NEWSLETTER

RADIOACTIVE WASTE MANAGEMENT

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2001 FNCA WORKSHOP ON RADIOACTIVE WASTE MANAGMENT
DECEMBER 4-7, 2001 DALAT, VIETNAM

THE FNCA WORKSHOP 2001 DALAT, VIETNAM

The FNCA 2001- Workshop on Radioactive Waste Management was held from Dec. 4-7, 2001, in Dalat, Vietnam by Vietnam Atomic Energy Commission (VAEC) and the Ministry of Education, Culture, Sport, Science and Technology (MEXT) of Japan, in cooperation with Japan Atomic Industrial Forum, Inc. (JAIF).

Representatives involved in policy making, regulation, and R&D on RWM from the nine countries under the framework of the FNCA, i.e. Australia, China, Indonesia, Japan, Korea, Malaysia, the Philippines, Thailand and Vietnam atten-ded the Workshop

In the Workshop, the drafts of the consolidated report on RWM were presented and discussed at the Round Table Discussion.

The Sub-meeting on SRS storage and TENORM was held. Mutual understandings on both topics were deepened and information exchanges were achieved. Round Table Discussions were held on SRS management, based on the interim report of the SRS management task group. Reports were given by the Philippines and Thailand.

The participants reviewed and agreed on the rolling 3-year work plan on RWM in FNCA.

A special poster and video presentation on development of Japanese high-level waste disposal program was made during the Workshop. A technical tour to the Dalat Nuclear Research Institute was conducted following the Workshop.

Participants agreed that the continuation of Workshop on RWM is strongly recommended to allow the planned program for addressing radioactive waste management issues to be completed. This program will contribute to the safe radioactive waste management and radiation protection in the FNCA countries in the context of the global environment.

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NEWS ARTICLES FROM PARTICIPATING COUNTRIES

KOREA

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

Radioactive Waste Volume Reduction

Nuclear Environment Technology Institute (NETEC) is responsible for the radioactive waste management and disposal for the wastes generated from nuclear power plants and radio-isotope (RI) users in Korea. The radioactive wastes generated from nuclear power plants are in storage at the facilities in nuclear sites. And the wastes generated from RI users are sent to the storage facilities of NETEC.

NETEC is looking for a site for the permanent disposal of these wastes and also for the central storage of the spent nuclear fuels generated from nuclear power plants. The waste disposal site requisition activities do not progress as scheduled.

NETEC anticipated the voluntary subscription for the disposal site by local governments. However, it was not successful. So, they decided to find a few appropriate candidate sites first and then to negotiate with the relevant local governments. This process will go on for the next one year.

In the meantime, NETEC felt the necessity to expand the waste storage capacity of their facilities in order to accommodate the coming waste. The waste volume reduction ways have been looked into.

A consolidated storage container was divided for the more effective storage of the spent sealed sources. And an incinerator was introduced for the volume reduction of the combustible dry active waste and incinerable liquid radioactive waste. For the treatment of the non-combustible waste a 50 ton compactor was utilized. These waste volume reduction equipment will reduce the RI waste volume at least by a factor of ten.

Since the 2002 workshop of the FNCA RWM project is scheduled to be held from Nov. 18(Mon.) to Nov. 22(Fri.) in Daejeon, Korea, the workshop participants will have a chance to look at the facility.

RI Waste storage facility of NETEC (KOREA)

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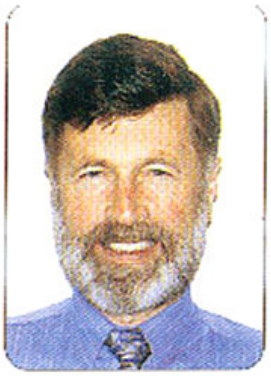
AUSTRALIA



Mr. John Harries
ANSTO, Australia.

