

NEWSLETTER

RADIOACTIVE WASTE MANAGEMENT

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The FNCA RWM Workshop 2001 to be held this December

The FNCA Workshop on Radioactive Waste Management (RWM) 2001 is scheduled on December 4-7, including a technical tour to relevant facilities in Dalat, Vietnam. The Workshop will be hosted by the Vietnam Atomic Energy Commission (VAEC) 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 coming Workshop, the draft of Consolidated Report would be reported as a country report from each participating country and the format of this report should be discussed at the Round Table Discussion. In the Sub-Meeting, which will be also held sequentially at the 2nd day of the Workshop, the discussions will be focused on the issues concerning "Spent Radiation Sources (SRS) Storage" and "TENORM". In addition, the interim report of activities of the new project, "SRS Management Task Group", which was implemented as the Discussion/Survey Meeting in the Philippines and Thailand this year, would be made.

Overall Schedule

Sunday, 2

Arrival of Foreign Participants at Ho Chi Minh

Monday, 3

Move to Dalat

Tuesday, 4

The First Day of Workshop

-Country Report on Draft of Consolidated Report etc.

Wednesday, 5

The Second Day of Workshop

-Sub-Meeting on SRS Storage & TENORM

Thursday, 6

The Third Day of Workshop

-Round Table Discussion

SRS Management

-Review/Modification on 3-year Plan

Friday, 7

Technical Tour to Nuclear Research Institute

Move Back to Ho Chi Minh

Saturday, 8

Departure of Participants from Ho Chi Minh



View of Dalat Nuclear Research Reactor

The Person in Charge of Workshop



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Draft Summary of SRS Management Task Group

The FNCA RWM Project Leader in Japan, the Philippines and Thailand



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Kosako/The
Univ. of Tokyo



Ms. Eulinia M.
Valdezco/PNRI



Mr. Banchong
Wangcharoenroong
/OAEP

Following the proposal and agreement of the First Forum for Nuclear Corporation in Asia (1st FNCA Meeting) held on November 13, 2000 in Bangkok, Thailand, followed by the confirmation of the FNCA countries' support at the Second FNCA Coordinators Meeting on March 14-16, 2001 in Tokyo, Japan, the Project for Establishment of Spent Radiation Sources (SRS) Management Task Group was authorized as a new project under the FNCA activities. The first activity of the Project for Establishment of SRS Management Task Group was implemented as the Philippine-Japan Discussion/Survey Meeting on July 30-August 3, 2001 in Manila at the Philippine Nuclear Research Institute (PNRI). And the second activity was implemented as Thailand-Japan Discussion/Survey Meeting on August 20-24, 2001 in Bangkok at the Office of Atomic Energy for Peace (OAEP).

The topics taken up at both Meetings were the following:

- *Experiences and lessons learned in both countries*
- *Status of SRS Management in both countries*
- *International trend in SRS Management*
- *Ways of cooperation on SRS Management within the FNCA framework*

A technical tour to a hospital and a steel works was made in the Philippines, and also a technical tour to a petroleum refinery facility and a strip mill company was made in Thailand. Japanese visitors received information on Sealed Radiation Source Use including SRS Management in industry and problem of Scrap Metal contaminated with radioactive materials.

The discussion was an opportunity to share experience and to seek ways to enhance cooperation on SRS Management between both countries under the FNCA framework. Both countries agreed that this kind of activity through an open exchange of information and experiences, based upon a common understanding on the critical issues, is the most effective in strengthening the SRS Management systems in both countries, and also agreed to make available the result of the Meeting to the other FNCA countries for their practical uses.

The Discussion/Survey Meeting on SRS Management was successful and enhanced good cooperation in the field of radioactive waste management between the Philippines, Thailand and Japan.

Meeting participants expressed appreciation to the PNRI and OAEP respectively for their arrangements, and to the Ministry of Education, Culture, Sports, Science & Technology (MEXT) and the Japan Atomic Industrial Forum (JAIF) of Japan for their support in facilitating the participation of the expert-team from Japan.

The Philippines



Dr. Alumanda M. de la Rosa, FNCA Coordinator of the Philippines & Prof. Kosako



Meeting & Discussion at PNRI



Visit to a Hospital

Thailand



Meeting & Discussion at OAEP



Visit to Ongkharak Nuclear Research Center, OAEP



Friendship between Thai Experts & Japanese Delegates

Topics from FNCA Countries



Korea



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 Division, Nuclear Environment
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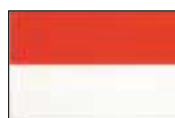
Recent Activities related to Radioactive Waste Management in Korea

For treatment of low-and intermediate-level radioactive wastes (LILW), vitrification was singled out as the most promising technology which can remarkably reduce waste volume and enhance disposal safety in favor of public acceptance. Based on a feasibility study, NETEC constructed a pilot vitrification facility in 1999 and has developed its unique vitrification process for LILW. In September 22, 2001, NETEC successfully completed a long-term vitrification pilot test which lasted 130 hours. Total 1.1 ton of simulated dry active waste (DAW) and spent resin were vitrified with volume reduction ratio of 80 in the test. The test aimed at demonstrating overall performance requirements of the NETEC vitrification process which are expected to be essential for commercialization. As a next step, NETEC plans to design and construct the first commercial vitrification plant at one of the nuclear power plant sites by 2004.

