

PNRI Newsletter

January - March 2016

| Volume 10

A newsletter of the Philippine Nuclear Research Institute (PNRI)

PHILIPPINES RECEIVES ATOMS FOR PEACE AWARD

In this Issue

Atoms for Peace Award	1
Plant Growth Promoter Production ...	2
Improving Adlai with Radiation	3
Radioactive Waste Disposal Project ...	3
Feasibility Studies for Advanced Nuclear Facilities	4
Members of the Academe Meet for Nuclear S&T in Colleges	4
National Dose Response Curve	6
FNCA Seminar on Radiation Tech	8
CMR and RSC-IR Courses	8
JAEA Workshops on Radioactivity Monitoring and Nuke Emergency	9
Policemen Training for MDS	11
EU Standards Workshop	11

The PNRI Newsletter is an online publication of the Philippine Nuclear Research Institute (PNRI), a research and development institute of the Department of Science and Technology (DOST).

For comments, suggestions or inquiries, please contact:



Nuclear Information and Documentation
Section/Technology Diffusion Division
Philippine Nuclear Research Institute
Department of Science and Technology
Commonwealth Ave, Diliman, Quezon City
P.O. Box 932 Manila or 213 UP, Quezon City
Philippines 1101

Website: <http://www.pnri.dost.gov.ph>

Email: information@pnri.dost.gov.ph

Fax: (632) 920.1646

PNRI Trunkline: (632) 929.6010 to 19 loc 286



Left Photo: DOST Secretary Mario Montejo with President Barack Obama of the United States. The US hosted the 4th Nuclear Security Summit from March 31 to April 1 (Photo from the Department of Foreign Affairs)



Right Photo: The Atoms for Peace Award given on March 31 to the Philippines as well as to 15 other countries for their contributions to global nuclear security

The Philippines adds another laurel among its international recognitions as it received the Atoms for Peace Award, due in no small part to the efforts of the Department of Science and Technology – Philippine Nuclear Research Institute (DOST-PNRI).

DOST Secretary Mario Montejo received the award on behalf of the country during the 4th Nuclear Security Summit on March 31 in Washington, D.C. The Atoms for Peace award recognizes the country's contributions in nuclear security, particularly through the removal of highly-enriched uranium from the country's territory.

The Secretary mentioned the long experience and participation of PNRI in keeping the security of nuclear and radioactive materials and facilities. These issues received renewed focus since the World Trade Center attack on September 11, 2001.

Continued on Page 3

From the Director

PNRI News

PNRI STEPS UP PLANT GROWTH PROMOTER PRODUCTION FOR FILIPINO FARMERS



Greetings to everyone!

I am pleased to inform you that PNRI has once again welcomed the new year with a successful and productive first quarter. These achievements were well-recognized here and abroad, especially among our partners in advancing the peaceful uses of nuclear science and technology as well as in regulating the use of nuclear and radioactive sources.

Foremost among these is the recently granted Atoms for Peace Award to the Philippines at the Nuclear Security Summit last March 31 in Washington D.C., United States. The award was personally received by DOST Secretary Mario Montejo with several PNRI and DFA officials in attendance.

The Secretary was also pleased with the progress of our Plant Growth Promoter, which is now being distributed to farmers across the country. To meet the demand, PNRI's researchers are hard at work in making the best use of our irradiation facilities in producing the PGP.

Meanwhile, our research sections are also moving forward with the development of mutant breeds of adlai as a substitute staple food crop, as well as a dose response curve that will prove useful in radiological emergencies. Feasibility studies are also underway for the establishment in the near future of advanced nuclear facilities such as a new research reactor and particle accelerator.

As we have started 2016 with fruitful achievements, so are we also hoping to reap a wonderful harvest in the next quarters.



PNRI researchers and staff working hard to produce liters of Plant Growth Promoters (inset) at the Institute's irradiation facilities.



Ricefields sprayed with PGPs (left) proved much more resilient to lodging compared to the ricefields without PGPs (right) when exposed to typhoons.

With the effects of El Niño and climate change ravaging farmlands in the country-side, Filipino farmers around the country are facing another crisis in agriculture and food security.

The DOST-PNRI does its part in meeting this challenge by producing Plant Growth Promoters (PGPs) for distribution to farmers in various regions early in 2016. PNRI's research studies have proven that its radiation-processed PGPs can increase the yield of crops by at least 30 percent. The PGPs can also protect the crops from virus infestation and prevent them from lodging during typhoons.

