The Contributed Papers of the Third Asian and Oceanic Congress on Radiation Protection (AOCRP-3)

The Third Asian and Oceanic Congress on Radiation Protection (AOCRP-3) is a congress for radiation protection held every four years under Asian and Oceanic Association for Radiation Protection (AOARP). The AOARP is a regional association of International Radiation Protection Association (IRPA). AOCRP is also placed as a regional congress of IRPA, and has a history of holding in Soul, Korea (AOCRP-1, 2002) and in Beijing, China (AOCRP-2, 2006).

Now we have AOCRP-3, 2010, in Tokyo, Japan. It is a big pleasure to accept a large number of attendants, who are more than five hundreds from over thirty countries. The contributed papers are summarized here, which are covering 12 fields; “Radon”, “Emergency Preparedness and Response”, “Radiation Measurement”, “Radiation Control and Management”, “Radioactive Waste Management”, “NORM/TENORM”, “Dosimetry”, “Standard, Criteria and Regulation”, “Exposure to Medical Radiation”, “Health Effects of Ionizing Radiation”, “Environmental Radioactivity” and “Radiological Protection as Part of the Global Nuclear Expansion”.

The attendants list is attached at the end of this book. We, executive committee, are expecting you to make full use of this booklet.

May 24, 2010

President of AOCRP-3
Toshiso KOSAKO
(The University of Tokyo)
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Congress Organization
The Member of International Congress Council (ICC)

Australia-New Zealand
Cameron Jeffries, *Radiation & Laser Safety Officer at St Vincent's Hospital*

China
Sen-lin Liu, *Dean, China Institute of Atomic Energy*

India
Satya Pal Agarwal, *Former Head, Radiological Safety Division, Atomic Energy Regulatory Board*

Japan
Toshiso Kosako, *Professor, Graduate School of Engineering, The University of Tokyo*

Korea
Sei Chul Yoon, *Professor Dept. of Radiation Oncology/Seoul St. Mary's Hospital*

Malaysia
Muhamad Lebai juri, *Senior Director, Malaysian Nuclear Agency*

The Philippines
Eulinia M. Valdezco, *Chief, Nuclear Regulations, Licensing and Safeguards Division, Philippine Nuclear Research Institute*

Indonesia
Syahrir, *Senior Researcher, Radiation Safety and Environment Division, Radioactive Waste Technology Center, BATAN Serpong*

Thailand
Sutat Thiangtrongjit, *Manager, Radioactive Waste Management Center, Thailand Institute of Nuclear Technology*

Viet Nam
Vuong Huu Tan, *Chairman of Vietnam Atomic Energy Commission*
The Member of International Academic Advisors (IAA)

Australia-New Zealand
Nick Tsurikov, Director, Calytrix Consulting

China
Qiuju Guo, Associate Professor, Department of Technical Physics, School of Physics Peking University

India
Amir Hasan Khan, Raja Ramanna Fellow, Environmental Assessment Division, Bhabha Atomic Research Centre

Japan
Takeshi Iimoto, Associate Professor, Division for Environment, Health and Safety, The University of Tokyo

Korea
Kun-Woo Cho, Head, Radiation Research Department, Korea Institute of Nuclear Safety

Malaysia
Noriah Mod Ali, Senior Researcher, Malaysian Nuclear Agency

The Philippines
Agnette P. Peralta, Director, Bureau of Health Devices and Technology, Department of Health

Indonesia
Dadong Iskandar, Resarcher, National Nuclear Energy Agency, Center for Technology of Radiation Safety and Technology

Thailand
Nanthavan Ya-anant, Nuclear Science Specialist, Radioactive Waste Management Center, Thailand Institute of Nuclear Technology

Viet Nam
Tran Ngoc Toan, Researcher, Institute for Nuclear Science and Technique, under the Vietnam Atomic Energy Commission
Executive Committee (ECC)