Radioactive waste incineration system to accept wastes from non-power sources except α -bearing waste is under license. Safety assessment and environmental impact assessment reports are

submitted for regulatory review. The system consists of two incinerators, which have the capacity of 30 kg/hr for combustible DAW and 8 l /hr for organic liquid waste, respectively, and a common off-gas treatment sub-system. It has also equipped with the emission monitoring system in stack to continuously tele-measuring hazardous off-gas such as SOx, NOx, Cl₂, etc.

Apart from the development of waste volume reduction technologies, the endeavor to secure a site for LILW disposal facility, which is planned to operate from 2008, is still going on. After the open subscription from June 2000 to June 2001 is finished without any desirable result, NETEC is carrying out a new siting program to select candidate site(s) first and then to negotiate in depth with the relevant local governments before the final nomination of a site.



Indonesia



Mr. Gunandjar
 FNCA RWM Project Leader
 Director, Center for
 Development of Radioactive
 Waste Management
 National Nuclear Energy
 Agency (BATAN)

Development of Spent Radiation Sources (SRS) Management in Indonesia

In Indonesia, the Spent Radiation Sources (SRS) are generated from nuclear installation, industries, hospitals, mining company, and research laboratory. The wastes of SRS must be managed safely to avoid the risk of irradiation to workers and

public and also for protection of the environment. The Center for Development of Radioactive Waste Management (CDRWM)-BATAN is the undertaking organization as well as responsible to carry-out the radioactive wastes (including SRS) management with statutory as Executing Body. Management of the SRS is an integral part of radioactive waste management program and has been implemented in the planning, design and operation. The SRS from producer (user) are transported by truck, and stored in the interim storage for pretreatment, then the SRS are conditioned and stored in the interim storage for high radiation waste facility.



Interim Storage for High Radiation Waste

A part of the SRS are immobilized with cement matrix in the concrete shell and then stored in the interim storage facility before sending to the final storage. The SRS from different producer (user) and its recommendation to treatment, as follow:

Source Arising	Type of SRS	Recommendation to treatment ^{*)}
Hospitals (Brachytherapy, teletherapy)	Co-60	CS
	Cs-137	
	Ra-226	
Research Laboratory	H-3 (solid)	IS
	C-14 (solid)	
	P-32 (solid)	
Industries (Non Destructive Testing, Industrial Gauges)	Cs-137	CS
	Co-60	
	Sr-90	
	Kr-85	IS
	Ir-192	
	Am-241	CS
	U-depleted Ra-226	
Mining Company (Well-logging)	Cs-137	CS
	Co-60	IS
	Ir-192	CS
	AmBe	CS
Nuclear Installation	Co-60	CS
	Cs-137	
	Ir-192	IS
	I-131	

*) CS= Conditioning and storage in concrete bunkers
IS= Immobilization in the concrete shell and storage safe

Concerning the spent Radium sources (Ra-226), we are aware that both the World Health Organization (WHO) and International Atomic Energy Agency (IAEA) recommend that the use of Radium for medical treatment should be replaced by other more controllable methods and radioisotopes. Today most of the old Radium sources previously used for Brachytherapy have been replaced by sources containing Co-60, Cs-137, Ir-192 or other radionuclides. As a consequence many countries now face the problem of ensuring that Radium with drawn from service is rendered safe and stored securely until disposal is possible.

The CDRWM-BATAN currently find the technical assistance from IAEA under IAEA Model Project INT/4/131: "Sustainable Technologies to Manage Radioactive Waste" with task is Radium Conditioning.

Preparing infrastructure for this programme such as organizing team of Radium conditioning, the room for Radium conditioning Laboratory and some equipments needed has been carried-out. The room for Radium conditioning Laboratory use a part of the incinerator area located at Radioactive Waste Treatment Installation Facility.

In this program, Indonesia received some assistance of equipments and expert from IAEA. The Radium conditioning operation have been carried out on February 19 - 23, 2001, by a national team assisted by an IAEA expert.



China



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China National Nuclear
Corporation (CNNC)

National Seminar on Radiation Source Safety

Being co-organized by China Nuclear Radiation Protection Society and Department of Safety, Protection and Health, CNNC, the seminar was held in Lintong from October 9 to 14, 2001. It was under the auspice of China Atomic Energy Authority, Ministry of Health, State Environmental Protection Administration and Ministry of Security.