Developed in cooperation with the Department of Agriculture (DA), Philippine Council for Agriculture, Aquatic and Natural

Resources Research and Development (PCAARRD), and the National Crop Protection Center of the University of the Philippines - Los Baños (UPLB), the PGP was developed from carrageenan which is extracted from seaweeds.

Irradiation degrades these polymers to form natural bioactive agents that can improve the health and increase the growth and yield of various crops.

After successful field experiments on rice has proven its superb advantages, the PGP project was officially launched in November last year. The following month, DOST and DA signed an agreement for wide-spread testing in Luzon, Panay Island,

Continued on Page 3

Atoms for Peace Award - Continued from Page 1

As the Philippines' nuclear regulatory body, PNRI also ensures the country's adherence to international treaties, standards and commitments with the International Atomic Energy Agency (IAEA) and the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO).

At the 4th Nuclear Security Summit, Secretary Montejo was joined by Philippine Ambassador to Vienna and Resident Representative to the International Atomic Energy Agency (IAEA) Ms. Maria Zeneida Angara-Collinson, PNRI Officer-in-Charge, Office of the Deputy Director Dr. Soledad Castañeda, PNRI Nuclear Safeguards and Security Section Head Ms. Julietta Seguis and other officials from the Department of Foreign Affairs (DFA)



DOST Secretary Mario Montejo (center) with PNRI Officer-in-Charge, Office of the Deputy Director Dr. Soledad Castañeda (right) and PNRI Nuclear Safeguards and Security Section Head Ms. Julietta Seguis (left) at the Nuclear Security Summit

and the Department of National Defense (DND). The Philippines was one of the sixteen countries that received the Atoms for Peace Award, along with

Brazil, Chile, Czech Republic, Denmark, Georgia, Hungary, South Korea, Mexico, Romania, Spain, Sweden, Thailand, Turkey, Ukraine and Vietnam.

PNRI Steps Up PGP Production - Continued from Page 2

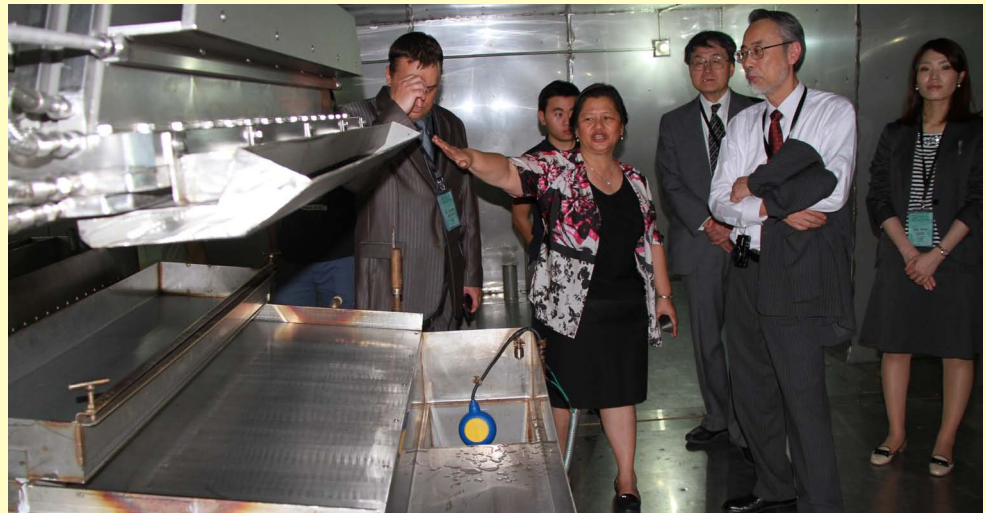
Zamboanga and Davao. To this end, PNRI produced more than 40,000 liters of PGPs during the first quarter of 2016 which were distributed for free to farmers.

The farmers then used these products to around 4,000 hectares of farmland in Regions 2 and 3, particularly in the municipalities of Tuguegarao in Cagayan, Ilagan in Isabela and Pulilan in Bulacan.

PNRI used the Cobalt-60 Multipurpose irradiation Facility, and later the Electron Beam Irradiation Facility to meet the distribution requirements for the PGPs.

To adapt the latter facility for the irradiation of the liquid PGPs, PNRI received assistance from the Metals Industry Research and Development Center (MIRDC) for the product handling system. PNRI also received assistance from Industrial Technology Development Institute (ITDI), through the provision of specialized equipment for bottling the PGPs.

