NEWSLETTER
RADIOACTIVE WASTE MANAGEMENT
Nov.2007
No.19
Nuclear Safety Research Association

Waste Management as a Barometer of Culture

Dr. Shunichi TANAKA
Vice-chair, Atomic Energy Commission of Japan

Firstly, I would like to send my sincere respect for all members working on Radioactive Waste Management project under the umbrella of Forum for Nuclear Cooperation in Asia (FNCA). The FNCA is an international cooperation regime promoting the utilization of nuclear energy to develop and improve the national welfare, where a lot of projects have been organized and achieved successfully in medicine, agriculture, industry, and so on. With reminding radioactive waste left much or less behind the abundant of fruits, I would like to stress that it is inevitably important to tackle the subject for dealing safely with radioactive waste. So far there has been no country as confirmed completely radioactive waste management, because it is difficult to get over steep hills in not only technology, cost, and legal but also public acceptance.

Waste is inevitably produced with the action of human being as daily life and industrial development. The waste management, however, have been fallen behind, resulting lots of problems such as environmental pollution and relevant diseases. Green house gas (GHG) is a kind of issue of waste management which human being has to overcome it by worldwide collaboration, as well.

It is easy to enjoy the fruit and hardly easy to manage the waste. Waste management is a barometer picturing the culture of community. Needless to say, radioactive waste must be dealt safely and properly. In this context, the activity of RWM in FNCA is more significant than other projects. I expect that you develop the cooperation in Asian counties for RWM as a front runner, and inspire and lead the discussion and policy about radioactive waste in the world.

Record of RMW Workshops

1) 1995 RMW Seminar	Japan (Tokyo)	8) 2002 RMW Workshop	Korea (Daejeon)
2) 1996 RMW Seminar	Malaysia(Kuala Lumpur)	9) 2003 RMW Workshop	Indonesia(Jakarta)
3) 1997 RMW Seminar	China(Beijing)	10) 2004 RMW Workshop	Malaysia(Kuala Lumpur)
4) 1998 RMW Workshop	Thailand(Bangkok)	11) 2005 RMW Workshop	Japan (Okayama Pref.)
5) 1999 RMW Workshop	The Philippines(Manila)	12) 2006 RMW Workshop	China(Beijing)
6) 2000 RMW Workshop	Australia(Sydney)		
7) 2001 RMW Workshop	Viet Nam (Da Lat)	13) 2007 RMW Workshop	Thailand(Bangkok)

Paticipants: 370 Persons (cumulative up to 2006)

Decommissioning and Clearance Task Group Discussion/Survey Meeting in Thailand

Nanthavan Ya-anant
Nuclear Science Specialist
Radioactive Waste Management Center
Thailand Institute of Nuclear Technology (TINT)

The Task Group Activities, Discussion/Survey Meeting on Decommissioning and Clearance was held from August 6 to 10, 2007. This meeting was hosted by Thailand Institute of Nuclear Technology (TINT), Ministry of Science and Technology, as the local host organization, and the Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan, in cooperation with Nuclear Safety Research Association (NSRA).

Thailand provided the venue as the fifth country based FNCA-2007 activity with hosting the Thailand-Japan Discussion/Survey meeting in Bangkok. Dr. Somporn Chongkum, TINT Executive Director, welcomed the Tasks group and expressed his appreciation for the FNCA Task Group visit. The FNCA Task Group was led by Prof. Toshiso Kosako (Japan Project Leader, RWM) and comprised of Dr. Takuya ABE (University of Tokyo), Mr. Takayuki AMAYA(MEXT) and Mr.Hideharu SATO (NSRA).

Decommissioning/ Clearance

The topics that were discussed during the Decommissioning and Clearance discussion and survey meeting were the following:

a) Recent status of Decommissioning and Clearance in both countries
b) Outline of regulation on Decommissioning /Clearance and NORM- TENORM in both countries
c) Ways of cooperation on Decommissioning and Clearance within the FNCA framework to provide adequate radiation protection

Technical visits

The Japanese delegation and personnel from TINT and OAP visited Mae Moh Power Plant and Coal Mining of the Electricity Generation Authority of Thailand (EGAT), Lumpang province and also the Bangkok Steel Industry Public Company(Ltd) in Samuthprakarn province for the technical visits.

Conclusion

In the final discussion, all parties recognized and the importance of exchanging information and provision of technical and human resources support in strengthening the personnel competency, legislation and infrastructure for Decommissioning, Clearance, NORM/TENORM issues.

