



# 2019 ISOE INTERNATIONAL SYMPOSIUM ON OCCUPATIONAL EXPOSURE MANAGEMENT AT NUCLEAR FACILITIES

BEIJING, CHINA, 22-24 OCTOBER 2019

## PROGRAMME & BOOK OF ABSTRACTS



SUPPORTED BY





## **ISOE International Symposium**

*Beijing, China, October 22-24, 2019*

The IAEA Technical Centre of the Information System on Occupational Exposure (ISOE), in collaboration with the Nuclear and Radiation Safety Centre, Ministry of Ecology and Environment of China is organizing the 2019 ISOE International Symposium on Occupational Exposure Management at Nuclear Facilities.

The Symposium will be held in Beijing, China from 22 to 24 October 2019. The Symposium will be co-sponsored by the International Atomic Energy Agency (IAEA), the OECD Nuclear Energy Agency (NEA) and supported by the Chinese Society of Radiation Protection; the Radiation Monitoring Centre of China General Nuclear Power Corporation and the Beijing Society of Radiation Safety.

The Symposium is targeted at all those concerned with radiation protection at nuclear facilities, from utilities, contractors, regulatory bodies as well as international organizations.

The main objectives of the Symposium are:

- to provide a large forum of information exchange on occupational exposure concerns in nuclear power plants (practices, management and procedures, dose results and reduction, improvements of techniques and tools, etc.),
- to provide an opportunity to transfer the knowledge and experiences on occupational radiation protection accumulated in the ISOE system to newcomers and embarking countries of NPP.
- to allow vendors to present their recent experience and developments in radiation protection (measurement techniques, operating and plant design improvements, ALARA practices during operation and outages, etc.) in a commercial exhibition.

The Symposium will provide an opportunity for the participants to participate in discussions during plenary sessions and presentations of posters.

A technical visit will be organized on the last day of the Symposium.

We are looking forward to welcoming you in Beijing.

Jizeng MA

*Head of ISOE IAEA Technical Centre*

*On behalf of the Programme Committee*



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**PROGRAMME COMMITTEE MEMBERS**

Duanjie YANG	<i>NSC, China</i>
Junwu YANG	<i>CGN, China</i>
Hong WEI	<i>CNNP, China</i>
Jizeng MA	<i>ISOE IAEA TC</i>
Koji HONJO	<i>ATC, Japan</i>
Guy RENN	<i>Sizewell B Power Station, UK</i>
Lucie D'ASCENZO	<i>ETC, CEPN, France</i>
Caroline SCHIEBER	<i>ETC, CEPN, France</i>
David W. MILLER	<i>NATC, USA</i>
Colin PRITCHARD	<i>Bruce Power, Canada</i>
Oleg SARAEV	<i>OECD/NEA, France</i>

**SYMPOSIUM VENUE**

The Symposium will take place at the Juyingting Meeting Room, Beijing Friendship Hotel, Beijing, China.

**WORKING LANGUAGE**

The symposium will be held in English.



**PROGRAMME OF THE SYMPOSIUM**

**TUESDAY 22 OCTOBER 2019**

08:30 – 09:00	<b>Registration</b>
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09:00 – 9:30	<b>Opening Ceremony</b>
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<b>SESSION 1.</b> <i>Chairpersons</i>	<b>ISOE SYSTEM</b> <i>Guy Renn (EDF Energy, UK), Ted Lazo (OECD/NEA)</i>
09:30 – 10:30 (60 min)	<b>The Information System on Occupational Exposure - ISOE: general presentation and highlights of key activities</b> <i>C. Schieber (CEPN, France)</i>
	<b>ISOE Working Group on Radiological Protection Aspects of Decommissioning Activities at Nuclear Power Plants (WGDECOM) – Outcomes and feedback</b> <i>L.-A. Beltrami on behalf of WGDECOM (CEPN, France)</i>
	<b>New activity of ISOE Asian Technical Center</b> <i>Honjo Koji (Nuclear Safety Research Association (NSRA)-ISOE ATC, Japan)</i>

10:30 – 11:00 (30 min)	<b>Coffee-break, Visit of Exhibition, Posters</b>
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<b>SESSION 2.</b> <i>Chairpersons</i>	<b>SOURCE TERM MANAGEMENT</b> <i>J.M. Pettersson, (Oskarshamn NPP, Sweden), Duanjie Yang (NSC, China)</i>
11:00 – 12:30 (90 min)	<b>Visualization Technology and Preliminary Practice of Radiation Protection</b> <i>Yuan Zhao, Liye Liu*, Qinjian Cao, Hua Li, Yu Wang, Jinfeng Cheng, Xing Chen, Jiafu Wei (China Institute for Radiation Protection, China)</i>
	<b>ALARA tools: Source Term Control at CNE Cernavoda</b> <i>C. Chitu, A. Nedelcu (CNE Cernavoda NPP, Romania)</i>
	<b>Preliminary Discussion of Potential Surface Contamination Risk Identification and Surface Contamination Control Method in Nuclear Power Plant</b> <i>Ren Xueming (Taishan Nuclear Power Joint Venture Co., Ltd., China)</i>
	<b>Three-Dimensional Position-Sensitive Pixelated CdZnTe Detector Technology for Isotope Detection, Localization, Quantification, and Trending at Nuclear Power Plants</b> <i>Weiyi Wang (H3D, Inc., USA)</i>