Aoki Yoshiro                        RADIATION EFFECTS ASSOCIATION
Fujita Akira                       JGC CORPORATION
Igarashi Yasuharu                  TOSHIBA CORPORATION
Ishida Masami                      Nuclear Safety Technology Center
Ishiguro Junichi                   JAPAN NUS Co., Ltd.
Ishihara Junichi                   CHUBU Electric Power Co.,Inc.
Katayama Shoichiro                 Japan Atomic Energy Agency
Katayanagi Hiroshi                 TODEN KOGYO CO., LTD.
Kishimoto Kunikazu                 ATOX Co., Ltd.
Maru Akira                         Hitachi, Ltd.
Matoba Hiroaki                     NAGASE LANDAUER, LTD.
Matsubara Shohei                   ALOKA CO., LTD.
Matsumoto Shoji                    The Japan Atomic Power Company
Matsumura Motofumi                 Fuji Electric Systems Co., Ltd.
Muto Sakae                         TOKYO ELECTRIC POWER COMPANY
Sasaki Yasuhiro                    Japan Radioisotope Association
Sato Kaneaki                       Japan Chemical Analysis Center
Takeuchi Nobuhiro                  Chiyoda Technol Corporation
Tsujii Hirohiko                    National Institute of Radiological Sciences
Yagawa Genki                       NUCLEAR SAFETY RESEARCH ASSOCIATION
Yagi Makoto                        KANSAI ELECTRIC POWER CO., INC.
Yamauchi Kiyoshi                   Mitsubishi Heavy Industries, Ltd.
Yatsuzuka Hiroshi                  Japan Atomic Industrial Forum, Inc.
Yokoyama Hayaichi                  Central Research Institute of Electric Power Industry
Yoshikawa Susumu                   Tokyo Electric Power Environmental Engineering Co., Inc.

Congress Organizing Committee (COC)

(P=Program, F=Finance)

P  F  Kosako Toshiso                The University of Tokyo
P  F  Imoto Takeshi                 The University of Tokyo
P  F  Abe Takuya                    The University of Tokyo
F  Chikamoto Kazuhiko              JAPAN NUS Co., Ltd.
P  Fukushi Masahiro                 TOKYO METROPOLITAN UNIVERSITY
P  Futatsukawa Shouji               Japan Radioisotope Association
P  Harano Hideki                    Advanced Institute Science and Technology
P  Hashimoto Makoto                 Japan Atomic Energy Agency
P  Hattori Takatoshi                Central Research Institute of Electric Power Industry
F  Hayashi Katsumi                  Hitachi, Ltd.
P  F  Hirota Masahiro               The University of Tokyo
P  Homma Toshimitsu                 Japan Atomic Energy Agency
Venue

Tower Hall Funabori
4-1-1 Funabori, Edogawa, Tokyo, 134-0091 JAPAN
TEL: +81-3-5676-2211
FAX: +81-3-5676-2501

Access to the venue
Floor map
# Program Overview

<table>
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<th>25(Tue)</th>
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<td><strong>Big Hall</strong></td>
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<td>JWPR-3C</td>
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**Notes:**
- OPC: Open Conference
- ROC: Regular Conference
- OP: Open Poster
- LS: Local Session
- LOA: Local Organization
- JWPR: Joint Working Party
- Welcome Party
- Poster Session & Booths
- Poster Presentation Hour
- Farewell Party
Program Highlight

Sunday, May 23

15:00 ~ 18:00  Registration: Room 406 (4F), Venue

Monday, May 24

9:00 ~ 10:00  Registration: Big Hall

10:00 ~ 12:00  Opening Session: Big Hall
Opening Remarks
Toshiso Kosako, President of the Congress, Japan

Congratulatory Remarks
Jong Kyung Kim, President of AOARP
Kenneth R. Kase, President of IRPA

Keynote Address
“Nuclear Science Technology for Sustainable Development of Mankind—Transition of the civilization based upon Chemical Reaction to that based upon Nuclear Reaction—”
Yoichi Fujiie, Former Chairman of Japan Atomic Energy Commission, Japan

12:10 ~ 13:30  Luncheon Seminar
LS-1: Event Hall (Zuiun)
Yuu Ishimori, Japan Atomic Energy Agency, Japan
“NORM/TENORM management and its discussion points”

LS-2: Event Hall (Heian)
Shigenobu Nagataki, Professor Emeritus of Nagasaki University, Japan
“Radiation Health Effects of Atomic Bombs and Accidents of Nuclear Power Plants”