The Task Group, the TINT and the OAP agreed on the following:

a) It is important to balance cost and safety consideration in the management of NORM/ TENORM.
b) Guidelines of NORM/TENORM should be harmonized based on international guidelines/ standards in order to avoid trade confusion among FNCA countries.
c) Exchange of information and experiences is the most effective means in addressing the issues.
d) Manpower development through training programs in FNCA countries with advance technologies and capabilities.

The group expressed their appreciation to the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT), the Nuclear Safety Research Association (NSRA), Thailand Ministry of Science and Technology (MOST), the Office of Atoms for Peace (OAP) and Thailand Institute of Nuclear Technology (TINT) for their supports in facilitating the participation of the expert teams from both sides, Japan and Thailand.

They also expressed their appreciation to the Mae Moh Power Plant and Coal Mining of the Electricity Generation Authority of Thailand (EGAT), and also the Bangkok Steel Industry Public Company(Ltd) for their hospitalities for the technical visits.

VIETNAM Task Report in 2007

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Centre of Radiation Protectionand Enviroment MonitoringInstitute of Nuclear Science and Technology(INST)

Date: Aug. 20-25, 2007, Main Subject:

Decommissioning/Clearance, Japanese experts of visit: Prof. Dr. T. Kosako and Dr. T. Iimoto (The univ. of Tokyo), Ms. M. Matsumoto (NSRA). Site-Visit Targets were

1) Facility of RWM Temporary Storage and Monazite Pilot Plant at Phung,
2) Da Nang General Hospital, and
3) Thanh Tam Co. Ltd. (black beach sand).

Temporary RWM Storage at Phung

The following information is presented in the discussion.

a) RWM in Vietnam, b) Japanese guideline for NORM/TENORM WM, c) Clearance system in Japan, d) Decommissioning experiences in Japan.

Both country were agreed that categorization of the RW be important to success an effective management.

Operator should have the all responsibilities on the RWM to plan and establish a clearance procedure. Related authority should construct a national clearance system and should check the operator's plan and procedure.

Before dismantling a facility related to nuclear materials, its operated history should be recorded as in detail as possible.

Monazite Pilot Plant at Phung

60Co Source in Da Nang General Hospital, having not been used since 2002

TDa Nang General Hospital site-visit

Japan and Vietnam recognized importance of exchange of information and provision of technical support, in strengthening infrastructure on Decommissioning / Clearance issues, which should cover:

(1) Information exchange of updated technologies of radiation waste, especially of low and intermediate,
(2) Manpower development by effective training programs on these issues, and
(3) Practical cooperation in strengthening measurement technology / methods through intercomparison program among the FNCA countries.

Both sides also recognized that they could utilize stepwise approach of NORM/TENORM RWM in order to improve Decommissioning and Clearance strategy.

Thanh Tam Co. Ltd. in Quang Nam Province

Site-Visit to Black Beach Sand

Main members in the ITRRE discussion

Upgrading of Radioactive Waste Management Facilities at ANSTO - 5 Year Plan

Lubi Dimitrovski
FNCA RWM Project Leader of Australia
Waste Operations
Australian Nuclear Science &Technology Organisation

ANSTO has implemented a 5 Year Radioactive Waste Management Plan in order to ensure its radioactive waste management facilities are capable of supporting ANSTO's needs now and in the future.

The 5 Year Plan provides key activities that will:

* Ensure the current and future direction for Waste Operations processes are consistent with ANSTO's Strategic Plan.
* Demonstrate preparedness to cater for current and future radioactive waste management needs, including waste arising from the operations of the new OPAL Reactor and from the decommissioning of the HIFAR and MOATA Reactors.
* Ensure ongoing facility maintenance activities are planned and carried out in a timely manner.
* Meet regulatory and customer requirements.
* Ensure financial issues are addressed through value for money driven operations.
* Use processes that are best practice and streamlined to serve ANSTO's needs.

