FNCA 2013 Workshop on
Radiation Safety and Radioactive Waste Management

Summary of Open Seminar
-Radiation Safety Control and RI Analysis /Control in FNCA Member Countries-

12. Sep, 2013, National University of Mongolia

1) Presentation1: FNCA Activities and RS&RWM Project

Prof. Toshiso Kosako, Professor of Nuclear Professional School, Graduate School Engineering, The University of Tokyo introduced outline of FNCA and RS&RWM project activities. FNCA has 10 ongoing projects in the area of mutation breeding, biofertilizer, electron accelerator application, radiation oncology, research reactor network, neutron activation analysis, safety management system for nuclear facilities, radiation safety and radioactive waste management, nuclear security and safeguards, and human resources development. Previous and current project activities include information exchange at the workshop, task group activities, publication of consolidated reports on RWM/RS, and publication of RS&RWM newsletter.

2) Presentation2: Current situation of radiation safety control at research institutes/NPP and Human Resources Development in the field of Radiation Safety and Radioactive Waste Management

2-1) Thailand

Ms. Nanthavan Ya-anant presented "Current Situation of Radiation Safety Control at Thailand Institute of Nuclear Technology (TINT)". She gave the information of R &D on nuclear technology and the Radiation Protection Program(RPP) at TINT. The RPP contains with important issues as follows; organization and policy, staffing and responsibility, radiation area and classification, monitoring program, assessment of personnel dose, equipment for controlling occupational exposure, training of staff, radioactive waste management, emergency preparedness. The last issue is the review of RPP every 2 years.

2-2) Kazakhstan

Dr. Shayakhmet SHIGANAKOV showed main factors forming nuclear and radiation situation in Kazakhstan. Basic technical parameters of research reactors, fast breeder

reactor BN-350 and other installations are described. Some pictures related to the Semipalatinsk nuclear test site are shown also. List of the main laws and regulations in the field of atomic energy use are listed. Short information concerning to Kazakhstan`s state structure for atomic energy use, including the Kazakhstan`s regulatory body are presented.

2-3) Japan

Dr. Eng. Yuji Matsuzoe delivered a talk on application filed of radiation monitor and systems. Radiation control was categorized as 1) Human Control, 2) Environment Control and 3) Article/Food Control. Application example of the radiation monitor of each control and its system were also presented.

Ms.Emi Imaizumi explained MEXT Nuclear Researchers Exchange Program. Nuclear Safety Research Association is currently implementing this program as secretariat. Five Mongolian researchers have been accepted up to 2012 and one researcher from NEA will be participating in this program this year, Finally, Mr.Zolbadral Tsoodol(NUM), who have participated in this program in JFY2011 from NUM, gave a speech about his impression and outcomes of this program.

3) Presentation 3: Status of radioactive isotope analysis at research institutes in member countries (system, instrument etc.)

3-1) Mongolia

Ms.N.Norov, Nuclear Research Center, National University of Mongolia gave a presentation on radioactive isotope analysis in Mongolia.

Mongolia is rich in mineral resources. In recent year, uranium and rare earth elements work of exploration is quite done. Thus, Mongolia demands to develop radioactive isotope analysis. As yet, Radiation Regulatory Laboratory of Nuclear Energy Agency of Government, Nuclear Research Center of National University of Mongolia, State Center Veterinary Laboratory and Central Geological Laboratory are performing radioactive isotope analysis using the gamma spectrometry. CGL has been performing gamma spectrometry analysis in 2668 samples, since 2011. First time, CGL participated in IAEA-TEL-2012 Proficiency Test by gamma spectrometry analysis from Mongolia. CGL determined 12 natural and artificial radioactive isotope in objectives of PT. Test report of CGL was accepted without Pb-210

3-2)Malaysia

Dr. Mohd Abd Wahab explained to the audience on general information about

Malaysian Nuclear Agency and the role of Malaysian Nuclear Agency for promoting of nuclear science and technology for national development. In the second part of the presentation, he had shown to the audience analytical laboratories and equipment at Analytical Chemistry Application Laboratory and Radiochemistry and Environmental Laboratory which belong to Malaysian Nuclear Agency. The name of equipment and the use of that equipment were also explained to the audience. Some of these equipment include gamma spectrometry, low background gross alpha/beta proportional counting system, liquid scintillation counting system, alpha counting system, inductively coupled plasma mass spectrometer, isotope ratio mass spectrometry etc. Quality assurance programme which include the inter-comparison programme with the International Atomic Energy Agency had been presented. He also explained that the laboratories are accredited MS ISO/IEC 17025:2005 and approved by Ministry of Health to measure radioactivity in food and water and issuance of radioactive free certificates for exporting purposes. Lastly all research projects, either sponsored by the International Atomic Energy Agency or using grants from Government of Malaysia were discussed.

3-3) Vietnam

Ms. Pham Thi Quynh Luong gave a presentation on the current status on radioactive isotope analysis at research Institute in Vietnam.

In Vietnam there are 2 major research institutes having radioactive isotope analysis instruments: 1)Vietnam Atomic Energy Institute (VINATOM) and 2)Institute of Physics of National Center for Scientific Research (NCSR).

Many modern machines, advanced instruments are equipped with analytical laboratories in institutes and universities. Radioactive isotope analysis have been efficiently served in environmental radioactivity monitoring, nuclear safety, health care, industry, geology, research, special in NPP. There are a lot of Vietnam standards on radioactive isotope analysis have been set up.