Aside from rice, PNRI is also testing the PGPs on mungbean and peanut. The recent field experiments showed that the PGPs increased the yield of mungbean were by up to ten times the average yield.



Above: PNRI Chemistry Research Section Head and PGP Project Leader Dr. Lucille Abad shows the liquid product handling system to international experts for a radiation applications seminar by the Forum for Nuclear Cooperation in Asia (FNCA) (see article on Page 8)



PNRI researchers and staff use the bottling equipment from ITDI for the PGPs



Carboys filled with PGPs are being loaded on trucks for distribution to farmers

PNRI Improves Adlai Crops with Irradiation Technology



Helping to overcome the country's challenges in agricultural production and food security, research specialists from the DOST-PNRI are developing better varieties of adlai or Job's Tears, which may serve as a substitute to the country's staple food crops such as rice and corn.

While just as rich in carbohydrates and protein, adlai is unfortunately not as well-known as its cousin crops, except among the indigenous communities. In other Asian countries, adlai is also used to produce flour, coffee, tea, wine, beer and vinegar, among other products. Adlai also has medicinal properties that can help mitigate the symptoms of allergies, diabetes and even cancer. Lastly, adlai is also known for its resilience in extreme conditions, such as droughts and typhoons.

With the unique advantage of gamma radiation, PNRI has been working since 2013 to improve the agronomic traits of adlai by making mutant varieties that yield more grain and mature earlier, while having shorter height to make the crops more resistant to lodging during typhoons. These improvements also complement the Food Staples Sufficiency Program of the Department of Agriculture (DA), which encourages the diversification of staple food crops beyond rice by increasing production, ensuring market availability and lowering its prices.

Researchers from the PNRI Agriculture Research Section used the Ginampay variety of Adlai for mutation breeding in PNRI's experimental field, where the putative mutants are already in the third and fourth generations.



A PNRI researcher measures the height of the putative mutant adlai, which were irradiated with 100-gray (Gy) dose of gamma radiation.

Continued on Page 6

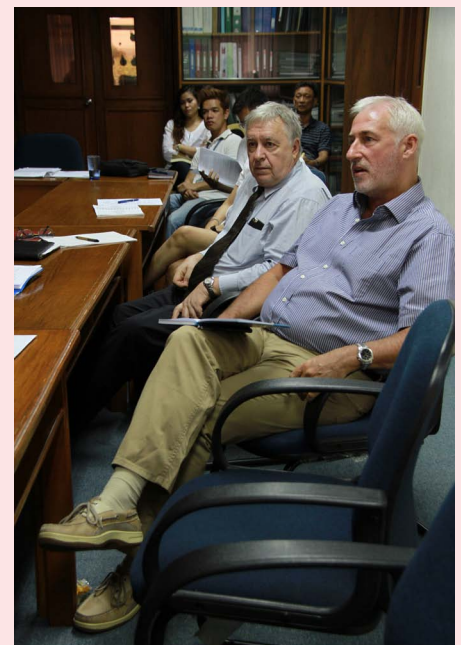
IAEA Experts Visit PNRI for Radioactive Waste Disposal Project

The DOST-PNRI continues to receive technical assistance from the International Atomic Energy Agency (IAEA) for the establishment of a long-term radioactive waste disposal site in the Philippines.

IAEA experts met with regulators and research specialists from PNRI and other members of the inter-agency core group on radioactive waste disposal on January 11 to assess the Institute's progress in preparing for the future disposal site. The site will feature both borehole and near-surface disposal facilities for the disposal of low and intermediate-level disused radioactive waste, consistent with the IAEA Borehole Disposal of Sealed Radioactive Sources (BOSS) standards.



Top Photo: The IAEA experts on radioactive disposal siting met with regulators and research specialists from PNRI for the Borehole and Near-Surface Disposal Project for Radioactive Waste.



Right Photo: IAEA experts Mr. Peter Ormai (behind) and Mr. Paul Degnan (front).

PNRI Oversees Feasibility Studies for Advanced Nuclear Facilities

In 2015, the National Economic Development Authority (NEDA) approved the proposals of the DOST-PNRI for the conduct of feasibility studies for the establishment of an accelerator facility and of a new research reactor.