Progress towards National Facilities for the Storage and Disposal of Radioactive Waste in Australia

Australia is developing an integrated waste management strategy for the long term management of radioactive waste. This strategy is based on establishing a national facility for the disposal of low level waste and a national facility for the storage of intermediate level waste.

In February 2001, the Government announced selection of a preferred site and two alternate sites for the National Repository for the near surface disposal of low level radioactive waste. All three sites have low annual rainfall, high pan evaporation and highly saline and low productivity aquifers.

A full environmental impact assessment will be carried out for the repository, including preparation of an Environmental Impact Statement (EIS). The draft EIS, to be completed in 2002, will be open for public comment, including consultative meetings and information days. The siting, construction, operation and decommissioning of the repository will be licensed by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA).

For some radioactive waste, the concentrations of long-lived radionuclides are too high for near surface disposal. Under the Australian classification system, intermediate level waste unsuitable for near surface disposal is known as Category S wastes, which includes numerous radium sources, wastes from the production of molybdenum-99 and, in the future, waste from the overseas reprocessing of research reactor spent fuel.

Also in February 2001, the Government decided to establish a purpose-built national facility for the storage of long-lived intermediate level waste (Category S) produced by Commonwealth agencies. The national store will not be sited with the low level waste repository. An expert committee has been appointed to advise on the site selection process. In July 2001 a discussion paper titled "Safe-storage of radioactive waste: the national store project: methods for choosing the right site" was released for public comment.

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MALAYSIA

Mr. Nik Mazukee

International Nuclear Conference 2002

The first International Nuclear Conference held in Malaysia was in 1997 (INC'97). Following the success of the conference and in response to the call by many participants of the 1997 conference, the International Nuclear Conference 2002 (INC '02) will be held again in 2002. The venue of INC;02 will be at the Putra World Trade Centre (PWTC), Kuala Lumpur, Malaysia, from 15-18 October 2002.

INC'02 will cover the progress and developments in nuclear science and technology. It will cover a wider area in a single conference by adopting a new format whereby five seminars focusing on the application of the technology in five different areas will be held as concurrent or parallel seminars. The INC'02 is jointly organized by the Malaysian Nuclear Society (MNS) and Malaysian Institute for Nuclear Technology Research (MINT), in collaboration with the FNCA and IAEA.

In this conference, the five technical seminars covered are:

a) Seminar I : Agriculture & Biosciences
b) Seminar II : Medical & Health
c) Seminar III: Environment, Waste & Safety
d) Seminar IV: Industry & Energy
e) Seminar V: Radiation Processing

Various topics related to Waste Management Strategy, Environment, Radioactive Waste and Safety, would be covered under Seminar III. Related information can be accessed through Website http://www.mint.gov.my/INC02/index.htm or by email: inc02@mint.gov.my

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THE PHILIPPINES

Ms. Eulinia M. Valdezco
Philippne FNCA
Project Leader RWM

A National Strategy to Manage Disused Radium Sources

The Philippines Participated in the IAEA Inter Regional Project under an IAEA advisory involvement scheme in which a national team was identified to undertake the project, with the IAEA providing an expert and specialized tools/materials/equipment.

Preparatory to project implementation, the Philippine Nuclear Research Institute issued Information Notice No. 99-01. The notice informed all concerned users and licensees that the Institute will no longer authorize the use of Ra-sources for human use effective January 31, 2000.

The radium policy enable the PNRI to collect all the radium sources in one location prior to the actual conditioning. A Seminar Workshop on Tungsten Arc Welding (TIG Welding) was then organized and conducted to meet the requirement of certified TIG welders as part of the national radium conditioning team. A specially designed and constructed workbench was used to install the mobile filtration system provided by the IAEA. The workbench (see figure) was divided into three distinct zones; the transfer zone, the welding zone and the leak testing zone. All the radium sources in storage were retrieved and segregated into batches of small sources to facilitate documentation and easy transfer to stainless steel capsules. Activity and physical dimensions were taken into consideration in the segregation process to facilitate conditioning.

