

PNRI Newsletter

April-June 2016

| Volume 11

A newsletter of the Philippine Nuclear Research Institute (PNRI)

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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

PNRI INAUGURATES THE RADIATION PORTAL MONITOR TRAINING FACILITY



The Radiation Portal Monitor Training Facility recently established at the PNRI compound in Quezon City

Heralding another high mark in the field of nuclear security, the Department of Science and Technology – Philippine Nuclear Research Institute (DOST-PNRI) inaugurated a Radiation Portal Monitor (RPM) Training Facility at the PNRI compound in Quezon City on April 11.

Established with the assistance of the European Union Joint Research Centre (EU JRC) and the United States Department of Energy (USDOE), the radiation portal monitor has similar capabilities to those of its larger counterparts deployed at the ports of Manila and Cebu under the Nuclear Smuggling Detection and Deterrence Program (formerly the Megaports Initiative) engaged in by the PNRI, Bureau of Customs (BOC) and the Philippine Ports Authority (PPA) since 2005. These RPMs are being used to detect possible illicit trafficking of nuclear and other radioactive materials coming through the busy Philippine ports, and are a valuable asset to the port authorities.

To sustain these efforts, the RPM at PNRI will serve as a training facility for front-line officers from the BOC and port authorities involved in operating the RPMs stationed at the ports.

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INVESTORS MEET TO ESTABLISH A FUTURE COMMERCIAL IRRADIATION FACILITY



PNRI Biomedical Research Section Head Ms. Zenaida De Guzman presents the feasibility study on the establishment of a commercial irradiation facility to representatives of several companies and government agencies

Greetings to everyone!

For the second quarter of 2016, PNRI has focused on laying the groundwork and strengthening the foundation for several projects, initiatives and services.

Early this April, a Radiation Portal Monitor (RPM) was inaugurated at the front gate of PNRI, which will prove useful for the training of port authorities in operating the RPMs in Manila and Cebu. This is part of the efforts to prevent the illicit trafficking of nuclear and radioactive materials.

For the industrial and commercial sector, several investors met with officials from PNRI and the Philippine Center for Postharvest Development and Mechanization (PhilMech) to discuss the establishment of a future commercial irradiation facility in the country.

PNRI continued to strengthen its local and international linkages, particularly with the International Atomic Energy Agency (IAEA), which continues to send experts in various fields and assists us with technical cooperation projects. The Institute also signed a Memorandum of Agreement with the Partnership for Clean Air for air pollution studies.

Indeed, I am sure that PNRI will continue to do well not only for the latter half of the year, but also in the years to come. It has been a privilege to serve as the Director of PNRI, and I know that the Institute will continue to reach new heights long after my retirement. Mabuhay ang PNRI!

*Alumanda Dela Rosa, Ph. D.
Director, DOST-PNRI*

After years of consultation and planning, officials from the DOST-PNRI and the Philippine Center for Post-harvest Development and Mechanization (DA-PhilMech) met with representatives of key industrial companies, government corporations and other agencies for proposals to finally establish a commercial irradiation facility on April 19.

Radiation has proven useful in product processing applications such as decontaminating food, crops, fruits, vegetables and raw materials, sterilizing medical equipment, and enhancing the quality of certain materials, among others.

The forum sought to convince potential investors that putting up an irradiator for processing food and other commodities is a viable enterprise, particularly by presenting the results of the feasibility study conducted by PNRI and PhilMech since 2013.

Officials and representatives from the National Development Company, Unilab, DOLE Asia, NEXUS Agribusiness Solutions, FARMTEC Foods, and the National Food Authority, attended the forum, as well as the senior staff from PNRI and PhilMech.

Experts in radiation processing, irradiation facilities and technology commercialization also participated in the forum, including Mr. Manfred Frentel, Technical Director of GSG International, DOST Balik Scientist Dr. Gonzalo Serafica, University of the Philippines Los Baños Professor Caesar Quicoy and PNRI Biomedical Research Section Head Ms. Zenaida De Guzman.