The Aspiretech Corporation, a private consultancy firm won the bid for the two feasibility studies on December 2015. Aspiretech, in cooperation with PNRI as the implementing agency, is presently undertaking the feasibility studies.

Feasibility Study for Research Reactor

On February 8 and 9, research reactor experts from Australia and Indonesia shared their experiences and lessons learned on

Continued on Page 7



PNRI researchers show the mechanism of the Electron Beam Irradiation Facility to foreign experts on accelerators

Members of the Academe Open to Nuclear S & T for Universities and Colleges



PNRI Director Dr. Alumanda Dela Rosa (left photo, 1st row, center) with representatives of various colleges and universities along with researchers and section heads from PNRI. The meeting was held at the PNRI auditorium (right).

Nuclear science and technology could once again earn its place in tertiary education as deans and department heads from various universities and colleges across the country met with officials of the DOST - PNRI on March 15 to discuss the possibility of integrating nuclear and radiation-related studies to their respective college curricula.

The meeting was a continuation of prior discussions held on December 8 at

the 3rd Philippine Nuclear Congress, and was organized by the Philippine Embassy and the Permanent Mission in Vienna, Austria.

Among the institutions represented in the follow-up meeting were the University of the Philippines - Diliman (UP Diliman), Ateneo de Manila University (AdMU), University of Santo Tomas (UST), Polytechnic University of the Philippines (PUP), FEATI University, Pamantasan ng Lungsod ng Maynila (PLM), University of

San Carlos (USC) and Visayas Maritime Academy (VMA) Global College.

The members of the academe were given a rundown of PNRI's various research projects and its wide range of training programs.

Among these programs are internships, thesis advisorships, seminars and training courses offered by the Nuclear Training Center, the Annual Neutron School conducted by

Continued on Page 6

Establishment of National Radiation Dose-Response Curve



A PNRI researcher (left) observes blood samples through a microscope for dicentric chromosomes (right) which will be used to determine the radiation dose absorbed by a worker occupationally exposed to radiation.



Making a vital step forward in the country's emergency preparedness and response for nuclear and radiological incidents, researchers from PNRI's Biomedical Research Section (BRS) have recently established a radiation dose-response curve for dicentric chromosomes for the Filipino population. The dose-response curve will allow the Institute's biodosimetry experts to estimate the absorbed dose of persons acutely exposed to radiation.

A person's absorbed dose, which is measured in units of Gray (Gy), is the amount of energy deposited per unit mass of body tissue. Biological dosimetry (or biodosimetry) analyzes how much radiation the person has absorbed by finding dicentric chromosomes in blood samples. These abnormal chromosomes are formed due to radiation exposure.

Continued on Page 7

PNRI Improves Adlai Crops with Irradiation Technology - Continued from Page 4

After irradiating the seeds with doses of 100 to 200 gray (Gy) of gamma radiation, they are planted and grown for further observation.

PNRI's research and development studies currently show promising results as the putative mutant breeds of adlai yielded from 790 kilograms of grain per hectare (kg/ha) to as much as 900 kg/ha. This is around 30 to 50 percent higher than the yield of average crop breeds.

Meanwhile, the putative adlai mutants were also 40 to 57 percent shorter than the unirradiated Adlai.

Aside from developing mutant varieties, PNRI also seeks to improve the fertilizer, soil nutrient and water management practices for Adlai.

Field experiments were conducted in partnership with the Bureau of Soils and Water Management (BSWM) under an International Atomic Energy Agency

(IAEA) project on "Enhancing Productivity of Locally-Underused Crops Through Dissemination of Mutated Germplasm and Evaluation on Soil, Nutrient and Water Management Practices".

The PNRI researchers will continue to develop the adlai crops up to the eighth generation to complete the mutation breeding process.

Members of the Academe Open to Nuclear S&T - Continued from Page 5

the PNRI Applied Physics Research Section, and nuclear S & T outreach programs for secondary schools under a technical cooperation project with the International Atomic Energy Agency (IAEA). The group also had a tour of the various PNRI facilities.

The discussions led to a number of considerations and suggestions as to how nuclear S & T may be included in the college curriculum.

These suggestions include creating an entirely separate course on nuclear S & T,

hosting different nuclear and radiation-related subjects by PNRI experts, and obtaining certification from the Commission on Higher Education (CHED) for the existing PNRI courses, among others.



