Fukushima and the International Science and Technology Center

Tokyo, 3 February 2012

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What is ISTC ?

- An International implementing agency for science and technology cooperation

- Operations began in 1994

- Participating countries:

  EU, Japan, USA, Russia, Canada, Norway, South Korea, and 6 other countries of the FSU (Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan and Tajikistan).

RESULTS

- 2,751 projects funded
- 1 billion USD investment
- Network of 74,000 researchers at 1000 institutes
- More than 60 workshops in Japan

RESULTS

ISTC Projects Review and Fukushima

① Decontamination and rehabilitation of nuclear or radioactively contaminated sites
② Semipalatinsk findings
③ Chernobyl post accident analysis
④ Radiological impact (mathematical models and results)
⑤ Liquid waste and solid waste treatment
⑥ Monitoring
⑦ Severe accidents assessment

About 130 ISTC projects (42 mil. USD) are relevant for Fukushima.

Priority areas:

① Decontamination and rehabilitation of nuclear or radioactively contaminated sites

ISTC projects identify technologies for:

- decontamination of soils
- removing transuranium elements from silt of radioactive storage pond
- decontamination of solid surfaces
- cleanup of high-level waste storage tanks
- pyrolytic Disposal of Radioactive Waste
- fixation of Radio Isotope Polluted Soils against Erosion
- isolation of Radionuclide-free Cellulose

② Semipalatinsk findings: Semipalatinsk Test Site (STS)

Technologies

- for ecological monitoring and instrumentation
- for water pollution and control
- for remediation and decontamination
- for radiobiology and public health

③ Chernobyl post accident analysis

④ Radiological impact (mathematical models and results)

- Migration of radioactivity through rivers and groundwater
- Radionuclide migration with food
- Radio-nuclides in atmosphere
- Decision support systems

⑤ Liquid waste and solid waste treatment

- High-Level Waste treatment
- Low-Level and Medium-Level Waste treatment

⑥ Monitoring

- Semipalatinsk
- Post-Chernobyl accident
- Ural and Siberia region
- Central Asia, etc.

⑦ Severe accident assessment

22 projects are of interest to Fukushima

1 Technologies and results of research

1－1 Technologies for restoring environment

- Decontamination of soils by chemical and physical methods
- Decontamination of solid surfaces
- Reducing active waste amounts
- Bio remediation
- Fixation of radioisotope polluted soils against erosion

1－2 Modelling of radionuclides transportation

1－3 Transportation of radionuclides in Japan Sea

2 Projects relating to stakeholder issues, securing safety, and decision making

Actions taken

- Expert reviews in Moscow
  - Severe Accidents Management（2011.12.1-2）
  - Decontamination and restoration of environment （2011.12.5-6）
- Today

  Presentation of 7 ISTC projects

NEXT STEPS

- Further identification of technologies relevant for Fukushima
- ISTC will remain facilitator

1 Technologies and results of researches

1—1 Technologies for restoring environments

Project	Title	Institute	Tech. Field
2055	Development and Demonstration of Technology for Decontamination of Solid Surfaces and Soils by Subcritical Carbon Dioxide	Khlopin Radium Institute, et.al.	Decontamination of Soils by chem. and phys. method
1567	Use of IPEC for Remediated Soils Contaminated from Nuclear and Industrial Activities	All-Russian Scientific Research Institute of Non-Organic Materials named after A. Bochvar, et.al.	
0016	Development of electrokinetic and chemical methods for rehabilitation of soil and ground water contaminated by radionuclides and heavy metals	Federal State Unitary Enterprise Research and Development Institute of Power Engineering named after N.A.Dollezhal, et.al.	
3189	The Development of Composition and Technology of Amendment Production for Rehabilitation of Soils Contaminated by Radionuclides and Assessment of Their Application Efficiency	Scientific & Production Association “Typhoon”	
B-859	Combined Technology for Radioactively Contaminated Soil Remediation Based on Application of Hydroseparation, Chemical Leaching and Addition of Natural Organic and Mineral Absorbers	Joint Institute of Energy and Nuclear Research – Sosny	
p2042	Evaluate Decontamination Techniques For Use at the Idaho National Technology Engineering Center	All-Russian Scientific Research Institute of Non-Organic Materials named after A. Bochvar	Decontamination of Solid Surfaces
0869	Liquidation of the Chernobyl Disaster Aftermath: Development of a Technology for Pyrolytic Processing, Disposal and Compacting of Combustible Radioactive Technogenic Waste	Institute of Problems of Chemical Physics	Reducing active waste amounts
B-852	Development of Conversion Technology for Isolation of Radionuclide-free Cellulose and Nitrolignin from the Straw of Agrocultures as a Method for Rehabilitation and Deactivation of Territories	Belarussian State University / Institute of Physical Chemical Problems	Bio remediation
K-152	Fixation of the Radioactive Contamination of Soil Surface at the Azgir Range	Kazakh National University, et.al.	Fixation of radio isotope polluted soils against Erosion