12:30 – 14:00	<b>Lunch Break</b>
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<b>SESSION 3.</b> Chairpersons	<b>RADIATION PROTECTION MANAGEMENT 1</b> <i>Chuan Wang (CNNC Sanmen NPP China), Caroline Schieber (CEPN, France)</i>
14:00 – 15:40 (100 min)	<b>Main results of optimization of occupational radiation protection at NPPs in Russian Federation</b> <i>I. Doljenkov (Rosenergoatom JSC, Russian Federation)</i>
	<b>Improving occupational radiation exposure using ALARA tools: performance indicators</b> <i>A. Nedelcu, L. Samson (“CNE Cernavoda” NPP, Romania)</i>
	<b>Intensive Monitoring and Management Practice for Radiation Dose in CGN</b> <i>Enjian Yu (CGN, China)</i>
	<b>Dose per RCA-hour; a useful radiological protection indicator?</b> <i>G. Renn (EDF Energy, Sizewell B NPP, UK), P. Putteman (EDF, Penly NPP, France)</i>
	<b>Research Progress on International <math>\alpha</math> Value of Radiation Protection</b> <i>Li Yang (NSC, China)</i>

15:40 – 16:10 (30 min)	<b>Coffee-break, Visit of Exhibition, Posters</b>
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<b>SESSION 4.</b> Chairpersons	<b>RADIATION PROTECTION MANAGEMENT 2</b> <i>Andreas Ritter (Leibstadt NPP, Switzerland), Koji Honjo (NSRA, Japan)</i>
16:10 – 17:50 (100 min)	<b>Optimisation of the occupational radiation protection at OKG NPP</b> <i>C. Bauréus Koch, M. Pettersson (OKG NPP, Oskarshamn, Sweden)</i>
	<b>Understanding and Thinking about the Role of Collective Dose Concept in Radiation Protection Management of Nuclear Power Plants</b> <i>Wang Chuan (CNNC Sanmen Nuclear Power Co., Ltd., China), He Junnan, Zhang Qiang, Zeng Jinzhong, Ni Wei, Wang Ruijun, Li Houwen (CNNC Nuclear Power Operations Management Co., Ltd., China)</i>
	<b>Radiological Protection for Nuclear Power Plant</b> <i>Yu Xiaodong (SPIC, China)</i>
	<b>Dose reduction methods and techniques during operational phase and Refueling Outage (RFO) at Chashma Nuclear Power Plant Unit-1</b> <i>Rana Iftikhar Ahmad (Chashma NPP, Pakistan)</i>
	<b>The research and application of HYH plant optimized radiation protection</b> <i>Xie Wenming (Liaoning Hongyanhe nuclear power Co., Ltd., China)</i>



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**CONFERENCE DINNER**

19:00

**Symposium Dinner at Juxiuyuan, Friendship Hall, Friendship Hotel**



**WEDNESDAY 23 OCTOBER 2019**

<p><b>SESSION 5.</b> Chairpersons</p>	<p><b>WASTE MANAGEMENT</b> <i>I. Lozhnikov (Leningrad NPP, RUSSIA), Kongzhao Wang (CNNO, China)</i></p>
<p>09:00 – 10:00 (60 min)</p>	<p><b>Practice of Radioactive Solid Waste Classification in Operational NPP</b> <i>Sun Lei (CNNC Nuclear Power Operations Management Co., Ltd., China)</i></p> <p><b>Application of "Non-Radioactive" in TEPCO</b> <i>Yuya Komatsu, Sumito Komiyama, Yoshihide Murakami (TEPCO, Japan)</i></p> <p><b>Inventory of radioactive wastes at Armenian NPP, preliminary evaluation of Need in Primary Circuit Decontamination (expenses/benefits)</b> <i>K. Pyuskyulyan (Armenian Nuclear Power Plant Closed Joint Stock Company, Armenia)</i></p>
<p>10:00 – 10:30 (30 min)</p>	<p><b>Coffee-break, Visit of Exhibition, Posters</b></p>
<p><b>SESSION 6.</b> Chairpersons</p>	<p><b>INTERNAL EXPOSURE MANAGEMENT</b> <i>K. A. Lindberg (Ringhals NPP, Sweden), C. Chitu (Cernavoda NPP, Romania)</i></p>
<p>10:30 – 12:10 (100 min)</p>	<p><b>Performance test results of whole body counters in Korean nuclear power plants</b> <i>Si Young Kim, Tae Young Kong, Young Ju Lee, Jung Kwon Son (Korea Hydro &amp; Nuclear Power Co., Ltd. Central Research Institute (KHNP CRI), Republic of Korea)</i></p> <p><b>Assessment of the alpha risk after a fuel dissemination in the Reactor Cooling System of French PWRs using the OSCAR V1.4 Code</b> <i>T. Jobert (EDF, France)</i></p> <p><b>Monitoring of Tritium Internal Exposure Doses of Heavy-water Reactor Workers in Third Qinshan Nuclear Power Plant</b> <i>Wang Kongzhao (CNNO, China)</i></p> <p><b>Efficiency Calibration Experiment of WBC</b> <i>Zheng Lu (CIAE, China)</i></p> <p><b>Dose Survey in a Tritium Intake Accident</b> <i>Xiong Kouhong (CNNC Nuclear Power Operations Management Co., Ltd., China)</i></p>
<p>12:10 – 14:00 (110 min)</p>	<p><b>Lunch Break</b></p>