The proponents believe that a fully-commercial irradiation facility under the private sector will not only be profitable but will also advance the country's irradiation technologies to its much-awaited next step.

For decades, the Philippines operated only one irradiator for semi-commercial services – the Cobalt-60 Multipurpose Irradiation Facility (MIF) at PNRI, which opened in 1989. While the recently established Electron Beam Irradiator Facility was a welcome addition to the Philippines' processing capabilities, the country still lags behind in building irradiators among our neighbors, as Thailand, Vietnam, Indonesia, Malaysia, and China have several commercial-scale irradiators catering to the needs of agriculture and industry.

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PNRI Inaugurates the Radiation Portal Monitor Training Facility - Continued from Page 1

“The training facility that we are inaugurating today is an important new component of the nuclear security architecture of the country, as it ensures the sustainability of the training of our frontline officers,” said DOST Secretary Mario Montejo in his inaugural remarks.

“This joint project is indeed a fitting testament to the growing partnership between the EU and the Philippines over the past 25 years,” said Secretary Montejo.

The inauguration was attended by officials, representatives and experts from the European Union, National Security Council, BOC, PPA and the Cebu Port Authority, highlighting the strong linkages among local and international agencies that made the project possible.

“Deploying equipment and holding training courses are important for establishing a nuclear security culture but it is not enough. A harmonized approach and a national strategy as well as trained users and skilled experts are to be part of the efforts in order to reach long-term sustainability,” said Mr. Achim Tillesen,



Mr. Achim Tillesen, Head of Development Cooperation at the Delegation of the European Union (EU) to the Philippines and PNRI Director Dr. Alumanda Dela Rosa with members of the PNRI Senior Staff and experts from the EU Joint Research Centre (JRC) during the ribbon-cutting for the inauguration of the Radiation Portal Monitor Training Facility at the front gate of PNRI.

Head of Development Cooperation at the Delegation of the European Union to the Philippines.

the Philippines for receiving the Atoms for Peace award during the 4th Nuclear Security Summit on April 1.

The EU official highlighted the excellent and close cooperation of the EU with PNRI not only in nuclear security but also in emergency preparedness and response. He also congratulated

The inauguration was immediately followed by the opening of the National Frontline Officer Training on Radiation Detection Techniques and Procedures (see article on Page 7).

Investors Forum for Irradiation Facility - Continued from Page 2

Meanwhile, PNRI’s Co-60 facility alone can barely cover all the products sent for irradiation, even when operated at full capacity. PNRI is presently preparing to upgrade the facility’s irradiator to be able to serve more of its diverse clientele.

“Because of the increased demand of this facility, we are now irradiating products 24/7, and PNRI cannot accommodate all the requests of the industry,” said Ms. De Guzman.

Beyond the nation’s capacity to meet the market for irradiation services, the companies also voiced out concerns on product standards and regulations. The increasingly stringent requirements for manufacturing and exports are a key consideration for some companies interested in irradiation technology to help them meet international standards.

The DA, and PhilMech, in particular, has long been pushing for the private sector to invest in radiation processing facilities that will be especially useful in agricultural products that are clean, pest-free and have a longer shelf-life.



Experts and company representatives visit the Cobalt-60 Multipurpose Irradiation Facility (above) and the Electron Beam Irradiation Facility (below)

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Investors Forum for Irradiation Facility - Continued from Page 2

PhilMech joined PNRI and other DA agencies in spearheading a feasibility study for a future irradiation facility, which is now projected to cost around Php 337 million in initial investments, or around \$7 million.

The facility's initial costs will allow the new irradiator to receive from 10,700 to 12,000 tons of products annually, far more than the capacity of the existing irradiation facilities. The Co-60 irradiator will have an initial activity of 100 kiloCurie (kCi), but may be increased up to 1000 kCi.

