***Workshop on the Management of Spent fuel, Radioactive Waste, and Decommissioning in SMRs/Advanced Reactor Technologies***

**7 – 10 November 2022**

Venue: Lord Elgin Hotel

Ottawa, CANADA

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| **Day 1, 7 November 2022** | |
| **08:30 – 17:00** | **Registration** |
| **09:00 – 10:45** | **Opening session**   * Conference Chair, **James McKinney**, Head of Integrated Waste Management, NDA   **Welcome address and introductory remarks**   * **William Magwood, IV**, NEA Director General * **John Hannaford,** Deputy Minister, DMO/DMO, Natural Resources Canada- TBC   **Keynote Speech**   * **Patrick Landais**, High Commissioner for Atomic Energy, CEA * **Sam Brinton,** Deputy Assistant Secretary for Spent Fuel and Waste Disposition**,** Office of Nuclear Energy, U.S. Department of Energy * **Rumina Velshi,** President and Chief Executive Officer, Canadian Nuclear Safety Commission (CNSC) * **Christopher T. Hanson,** Chairman, Nuclear Regulatory Commission (NRC) - TBC |
|  | **BREAK** *(15 min)* |
| **11:00 – 11:20** | **Session 1: Understanding of the functioning of major SMR/Advanced Reactor Technologies and Fuel Cycles**  *Overview of mature SMRs/Advanced Reactor Technologies and associated fuel type* *This session will touch on understanding the functioning of major SMRs/Advanced Reactor Technologies, with the main differences expected in the function of the technologies and mode of operation (e.g. fuel type).*  Presenter (15 min ppt + 5 min Q&A)   * **Massimiliano Fratoni,** University of California, Berkeley |
| **11:20 – 13:00** | *Key Attributes of SMR/Advanced fuel type and design consideration and implications for decommissioning and radioactive waste management**This session will explore the key questions designers need to consider now when developing a new fuel that has not been evaluated by waste acceptance criteria. For example: are Deep Geological Repositories capable of taking this kind of waste? Should that be considered now? What challenges/issues may arise that are different compared to traditional reactor oxide fuels during transportation, management, and finally disposal of spent fuel or by-products of spent fuel treatment (recycling/conditioning)?* Chair (5 min session introduction + 1 min intro./speaker + 5 min summary)   * **Massimiliano Fratoni,** University of California, Berkeley (TBD)   Presenters (12 min ppt + 5 min Q&A each)   * TRISO fuel (Kairos Power/X-Energy) – TBD * Fast reactors (GE-Hitachi/TerraPower) – TBD * Liquid fuel molten salt (Thorcon/Terrestrial Energy/TerraPower/Moltex) – TBD * New Brunswick Power Plant (NBP) – TBD * NUWARD - TBC |
|  | **LUNCH (1 hour 30 min)** |
| **14:30 – 14:50** | *Perspectives from students/young generation* *During this session a student/young professional is invited to discuss their views pertaining to the understanding of the functioning of major SMR/Advanced Reactor Technologies and Fuel Cycles*  Chair (5 min introduction + 5 min summary)   * **Massimiliano Fratoni,** University of California, Berkeley - **TBC**   Presenters (10 min ppt each + 5 min Q&A) - TBD   * **TBD – one student or** * **TBD – one young professional** |
| **14:50 – 15:45** | *Panel discussion on key takeaways and recommendations* *This panel invites the previous presenters to develop one slide with key takeaways/recommendations and proceed with a panel discussion, during which the floor will be opened for questions from the audience.*  Chair (5 min session introduction + 5 min summary)   * **TBD**   Panellists (45 min)   * *same speakers as those listed above* |
|  | **BREAK (15 min)** |
| **16:00 – 17:40** | **Session 2: Storage and Transportation of spent fuel and Radioactive Waste in SMR/Advanced Reactor design**  *Overview of work activities on Fuel Storage and Transportation**This session will highlight the current challenges associated with fuel storage and transportation that should be evaluated to determine its applicability to new fuel types considering historical experience (e.g. duel cask, criticality issues, environmental concerns, etc.).*  Chair (5 min session introduction + 1 min intro./speaker + 5 min summary)   * **TBD**,   Presenters (12 min ppt + 5 min Q&A each)   * **James McKinney**, Head of Integrated Waste Management, NDA *– Overview of the NEA’s Ad Hoc group work on waste & fuel extended storage and transportation* * **Aldar Csontos**, Director Fuels, Nuclear Energy Institute *– TBC* * **Amparo Gonzalez Esparatero**, Technical Lead Spent Fuel Management, Division of Nuclear Fuel Cycle and Waste Technology, Department of Energy, International Atomic, Energy Agency (IAEA) * **Martin Porter,** Secretary General of World Nuclear Transport Institute, - TBC * **Robert Howard**, National Technical Director – Integrated Waste Management, Pacific Northwest National Laboratory (PNNL) |
| **17:40 – 17:50** | **End of day 1 remarks** Conference Chair **James McKinney**, Head of Integrated Waste Management, NDA |
| **18:00 – 20:00** | **Cocktail Reception** |