Several deans, college department heads and professors participated in the discussions on how to integrate nuclear science and technology in their universities and colleges. Among them are (from left to right) Dr. Jose Maria Balmaceda, Dean of the University of the Philippines College of Science, Dr. Evangeline Bautista, Dean of the Ateneo de Manila University School of Science and Engineering, Dr. Rogelio Panlasigui, Dean of the FEATI University College of Engineering, Dr. Emelinda Sabando, Dean of the Pamantasan ng Lungsod ng Maynila College of Science, and Mr. Manuel Muhi, Executive Vice President and Vice President for Academic Affairs of the Polytechnic University of the Philippines.

Feasibility Studies - Continued from Page 5

feasibility studies for their country's reactors. In March, consultations with prospective stakeholders from medical, industrial, agricultural and academic sectors were held in Manila and Cebu. The research reactor's applications as a neutron source include analysis, training, and therapeutic purposes. Consultations were also planned in Bataan and Davao.

Feasibility Study for Accelerator

Meanwhile, focused group discussions for the accelerator were held with the research and academic sectors on February 3 at PNRI, and with the medical sector on February 17 at the Mindanao State University - Iligan

Institute of Technology. PNRI also consulted with members of the medical sector in Manila on March 1.

Among the accelerator's applications which caught the stakeholder's interests are its potential for medical radioisotope production, research, and linear accelerators for radiotherapy of cancer patients. Another expert meeting was held at PNRI on March 16 for the accelerator facility. Professor Ken Takayama from Japan presented on the basic principles of particle accelerators as well as its applications.

The feasibility studies are expected to be completed in July for the particle accelerator, and in October for the research reactor.

Particularly for the research reactor, the preliminary assessments are but the first stage of a longer endeavor.

A techno-economic evaluation of the proposed research reactor facility will involve the determination of specifications and adjunct facilities.

The organizational, legislative and regulatory framework must also be prepared to pave the way for the actual establishment of the new research reactor.



Left Photo: Experts and consultants for the research reactor project visit the Philippine Research Reactor - 1 with PNRI officials



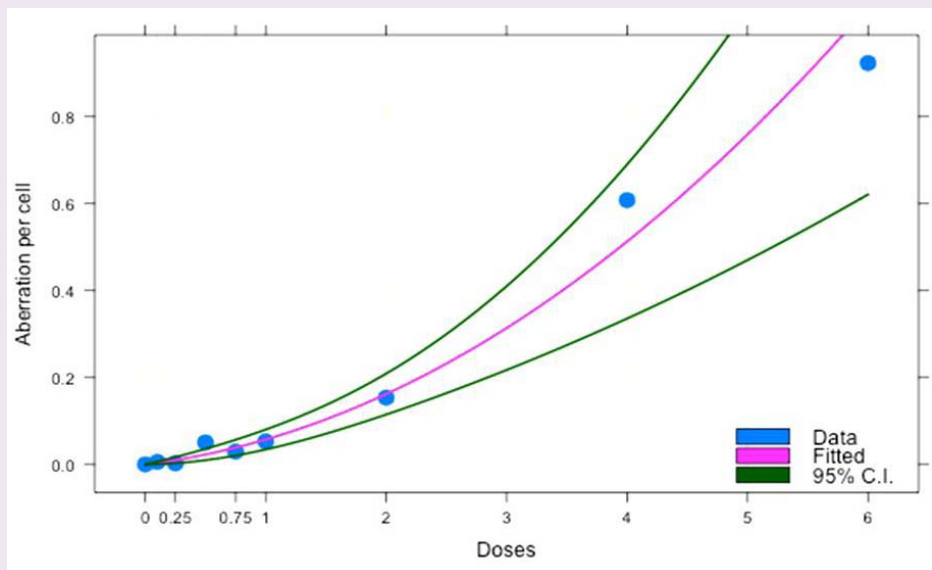
Right Photo: Professor Ken Takayama from Japan with a PNRI research specialist discussing the E-Beam Irradiation Facility and the potential establishment of an accelerator facility in the Philippines in the near future

Establishment of a National Radiation Dose Response Curve - Continued from Page 6

By referring to the established dose response curve, the researchers may interpret the absorbed dose through the number of dicentric chromosomes.

PNRI offers its cytogenetic analysis services to workers occupationally exposed to radiation, such as industrial radiographers and nondestructive testing practitioners requiring annual monitoring here and abroad. The BRS researchers used blood samples from clients across the country to conduct the in-vitro irradiation study of dicentric chromosomes. From these samples, PNRI established a dose-response curve that may prove useful as a general reference for average Filipinos to be tested for radiation exposure in case of a nuclear or radiological emergency.