13:40 ~ 15:30  AOARP & FNCA Session: Big Hall
Chair: Toshiso Kosako, President of the Congress, Japan
“Present Activities of Radiation Protection Societies in Asian and Oceanic countries”
Presentation of highlights on Radiation Protection of each country by AOARP members; ARPS, CSRP, IARP, JHPS, KARP, MARPA, PARP
Presentation of highlights on Radiation Protection and Radioactive Waste Management of each country by FNCA RP&RWM members; Australia, Bangladesh, China, Indonesia, Japan, Korea, Malaysia, Philippines, Thailand, Viet Num

Panel on the future development and cooperation on Radiation Protection in this area connecting to the world movement,
Point 1. Radiation protection (System, Calibration, Emergency, etc.)
Point 2. Medical application
Point 3. Research reactor & power reactor

15:40 ~ 17:25  Oral Presentation Session
OP-1 Radon: Big Hall
Session theme:
This session will cover international trend about the regulation of indoor radon which is gaining importance in recent years. Moreover, standardization of the measuring methods for radon and thoron concentration will be also considered. The keyword of the session will be on calibration of radon and thoron, national...
surveys, and epidemiology.

**Chair:** Qiuju Guo, *Peking University, China*  
Shinji Tokonami, *National Institute of Radiological Sciences, Japan*

**Keynote lecture:**  
Francesco Bochicchio, *Italian National Institute of Health, Italy*  
“The newest international trend about regulation of indoor radon”

**Oral Presentation:**  
1-O-1 Tracy Wright, *Australian Radiation Protection and Nuclear Safety Agency, Australia*  
“Calibration and standardisation for radon and thoron”

1-O-2 Yong-Jae Kim, *Korea Institute of Nuclear Safety, Korea*  
“National survey in Korea”

1-O-3 R. C. Ramola, *H. N. B. Garhwal University, India*  
“Radon, Thoron Survey in Himalayan Homes, India”

1-O-4 Quanfu Sun, *National Institute for Radiological Protection, China*  
“Epidemiological study in China”

1-O-5 Jing Chen, *Radiation Protection Bureau, Health Canada, Canada*

**Comments:**  
1-C-1 Shinji Yoshinaga, *National Institute of Radiological Sciences, Japan*  
“For epidemiology”

1-C-2 Takao Iida, *Professor Emeritus of Nagoya University, Japan*  
“For radiation measurement”

**Discussion:**

15:40 ～ 17:25  
**OP-2 Emergency Preparedness and Response:** Event Hall (Zuiun)

**Session theme:**  
This session will basically discuss the current status of emergency preparedness and response for a nuclear or radiological emergency in Asian countries. Recently, the 2007 recommendations of the ICRP emphasize the importance of optimization of the overall response strategy, while the IAEA issued a Safety Requirements publication on preparedness and response for a nuclear or radiological emergency and several documents to implement the capabilities for responding to radiation emergencies. The future perspectives of improving their capabilities in these lines will be also addressed.

**Chair:** Cameron Jeffries, *St Vincent's Hospital, Australia*  
Toshimitsu Homma, *Japan Atomic Energy Agency, Japan*

**Keynote lecture:**  
Wolfgang WEISS, *The Federal Office for Radiation Protection, Germany*  
“Recent development of concepts for emergency exposure situations and its implementation in the international safety standards”

**Oral Presentation:**  
2-O-1 Xiao-Qiu Chen, *Ministry of Environmental Protection, China*  
“Preparedness and response for a nuclear facility emergency”

2-O-2 Mohd Abdul Wahab Yusof, *Malaysian Nuclear Agency, Malaysia*  
“Radiological Emergency: Malaysian Preparedness and Response”

2-O-3 Masashi Kanamori, *Japan Atomic Energy Agency, Japan*  
“Preparedness and Response for Radiological Emergency in Japan”

2-O-4 Maria Visitacion B. Palattao, *Philippine Nuclear Research Institute, The Philippines*  
“Medical Response to a Radiation Emergency in the Philippines”

2-O-5 Shigenobu Nagataki, *Professor Emeritus of Nagasaki University, Japan*  
“International Association of Radiopathology (IAR) as Non-profit Association”

**Discussion:**

**OP-3 Radiation measurement:** Event Hall (Heian)
Session theme:
This session will discuss the application of radiation measurements for radiation protection. New technologies of radiation detection, radiation analysis, or radiation quantification, applications of conventional radiation measurement method in today's style, calibration, standardization, and optimization of radiation measurement will be presented.