"We're very challenged in terms of just being able to put up one; we can do one like Sri Lanka, which doubled it within the year, or dual, like Vietnam, who is already up to seven," said Dr. Serafica, who has been providing the effort with invaluable technical and advisory assistance from the project's inception.

The feasibility study showed that most of the products that the future irradiator will cater to are agricultural products such as milled rice, spices and seasonings such as onion and shallot bulbs, garlic and food supplements. Some of the potential clients are also interested to bring cosmetic products and other raw materials for irradiation,



Clockwise from left: Mr. Manfred Fretel of GSG International; PNRI Director Dr. Alumanda Dela Rosa and PNRI OIC, Office of the Deputy Director Dr. Soledad Castañeda; Dr. Nerlita Manalili of NEXUS Agribusiness Solutions and DOST Balik-Scientist Dr. Gonzalo Serafica

followed by meat products, medical products and raw materials.

Aside from being an alternative to chemical and other conventional product treatments, the irradiation facility will also provide more jobs, a hefty share of income tax to the government and better access to foreign markets.

Among the hurdles which the proposed facility must overcome are the nuclear regulatory and safety procedures for the irradiator, and, more importantly, the willingness of members of the private sector to invest in the facility.

Still, the experts believe that a commercial irradiation facility will be well worth the effort as it will make its mark in the country's agricultural and industrial horizons.

"We're still trying to make it commercially viable, but the social impact on the farmers and the agricultural products, value-added, is there. I think we just need to get our hearts out, more than anything, on our checks," said Dr. Serafica.

"It's been a long, drawn effort, but we're not giving up."

IAEA AMBER Software for Radioactive Waste Disposal

The International Atomic Energy Agency (IAEA) provided assistance to the Philippines' establishment of a long-term radioactive waste disposal facility through a workshop for operating a software for radionuclide migrations from May 2 to 6.

PNRI regulators and researchers were introduced to the AMBER software used for biosphere modelling of radionuclide contaminants.

The participants were particularly familiarized with the AMBER model based on the IAEA's Generic Safety Assessment (GSA) for the borehole disposal of disused radioactive sources.



IAEA expert Dr. Russelle Walke on radioactive disposal siting met with regulators and researchers from PNRI involved in the project for establishing a Borehole and Near-Surface Disposal Site for radioactive waste.

PNRI Signs MOA with Partnership for Clean Air for Air Pollution Studies



Left Photo: PNRI Director Dr. Alumanda Dela Rosa and PCA President Mr. Renato Pineda Jr. signing the Memorandum of Agreement for Air Pollution



Right Photo: Dr. Dela Rosa, Mr. Pineda and the PNRI Senior Staff with the project leader Dr. Preciosa Corazon Pabroa (4th from left) and PCA Secretary Ms. Julieta Manlapaz (2nd from right)

DOST-PNRI continues to collaborate with the Partnership for Clean Air (PCA) for air pollution studies through the signing of a Memorandum of Agreement on June 20. The MOA was signed to implement a project with the European Union (EU) and the GFA Consulting Group on the “Assessment of respirable air particulate pollution sources in Metro Manila and receptor modelling source apportionment”

The PCA supports PNRI in its studies to determine the sources of particulates polluting Metro Manila, and where these pollutants are coming from.

Black carbon forms much of the fine particulates (matter smaller than 2.5 micrometers) in Metro Manila, and can cause lung and heart diseases. The latest results show that vehicle emissions comprise around half of the air pollutants in the metropolis, followed by industrial emissions, which form almost a third of the pollutants, and secondary sulfur, which is almost a quarter of all the air pollutants. The rest of the air pollutants are composed of smoke and fine soil.

The study takes advantage of the unique capabilities of PNRI in nuclear and nuclear-based analytical techniques.

PNRI’s Nuclear Analytical Techniques Applications Section performs multi-elemental and non-destructive analysis of samples faster than conventional methods.