Radiation dose curves vary among different populations and countries, as the geography and other circumstances affected the natural background radiation differently.



The dose-response curve of dicentric chromosomes to gamma radiation. Observed values (blue dots) for each dose point were fitted into a linear quadratic model. The fitted curve (purple line) can be used to estimate the absorbed dose of radiation-exposed individuals within 95% confidence intervals (green line)

Seminars, Workshops and Training Courses

FNCA Seminar Highlights Radiation Technology Applications for Sustainable Development



Left Photo: Experts and participants of the FNCA from eight countries with PNRI Director Dr. Alumanda M. Dela Rosa (6th from left).
Right Photo: The participants visit the Cobalt-60 Multipurpose Irradiation Facility at PNRI



Emphasizing the increasing role of radiation processing in a wide range of applications that are vital to the industry, the DOST-PNRI hosted the *Open Seminar on Applications of Radiation Technology for Sustainable Development* on February 10.

The seminar was held in cooperation with the Forum for Nuclear Cooperation in Asia (FNCA) and the

Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan.

Representatives from the nuclear technology agencies of Japan, Bangladesh, Mongolia, Kazakhstan, Thailand, Indonesia, Malaysia and the Philippines attended the open seminar. Among the participants from local institutions were researchers from PNRI, the National Crop Protection Center (NCPC) of the Uni-

versity of the Philippines - Los Baños (UPLB), and students from Marikina Polytechnic College (MPC).

Experts from the Japan Atomic Energy Agency (JAEA), Thailand Institute of Nuclear Technology (TINT), PNRI and NCPC lectured on their various research projects on radiation processing.

Continued on Page 10

Medical and Industrial Professionals Complete Nuclear Training Courses at PNRI

Professionals from the medical sectors graduated at DOST-PNRI on February 12 for the Course on Medical Use of Radioisotopes (CMR) and the Radiation Safety Course - Industrial Radiography (RSC-IR). The training courses were conducted by the PNRI Nuclear Training Center (NTC) with experts from partner agencies and PNRI lecturers on nuclear science and technology on the use of radio-isotopes in the medical field, radiation protection, nuclear safety and security.

Course on Medical Use of Radioisotopes

Formerly the Radioisotope Techniques Training Course - Medical (RTTC-M), the CMR is a month-long training course that focuses on medical applications of nuclear/radiation technologies. Several doctors and medical specialists from various hospitals throughout the country were joined by researchers from PNRI during the training course.

Continued on Page 10



Top Photo: PNRI NTC Officer-in-Charge Mr. Roel Loteriña (1st row, middle) with the participants of the Course on Medical Use of Radioisotopes

Right Photo: The participants who completed the Radiation Safety Course - Industrial Radiography



JAEA Workshops on Environmental Radioactivity Monitoring and Nuclear/Radiological Emergency Preparedness and Response



The participants, experts, facilitators and PNRI officials during the FTC on Environmental Radioactivity Monitoring

The Philippines once again boosts its capabilities in radiation detection and monitoring, and in responding to nuclear and radiological emergencies, as DOST-PNRI conducts the National Workshops on Environmental Radioactivity Monitoring and on Nuclear Emergency Preparedness and Response.

Formerly known in the Philippines as the Follow-up Training Courses (FTC), the workshops were conducted with the assistance of experts from the Japan Atomic Energy Agency (JAEA).

National Workshop on Environmental Radioactivity Monitoring

Environmental specialists, instructors and researchers from the University of the Philippines - Diliman, University of the Philippines - Manila, Department of Environment and Natural Resources, PNRI, Surigao del Sur State University, Central Luzon State University and Mandaluyong High School participated in the radioactivity monitoring workshop held from February 22 to 26.

Mr. Shinichiro Torata, Mr. Nobuyuki Masaki, and Mr. Masanao Nakano of JAEA served as experts for the workshop with facilitators from the PNRI Health Physics Research Section. Aside from a background on



Dr. Masanao Nakano of JAEA supervises the participants in a field sampling exercise.

nuclear and radiation science, the participants were also taught radioactivity measurement in environmental samples, ambient gamma radioactivity analysis, water sample analysis with liquid scintillation counters, soil sample analysis with solid state spectrometer, gamma spectrometry, internal assessment of radiation exposure dose, and radioactive waste management, among others.