The 5 Year Plan has identified the following improvements for the management of radioactive wastes:

* Upgraded and improved processing for Low Level Solid Wastes (LLSW), including super compaction and cement conditioning and packaging, increased storage, improved decontamination systems, upgrading of active ventilation systems and upgrading of the LLSW drum gamma system for characterisation of LLSW.
* Upgraded and improved processing of Low Level Liquid Wastes (LLLW) including refurbishment of the remaining LLLW storage tanks and infrastructure, implementation of a new sludge drying process incorporating a drum drying system, and safety improvements.
* Upgrading Intermediate Level Liquid Waste (ILLW) processing for intermediate level liquid wastes arising from the production of medical radioisotopes.
* Upgrading of Intermediate Level Solid Waste processing, including improved shielding to reduce radiation dose, and the installation of an ion exchange resin process to condition and package radioactive ion exchange resins.
* Process development for treatment of miscellaneous organic wastes.
* Upgrading of existing Hot Cells.
* Rationalisation of security arrangements following the shutdown of the HIFAR reactor.
* Improved analytical monitoring and analytical systems to complement the increased volumes of radioactive wastes that may be generated.

Funding of up to A$11.5 million has been allocated over the next 5 years. The major projects in the 5 Year Plan include the upgrading of low level solid waste characterisation (gamma scanning) of 200 litre steel drums, followed by super compaction, placement of the compacted drums in engineered over pack containers and final cement encapsulation.

Low level solid waste characterisation will be carried our using 3 gamma scanning techniques:

* Portable Gamma Scanner for larger over packs (final packages and general waste containers).
* Low activity gamma scanner for 200 litre steel waste drums enabling free release of decayed and exempt level waste.
* Higher activity Segmented Gamma Scanner for 200 litre and 400 litre steel waste drums.

The super compaction process will enable volume reduction of the majority of the 6000 drum (200 litres) drum inventory of low level solid waste and placement in engineered over pack containers for final cement encapsulation. ANSTO is continuing to develop a suitable cement encapsulation medium that would conform to any future waste acceptance criteria for a near or above surface low level waste repository.

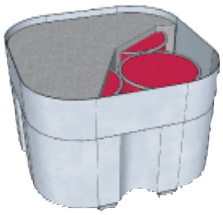
Commercially available Portable gamma scanner

The Canberra Q2 Low Level Waste Assay System currently in use

A commercially available segmented waste assay system

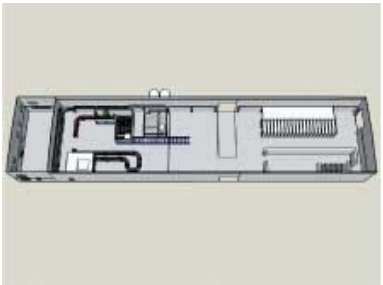
The 1000 tonne press earmarked for super compacting 200 L drums

Super compaction tests conducted using inactive 200 L drums



Conceptual drawing of over pack containers being assessed for use for low level waste conditioning and packaging

In addition to the upgrading of low level solid waste management processes, ANSTO will also be upgrading its existing decontamination facility. This will provide the capacity to decontaminate waste items to enable free release, and will especially support decontamination of equipment arising from the future decommissioning of the 2 research reactors that have been shut down permanently. In order to provide an integrated facility for processing/ decontamination of radioactive wastes, the existing processing Waste Treatment & Packaging Facility (WT&PF) will be extended and upgraded to accommodate the additional radioactive waste treatment processes.



Upgraded and extended Waste Treatment and Packaging Facility

Decontamination processing will include an engineered fully-ventilated chamber, allowing multiple decontamination techniques such as pressure blasting, plasma arc cutting and conventional chemical cleaning methods to be utilised.

Establishment of Study Group for Decommissioning of Research Reactors in Indonesia

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Radioactive Waste Technology Center
National Nuclear Energy Agancy - BATAN

Currently, there are three research reactors operating in Indonesia. Those are Bandung Triga 2000 (2000 kW) at Bandung - West Java , Kartini Research Reactor (100 kW) at Yogyakarta - Central Java and Siwabessy Multipurpose Reactor (30 MW) at Serpong - West Java. These reactors are operated by the National Nuclear Energy Agency (BATAN). The age of the three research reactors varies from 20 to 43 years since the reactors reached their first criticality. All the three reactors are in operation. However, they have different operating experiences, since they were built in different periods. Table 1 shows the data for the three reactors. As from Table 1, Bandung Triga 2000 reactor is the oldest among them.

Bandung Triga 2000 reactor has reached first criticality in year 1964, which means that the reactor has been operated about 43 years. Since its first criticality, the reactor has been modified several times. In the first time, the reactor was operated at a power of 250kW. The reactor was then upgraded to 1000 kW power level in 1971, and to 2000 kW in 2000[1]. During the last upgrading project, some important components were replaced or modified. The old core with a circular configuration has been modified to be that with a hexagonal one. In addition, a new aluminum tank was placed as a liner inside the old one. This new liner is then becoming a reference for the period of reactor operability. Referring to the liner, the reactor is predicted to be operable until 2015, after which the reactor shall be decommissioned.