Chair: Noriah Mod Ali, Malaysian Nuclear Agency, Malaysia
Syahrir, National Nuclear Energy Agency, Indonesia

Keynote Lecture:
Fang-Yuh Hsu, National Tsing Hua University, Taiwan
“Assessment of skin doses due to different treatment techniques used in the Nasopharyngeal Carcinoma radiotherapy”

Oral presentations:
3-O-1 YongKyun Kim, Hanyang University, Korea
“Performance of the neutron-gamma separation by using a composite stilbene scintillator for the fast neutron measurement”

3-O-2 Xiao-na Ren, China Institute of Radiological Protection, China
“Monte Carlo Simulation for Energy Deposition of Ionization Chamber Based on the Equivalent Electron Source Theory and Experimental Verification for the Theory”

3-O-3 Attakovit Sa-Nguensat, Ministry of Public Health, Thailand
“InLight OSL for Routine Radiation Monitoring Service in Thailand”

3-O-4 Kikuo Shimizu, Osaka University, Japan
“Fundamental study of the radiation monitoring system based on evaluation of DNA lesions”

3-O-5 Tran Ngoc Toan, Vietnam Atomic Energy Commission, Viet Nam
“Calibration of kVp meters used in quality control tests of diagnostic X-ray units”

Discussion:

OP-4 Radiation control and management: Training Hall
Session theme:
This session will discuss mainly serious or typical radiation accidents and incidents. Their causes and backgrounds, what happened, how to confronted them, what has been changed, what kind of problems are still remained, and what should be done in the future, will be presented. Moreover we will discuss the challenge to manage it more substantial in the radiation control and management.

Chair: Sen-lin Liu, China Institute of Atomic Energy, China
Hirokuni Yamanishi, National Institute for Fusion Science, Japan

Keynote Lecture:
Nanthavan Ya-anant, Thailand Institute of Nuclear Technology, Thailand
“Radiological accident and incidents in Thailand and lessons to be learned”

Oral presentations:
4-O-1 Seung-Nam Seo, Korea Hydro & Nuclear Power Company, Korea
“Root Cause Analysis for Radiation Incidents at Nuclear Power Plants”

4-O-2 Yoshihiro Asano, RIKEN, Japan
“Characteristics of the radiation safety for Synchrotron Radiation and X-ray Free Electron Laser Facilities”

4-O-3 Minh Quang Pham, Institute for Technology of Radioactive & Rare Elements, VAEI
“Management of Radioactive Sources and Stabilization, Store of Expired Sources such as Ra Needles and Co Disused Sources in Vietnam”

4-O-4 Sadaaki Furuta, Japan Atomic Energy Agency, Japan
“Radiation Protection in Nuclear Fuel Cycle Facilities”

4-O-5 Hiroshi Yasuda, National Institute of Radiological Sciences, Japan
“Management of cosmic radiation exposure for aircraft crew in Japan”