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<b>SESSION 7.</b> <i>Chairpersons</i>	<b>REGULATION AND DESIGN ASPECTS</b> <i>G. A. Testa (ENSI, Switzerland), Aude Geniaux (ASN, France)</i>
14:00 – 15:00 (60 min)	<b>Radiation Protection Requirements for a New NPP-unit in Finland</b> <i>Veli Riihiluoma (STUK, Finland)</i>
	<b>Research of Occupational Exposure Dose Assessment for HPR1000</b> <i>Yingnan Tian (China Nuclear Power Engineering Co., LTD, China)</i>
	<b>The Established and Application of Dedicated Dose Assessment Models of HPR1000</b> <i>Jun Xiong (China Nuclear Power Design Co., LTD, China)</i>

15:00 – 15:20 (20 min)	<b>Summary of the meeting</b> <b>Briefing for the next ISOE International Symposium</b> <b>Distinguished Papers and Closure of the Symposium</b>
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**THURSDAY 24 OCTOBER 2019**

08:00 – 16:00	<b>Technical Visit</b> <ul style="list-style-type: none"> <li>• China Institute of Atomic Energy, CNNC</li> <li>• Nuclear and Radiation Safety Centre, MEE</li> </ul> Departure: 8:00 – Return: around 16:00
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**POSTER SESSION**

- 1. Assessment of Occupational Exposure During the period 2014-2018 using TLD in Bangladesh**  
*Selina Yeasmin (Atomic Energy Centre Dhaka, Bangladesh)*
- 2. Radiation environmental monitoring of a decommissioned tailings pond**  
*Qian Zhang (East China University of Technology, China)*
- 3. Personal Monitoring of Workers under Ionizing Radiations in Madagascar**  
*Veroniaina Raharimboangy (Institut National des Sciences et Techniques Nucléaires-INSTN, Madagascar)*
- 4. Systematic Approach to Training Occupationally Exposed Workers for Strengthening National Capacity and Minimize Exposure to Ionizing Radiation in Nuclear Facilities in Iraq**  
*Salwa Hamed Mansur Al- Salhy (Radiation Protection Center (RPC), Ministry of Health and Environment, Iraq)*
- 5. Development and Application of the Personal Dosimeter Self-Distribution System**  
*Yue Wang (CNNP Nuclear Power Operations Management Co., Ltd., China)*
- 6. Evaluation of Measurement Uncertainty in External Exposure Personal Dose Monitoring**  
*Na Liang, CNNP Nuclear Power Operations Management Co., Ltd.*
- 7. Application of Gamma Spectrometer in Radiation Source Term Reduction**  
*Wang Bin (CNNP Nuclear Power Operations Management Co., Ltd., China)*
- 8. Optimization of Tritium Internal Exposure Monitoring and Assessment in TQNPP**  
*Lu Liyan (CNNO, China)*
- 9. Practice and Optimization of Tritium-in-Air Monitoring and Protection in TQNPP**  
*Sun Lei (CNNP Nuclear Power Operations Management Co., Ltd., China)*
- 10. Radiation Protection Measures on Cobalt-60 Production in TQNPP**  
*Ge Xuyang (CNNP Nuclear Power Operations Management Co., Ltd., China)*
- 11. The Overall Shielding Solution in Reactor Vaults in TQNPP**  
*Ge Jian'an (CNNP Nuclear Power Operations Management Co., Ltd., China)*
- 12. Occupational radiation protection at the Belarusian NPP on the Preoperational Stage**  
*Alena Nikalayenka (Radiation Safety Laboratory of the Scientific Practical Centre of Hygiene, Belarus)*