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| **Day 2, 8 November 2022** | |
| **09:00 – 09:05** | *Day 2 Welcome* Conference Chair **James McKinney**, Head of Integrated Waste Management, NDA |
| **09:05 – 10:10** | *Technical and economic feasibility of radioactive waste, as well as storage and transport of reprocessed fuel based on reactor type (closed-loop fuel cycle)* *This session will address the feasibility of reprocessing fuel from new designs noting the different types of reprocessing technics, including associated waste generation and economic feasibility.*  Chair (5 min session introduction + 1 min intro./speaker + 5 min summary)   * **TBD**,   Presenter(s) (12 min ppt+ 5 min Q&A each)   * **Robin Taylor**, UK National Nuclear Laboratory Limited * **Bertrand Morel**, R&D Manager, ORANO |
| **10:10 – 10:35** | *Perspectives from students/young generation* *During this session a student/young professional is invited to discuss their views pertaining to an element of the Storage and Transportation of spent fuel and Radioactive Waste in SMR/Advanced Reactor design.*  Chair (5 min session introduction + 5 min summary)   * **TBD,**   Presenters (10 min ppt each + 5 min Q&A)   * **TBD, Student or** * **TBD, Young Professional** |
|  | **BREAK** *(15 min)* |
| **10:50 – 11:45** | *Panel discussion on key takeaways and recommendations*  *This panel invites the previous presenters to develop one slide with key takeaways/recommendations and proceed with a panel discussion, during which the floor will be opened for questions from the audience.*  Chair (5 min session introduction + 5 min summary)  **TBD**,  Panellists (45 min)   * *same speakers as those listed above* |
| **11:45 – 13:05** | **Session 3: Radioactive Waste and Decommissioning in SMRs/Advanced Reactors** *Licensing and Regulatory requirements of Spent Fuel and waste management for SMRs/Advanced Reactors**This session will explore how regulators have prepared and identified potential regulatory process changes, resulting from future employment of SMRs and Advanced Reactors, that may need to be considered now to properly manage waste and decommissioning activities in the future. Also, the possibility of regulatory harmonization will be examined.*  Chair (5 min session introduction + 1 min intro./speaker + 5 min summary)   * **Ramzi Jammal**, CNSC Executive Vice-President and Chief Regulatory Operations Officer   Presenters (12 min ppt each + 5 min Q&A)   * **Nancy Greencorn,** Canadian Nuclear Safety Commission (CNSC) * Nuclear Regulatory Commission (NRC) – TBC * WENRA/ Autorité de sûreté nucléaire (ASN) – TBC * Office for Nuclear Regulation (ONR) – TBC * **Zdenek Tipek**, Deputy Chairman, the State Office for Nuclear Safety (SUJB) - TBC |
|  | **LUNCHBREAK** *(1 hour and 30 min)* |
| **14:35 – 16:35** | *Operational and design optimization consideration related to Decommissioning and Radioactive waste management for SMRs/Advanced Reactors* *This section will evaluate if implementers are ready to integrate waste generated from SMRs/Advanced Reactors into their disposal strategy. Furthermore, it asks whether feedback from current practices in waste management and decommissioning can help in optimally designing the future concept of SMRs/Advanced Reactors to minimize the flow of waste and facilitate efficient decommissioning of future reactors.*  Chair (5 min session introduction + 1 min intro./speaker + 5 min summary   * **Bill Boyle,** Director, Office of Spent Fuel & Waste Science and Technology**,** Office of Nuclear Energy, US Department of Energy   Presenters (12 min ppt each + 5 min Q&A)   * Prakash Narayanan, Chief Technical Officer, ORANO TN Americas * Oak Ridge – TBD * Andra – TBD * Roundtable Discussion (5 min set-up/introduction + 45 min discussion): related to waste implication from deployment of SMRs/Advanced Reactor Technologies   1. Terrestrial - TBC   2. NuScale - TBC   3. Lindsay M. Krall, SKB   4. NEA Databank Member – TBC   5. Anne SATURNIN, CEA - TBD |
|  | **BREAK** *(15 min)* |
| **16:50 – 18:20** | *Operational feedback on managing and disposal of existing waste streams and how some of these concepts can be applied in future endeavours, such as SMRs/Advanced Reactors* *This section will highlight lessons learned from current and past Radioactive Waste disposal projects, as well as dismantling and decommissioning activities.* *The aim is to share this information with designers and potential utilities of SMRs/Advanced Reactors to consider during the current design phase to minimize the overall radioactive waste volume expected from SMRs and Advanced Reactor Technologies, including management of damaged fuel during operation.*  Chair (5 min session introduction + 1 min intro./speaker + 5 min summary)   * **Bill Boyle,** Director, Office of Spent Fuel & Waste Science and Technology**,** Office of Nuclear Energy, US Department of Energy   Presenters (12 min ppt + 5 min Q&A each)   * **Rebecca Tadesse**, Head of Division of Radioactive Waste Management and Decommissioning, NEA – *NEA’s overview on lessons learned from current reactor decommissioning and dismantling* * **Jim McKenna,** Atomic Energy of Canada Limited (AECL) – *Lessons learned from recent transportation of liquid HEU from Canada to US* * **Representative** from UK - TBD * **Paula Keto,** Senior Scientist, VTT – *Evaluation of Waste Management Needs for Deployment of SMRs in Finland - Finland’s successes in handled final deposition of spent nuclear fuel and LILW can be adapted for when the SMRs come to the market* |
| **18:20 - 18:25** | **End of day 2 remarks**  Conference Chair, **James McKinney**, Head of Integrated Waste Management, NDA |