Discussion:
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<th>Time</th>
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<tr>
<td>17:40 – 18:40</td>
<td>JHPS General meeting: Big Hall</td>
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<td>18:50 – 20:50</td>
<td>Welcome Party: Event Hall (Heian &amp; Fukuju)</td>
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<td><strong>Tuesday, May 25</strong></td>
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<td>9:00 – 9:30</td>
<td><strong>Registration:</strong> Small Hall</td>
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<td>9:30 – 10:20</td>
<td><strong>Refresher Course</strong></td>
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<td>RC-1: Small Hall</td>
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<td>Hans-Georg Menzel, <em>European Organization for Nuclear Research, Switzerland</em></td>
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<td>“Radiation protection system: history of dose limits and constraints”</td>
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<td>RC-2: Event Hall (Zuiun)</td>
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<td>Yoshiharu Yonekura &amp; Kazuo Sakai, <em>National Institute of Radiological Sciences, Japan</em></td>
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<td>“UNSCEAR to provide scientific bases for radiation protection”</td>
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<td>RC-3: Event Hall (Heian)</td>
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<td>Jizeng Ma, <em>China Institute of Atomic Energy, China</em></td>
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<td>“Definition of various radiological units and its future”</td>
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<td>10:30 – 12:15</td>
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<td><strong>OP-5 Radioactive waste management:</strong> Small Hall</td>
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<td><strong>Session theme:</strong> This session will deal with principles, policy, or practices of radiation protection for radioactive waste management (RWM). Regulatory or technical aspects of RWM will be also discussed. The session participants will reach certain understanding on the challenges in RWM issues and may find possible resolution of them.</td>
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<td><strong>Chair:</strong> Cameron Jeffries, <em>St Vincent's Hospital, Australia</em></td>
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<td>Maria Visitacion B. Palattao, <em>Philippine Nuclear Research Institute, The Philippines</em></td>
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<td><strong>Keynote lecture:</strong> Phil Metcalf, <em>International Atomic Energy Agency, Austria</em></td>
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<td><strong>Oral presentations:</strong></td>
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<td>5-O-1 Chang-Lak Kim, <em>Korea Radioactive Waste Management Corporation, Korea</em></td>
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<td>“Recent RWM practices in an AOCRPM member state, Korea”</td>
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<td>5-O-2 Yuji Inoue, Ministry of Education, Culture, Sports, Science and Technology, Japan</td>
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<td>“Development of Clearance Levels in Japanese Radioisotope Regulations”</td>
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<td>5-O-3 Nanthavan Ya-anant, <em>Thailand Institute of Nuclear Technology, Thailand</em></td>
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<td>“Regional Cooperation in RWM in the AO countries”</td>
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<td>5-C-1 Hideo Kimura, <em>Japan Atomic Energy Agency, Japan</em></td>
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<td>“Safety analysis for RWM from Japan”</td>
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<td>5-C-2 Toyoaki Yamauchi, <em>Japan Atomic Power Company, Japan</em></td>
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<td>“Decommissioning and RWM from Japan”</td>
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<td><strong>Discussion:</strong></td>
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<td><strong>OP-6 NORM/TENORM:</strong> Event Hall (Zuiun)</td>
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<td><strong>Session theme:</strong> This session will discuss how to manage NORM/TENORM effectively. Each country's present regulation and problems, and direction and plan to solve them.</td>
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<td><strong>Chair:</strong> Hosin Choi, <em>Korea Institute of Nuclear Safety, Korea</em></td>
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<td>Hidenori Yonehara, <em>National Institute of Radiological Sciences, Japan</em></td>
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<td><strong>Keynote lecture:</strong></td>
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</table>
Sen-lin Liu, *China Institute of Atomic Energy, China*
“The Status on the Radiological Protection of NORM Exposure”

**Oral presentations:**

6-O-1 Byung-Uck Chang, *Korea Institute of Nuclear Safety, Korea*
“The Current Status of NORM/TENORM industries and Establishment of the Regulatory Frameworks in Korea”

6-O-2 Cameron Jeffries, *St Vincent's Hospital, Australia*
“Regulation of Naturally Occurring Radioactive Materials in Australia”

6-O-3 Shintaro Hara, *Ministry of Education, Culture, Sports, Science and Technology, Japan*
“Japanese “U-Th guideline” and its background”

6-O-4 Michael Cowie, Saudi Aramco, Saudi Arabia
“Saudi Aramco’s NORM management strategy”

**Discussion:**

**OP-7 Dosimetry:** Event Hall (Heian)

**Session theme:**
This session discusses numerical dosimetry for external/internal irradiation based on ICRP Committee-2, and related activities including high-energy dosimetry, internal dose calculation models, etc.

