NEWSLETTER

RADIOACTIVE WASTE MANAGEMENT

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The FNCA 2002 Workshop on RWM to be held at Daejeon this November

The FNCA 2002 Workshop on Radioactive Waste Management (RWM) is scheduled to be held from November 18 to 22, including technical tour to Yonggwang Nuclear Power Station.

The workshop will be hosted by Ministry of Science and Technology (MOST) of Korea and Nuclear Environment Technology Institute (NETEC) of Korea Hydro & Nuclear Power Co.,Ltd.(KHNP) as a local host, and the Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan, in cooperation with Japan Atomic Industrial Forum Inc.(JAIF).

In the upcoming workshop, each representative of FNCA countries report latest topics relating to RWM issues as country report.

Round table discussions will be held, regarding RWM consolidated report and 3-year plan.

There are the sub-meetings focused on RW from Decommissioning, Waste Characterization,and Technologically Enhanced Normal Occurring Radioactive Material (TENORM).

In addition, the result of Spent Radiation Sources Management (SRSM) Task Group's Activity will be reported to the workshop members.

Overall Schedule

Sunday, November 17

Arrival of overseas participants at Daejeon City

Monday, November 18

The 1st day of Workshop

- Country Report etc.

Tuesday, November 19

The 2nd day of Workshop

- Sub-meeting on RW from Decommissioning
- Sub-meeting on Waste Characterization

Wednesday, November 20

The 3rd day of Workshop

- Technical visit for Yongwang NPS

Thursday, November 21

The 4th day of Workshop

- Sub-meeting on TENORM
- SRSM reporting

Friday, November 22

Final day of Workshop

- Review of 3-year plan

Saturday, November 23

Departure of overseas participants for home country

The persons in Charge of Workshop

Dr. Myung-Jae Song
FNCA RWM Project
Leader of Korea
General Manager, R&D Division
NETEC/KHNP

Mr. Sang-Woon Shin
Group Leader
Radwaste Treatment Research Group
NETEC/KHNP

Dr. Hyung-Joon Kim
Manager
Policy Development Team
NETEC/KHNP

Topics from FNCA Countries

Korea

Dr. Myung-Jae Song
RWM Project Leader
General Manager, R&D Division
Nuclear Environment Technology Institute (NETEC)
Korea Hydro & Nuclear Power Co., Ltd (KHNP)

FNCA 2002 – SRSM Task Group Meeting

The FNCA 2002-SRSM (Spent Radiation Source Management) task group meeting was held from 26 to 30 of August at NETEC in Daejeon, Korea. This meeting was jointly hosted by NETEC and JAIF (Japan Atomic Industrial Forum, Inc.).

Three FNCA countries, Korea, Japan and Thailand, participated this task group meeting. Delegates from all participating FNCA countries presented and discussed their experiences, lessons learned, status, international trend, and ways of cooperation on “Spent Radiation Source Management (SRSM)” within the FNCA framework. Therefore, all participants recognized that the safe management for the spent radiation source is an important issue in promoting the peaceful utilization of radiation and radioisotopes for improving human life quality.

At the meeting, it was agreed that the task group meeting through an open exchange of the information and experiences based on a common understanding on critical issues is very useful in strengthening the SRSM system in each country, and the result of this meeting needs to be made for a practical use of the other FNCA countries.

In conclusion, two actions were recommended to strengthen the SRSM system in each FNCA country as follows:

- Strengthening the linkages of the regulatory body with relevant national agencies concerned with the radioactive waste management.
- Exchanging information and providing mutual technical support concerning the implementation of ICRP recommendations and IAEA BSS.

At the last day of the meeting, the technical visits to NETEC’s pilot scale vitrification facility and Seoul Asan Medical Center were made.

FNCA 2002-SRSM Task Group Meeting August 26 -30, 2002 Daejeon,Korea

Japan

Prof. Toshiso Kosako
RWM Project Leader
Research Center for Nuclear Science and Technology,
The University of Tokyo

Mr. Minoru Ookoshi
General Manager
Waste Management Division No.1
Department of Decommissioning and Waste Management
Japan Atomic Energy Research Institute (JAERI)

Advanced Volume Reduction Facility in the JAERI Tokai Research Establishment

The Japan Atomic Energy Research Institute (JAERI) is constructing a new waste treatment facility in the Tokai Research Establishment since March in 1999. The facility is designed to gain high volume

reduction ratio and the stability of waste form for low-level solid radioactive waste. The size of the facility is about 51 m-41 m with three floors over ground and one floor under ground. The waste treatment system consists of a super compactor, a metal melting unit and a non-metal melting unit.