Presentation 4: Importance of radiation safety and protection

Prof.Toshiso Kosako gave a lecture on importance of radiation safety and protection. The history of radiation radioactivity discovery was explained. Radiation is applied for various purposes such as medical use, agricultural use, food irradiation industrial use, environmental protection technologies, and civil engineering. Projects of nuclear fuel cycles in Japan were also described. The importance of risk management based on correct understanding of risk level was emphasized. Radiation in nature and procedure to decide guidance level of safety were also explained.

Presentation 5: ICRP Recommendations and IAEA Safety

Ms.Lynn Tan introduces the two international bodies, the International Atomic Energy Agency (IAEA) and the International Commission for Radiological Protection (ICRP) to the Mongolian University students and young researchers. Both are established to promote safe, secure and peaceful use of nuclear science and technologies. The ICRP has recently updated the publication 60 Recommendations for Radiological in view of the latest development and findings arising from research and work conducted by itself and other scientific bodies such as the United Nations Scientific Commission on the Effect of Atomic Radiation (UNSCEAR). The IAEA's Safety Standards structure provides an easy point of reference for information. Publications from both organisations are being used worldwide to formulate their regulatory framework and national legislation. The aim of which is to maintain and improve global nuclear safety.

Presentation 6: Control of NORM and NORM residue management

6-1) Mongolia

Dr.Nyamdavaa Enkhgerel, State Senior Inspector on Nuclear and Radiation Safety, Nuclear Energy Agency described the importance of control of NORM and regulatory activities in NORM places in Mongolia. Monitoring results of NORM are mainly introduced covering activity concentration of radionuclides of natural origin in mining and processing of material, and radon monitoring.

6-2) Indonesia

Mr.Suryantoro presented intervention of TENORM. The NORM in Indonesia are found mainly in mining industry, e.g., tin, zircon, oil and gas among others, ceramic industry, and in phosphate rocks (mainly import from abroad for fertilizer industry). BCR on tenorm set stage intervention process tenorm exposure to humans and the environment. tenorm producer shall conduct an analysis of its tenorm, the results of the analysis are sent to BAPETEN to be evaluated, then BAPETEN will make recommendations based on the results of that evaluation.

Presentation 7: RI control for medical use

7-1) Philippines

Ms. Maria Visitacion B. Palattao delivered a presentation on Regulatory Control in the Use of Radioactive Materials in Medicine. The Philippine Nuclear Research Institute (PNRI) was created by law in 1958 with a dual mandate to promote the peaceful applications of nuclear energy and to regulate the use of nuclear and radioactive

materials in industry, medicine and in research. At present, the PNRI regulates the use of radioactive materials in 95 medical licenses in teletherapy, brachytherapy and nuclear medicine. The Nuclear Regulatory Division is the regulatory arm of PNRI and is responsible for developing standards, issuing licenses to facilities, and inspecting them for compliance with the regulations and license conditions. The regulatory requirements for medical licenses are categorized in terms of administrative requirements, technical requirements, and radiation safety practices. The designation of a radiation safety officer is required for all licensees, with the responsibility of ensuring that the radiation safety program is maintained and implemented. Technical requirements include, among others, the periodic calibration of equipment and survey meters and the timely monitoring of ambient radiation and contamination levels in the facility. PNRI licensees are bound to comply with the terms and conditions of their license and the regulatory requirements specified in the Code of PNRI Regulations (CPR) in their operation and conduct of all licensed activities.

7-2) Bangladesh

Dr. M. Moinul ISLAM delivered a talk on radiological protection in medical exposure. The presentation provides an overview of regulation and new atomic energy control act 2012. The training and experiences requirement of personnel for the use of radioactive material in medical practices are also added. A brief description of the activity relating to nuclear medicine, radiotherapy department and radiation protection program has been included. The presentation outlined the emergency preparedness and responses in the country.

Panel Discussion 1

Prof. Toshiso Kosako emphasized importance of human resources development programs in member countries. Mr.Cheng Qifu of China explained that China has a plan to have NPPs with 58GWe in operation, NPPs with 30GWe under construction by 2020. Some universities provide nuclear engineering program. Ms. Pham Thi Quynh Luong of Vietnam informed that Vietnam has a plan to have first NPP by 2020 and young students and researchers need to learn more about nuclear engineering.

The Mongolian students were interested to know main requirements for studying at an university in foreign countries as well as where to contact for the scholarship/training programs offered by MEXT(Japan). Responding to the questions, Prof. Kosako emphasized language skill(Japanese /English) and good knowledge of basic science as the main requirements. Prof. Tomoaki WADA, Professor, President's Office, Tokyo

University of Science explained HRD situation after Fukushima Daiichi NPP accident. He hoped that Mongolian government would make a clear vision of nuclear power development in order to promote human resources development. Ms.Lynn Tan of Australia also explained ANSTO's efforts towards HRD and public acceptance.

Panel Discussion 2

Basic principal of radiation protection and planned exposure and existing exposure situation were explained by Prof. Kosako. He emphasized that the purpose of radiation protection is to avoid deterministic and probabilistic effect, whereas many people only care about dose limit and deterministic effect. He also stressed the importance of step by step approach to improve existing exposure situation and NORM control.