In March 2001, the conditioning of all radium sources in the country was undertaken by a national team with an IAEA expert. Using the specially designed and constructed workbench, the sources were loaded into the stainless steel capsule one by one taking note each time of the reading in the digital survey meter. A maximum load per capsule of not more than 50 mg or approximately 50 mR/hr at one meter is maintained. Each of the loaded capsule is then welded and tested for leaks using a desiccator containing glycol evacuated by a pump at 25 kPa. Ten small capsules and one big capsule were emplaced inside a lead shield which was also provided by the IAEA.. The lead shield is then lifted by an overhead crane and placed inside a 200 liter steel drum prelined with cement. The contact dose rates at the external surface of the steel drum are 130 μSv/hr at the side and 170 μSv/hr at the top. The drum is then marked on the outside surface with a final code number.

A total of 560 mg Ra (20.52 GBq) were encapsulated and TIG welded in 10 stainless steel capsules (9 standard sized and 1 big sized) and emplaced in the lead shield provided by the IAEA, The maximum contact dose rate at the external surface of the lead shield is 1.2 μSv/hr. A 55 mg Ra (2.03 GBq) source was encapsulated, TIG welded and leak test in the second big sized ss capsule due to its odd-shaped dimension. As it was not possible to place this source in the lead shield provided by the Agency, the ss capsule was placed in a 2.5 inch thick lead container, properly marked for temporary storage. The contact dose rate on the external surface of the lead container is 1μSv/hr and at one meter, 30 μSv/hr. This will be transferred later to a standard lead shield similar to that provided by the Agency and into a 200 liter prelined steel drum by the national team.

Results of all radiation monitoring of personnel and radiation control measurements of the working area gave values all within acceptable limits and indicative of an effective ALARA program.

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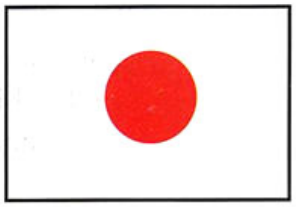

JAPAN

Mr.K. Kitayama
Nuclear Waste Management Organization of Japan (NUMO)

Current Status of Japanese HLW Disposal Program

The Long-term Program formulated by the Atomic Energy Commission of Japan specifies that high-level radioactive waste (HLW) separated during reprocessing of spent fuel is vitrified, stored for a period of 30 to 50 years for cooling and finally disposed of in a stable geological environment deep underground. In the year 2000, geological disposal program in Japan moved from the phase of generic research and development to the phase of implementation. Following the extensive technical achievements and activities for public understanding of HLW disposal, the "Specified Radioactive Waste Final Disposal Act" (the Act) was legislated in June 2000, and thereby was established the Nuclear Waste Management Organization of Japan (NUMO) in October 2000 as an implementing organization to further pursue the overall HLW management program. The Act specifies the overall framework for implementation and defines the roles and responsibilities of the Government, NUMO and other relevant organizations (Figure 1).

The assigned activities of NUMO include selection of the repository site, demonstration of disposal technology at the site, developing relevant licensing applications and construction, operation and closure of the repository as well as R&D necessary for implementation. According to the present schedule, repository operation may start as early as the 2030s.

The Act provides that the siting process shall consist of following three steps. Detailed investigations will be carried out in each stage and, finally, a repository site will be selected.

* In the first stage, literature survey will be conducted in nation-wide scale. Then preliminary investigation areas are nominated based on region-specific literature surveys focusing on long-term stability of the geological environment.

* Detailed investigation area(s) for candidate site(s) are then selected from the list of preliminary investigation areas by surface-based investigations including boreholes carried out to evaluate the characteristics of the geological environment.

* In the final third stage, detailed site characterization including underground experimental facilities will lead to selection of the site for repository construction

As the first milestone of siting process, NUMO announced to the public an overall procedure for selection of preliminary investigation areas on October 29, 2001. The procedure specifies that NUMO will solicit volunteer municipalities for preliminary investigation areas with publishing four documents as an information package around fiscal year 2002.