Recently, the reactor operation is limited by the Regulatory Body to about 1250 kW maximum, due to some safety problems relating to heat transfer in the core.

Table 1. Operating data of the research reactors in Indonesia

Reactor	Banding Triga 2000	Kartini Reactor	GA Siwabessy Rector
Powre[kW]	2000	100	30,000
Type	Triga Ⅱ	Triga Ⅱ	MTR
Fuel	UO_2	UO_2	U_3Si_2-Al (plate)
First Critical	Year 1964	Year 1979	Year 1987
Operator	BATAN	BATAN	BATAN
Application	Research, training and isotpe production	Research and training	Research, training and isotpe production
Location	Bandung, West JAVA	Yogyakarta Central JAVA	Serpong, West JAVA

There is no decision yet for the decommissioning of the three research reactors, however sooner or later it will be an object for the near future decommissioning program. Anticipation for the above situation is necessary. A study group has been established in February 2007, and the members of this group consist of researchers from RWTC, reactor operators and BAPETEN personnel. The group meets every 4 months to evaluate the decommissioning program for each reactor. At present, RWTC has published guidance document, and the operator of the reactors assisted by RWTC is now revising documents of decommissioning program. There is a new Government Regulation, No. 43/2007 on Nuclear Reactor Licensing, containing some decommissioning articles, and it is stipulated that BATAN itself should conduct the decommissioning of research reactors. For Indonesian case, an early decommissioning strategy for research reactor and restricted use of the site for other nuclear installation is more favorable, talking into account the high land pricing, the availability of radioactive waste repository, and cost analysis.

Fig.1. Location of the three research reactors in Indonesia

Status of LILW Repository Construction in Korea

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Since the Bong-Gil Ri, Yangbuk-Myun, Gyeong-Ju city was designated as the low-and intermediate-level waste (LILW) repository site in November 2005, various activities have been conducted including a geological investigation and administrative procedures.

In January 2007, the Korea Hydro & Nuclear Power Co. submitted an Application for Implementation Plan to Ministry of Commerce, Industry & Energy (MOCIE) and MOICE approved it in September 2007. Currently, Application for Construction & Operation Permit is being reviewed by Ministry of Science & Technology (MOST) and it is expected to be approved by December 2007.

The LILW disposal facility will have 100,000 drums of capacity in the first stage. After then, the capacity of the facility will be increased up to 800,000 drums by stages.

LILW will be disposed in rock caverns, which will be excavated in solid rock about 80 meters beneath. The disposal method was determined in June 2006 through the review of technical and sociological aspects by 'the disposal method selecting committee'.

The disposal caverns will be consisted of 42 vertical silos and 5 horizontal caves, with a unit capacity of 16,700 drums per silo and 20,000 drums per horizontal cave.

Sectional dimensions are 26.8 meters in diameter and 48 meters in height for vertical silo and 20 meters in width, 12 meters in height, and 140 meters in length for horizontal cave.

The vertical silos will accept the waste from nuclear power plant operation and radioisotope waste, and the horizontal cave will accept decommissioning waste.

The construction will be begun at the end of 2007, and the first stage construction project will be completed by the end of 2009.

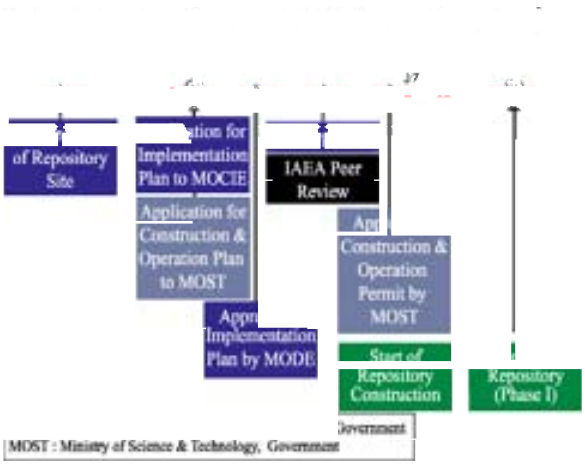

Fig. Rock Cavern-Type Disposal Facility

Cooperation activity with local community at the Ningyo-toge Environmental Engineering Center, Japan Atomic Energy Agency.