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| **Day 3, 9 November 2022** | |
| **09:00 – 09:05** | *Day 3 Welcome* Conference Chair, **James McKinney**, Head of Integrated Waste Management, NDA |
| **09:05 – 9:30** | *Perspectives from students/young generation* *During this session a student/young professional is invited to discuss their views pertaining to Radioactive Waste and Decommissioning in SMRs/Advanced Reactors.*  Chair (5 min session introduction + 5 min summary)   * **TBD,**   Presenters (10 min ppt + 5 min Q&A each)   * **Riccardo Chebac,** PhD student at Politecnico di Milano -*Design considerations for waste minimization and decommissioning optimization* * **Matthew P,** North American Young Generation - TBC |
| **09:30 – 10:25** | *Panel discussion on key takeaways and recommendations* *This panel invites the previous presenters to develop one slide with key takeaways/recommendations and proceed with a panel discussion, during which the floor will be opened for questions from the audience*  Chair (5 min session introduction + 5 min summary)   * **Bill Boyle,** Director, Office of Spent Fuel & Waste Science and Technology**,** Office of Nuclear Energy, US Department of Energy   Panellists (45 min)   * **same speakers as those listed above** |
|  | **BREAK** *(15 min)* |
| **10:40 – 11:45** | **Session 4: Key Considerations for Communities, Indigenous Peoples and Stakeholder involvement**  *Indigenous community/Tribal Nation perspectives on the potential deployment of SMR and Advanced Reactor Technologies*  Chair (5 min session introduction + 1 min intro./speaker + 5 min summary)   * **Julie Mecke,** Senior Policy Advisor, National Research Council of Canada (NRCan) - TBC   Presenters (12 min ppt each + 5 min Q&A)   * **Jessica Perritt**, NWMO * **Candice Jackson**, Deputy Director, Nuclear Energy Division, NRCan - * **Talia Martin,** Director of Energy for the Shoshone Bannock Tribe in Idah - TBC * Australia – TBD |
|  | **LUNCH** *(1 hour and 30 min)* |
| **13:15 – 14:20** | *Good practices on stakeholder engagement and dialogue including the intergenerational aspect of SMRs/Advanced Reactors* Chair (5 min session introduction + 1 min intro./speaker + 5 min summary)   * TBD,   Presenters (12 min ppt + 5 min Q&A each)   * **DOE** - TBD * **Joe Gadboury,** Nuclear Waste Management Organization * **Duane Bratt,** PhD, Professor, Department of Economics, Justice, and Policy Studies, Mount Royal University |
|  | **BREAK** *(15 min)* |
| **14:35 – 15:00** | *Perspectives from students/young generation* *During this session a student/young professional is invited to discuss their views on considerations involving Indigenous Peoples and stakeholder involvement.*  Chair (5 min session introduction+ 5 min summary)   * **TBD,**   Presenters (10 min ppt + 5 min Q&A)   * **TBD, Student or** * **TBD, Young Professional** |
| **15:00 – 15:55** | *Panel discussion on key takeaways and recommendations*  *This panel invites the previous presenters to develop one slide with key takeaways/recommendations and proceed with a panel discussion, during which the floor will be opened for questions from the audience.*  Chair (5 min session introduction + 5 min summary)   * **TBD,**   Panellist (45 min)   * **same speakers as those listed above** |
| **15:55 – 16:05** | **Session 5: Summary and Closing Remarks**   * Conference Chair **James McKinney**, Head of Integrated Waste Management, NDA |
| **16:05 – 16:10** | **Closing Address**   * **Canada (TBD)** |

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| **Day 4, 10 November 2022** |
| Site visit to Chalk River (agenda to follow) |