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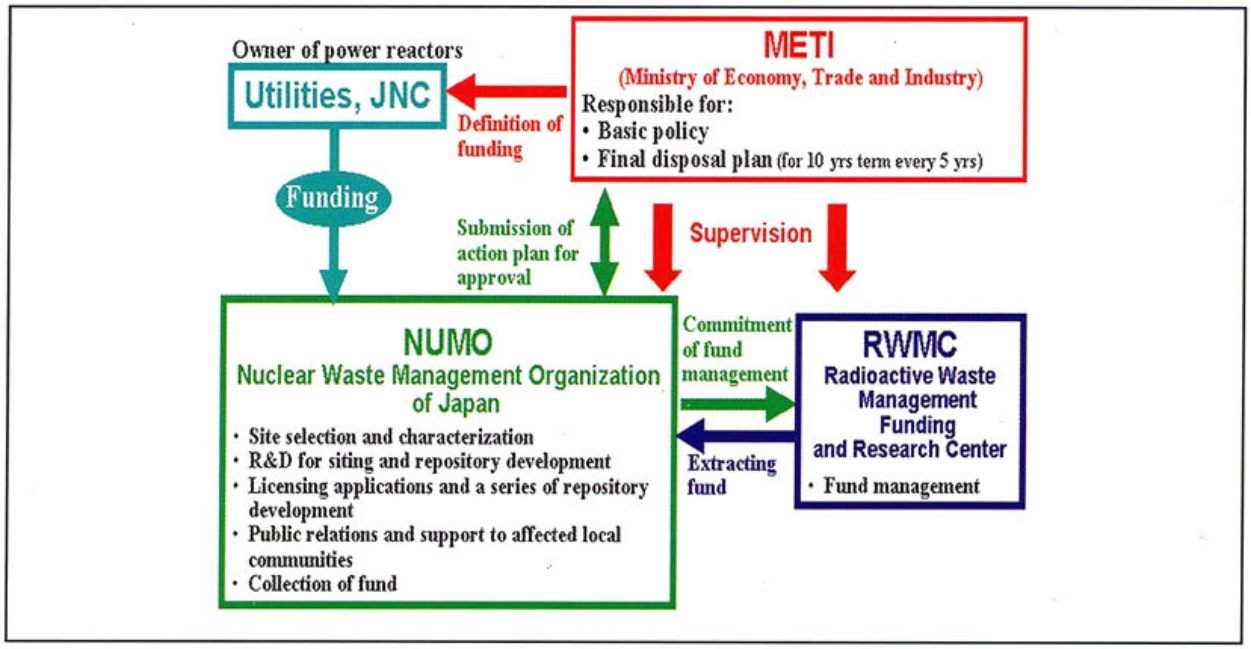
Figure 1: Framework of implementation of HLW disposal in Japan