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Chief, Engineer Environmental Technical Section, Environmental Research and Development Department, Ningyo-toge Environmental Engineering Center,Japan Atomic Energy Agency(JAEA)

At the Ningyo-toge Engineering Environmental Center (Ningyo-toge Center) of Japan Atomic

Energy Agency (JAEA), wide variety of R&D works of the front-end of the nuclear fuel cycle such as mining & milling, and gas centrifuge enrichment had been carried out since a uranium ore body was discovered at the Ningyo-toge pass in 1955. At present time, installations and facilities utilized for those works at Ningyo-toge Center are on the phase of decommissioning. In order to implement decommissioning program at Ningyo-toge Center safely and smoothly, it is necessary to keep in mind that local government opinion and public perception should be taking consideration into each process among the decommissioning program more carefully than operational phase.

JAEA has been putting in efforts to reflect those opinion and perception into the upcoming decommissioning plan of Ningyo-toge Center through discussions and meetings with local government (Kagamino-cho) and local communities. Other efforts to obtain public perception include site tour, technical cooperation to vaseline glass ("Uranglas" in Germany) manufacturing which is promoted by Kagamino-cho, and so on.

1) Uranium exploration exhibition gallery

One of galleries located within the site of Ningyo-toge Center is open to the public for exhibition purpose. Dimensions of the gallery are a width of 3m, a height of 2m and a depth of 42m. Concept of the exhibition is to present authentic condition of uranium occurrence in one ore deposit scale with a situation of uranium exploration in 1950's incunabula of atomic energy development in Japan. Number of visitors counts about 4,300 people since 2005. That number includes that of extracurricular activities at local primary, junior high and high schools.

2) Vaseline glass manufacturing

Kagamino-cho has been promoting manufacturing of vaseline glass ("Uranglas" in Germany) doped with a minor amount of uranium which was produced by Ningyo-toge Center. Its glassware is named "Yohsei-no-mori-garasu (glass of fairy forest)". JAEA is supporting in the field of radiological safety assessment and so on. "Yohsei-no-mori-garasu" studio and museum which offer opportunity for glassblowing experience and glassware exhibition was opened in April 2008.

Fig.1 Uranium exploration exhibition gallery

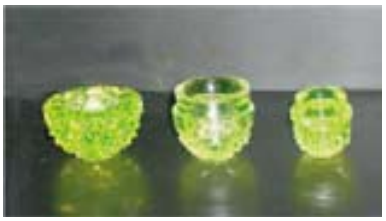

Fig.2 Vaseline glass

Overview Of Rokkasho Nuclear Fuel Cycle Facilities And Performance Of LLW Disposal

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Radioactive Waste Disposal Planning Dept.
Radioactive Waste Disposal Business Div.
Japan Nuclear Fuel Limited (JNFL)

Supported by the community's understanding and cooperation, Japan Nuclear Fuel Limited (JNFL) engages in the reprocessing of nuclear fuel, Mox fuel fabrication, and enrichment of uranium, temporary storage of high-level radioactive waste, and disposal of low-level radioactive waste in order to realize "semi-national energy production" or energy generation with which reliance on foreign energy resources is greatly reduced.

JNFL engages in these projects in Rokkasho-mura of Aomori Prefecture. This district is situated in the southern part of the Shimokita Peninsula in the northern corner of the prefecture, which lies at the northern tip of Honshu, Japan's main island.

Overview Of Rokkasho Nuclear Fuel Cycle Facilities

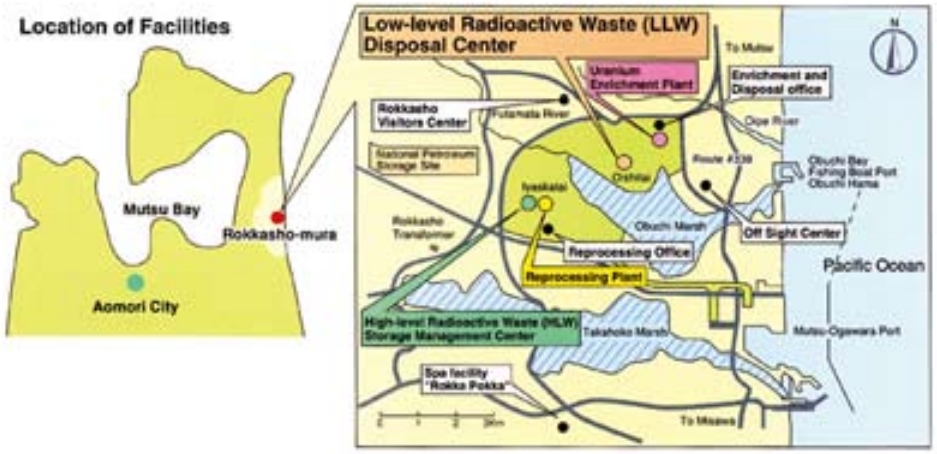
JNFL now operates three types of facilities: the Uranium Enrichment Plant, the Vitrified Waste Storage Center, and the Low-Level Radioactive Waste Disposal Center. JNFL is also focusing on reprocessing plant operation as the core of the nuclear fuel cycle and its MOX fuel fabrication business as well.