National Workshop on Nuclear Emergency Preparedness and Response



The responders and facilitators pose after the emergency exercise scenario of the National Workshop on Nuclear Emergency Preparedness and Response

First responders from the Philippine Army, Philippine National Police (PNP), Bureau of Fire Protection (BFP) and the Metropolitan Manila Development Authority (MMDA) participated in the emergency response training course held from February 29 to March 4.

They were joined by researchers from PNRI and the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA).

Dr. Minoru Kubo, Mr. Kenji Yokoo and Mr. Seiichi Kanaizuka from JAEA served as experts for the workshop, along with facilitators from members of the PNRI Radiological Emergency

Monitoring and Control (REMCON) Teams. The participants were taught basic nuclear and radiation concepts, crisis management and communication, proper wearing of personal protective equipment, radiation detection and monitoring, decontamination procedures.

The activities also emphasized the roles and responsibilities of the agencies under the National Radiological Emergency Preparedness and Response Plan (RADPLAN).

An emergency exercise scenario involving a Radiological Dispersal Device (RDD) was conducted on the last day of the training course.



A PNRI researcher (left) scans for radioactive materials on a scenario victim retrieved by rescuers (right) wearing personal protective equipment

FNCA Seminar on Radiation Applications- Continued from Page 8



A PNRI Irradiation Services Section researcher explains the conveyor system of the Cobalt-60 Multipurpose Irradiation Facility to the FNCA seminar participants.



A PNRI researcher shows to the participants a sample of PNRI's Plant Growth Promoters (see article on Page 2)

FNCA Seminar Lecturers

PNRI Chemistry Research Section head Dr. Lucille Abad discussed on *Applications of Radiation Technology for Industry and Agriculture in the Philippines*.

Dr. Masao Tamada of the Takasaki Advanced Radiation Research Institute (TARRI) under JAEA, lectured on *Research and Development on Radiation Processing for Industry and Environment in Japan*.

Dr. Phiriyhutorn Suwanmala of TINT delivered his lecture entitled *Success Stories: Radiation Processing Applications in Industry and Agriculture in Thailand*.

Dr. Gil Magsino of the NCPC-UPLB discussed on the *Biological Efficacy Evaluation of Radiation Modified Kappa-Carrageenan and Chitosan as Inducers of Resistance Against Major Pests and Diseases in Rice*.

After the seminar, the experts had a tour of the irradiation facilities at PNRI, namely the Cobalt-60 Multipurpose Irradiation Facility and the new Electron Beam Irradiation Facility.

The PNRI researchers also made a demonstration of the production process of the Institute's Plant Growth Promoters from irradiated carrageenan (see article on Page 2).



Dr. Darmawan Darwis from BATAN Indonesia tries the mixer for the Plant Growth Promoter formulation procedure prior to irradiation

Medical and Industrial Professionals Complete Training Courses - Continued from Page 8

The CMR was conducted from January 18 to February 12. Participants were taught basic nuclear physics and radiation chemistry and processing, radiation monitoring instruments, proper handling of radioactive materials and radiation dosimetry.

These were followed by nuclear and radiation applications specifically for the medical field, such as cellular radiobiology and cytogenetics, decontamination and radiopharmaceuticals, nuclear medicine, positron emission tomography and radiation therapy. PNRI

regulators also lectured on the Code of PNRI Regulations, licensing procedures, security of radiation sources, radioactive waste management, emergency procedures, and other nuclear safety and security measures.

Radiation Safety Course - Industrial Radiography

Meanwhile, the Radiation Safety Course (RSC) - Industrial Radiography is intended for operators of gamma radiography on-site and in shielded enclosures.

The RSC-IR was conducted for two weeks, from February 1 to 12. Many of the participants are Nondestructive Testing (NDT) technicians and company engineers from the industrial sector.

The CMR as well as the RSC series of courses are among the regulatory training requirements needed for professionals in various fields who will be involved in radioactive materials.

Nuclear Safety, Security and Regulations

Policemen Train on the Use of Mobile Detection System



Left Photo: Experts from the United States Department of Energy - National Nuclear Security Administration (USDOE-NNSA) brief the participants from the Philippine National Police (PNP) on the capabilities of the Mobile Detection System (MDS)

Right Photo: PNRI and USDOE specialists conduct troubleshooting exercises with the PNP personnel for the MDS components

Improving the capabilities of Philippine law enforcement agencies in radiation detection and nuclear security, the DOST-PNRI, in cooperation with the United States Department of Energy - National Nuclear Security Administration (USDOE-NNSA), hosted a National Workshop on Operational Training for the Mobile Detection System (MDS) from February 9 to 13

at the PNRI compound. Specialists and other personnel from the Philippine National Police (PNP) participated in the week-long workshop.