Compressible metal wastes from research reactors are treated by the super compactor (see Fig.1). This compaction system consists of the diameter reduction unit to compact the 200-liter drums in the diameter direction with 200 ton and 520 ton force and the high-pressure compaction unit to compact the drums in the direction of height with 2,000 ton force. Compacted pellets are filled into new 200-liter drums as close as possible to the limit of the height. The processing capacity is 50 drums a day.

Metal wastes except for compressible wastes are treated by the metal melting unit of an induction furnace (see Fig. 2). After melting, the metal wastes are cast to receptacles, which are used at the non-metal melting unit, by centrifugal casting apparatus, or cast to ingots. The processing capacity is 4 ton per one batch a day. The volume reduction ratio of waste is around 1/6. Off-gas from the furnace is purified through off- gas cleaning system, which has ceramic filters, HEPA filters, etc. and is released to atmosphere. As a measure for the control of dioxin concentration, the off-gas cleaning system has an after-burner which maintains the off-gas at a temperature of 1,100 degree Celsius, a gas cooler which immediately cools the off-gas to 200 degree Celsius by spraying water and a dioxin filter.

The non-metal melting unit has an incinerator and a plasma melting furnace (see Fig. 3). Incombustible wastes such as vinyl chlorides are incinerated by the incinerator first, so as to reduce a burden to the off-gas cleaning system of the unit, and generated ash and incombustible wastes such as concrete and glass are melted by the plasma melting furnace. The processing capacity is 4 ton a day by two batches. The volume reduction ratio of waste is around 1/3. Molten slag is pored into the receptacles, which are produced at the metal melting unit. Thus the amount of secondary wastes is reduced by utilizing the metallic wastes as receptacles. The receptacles are packaged in 200-liter drums after cooling. Off-gas cleaning system is shared in the incinerator and the plasma-melting furnace, and is equal to the system constitution of metal melting unit.

We will start the operation of the facility in the early of 2003. We can treat about 2,000 m^3 of low-level solid wastes a year, which are stored on the site presently and generated newly so that the products can be disposed of into a near surface disposal facility in the future.

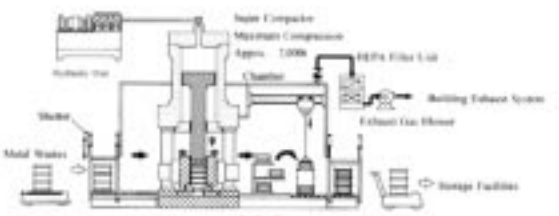

Fig. 1 Process Flow of Super Compactor

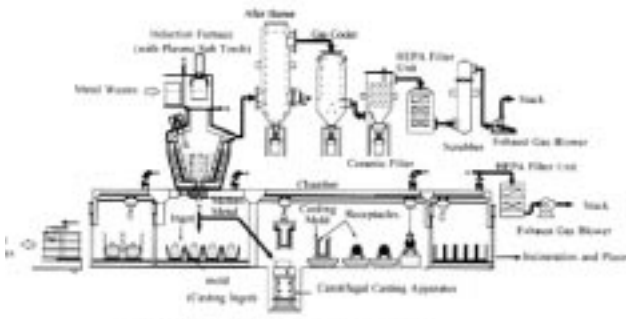

Fig. 2 Process Flow of Metal Melting Unit

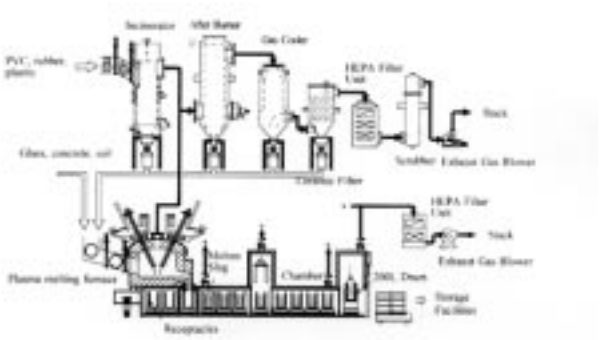

Fig. 3 Process Flow of Non-metal Melting Unit

Austraria

Dr. John Harries
RWM Project Leader
Leader, Environmental Radioactivity
Australia Nuclear Science and Technology Organisation (ANSTO)

Mr. Lubi Dimitrorski
Head, Waste Operations & Technology Development
ANSTO

New Waste Treatment and Packaging Facility

The construction of a new Waste Treatment and Packaging Facility has been completed at the Australian Nuclear Scientific & Technology Organisation (ANSTO). The new facility was completed in July 2002 and will be managed by the ANSTO Waste Operations & Technology Development Section.