1 Technologies and results of researches

1－2 Modelling of radionuclides transportation

Project	Title	Institute	Tech. Field
3696	Modeling of Radionuclide Transport Realized into the Rivers, Lakes and Bays from the Non-Uniformed Contaminated Territories in Order to Perform Long-Term Radio Ecological Prediction Using Measuring Data Analysis	VNIIEF, et.al.	Mathematical models and results of radiological impacts Mathematical models and results of radiological impacts
0851	Development of Prediction Models for Radioactive Contamination Escape from the Karachai Lake Based upon Modern Data on the Site Geological Structure	IGEM (Geology & Mineralogy), et al.	
0589	Developing Confinement Techniques for Radioactive Matters within Topsoil to Prevent their Spread with Water and Wind from the Sites on Nuclear Fuel Cycle Sites	All-Russian Scientific Research Institute of Non-Organic Materials named after A. Bochvar, et. Al.	Decontamination of Soils by chem. and phys. method

1 Technologies and results of researches

1－3 Transportation of radionuclides in Japan Sea

Project	Title	Institute	Tech. Field
p1389	Investigation of Migration Behaviour of Radionuclides and Related Oceanographic Observation in Sea of Japan	Far Eastern Regional Hydrometeorological Research Institute, et.al	Mathematical models and results of radiological impacts
p1783	Investigation of Migration Behavior of Radionuclides and Related Oceanographic Observation in the Sea of Japan		
p2387	Investigation of Migration Behavior of Radionuclides and Related Oceanographic Observations on the Sea of Japan		

2 Projects relating to stakeholder issues, securing safety, and decision makings

Project	Title	Institute	Tech. Field
p4007	Fate and Transport of Cesium, Strontium and Cobalt Particles on Urban Surfaces	Scientific & Production Association “Typhoon”	Mathematical models and results of radiological impacts
0150	Contamination of Agricultural Products, Dose Burden for Population and Efficiency of Countermeasurement on Contaminated Lands: Probabilistic Methods of Estimation, mathematics and Software.	Institute of Agriculture Radiology and Agroecology, et.al.	
1224	Development of GIS-DSS Systems for Research, Education and Training in the Context of the Rehabilitation of Contaminated Territories with Consideration of Radioecological, Ecological, and Socio- Economic Factors. (GIS - Geographical Information system; DSS - Decision support System)	Kurchatov Research Center, et.al. [Obninsk Institute of Nuclear Power Engineering]	
2558	Radioecological Monitoring of the Tobol and Irtysh Rivers. Study of Biogenic Transfer of Radionuclides and Radiation Risk Assessment for the Population and Environment	Russian Academy of Sciences / Severtsov Institute of Ecology and Evolution, et.al.	
3547	Analysis of Radionuclides Transport and Assessment of Radiation Risk for the Population and Environment in the Basin of the Irtysh-Ob’ River System	Russian Academy of Sciences / Severtsov Institute of Ecology and Evolution, et.al.	
K-052	The Development of ways to Increase the Effectiveness of Agricultural Production of Spoiled Territories of Kazakhstan.	National Biotechnology Center of Kazakstan / Scientific Research Agricultural Institute	Decontamination of Soils by chem. and phys. Method
K-237	Development of Methods for Remediation of Soils with Increased Contents of Heavy Metals, Radionuclides and Improvement of Soils for Ecologically Clean Agricultural Production Systems Taking into Account the Population Health Indicators	Kazakh Research Institute of Fruit Growing and Viticulture, et.al.	Bio remediation