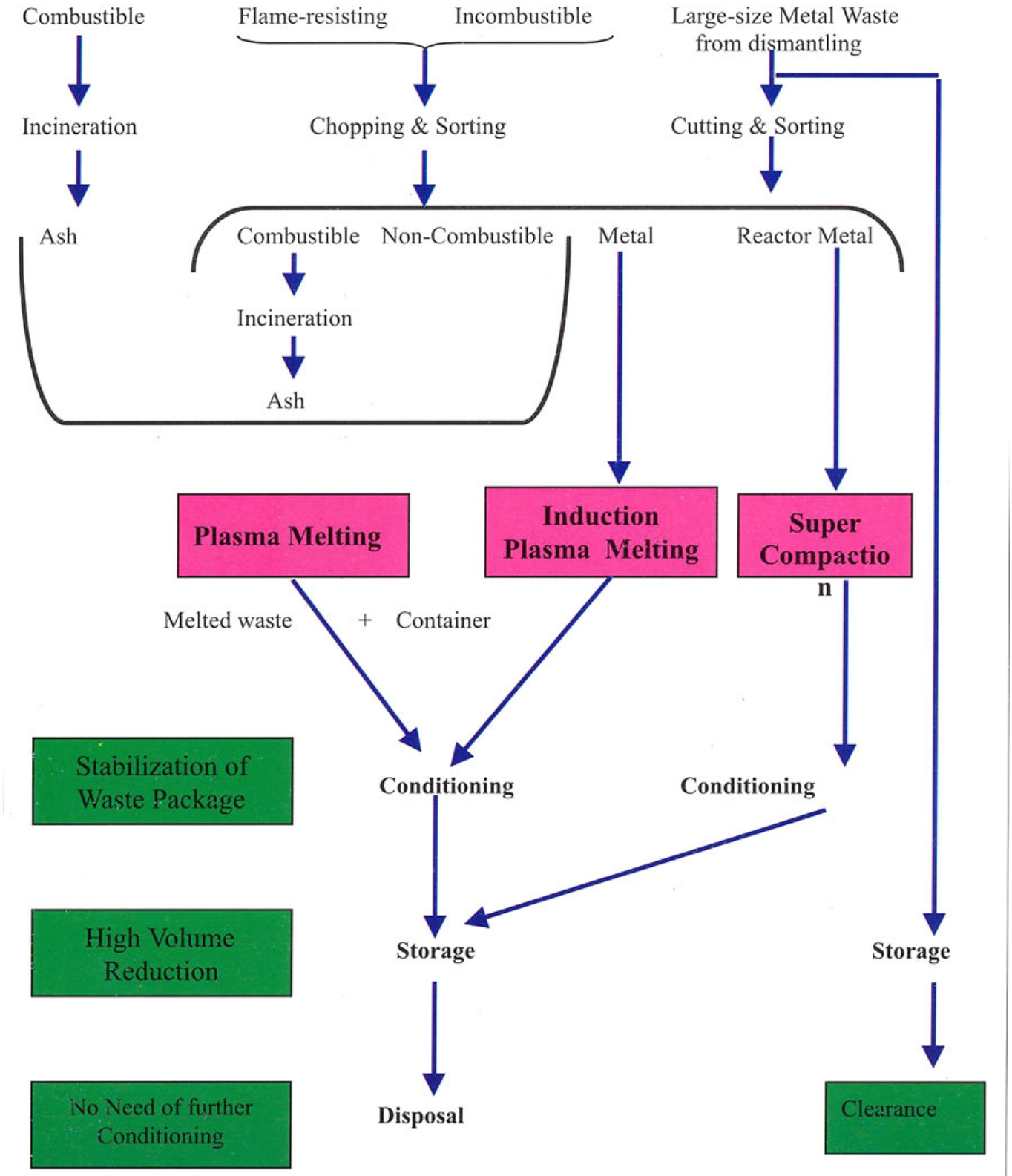


Prof. T. Kosako
The Univ. of Tokyo

Mr. K. Shimooka
(JAERI)

Advanced Volume Reduction Treatment at JAERI

JAERI will commission the advanced melting system for the low-level solid waste in FY2002. Final goal of the system is to get the stable waste forms for the disposal as well as to reduce its volume. Consolidated volume reduction system considered recycle, clearance and disposal of the wastes is constructed. Among a large variety of volume reduction methods, the most suitable method was selected, which depends on the nature of the wastes, preliminary sorting, pre-treatment and the final disposal criteria. Wastes are classified into combustible (paper, wood), flame-resisting (rubber, plastics), incombustible (metal, glass, concrete) and large size waste from dismantling of nuclear facility (larger than 200 l drum). At the pre-treatment step, combustible waste is incinerated. Flame-resisting and incombustible wastes are chopped and segregated into metal, non-combustible and combustible again. Large size metal waste is cut and also segregated. After monitoring, some waste which activity is low enough to clear the regulation is stored without further treatment for the clearance in future. At the final treatment, high force compactor at a compaction force of 2,000 ton compresses metal waste generated from reactors. Plasma torch melting furnace accepts incinerated ash and non-metal wastes such as glass, concrete and plastics. This system has two 1,000 kW plasma torches and gives a melting rate of 4 ton/day. Metal melting furnace is an induction-heating furnace with plasma sub torch. The process capacity is 4 ton/day. Melted metal is recycled for fabrication of containers for non-metal wastes. Melted non-metal waste is poured into the container that is cast with melted metal waste. The advantages of this system are: a high volume reduction; recycling of contaminated metal; no need for further conditioning; stabilization of waste package. The facilities for this treatment system are completed soon and the operation will start in FY 2002.