PNRI used Gent Samplers to collect air particulates twice a week in five air pollution monitoring stations in Quezon City, Valenzuela, Mandaluyong, Pasig, and Bulacan.

Through the new agreement with the PCA, PNRI is planning to establish three new monitoring stations in Taguig, Makati and Valenzuela.

CSC Helps PNRI Employees Improve Basic Customer Service Skills

Public service is a public trust. To an extent, civil servants become the face of the agency as they engage directly with the day-to-day visitors as well as fellow employees who wish to avail of government services.

To improve and refresh the customer service skills of PNRI employees, the Civil Service Commission (CSC) conducted the Basic Customer Service Skills Seminar from May 30 to 31 at the PNRI Auditorium.

Administrative staff, researchers and regulators from PNRI’s various divisions participated in the two-day seminar, which was conducted by Director Jocelyn Patrice Deco of the CSC - National Capital Region.

The participants reviewed the basic requisites of customer satisfaction and the various procedures for availing the services provided by their respective sections.



Director Jocelyn Patrice Deco of the Civil Service Commission (CSC) - National Capital Region and PNRI Director Dr. Alumanda Dela Rosa (1st row, 4th and 5th from right, respectively) with the participants of the CSC Basic Customer Service Skills Seminar



Nuclear Training Courses

Engineers and College Instructors Study Reactor Engineering at PNRI



Left Photo: Experts and participants of the Follow-up Training Course on Reactor Engineering at the reactor pool of the PRR-1

Right Photo: The participants visit the Cobalt-60 Multipurpose Irradiation Facility at PNRI

Several engineers, researchers and college instructors successfully completed the Follow-up Training Course on Reactor Engineering from June 6-17 at the PNRI Nuclear Training Center. The training course was conducted by PNRI in close cooperation with the Japan Atomic Energy Agency (JAEA).

Twenty participants from the industrial sector as well as various state universities, some as far as Northern Luzon and Mindanao,

joined the two-week training course. Several researchers from PNRI's various sections also participated in the course.

PNRI research specialists and experts from JAEA facilitated the lectures and activities on reactor technology, reactor kinetics, reactor safety, heat transfer and nuclear safety & regulations.

The participants also had experiments on radiation measurements and survey, neutron moderation, reactor operation and reactor criticality simulation.

As part of the course, the JAEA experts and the Filipino participants also visited some of the nuclear reactors in the Philippines, such as the Bataan Nuclear Power Plant and the Philippine Research Reactor-1 (PRR-1) at PNRI.

They also visited other facilities of PNRI, such as the the Cobalt-60 Multipurpose Irradiation Facility and the Electron Beam Irradiation Facility.

PNRI Trains High School Teachers and College Instructors on Nuclear Science and Technology

Helping to advance the country's knowledge of nuclear science and technology in the academic field, the DOST-PNRI once again conducted the Seminar on Nuclear Science for Teachers (SNST) and the Course on Nuclear Technology (CNT) from April 18 to May 20 at the PNRI Nuclear Training Center.

High school teachers and instructors from Quezon City, Caloocan, Paranaque, Manila, Rizal, Bulacan and La Union attended the SNST while college instructors from the University of the Philippines Diliman and Los Baños joined the CNT.

PNRI's Nuclear Training group conducted lectures, experiments and a technical visit to the Bataan Nuclear Power Plant. The participants learned about the various applications of nuclear S & T, such as food irradiation, mutation breeding, soil fertility and plant nutrition studies, radioisotopes in medical, industrial and geological applications, and nuclear energy for power generation. PNRI is currently engaged in an outreach program for secondary school students under the IAEA Project RAS/0/065 on Supporting Sustainability and Networking of National Nuclear Institutions in Asia and the Pacific Region.