1. Uranium Enrichment Plant

The Uranium Enrichment Plant has centrifuges system and are to provide for an ultimate capacity of 1,500 ton-SWU/y, enough to meet about one third of the nuclear fuel needs of nuclear power stations in Japan. Currently, the plant is operating at a capacity of 1,050 ton-SWU/y, which is equivalent to the nuclear fuel required to run 8 or 9 reactors at 1,000MW-class nuclear power plants for one year.

2. Vitrified Waste Storage Center

Since the Reprocessing Plant has not been completed in Rokkasho-mura, Japan's spent fuel



has been reprocessed in France and the United Kingdom. Currently, the center has a storage capacity of 1,440 vitrified canisters. The facility will ultimately be expanded to accommodate 2,880 vitrified canisters.

3. Reprocessing Plant

The Rokkasho Reprocessing Plant is the first commercial reprocessing plant in Japan. The maximum reprocessing capacity of the plant is 800 ton-U/year, enough to reprocess the spent fuel produced from about 40 reactors at 1,000MW-class nuclear power stations.

4. MOX Fuel Fabrication Business

Since 1998, we have been conducting domestic and international studies into the technology used for MOX fuel fabrication. Subsequently, we proceeded with preparations including the plant baseline design and, on 2001,we asked Aomori Prefecture and Rokkasho-mura to cooperate in the proposed siting. On 2005, we concluded a basic agreement on siting. The following is the outline of the planned MOX Fabrication Plant.

Product MOX fuel assembly for domestic light-water reactor (BWR and PWR)

Maximum fabrication capacity 130t-HM/year

Start of construction As soon as safety agreement obtained

Stacking Drums Waste packages are stacked inside the disposal facility.

Performance Of The Low-Level Radioactive Waste Disposal Center

At nuclear power stations, operations and maintenance generate low-level radioactive waste, such as work clothes, gloves, and water and paper used to clean the power station floors. At each power station, liquid waste is first boiled and concentrated. The concentration is solidified by being mixed with cement or bitumen or plastic and then sealed into drums. Flammable waste is burned and sealed into drums. Non-flammable waste, such as metal, is compressed or melted when possible, and then sealed into drums as well. These waste drums are safely stored in interim site storages of stations, and then they are transported to the Low-Level Radioactive Waste Disposal Center.

Approved for a total capacity of 80,000m3 (400,000 200-liter drums), the center has now it's the No.1 Disposal Facility (for liquid waste) in operation with a capacity of 40,000m3 (200,000 200-liter drums), and the No.2 Disposal Facility (for solid waste) with capacity equivalent to that of the No.1 Disposal Facility. The performances on September 2007 are 137,000 drums and 60,000 drums for each facilities.

In accordance with the concept of burying low-level radioactive wastes generated in nuclear fuel cycle facilities in this disposal center in the future, we plan for the ultimate capacity of the Low-Level Radioactive Waste Disposal Center to be 600,000m^3.

The Proposed Radioactive Waste Management Regulations

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FNCA RWM Project Leaderof Malaysia,Manager, Radioactive Waste Management Centre Malaysian Nuclear Agency Nuclear Malaysia)Ministry of Science, Technology & Innovation (MOSTI)

Mohd Yasin Sudin
Director of Licensing Division Atomic Energy Licensing Board (AELB) Ministry of Science, Technology & Innovation (MOSTI)

Nik Mohd. Faiz Khairuddin
Nuclear Science Officer
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Ministry of Science, Technology & Innovation (MOSTI)

Atomic Energy Licensing Act 1984 (Act 304) is the main act for the control of atomic energy in Malaysia. There are 6 Sections under Part VI (Disposal of Radioactive Waste) of the Act, which dictate the need for any person to obtain authorization to accumulate, store, transport and dispose of radioactive waste, apart from his responsible to rectify any unsafe situation.