The new facility provides ANSTO with a state of the art facility for the treatment and packaging of radioactive wastes in readiness for transfer to the proposed National Waste Repository (low level and short-lived intermediate level solid wastes) and the future National Store (intermediate level solid wastes). The facility is designed with a 600 m^2 operations area and an additional 400 m^2, in two levels at the northern end of the building. The two level area includes blue and white laboratories, a technical maintenance room, offices, conference room, control room, display/viewing gallery and change room facilities.

The facility will be used for the treatment and packaging of a number of waste types including solids and liquids. Processes will include:

- Evaporation of wastes concentrated from treatment of low-level liquid wastes from the proposed tertiary (reverse osmosis) treatment plant. This waste will be dried and solidified, and packaged to the waste acceptance criteria for the repository.
- Treatment of liquid process wastes from radiopharmaceutical production.
- Cementation of general low level solid wastes.
- Controlled oxidation of wastes (longer term).
- Facility for low level waste drum inspection, used filter processing and general decontamination.
- Testing and development of equipment and processes.
- Handling and packaging of intermediate level solid wastes as they are retrieved from storage facilities at ANSTO.

Construction of this new facility is most timely. The draft Environmental Impact Statement (EIS) for the proposed National Waste Repository has been released by the Department of Education, Science & Training (DEST) (http://www.dest.gov.au/radwaste). One of the first and major uses of the new Waste Treatment and Packaging Facility will be to treat the low-level solid-waste presently stored on at the ANSTO site so that it can be disposed of in the repository when it becomes operational.

The Philippines

Ms. Eulinia M. Valdezco
RWM Project Leader
Head, Radiation Proection Services
Philippine Nuclear Research Institute (PNRI)

On-Site Field Verification and Investination for a Near Surface Radioactive Waste Disposal in the Philippines

The siting process for the Philippine repository consists of 2 major stages. Stage I - the Site Screening process consists mainly of desk compilation of existing information and data sourced from different government and private agencies. Field investigations using geological, hydrological and surface environment methods are employed to verify, update and confirm existing data. These reconnaissance field investigations are carried out by performing selected airborne surveys of candidate regions and areas supplemented by ground investigations, as appropriate. Stage II – the Site Evaluation will proceed as soon as candidate areas identified in the first stage warrants detailed surface and subsurface investigations. This will finally include locating and constructing boreholes and exploratory shafts to allow characterization of underground surfaces.

Stage I activities generated maps showing the geologic, hydrogeologic and environmental considerations that were utilized in the site assessment process. The maps correspond essentially with the hilly to mountainous sections of the country, which when overlayed would eliminate more than 90% of the total land area in the country. Following the recommendation of the desktop study on Site Characterization for Near Surface Disposal of Radioactive Waste that was completed in 2000, on-site field verification and investigation activities were undertaken in 3 selected potential sites that warrant further investigation. Two of the sites are located in the island of Luzon while the third site is situated in the Visayas island. The purpose of the investigation was to verify, confirm and refine the results of the above stated study based on actual field observation of land use, accessibility, topography, geology and hydrogeological features including peace and order situation. An ocular inspection criterion based on these factors was developed for this purpose. These factors were grouped into 3 major categories, i.e. Social condition/access, On-site and access terrain, and Hydrogeology assigning a weighted score value of 40%, 30% and 30%, respectively.

Two of the sites (one of the sites is shown in the picture) were confirmed to have very good environmental conditions. Thus, the previous scores and descriptions of associated factors for environmental conditions were retained. The other site was found to be only about 25 km from an active volcano whose date of last eruption or known activity was in 1907 and only 2 km away from an active fault.

Using the results of ocular inspection and verification, a comparative rating scheme was made against the results of the desktop studies. Field investigations done on two sites are generally in conformity with the previously conducted desktop studies. The other site was not very promising due to its tectonic characteristics. However, it was observed that it possesses a favorable geo-environment. It was concluded that on-site field verification activities are shown to be an effective methodology in deciding whether to pursue or forego further investigation of potential sites for disposal purposes.

Thailand

Mr. Sutat Thiangtrongjit
RWM Project Leader
Head , Radioactive Waste Management Project
Office of Atoms for Peace (OAP)

Ms. Nanthavan Chataraprachoom
Senior Nuclear Chemist
Radioactive Waste Management Project
OAP

Conditioning of Co-60 Source from the Radiological Accident in Thailand

Office of Atomic Energy for Peace (OAEP) is the central of radioactive waste management in Thailand. All radioactive wastes including orphan sources and disused sources which can not be returned to manufacturer have to be sent to OAEP for further management and storage.