More than one hundred officials and experts, including 3 IAEA officials, participated in the

seminar. The main topics are as follows:

1. *Management and supervision of radiation sources;*
2. *Current status and existing problems of radiation source management;*
3. *Lessons and analyses of accidents caused by radiation sources;*
4. *Conditioning, Storage and Disposal of spent radiation sources;*
5. *Techniques for radiation sources safety evaluation;*
6. *Emergency preparedness and response to radiation source accidents.*

The participants set forth a lot of comments and suggestions for improving the management of radiation sources in China. The seminar suggested that the whole life management, training of the user, public awareness are critical issues to prevent accidents from occurring.



Australia



Dr. John R. Harries
FNCA RWM Project Leader
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Science and Technology
Organisation (ANSTO)

RADIOACTIVE WASTE MANAGEMENT AT ANSTO - MANAGING CURRENT AND HISTORIC WASTES

The Australian Nuclear Science and Technology Organisation (ANSTO) site at Lucas Heights has operated as a nuclear site for over 40

years. In 2001, ANSTO successfully completed an integrated five year Waste Management Action Plan to deal with legacy radioactive waste management issues.

Improved facilities were constructed for storage and characterisation of solid low-level radioactive waste, better monitoring was developed for the existing storage facilities for spent research reactor fuel and intermediate level liquid wastes, and some wastes were converted into more stable forms.

A hot cell process was developed to solidify the intermediate level liquid waste generated during the production of molybdenum-99. Routine processing of the liquid waste commenced in 1999 and to date over 2 m³ of liquid waste has been converted to a solid. This process has allowed for volume reduction of more than 98% for this waste form.

In one radioisotope production area, a threefold reduction in low level solid waste volume was achieved by separating non-radioactive waste from radioactive waste at the source. In another area, gaseous emissions of noble gases from the production of ⁹⁹Mo for radiopharmaceutical production were substantially reduced by utilising the results from new monitoring instrumentation which provided real time measurements of emission.

A pilot plant for demonstrating a membrane-based process for treatment of waste water has been installed, and the construction of a new Waste Treatment & Packaging Facility is currently under way for completion in mid 2002. The new facility will treat and package radioactive waste into forms acceptable for disposal in the proposed National Waste Repository.



Vietnam



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Development of Treatment Technique for Solid Radwaste at Nuclear Research Institute, Dalat, Vietnam

According to the design technology and facility for radwaste management, the solid wastes at the Nuclear Research Institute (NRI) was no need pre-treated for the storage/disposal. Therefore in the more than first ten years of reactor operation, solid waste only collected and stored in the storage/disposal facility. At that time, storage building once or twice a month opened for receiving solid waste from various laboratories at NRI. The wastes were thrown into one of the eight concrete pits. Day after day, wastes are collected more and more. The question how to treat and condition solid waste becomes very important because the fire could cause any time in the storage building. But this problem could not decide at NRI before year 2000 due to lack of the main facilities for these works.

To applying volume reduction treatment technique, the wastes have to segregate. One

segregating box has been constructed by Waste Management Division and placed in the storage building. Beside that, the NRI were provided with the "In-drum Compactor" and some equipment by the IAEA TC Project VIE/9/007. Since then, technology for solid waste treatment has been developed. In order to solve solid wastes generated from beginning up to now, one Country Project has just implemented successfully at NRI. More than 60 m³ compact-able wastes were compacted in 200-liter drum then conditioned in concrete. Based on experiment carried out in the laboratory and experience from FNCA Countries, the concrete produced in following component parts:

Cement: 17 %, Water: 8 %, Sand: 27 %, Soil: 48 %.

After 48 hours of setting, the water in the drum were controlled, it is less than 1%. After 28 days, conditioned drums were final controlled, labeled and stored in the storage/disposal facility. From now, the solid radwaste at NRI, Dalat become not difficult and unsafe problem that long time could not solve.

Highlight in 2001

The Forum for Nuclear Cooperation in Asia (FNCA) to be held in November, in Tokyo, Japan

The Second Ministerial Level Meeting (MM) of the Forum for Nuclear Cooperation in Asia (FNCA) will be held on November 29, 2001 in Tokyo, Japan, sponsored by the Atomic Energy Commission of Japan (AEC). The Senior Official Meeting (SOM) is also scheduled on November 28, 2001 in conjunction with MM.

Ministerial level representatives and senior officials from Australia, China, Indonesia, Republic of Korea, Malaysia, the Philippines, Thailand, Vietnam and Japan will participate in the FNCA

Meeting, the International Atomic Energy Agency (IAEA) also attend as an observer. The Delegates of FNCA countries will make country paper presentations on nuclear energy policy, and the following round table discussion on the 2 themes (tentative), "Sustainable Development and Nuclear Energy" and "Cooperation on Use of Radiation" will be actively discussed among the FNCA countries.

Regarding the field of RWM activities, the interim report of activities of "SRS Management Task Group", which was implemented in the Philippines and Thailand this summer, would also be reported to this Meeting and explored on the future cooperation on the good management of SRS under the FNCA framework.



FNCA HOMEPAGE RENEWAL OPEN!!

The HOMEPAGE, which introduces FNCA activities, has been renewed on November 12, and is now available on the following address: <http://www.fnca.jp/>

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