PNRI NTC trainers and coordinators with the participants and lecturers of the SNST and CNT during the closing ceremonies

Nuclear Safety, Security and Regulations

Port Authorities Improve Capabilities in Operating Radiation Portal Monitors



Left Photo: (1st row) PNRI Director Dr. Alumanda Dela Rosa (3rd from left) and Mr. Achim Tillessen, Head of Development Cooperation at the Delegation of the EU to the Philippines (center) with the JRC experts and participants of the training workshop.



Right Photo: Frontline officers from the Bureau of Customs and the various port authorities train on using RPMs at PNRI

To strengthen the security of maritime ports that are especially vital to an archipelagic country, customs and port authorities participated in the National Frontline Officer Training on Radiation Detection Techniques and Procedures from April 11 to 14 at DOST-PNRI.

The workshop was conducted in cooperation with the European Union Joint Research Centre (EU/JRC).

The EU JRC is involved in a joint

project with PNRI on Border Monitoring Activities in the Philippines. It is a vital step in enhancing the Philippines' capabilities in nuclear security, and particularly to prevent the illicit trafficking of nuclear and other radioactive materials through the maritime ports of the country.

Representatives from the Bureau of Customs and the Cebu Port Authority participated in the four-day workshop,

which was facilitated by PNRI's Nuclear Safeguards and Security Section (NSSS) and experts from the EU JRC.

The training revolved around the operation of Radiation Portal Monitor (RPM) systems, which were installed at the ports of Manila and Cebu under the Nuclear Smuggling Detection and Deterrence (NSDD) program.

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IAEA Experts Train Responders on Radiological Crime Scene Management

Effective crime scene operations are indispensable in both preventing and responding to threats involving nuclear and radiological materials.

To improve the capabilities of our law enforcement and other government agencies in dealing with a radiological crime scene, officials from the International Atomic Energy Agency (IAEA) and the International Criminal Police Organization (INTERPOL) shared their expertise during the National Workshop on Radiological Crime Scene Management from April 25 to 28 at the PNRI compound.

Fourteen participants from the Armed Forces of the Philippines (AFP), Philippine National Police (PNP), Bureau of Fire Protection



Mr. Adrien Svignon of the French Judicial Police demonstrates to the local investigators the proper procedures for gathering and securing evidence during a radiological crime scene operation.



(BFP) and other government agencies involved in Chemical, Biological, Radiological Nuclear and Explosives (CBRNE) emergencies joined the four-day workshop.

This workshop is part of PNRI's cooperation with the IAEA and the INTERPOL CBRNE Terrorism Prevention Program.

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Port Authorities Improve Capabilities on Operating RPMs- Continued from Page 7



EU JRC Scientific/Technical Support Officer Mr. Georgios Takoudes demonstrated to the participants and PNRI staff some of the features of the Radiation Portal Monitor (RPM) recently installed at the PNRI front gate for training purposes.

Another RPM was installed recently at PNRI for the training front-line officers, courtesy of the country's partnership with the EU/JRC and the USDOE (see article on Page 1).

Aside from the operation of the RPMs, the frontline officers were also taught the basic principles of radiation detection and the use of portable ORTEC and IdentifINDER radiation detection systems.

IAEA Training on Radiological Crime Scene Management- Continued from Page 7



Above: PNP and AFP personnel during an indoor exercise with their Personal Protective Equipment

Right: Mr. Radek Hlavacka of the IAEA showing some of the radiation detection equipment.



Lectures and activities were facilitated by the PNRI's Nuclear Safeguards and Security Section under the Philippines' Integrated Nuclear Security Support Plans (INSSP), and Radiation Monitoring and Control (REMCON) teams along with the security officers, investigators and radiologic experts from the IAEA, INTERPOL, the US Department of Energy, the French Judicial Police and the Spanish Guardia Civil.

Beyond enhancing the awareness of the participants of procedures in radiological crime scene operations, the four-day workshop also aimed to improve the cooperation between the various agencies with an emphasis to their different roles and responsibilities.

The participants were also refreshed with the role of command, control and coordination for the proper response in a radiological crime scene operation.

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.



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