**Chair:** Tran Ngoc Toan, *Vietnam Atomic Energy Commission, Vietnam*  
Nobuhito Ishigure, *Nagoya University, Japan*

**Keynote Lecture:**
Hans-Georg Menzel, *European Organization for Nuclear Research, Switzerland*
“Current Activities of Committee 2 of the International Commission on Radiological Protection”

**Oral presentations:**

7-O-1 Tatsuhiko Sato, *Japan Atomic Energy Agency, Japan*
“Impact of the Introduction of ICRP Publication 103 on Neutron Dosimetry”

7-O-2 Zhi-ping Luo, *China Institute of Atomic Energy, China*
“Gas Scintillation proportional Counter for in vivo Measurement”

7-O-3 Jong Hwi Jeong, *Hanyang University, Korea*
“Development and Application of Computational Human Phantoms”

7-O-4 A. C. James, *Washington State University, US*
“Development of computational code for internal dosimetry”

7-O-5 Yi-ren Xuan, *China Institute for Radiation Protection, China*
“The Current status of Dosimetry in China”

**Discussion:**

**OP-8 Standard, criteria and regulation:** Training room

**Session theme:**
ICRP published new basic recommendation of radiation protection in 2007, as ICRP Publication 103. Following ICRP 2007 publications, IAEA has revised Basic Safety Standard. This session introduce the latest information on the reviews of standard, criteria and regulation in Asian Oceania countries with these movements and will discuss issues in the future radiation protection.

**Chair:** Kun-Woo Cho, *Korea Institute of Nuclear Safety, Korea*  
Michiaki Kai, *Oita University of Nursing and Health Sciences, Japan*

**Keynote lecture:**
Eliana Amaral, *International Atomic Energy Agency, Austria*
“The Basic Safety Standards (BSS)—the current status” 落語 “RAKUGO” Japanese Sit-Down Comedy Performance in English Kimie Oshima, Susumu Maeda and Yuri Koike (Bunkyo Gakuin University)

**Oral presentations:**

8-O-1 Kun-Woo Cho, *Korea Institute of Nuclear Safety, Korea*
“Consideration with the application of the IAEA standard from the viewpoint of atomic energy use”

8-O-2 Noriah Mod Ali, *Malaysian Nuclear Agency, Malaysia*
“Consideration with IAEA standard from the viewpoint of Medical, agriculture, industry, manufacturing industry, health and environment”

8-O-3 Nobuyuki Sugiura, Kinki university, Japan
“Consideration with the application of the IAEA standard from the viewpoint of radioactive waste disposal”

Comments:
8-C-1 Takashi Nakamura, Professor Emeritus of Tohoku University, Japan
8-C-2 Ralph Andersen, Nuclear Energy Institute, USA

Discussion:

12:50 ~ 14:00 Special Luncheon Seminar: Event Hall (Zuiun & Heian)

“RAKUGO”Japanese Sit-Down Comedy Performance in English Kimie Oshima, Susumu Maeda and Yuri Koike (Bunkyo Gakuin University)

14:30 ~ 16:30 Poster Session: Exhibition Hall

14:30 ~ 15:30 AOARP EC meeting (closed)

16:40 ~ 19:00 IRPA Associated Societies Forun (small Hall)

Wednesday, May 26

9:00 ~ 9:30 Registration: Big Hall Commercial Video: Big Hall and Event Hall (Zuiun & Heian)

9:30 ~ 10:20 Refresher Course
RC-4: Big Hall
Maria Perez, World Health Organization, Switzerland
“Radiological protection in health care”
RC-5: Event Hall (Zuiun)
Hee-sun Kim, Korea Hydro & Nuclear Power Corporation, Korea
“Radiological protection for non-human species”
RC-6: Event Hall (Heian)
Phil Metcalf, International Atomic Energy Agency, Austria
“Concept of radioactive waste management”

10:30 ~ 12:30 IRPA Special Session: Big Hall
Kenneth R. Kase, Jacques Lochard et al.
Promoting excellence in Radiation Protection

12:40 ~ 14:00 Luncheon Seminar
LS-3: Event Hall (Zuiun)
Eliana Amaral, International Atomic Energy Agency, Austria
“IAEA’s Future Activities in Radiation, Transport and Waste Safety”
LS-4: Event Hall (Heian)
Shojiro Matsuura, Nuclear Safety Research Association, Japan
“Safety Culture and the Transfer to Future Generation”

14:10 ~ 15:40 IAEA Special Session
Long term management of disused sealed sources
Eliana Amaral, IAEA
“Safety of disused sources —background, issues, safety standards and the Code of Conduct—”
Fan Zhiwen, CIRP
“The programme of disused sealed source management and disposal in China”
Phil Metcalf, IAEA
“Demonstrating the safety of disused sealed source storage and disposal”