Elsewhere in the Act, under section 68, the Minister is empowered to establish any regulations that are deemed to be necessary to ensure safe management of radioactive materials (including waste). With the provision, the Minister has proposed a new Regulations pertaining to management of radioactive waste be established. An IAEA expert has been invited to assist and discuss a draft of such regulations a few years ago. According to the practiced mechanism for drafting regulations is that this draft will be elaborated a committee known as the Sub Safety Committee on Radiation Protection (RWM) Regulations followed by the Safety Committee before submitting to Attorney General Chamber and finally to the Minister for his perusal. The Minister will then table to the Cabinet for approval prior to be gazetted.

At present, the Sub Safety Committee has completed reviewing the draft, where some of the issues have been raised which need further consideration by the subsequence Committee as follows;

1. Radioactive Waste Management Officer (RWMO)

The Act requires that the licensee (operator) who foresee the application of radioactive materials that could lead to the generation of radioactive waste, appoints a person as the Radioactive Waste Management Officer whose responsibility in general, to ensure safe management of radioactive waste. According to these proposed Radiation Protection (Radioactive Waste Management) Regulations, AELB will issue a guidelines on the appointment of RWMO and it can be the same person as the Radiation Protection Officer who has been appointed once a company applies for a license to deal with ionizing radiation. The issue raised was the timing of the appointments of RWMO. It was proposed that it should be either when the company intends to perform waste management activity (application for class G license) or when there appears a need to handle radioactive waste.

2. Terminology for spent sealed Sources

There is still no specific term given to the spent sealed source. The term has been used interchangeably with disused sealed source. As the use of term needs to be consistent throughout the regulations, hence the committee has to decide on the most preferable of the two and provide in the interpretation section.

3. Discharge of radioactive waste

The sub safety committee has agreed to include a provision in the Regulations regarding the discharge of radioactive waste to the environment to ensure safe discharge within the stipulated clearance level. The proposed provision under the Regulations requires that the licensee obtains prior approval from the Board before discharging their waste. The licensee has the responsibility to make sure the limit for every discharge activity does not exceed the limits as in Schedule II of the Regulations.

One issue which arises in this provision is the specific period detremined by the Board in allowing the licensee to discharge/release waste to the environment. However, this is not stated in the Regulations. As such the Board needs to clarify this period of time in the other document such as Edaran Maklumat Teknik (administrative document for operation) as a guide to AELB's inspector to grant an approval to the licensee regarding to the period for discharge/release of waste and as a reference during the inspection.

4. Regulation 15… on Accepting Gifts

Another issue which has been discussed is related to accepting of spent sealed sources or waste as gifts. Generally, the policy allows "re using" spent sealed sources or waste which no longer needed by one licensee to another licensee who may require this. However, the proposed Regulations requires the donor licensee to subject into more works than if he just decides to dispose it instead.

In the case where the waste is an unsealed source (e.g. one hospital wishes to donate Iodine-131 to another hospital), it is not under any provision of the proposed Regulations that the licensee has to comply with it but the licensee needs comply with the Transport Regulations.

5. Limitation of Discharge Volume

Under the proposed regulations, the volume of effluent to be discharged at any one time is limited

one cubic meter (M^3) in any calendar year. The authority feels that the volume discharged should not be very large as to prevent from uncontrolled situation. However, the problem arise where some operators generate large volume of effluent and it is not practicable to apply this regulations, although in another regulation, the discharge more than this limit is allowed provided they obtain approval from the authority.

6. Reporting Emergency Situation

Provisions in other regulations regarding emergency situation (such as theft of spent sealed sources) state that the licensee should inform the authority within 24 hours. In the pursuing discussion, it was felt that the "grace" period given to initiate the notification may escalate to dangerous situation such as in the act of sabotage. Therefore, it is more appropriate that the licensee should notify or report any emergency "upon discovery" as this will permit immediate action to be taken.