Lead shielded container of Co-60

The OAEP working team

Since the Co-60 accident occured in Thailand in February, 2000, the Co-6o source (420 Ci) had been temporarily kept in a stainless steel container under water in the spent fuel storage pool (4.5 metre in depth) at OAEP.

For the safe management, a lead shielded container was designed under the recommendation from the IAEA, based on the Basic Safety Standard and maufactured by a local company in Thailand.

The Co-60 conditioning operation was successfully done during 6 - 7 September 2002 by the OAEP working team. Now it was stored in a safe dry storage facility at Radioactive Waste Management Division, OAEP, Bangkok. The contact dose rate at the lead shielded container is 1.5 mSv/hr and 0.08 mSv/hr at 1 meter respectively.

Malaysia

Mr. Nik Maruzkee Nik Ibrahim
RWM Project Leader
Senior Research Officer Division of Special Project
Malaysian Institute for Nuclear Technology Research (MINT)

Practice Oriented Training Course in QM of Radwaste

An IAEA group training course, Practice Oriented Training on Quality Management of Radioactive Waste, was held in Malaysia from August 5th to 16th 2002. 10 participants from 5 countries (China, Indonesia, Thailand, Philippines and Malaysia) attended the course. This is an upgrade of the Demonstration on Predisposal Radioactive Waste Management Methods and Procedures that has been implemented by IAEA since 1996. The IAEA Technical Officer for the course is Ms. Sophia S. T. Miaw.

The main purpose of the group training was to provide training on various quality assurance practices and procedures that are integrated to develop waste management systems. The focus was on acceptable levels of quality assurance in predisposal waste

management practices consistent with a national waste management strategy and international recommendations.

Among the scope of the training are the quality aspects related to pretreatment, processing, storage, transportation and record keeping and documentation. During the course, the participants were introduced to RWMR software developed by IAEA for record keeping of all type of radioactive waste. The participants were actively involved in discussions during class and technical exercises.

Practical on Compaction of Solid Waste

Measurement by Spectroscopy

Solid Waste Processing Area

Classroom Exercise

Vietnam

Dr. Tran Kim Hung
RWM Project Leader
Director
Department of International Relations and Planning
Vietnam Atomic Energy Commission (VAEC)

Research on Applying the Safety Assessment Methodology to Near Surface LLW Disposal Facilities in Vietnam

According to the national energy strategy in Vietnam up to 2020 years, the Vietnam Atomic Energy Commission is carrying out a National Project titled “To Establish a Strategy Development of Nuclear Power Plant in Vietnam”.

In this project, the problem of rad-waste management has been given attention, especially the question of national disposal facilities for LLW and ILW waste. Based on the content of the project, the specialists in the field of rad-waste management are applying the result of the IAEA coordinated research project “Improving Long Term safety Assessment Methodology for near surface Disposal Facilities (ISAM)” to Vietnam condition.

Now we are taking necessary steps to participate in the new IAEA ICRP Application of Safety Assessment Methodologies for near surface Disposal Facilities (ASAM)- This Project will be started in November of this year. The ASAM project will consider practical application of the ISAM safety assessment methodology to proposed and existing near surface

View of Dalat LLW Storage/Disposal Facility

disposal facilities.

We have been applying Safety Assessment Methodologies for storage/disposal facilities at the Nuclear Research Institute, Dalat. This repository has eight concrete pits with design capacity about 900 m^3.

After gaining knowledge and experience our experts will focus on applying methodology for national planned disposal facilities in the areas such as : site selection, establishing waste acceptance criteria, designing and optimal engineered barriers...

We hope that with the fruitful cooperation in the framework of the IAEA and FNCA, we will be able to apply Safety Assessment Methodologies to Vietnam condition successfully.

Research Group of Radwaste Management at NRI, Dalat, Vietnam

Introduction of New RWM Project Leaders

China

Dr. Zhang Jintao
Deputy Director General
Department of Safety, Protection and Quality
China National Nuclear Corporation (CNNC)

Dr. Zhang Jintao was nominated as a new Chinese RWM Projector Leader.

Predecessor: Mr. Qiao Shurong

Thailand

Mr. Sutat Thiangtrongjit
Head, Radioactive Waste Management Project
Office of Atoms for Peace (OAP)

Mr. Sutat Thinangtrongjit was nominated as a new Thai RWM Project Leader.

Predecessor: Mr. Banchong Wangcharoenroong

Indonesia

Dr. Asmedi Suripto
Director
Radioactive Waste Management Development Center (RWMDC)
National Nuclear Energy Agency (BATAN)

Dr. Asmedi Suripto was nominated as a new RWM Project Leader of Indonesia.

Predecessor: Mr. Gunandjar

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