16:00 ~ 17:30  **WHO Special Session**
**Appropriate use of radiation in paediatric imaging: challenges and opportunities**
N. Takamura, *WHO*
“Setting the scene — health risks of radiation exposure early in life”
M. Perez, *WHO*
“Radiation safety in health care settings — the case of pediatric imaging”
L. Lau, *IRQN*
“Global Collaborative Actions towards Appropriate Use of Radiation in Paediatric Imaging”

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Thursday, May 27

9:00 ~ 9:30  **Registration:** Small Hall  **Commercial Video:** Small Hall and Event Hall (Zuiun & Heian)

9:30 ~ 10:20  **Refresher Course**
**RC-7:** Small Hall
Moonhee Han, *Korea Atomic Energy Research Institute, Korea*
“Radiation safety (management and monitoring) around nuclear facilities”

**RC-8:** Event Hall (Zuiun)
Douglas Chambers, *SENES Consultants Limited, Canada*
Prediction of the Variation in Risks from Exposure to Radon at Home or at Work

**RC-9:** Event Hall (Heian)
Jacques Lochard, *International Radiation Protection Association, France*
“Enhancing radiation protection culture in young generation and the general public”

10:30 ~ 12:15  **Oral Presentation Session**
**OP-9 Exposure to medical radiation:** Small Hall

**Session theme:**
This session discusses radiation protection including measurements, dosimetry and optimization. Problems in medical fields will be presented and discussed to be solved.

**Chair:** Sei Chul Yoon, *Seoul St. Mary's Hospital, Korea*
Yuzuru Kono, *National Cancer Center Central Hospital, Japan*

**Keynote lecture:**
Mahtuz Mohd. Yusop, *Kuala Lumpur Hospital, Malaysia*
“Medical Response To Radiation Accidents”

**Oral presentations:**

9-O-1 Kanaga Kumari Chelliah, *Universiti Kebangsaan Malaysia, Malaysia*
“A Comparison of Average Glandular Dose Values between Screen Film Mammography and Digital Mammography”

9-O-2 Tan Chek Wee, *National University Cancer Institute, Singapore*
“Dosimetric comparison of IMRT planning for nasopharyngeal carcinoma using biologically based Monaco and dose based treatment planning system”

9-O-3 Vincent Wu, *Hong Kong Polytechnic University, Hong Kong*
“A Case Report on the Effect of Fan Beam Thickness in Helical Tomotherapy of Nasopharyngeal Carcinoma”

9-O-4 Yuzuru Kono, *National Cancer Center Central Hospital, Japan*
“Radiation exposure to family members and the general public after permanent brachytherapy for prostate cancer”
Comment:
9-C-1 Masahiro Fukushi, Tokyo Metropolitan University, Japan
Discussion:

OP-10 Health effects of ionizing radiation: Event Hall (Zuiun)
Session theme:
This session will discuss the evidence relating to health effects of low dose radiation. Although a major subject is carcinogenesis, non-cancer effects are also addressed. Furthermore, one of the most challenging issues to radiation protection, the attributability of health effects due to radiation exposure will be discussed.

Chair: Quanfu Sun, National Institute for Radiological Protection, China
Kazuo Sakai, National Institute of Radiological Sciences, Japan

Keynote lecture:
Otsura Niwa, Professor Emeritus of Kyoto University, Japan
“The LNT model and beyond mechanisms underlying the low dose health effects”

Oral presentations:
10-O-1 Hiromitsu Ogata, National Institute of Public Health, Japan
“A review of some epidemiological studies on cancer risk from low dose radiation or other carcinogenic agents”
10-O-2 Kotaro Ozasa, Radiation Effects Research Foundation, Japan
“Risk of cancer and non-cancer diseases in the atomic-bomb survivors”
10-O-3 Hee-sun Kim, Korea Hydro & Nuclear Power Corporation, Korea
“Experimental animal studies on low dose and low-dose-rate irradiation: The Adaptive Response and the Decreased Thymic Lymphoma Incidence in Low-Doserate Irradiated AKR/J Mice”

Discussion:

10:30 ~ 12:15
OP-11 Environmental radioactivity: Event Hall (Heian)
Session theme:
This session includes the topics on the behavior of radionuclides in the environment, transfer model, environmental protection for present and future. The topics especially focused on over Asia and Oceania regions, where nuclear reactors and facilities are expanded, will be discussed.