Schema of Advanced Volume Reduction Treatment at JAERI

INDONESIA

Dr. Djarot S. Wisnubroto
Center for Development of Radioactive Waste Management - BATAN

The policy of government of Indonesia for spent radiation sources

The policy of government of Indonesia for spent radiation sources is whenever possible spent sealed sources should be returned to the supplier. On the management of spent sealed sources, CDRWM (Center for Development of Radioactive Waste Management) - BATAN has a general principle that sealed sources should not be removed from their holders, or the holders physically modified (except for Ra-226 needles, smoke detector and lighting preventer).

On 2002, CDRWM is developing the management information system (MIS) for the database of all waste stored in CDRWM. This system is used to identify accurately and immediately on the transportation and storage of the radioactive waste. The other objective of MIS is to control the record of the waste history (transportation, treatment/ conditioning, and storage).

Spent sealed sources are segregated and collected separately because of their potentially high radiological hazard. Spent sealed sources generally are not removed from their associated shielding or source holders unless adequate precautions are taken to avoid exposure to radiation and contamination. Peripheral components of large irradiation equipment (i.e. those not directly associated with the source) are removed, monitored and disposed of appropriately. Sealed sources are not subjected to compaction, shredding or incineration.

Special conditioning techniques are required for spent radium sources. Spent radium sources are stored in an appropriate interim storage area with strict access control and radiation monitoring. The latest Ra-conditioning has been done on February 2001 supported by IAEA.

CDRWM has strategy to handle the radium by applying simple but effective methods of increasing the security of spent sealed sources. A potentially suitable method of securing spent sources is to contain the spent sources or source holders in a suitable size concrete metal drum (200 L). A convenient way to embed the source in concrete would be to place it in the center of the 200 L drum that filled with concrete.

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Japanese artists are performing

A Thai dancing-party

VIETNAM

Dr. Tran Kim Hung
FNCA RWM
Project Leader.

Vietnam - Japan Cooperation

Following the project that was signed by Vietnam Atomic Energy Commission (VAEC) and Japan Atomic Energy Research Institute (JAERI), a Training Center on Radiation Measurement and Radiation Protection was built in Institute for Nuclear Science and Technique (INST).

On December 10, 2001, the opening ceremony of Center was held. Two VAEC-JAERI Joint Training Courses were organized. The first training course on Radioactive Measurement was held from December 10 - 21, 2001 with 20 participants. The second training course on Radiation Protection was held from December 10 - 21, 2001 with 20 participants.

1st VAEC - JAERI Joint Training Course on Radiation Measurement

HIGHLIGHT IN 2002

1. FNCA Coordinators Meeting 2002, Tokyo.

FNCA Coordinators Meeting will be held in Tokyo, Japan on 6-8, March 2002. At the Meeting, the agreed rolling 3-year work plan will be presented.

2. 2002 FNCA RWM Workshop, Korea.

The 2002 workshop of the FNCA RWM project is scheduled to be held from Nov. 18 - 22 2002 in Daejeon, Korea. The workshop will be held by the Ministry of Education, Culture, Sports, Science and Technology of Japan and the Korea Hydro and Nuclear Power Co. (KHNP). The topics for the sub-meeting are:

- The Radioactive Waste from De-commissioning.
- The Waste Characterization.
- TENORM.

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