFee, Project Manager, Shaw Environmental Inc.

Jim Langsted, Test Engineer Shaw Environmental Inc.

Mikhail Khankhasayev, Florida State University

Liliya Petrachenkova, Science Applications International Corporation

**Interpreters:**

Tatyana Albert, TEA

**The Purpose of the Workshop:**

The purpose of this workshop was to witness the demonstrations of the Foam and Electrochemical Technologies developed under the auspices of the Joint Coordinating Committee for Environmental Restoration and Waste Management (JCCEM) between the U.S. DOE and Ministry of Atomic Energy for the Russian Federation (MINATOM) on plutonium-contaminated gloveboxes.

**Activities:**

Valery Romanovsky, Deputy General Director of the KRI, welcomed the workshop participants, and presented a brief overview of the history and main directions of scientific and engineering research at the KRI. He then introduced a KRI Senior Researcher, Igor Smirnov, who outlined the main activities of the daily agenda and addressed the safety concerns for the upcoming demonstrations.

Valery Shilov, VNIPIET briefly described the history and direction of the main activities at VNIPIET, which are currently focused on design of the MINATOM complex facilities.

### **Electrochemical Technology Demonstration**

Historical overview, basic ideas and principal elements of the VNIPIET electrochemical technology for decontamination of plutonium-contaminated gloveboxes were presented by Genrich Zakharchuk.

Alexander Pavlov presented the results of preparing this technology for the present demonstration under the auspices of the JCCEM. Dr. Pavlov described the equipment, its operational features and gave a brief overview of the main improvements of this technology, which include collection and treatment of the secondary liquid waste produced during the decontamination process. These improvements have been made in cooperation with the Khopin Radium Institute.

Nikolai Firsin presented a detailed description of the filtration sorption technique for recycling of the electrolyte, which is used during application of the electrochemical technology. This sorption technology was developed and successfully used at KRI.

Andrei Murzin described the process of solidification of the radioactive waste into iron phosphate ceramics which is a final form of the waste generated during application of the electrochemical technology.

John McFee, Shaw Environmental Inc. presented the results of comparative testing of five competing technologies for decontamination which were conducted within the framework of the DOE LSDDP project since December 2000. These five technologies included the nitric acid wipedown of a glovebox, cerium (IV) nitrate wipedown of a glovebox, Fog & Strip decontamination of a stainless steel lined room, LANL electrochemical decontamination of a glovebox, and the EAI (Environmental Associates Inc.) technology decontamination of a glovebox. The EAI technology consists of three-step application of certain chemical agents with specified wait times and wipedowns. According to Mr. McFee, completion of the VNIPIET electrochemical demonstration will facilitate comparison at all decontamination technologies on a common basis.

Jim Langsted, Shaw Environmental Inc. presented recent results of the EAI technology application for decontamination of gloveboxes. He mentioned that this technology experiences difficulty when interior surfaces of a glovebox were painted.

Mikhail Khankhasayev presented a brief historical overview of the JCCEM activities related to evaluation and development of electrochemical and foam technologies.

The demonstration of the electrochemical technology was conducted on October 23, 2002, at KRI by VNIPIET specialists. The demonstration was performed in accordance with the test plan and included two demonstrations of the electrochemical technology with simultaneous vacuum removal of used electrolyte in cleaning of (a) corroded radioactively contaminated metallic surface with measurements of decontamination factors, and (b) decontamination of a plutonium-contaminated glovebox. The results of the demonstrations were recorded by the Russian specialists. It is expected that the numerical data will be shared with U.S. counterparts by November 15, 2002 .

### **Foam Decontamination Technology**

Since a plutonium-contaminated glovebox was not available for the Foam Decontamination Technology demonstration and the statement of work was not signed, with a planned funding of \$7K to VNIPIET, it was decided not to pursue the agreement to conduct this demonstration. Therefore, the funds of \$7K for this demonstration will not be transferred to VNIPIET. The Russian side offered a different activity of the Foam Decontamination Technology on an open americium-contaminated tank without any funding from DOE. The U.S. side witnessed the decontamination of an open tank on October 22, 2002.

Additionally, the results of the two additional FY02 JCCEM-developed D&D projects were presented to describe the results of the Biotechnology for Decontamination of Surfaces coated with Paint and Varnish project, and Fluoroepoxy Coatings for Nuclear Applications project. The US Representatives were given the results of an application of the fluoroepoxy coating on an alpha contaminated glovebox. A tour of the facility was also given.

### Signatures

For the Russian Side  
Dr. Valery Romanovsky  
Deputy General Director  
KRI

For the U.S. Side  
Mr. John McFee  
Project Manager  
Shaw Environmental Inc.

Dr. Sergei Vladimirov  
Deputy Department Head  
VNIPIET

Dr. Alexander Pavlov  
Principle Investigator  
VNIPIET

Mr. Vadim Starchenko  
Director General  
"Daymos," Ltd.