Chair: John Twining, Australian Nuclear Science & Technology Organisation, Australia
Yong-Ho Choi, Korea Atomic Energy Research Institute, Korea

Keynote lecture:
Hiromi Yamazawa, Nagoya University, Japan
“Present and future of environmental radioactivity”

Oral presentations:
11-O-1 Yong-Ho Choi, Korea Atomic Energy Research Institute, Korea
Radioecological Studies in Korea Atomic Energy Research Institute, KAERI
11-O-2 Jian Zheng, National Institute of Radiological Sciences, Japan
“Distribution of artificial radionuclides in lacustrine sediments in China”
11-O-3 John Twining, Australian Nuclear Science & Technology Organisation, Australia
“Environmental studies in Australia: current radioecological priorities”
11-O-4 Shoichi Fuma, National Institute of Radiological Sciences, Japan
“Environmental protection: researches in National Institute of Radiological Sciences”

Comment:
11-C-1 Sentaro Takahashi, Kyoto University, Japan
“Cooperative studies”

Discussion:

OP-12 Radiological protection as part of the global nuclear expansion: Event Hall (Fukuju)
Session theme:
To share informative knowledge on radiological protection in nuclear advanced countries taking into
consideration active plans to newly construct NPPs in Asian countries.

**Chair:** Phil Metcalf, *International Atomic Energy Agency, Austria*
Takatoshi Hattori, *Central Research Institute of Electric Power Industry, Japan*

**Keynote lecture:**
Sylvain Saint-Pierre, *World Nuclear Association, United Kingdom*
“Centering radiological protection on today's global challenge in energy, climate change, environment and public health – with nuclear energy playing a key role”

**Oral presentations:**

12-O-1 Akira Suzuki, *Tokyo Electric Power Company, Japan*
“Current Status of Radiological Protection in Nuclear Power Stations in Japan”

12-O-2 Byongil Lee, *Korea Hydro & Nuclear Power Company, Korea*
“Current Status of Radiological Protection in NPPs in Korea”

12-O-3 Xin-he Liu, *China National Nuclear Corporation, China*
Current Status of Radiation Protection in Nuclear Plants of China

12-O-4 Lasse Kylakorpi (*Vattenfall AB*); Carl Goran Lindvall (*Barseback Kraft AB, Sweden*)
“RP management in an age mixed nuclear environment - a Swedish exposé”

12-O-5 Marcel Lips, *Kernkraftwerk Goesgen, Switzerland*
“Current Status of Radiological Protection in NPPs in Switzerland”

12-O-6 Bernard le Guen, *Electricité de France, France*
Results and Challenges for the Radiation Protection in French WPPs

12:30 ~ 13:50

**Luncheon Seminar**

**LS-5:** Event Hall (Zuiun)
Hiroshi Nakashima, *Japan Atomic Energy Agency, Japan*
“Development of PHITS and its application”

**LS-6:** Event Hall (Zuiun)
Toyoaki Yamauchi, *Japan Atomic Power Company, Japan*
Radioactive Waste Management and clearance system adopted in Decommissioning site

14:00 ~ 14:50

**Students Session 1:** Small Hall
“Academic activities and career plans of students from Asia and Oceania”

15:00 ~ 16:00

**Students Session 2**
“The present situations and issues of radiation applications in Asia and Oceania”

**Agricultural applications:** Event Hall (Zuiun)
**Medical applications:** Event Hall (Heian)
**Industrial applications:** Event Hall (Fukuju)

16:10 ~ 17:20

**ICRP Special Session:** Small Hall
**Current and future topics on ICRP activities**
Co-chairs: H. Menzel, O. Niwa (both ICRP Main Commission)
Jaiki Lee, *ICRP Main Commission*
“Recent, current and future activities of ICRP”
Jacques Lochard, *ICRP Main Commission*
“Ethics and values underlying the principles and concepts of the ICRP radiological protection system General discussion with the audience

17:30 ~ 18:30

**International Panel Discussion:** Small Hall

18:50 ~ 20:50

**Farewell Party:** Event Hall (Fukuju & Togen)