Confidence Building and Public Acceptance Strategy for the Proposed LLW Repository Project in the Philippines

Maria Visitacion B. Palattao
Senior Science Research Specialist Nuclear Regulations, Licensing and Safeguards Division
Philippine Nuclear Research Institute

The Philippines has been pursuing a series of tasks designed to the development of a near surface disposal facility for radioactive wastes in the Philippines. As the program moves forward into a more focused siting activities, the task of achieving sufficient confidence in long term safety becomes even much more important. Based on the evaluation of confidence, decision must be made whether safety assessment has been sufficiently successful in terms of demonstration of safety to justify the compilation and presentation of the safety case. Decision on the safety case must give adequate confidence to support the decision at hand and that efficient strategy should exist to deal at future stages which have the potential to compromise safety (OECD 1999). Therefore, the IAEA's ISAM methodology is being implemented to provide transparency at the methodological level. As a consequence, scenarios are developed and justified, based on analysis of FEPs. Mathematical models for near field, geosphere and biosphere are being developed and their appropriateness demonstrated in line with ISAM guidelines. Furthermore, a formalized quality assurance (QA) procedure is now being developed and implemented for data collection (Parameter Input Form or Data Collection Form) and document review.

On the other hand, other decisions will be coming from non-technical stakeholders. Communicating safety requires more extensive effort from both the implementing organization and the regulatory body. International experience had shown how communication and transparency regarding project development greatly contribute to project approval and its eventual implementation. Recognizing this, the Interagency Committee that pursues this project, in collaboration with recognized local scientific communicators, embarks on a public information campaign to increase awareness and public acceptance involving the long term management of radioactive wastes. Of particular concerns are the communities located near the proposed repository site. The municipality of the proposed site has a gross municipal population density of 68 persons per square kilometer as of the year 2000. The target audience for the public consultation process involves representatives from the academe (professionals and students alike), government officials and employees, and other community and public interest group. Initially, a seminar involving teachers and students was conducted to promote awareness and acceptance of the project. It may be noteworthy that the municipality has a literary rate of about 88%. Around 200 participants attended the seminar and participated actively during the open forum. Surveys were also conducted to gain an overview of the level of knowledge in as far as nuclear energy in general and the management of radioactive waste in particular are concerned. Initial results gathered showed that the participants don't have yet a clear

Public Information Campaign for Prospective Stakeholders

understanding of the subject. However, this did not deter their interest for further consultation and their concern about radioactive waste. This exercise clearly indicate that there is a need for a better public information campaign about nuclear science and technology in general and, through wider consultation, involve them more in the decision-making process concerning the management of radioactive wastes in particular.

The recent activities related to RWM in Vietnam

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At present, the final version of draft of an Atomic Energy Law is being reviewed and expected to be submitted to the National Assembly in the end of 2007. In this law, the clearance system and decommissioning of the nuclear facility are introduced. The ordinance under this law will adopt the values provided by IAEA safety guides. Up to now Vietnam standard TCVN 6870:2001 on Exemption of Radiation Sources and Practices defines exemption values for the radionuclides which are based on the IAEA Basic Safety Standards 115. Introduction of clearance for the waste from NORM, research and medical facilities is now under discussion.

In Vietnam there are two national centers, one belongs to Institute for Technology of Radioactive and Rare Elements (ITREE) responsible for management of radioactive waste in the northern region, the another belongs to Dalat Nuclear Research Institute and responsible for management of radioactive waste in the southern region. To strengthen the technical infrastructure of radioactive waste management in Vietnam, these centers have been upgrading recently.

In Institute for Technology of Radioactive and Rare Elements (ITREE)

+ The new equipment for treatments of radioactive waste such as: compact compressor, evaporator, ion exchange column have been provided.
+ The treatments of some kinds of radioactive contaminated materials have been conducting in new facility of radwaste treatment.

New equipment for compressing RW in ITREE

+ Our proposal for Technical Co-operation Project on upgrading laboratory of RWM in ITREE was approved in 2007. The staffs of ITREE are ready to perform this project.

New equipment for segregation of RW at ITRRE

In Nuclear Research Institute (located in Dalat province)

+ Replacing the fuels of high enriched uranium (HEU) by fuels of low enriched uranium (LEU) have been done successfully thank to the close cooperation with US and Russian scientists
+ Although we can prolong the activities of Research Reactor until 2020, now we start to study on decommissioning of this Research Reactor in the future.

In addition to that, due to understanding the risks of storage of the disused radiation sources in many different facilities, VARANSAC submitted the plan to build the national facility for storage of the disused radioactive sources. In 2007, Ministry of Environment and Resources is going to give the fund to VAEC to build this facility. The first step of this plan is the selection of the suitable site for building this facility. When the construction of this national facility have finished, all the disused radiation sources including the orphan sources will be stored in this location to ensure the radiation safety and security absolutely for public.

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This Newsletter is issued by Nuclear Safety Research Association(NSRA) under the contract with the Ministry of Education, Culture, Sports, Science and Technology(MEXT)