The workshop was particularly relevant to the PNP as the police force received four MDS vans last year through the cooperative project between the USDOE, PNRI and PNP.

Experts from the USDOE-NNSA and PNRI specialists from its Radiological Emergency Monitoring and Control Teams (REMCON) facilitated the workshop.

The policemen were given a background on nuclear and radiation concepts before participating in several exercises on detecting illicitly transported radioactive materials.

Continued on Page 12

EU Workshop on Regulatory Framework for Nuclear Safety



Left Photo: European Union (EU) experts Mr. Christian Kennes and Mr. Jean-Yves Ravachol (1st row, 4th and 5th from left) with PNRI Nuclear Regulatory Division Chief Mr. Teofilo Leonin (1st row, 3rd from left) and the PNRI regulatory staff

Right Photo: The PNRI regulators and EU experts deliberate on improvements to the various standards and regulations set by PNRI

The DOST-PNRI continues to improve its regulatory capabilities with the ongoing assistance of the European Union (EU) through a workshop training on regulatory framework and guidance from January 18 to 22 at the PNRI compound. The workshop was conducted as part of the EU Instrument

for Nuclear Safety Cooperation (INSC) Project PH3.01/09 *Technical Assistance for Improving the Legal Framework for Nuclear Safety and Strengthening the Capabilities of the Regulatory Authorities of the Philippines and its Technical Support Organization (TSO)*.

During the week-long workshop, PNRI regulators had the opportunity to interface with experts from RISKAUDIT and Bel-V, both of which are European nuclear safety organizations operating in close cooperation with the European Commission.

Continued on Page 12



The participants train in detecting radioactive materials in various scenarios with the Mobile Detection System (MDS) van and hand-held radiation detectors. Radioactive materials may be transported by vehicle (top), in sealed packages (below left) or in person (below right).

Policemen Training on Mobile Detection Systems - Continued from Page 11

The radiation detection exercises were performed under a variety of scenarios, particularly whether the radiation source is carried on foot, on a vehicle or packaged in sealed boxes. In addition, the USDOE experts trained the participants in the proper

maintenance and troubleshooting of the MDS components.

The workshop is part of the larger cooperative efforts by the Philippines and United States governments in sustaining nuclear security.

EU Workshop on Regulatory Framework - Continued from Page 11

The workshop focused on the review of PNRI's regulatory documents related to the siting, design and construction of nuclear facilities.

Among the Institute's regulations reviewed by the EU experts were the latest versions of the Code of PNRI Regulations (CPR) Part 5 on Site Evaluation for Nuclear Installations and CPR Part 7 on the Licensing on Nuclear Installations.

The experts and regulators also had presentations and discussions on regulations from other countries such as the Netherlands, Czech Republic, Canada, United Arab Emirates, Malaysia, Russia and South Africa.

The experts also had the opportunity to discuss on the Philippine regulatory architecture in general, as well as the other regulations and guides developed by the Institute.

About Us

The Philippine Nuclear Research Institute (PNRI) is a research and development institute under the Department of Science and Technology (DOST) mandated by law to undertake research and development activities in the peaceful uses of nuclear energy, render nuclear and specialized services and exercise regulatory control in the field of nuclear science and technology. The Institute has been serving the public for the past 55 years, harnessing the beneficial applications of nuclear energy while ensuring the safe use and security of radioactive materials and nuclear facilities for the protection of workers, the general public and the environment.

PNRI Vision

The PNRI is an institution of excellence in nuclear science and technology propelled by a dynamic and committed workforce in the mainstream of national development.

PNRI Mission

We contribute to the improvement of the quality of Filipino life through the highest standards of nuclear research and development, specialized nuclear services, nuclear technology transfer and effective and efficient implementation of nuclear safety practices and regulations.

PNRI Newsletter

Editorial Staff

RHODORA R. LEONIN
JUSTINA S. CERBOLLES
Editors

HANS JOSHUA V. DANTES
Writer/Layout

JOAN L. TUGO
Editorial Assistant

DR. ALUMANDA M. DELA ROSA
Editorial Consultant