

# Radiation Protection Aspects of Water Chemistry and Source-Term Management with a view of an ISOE Expert Group

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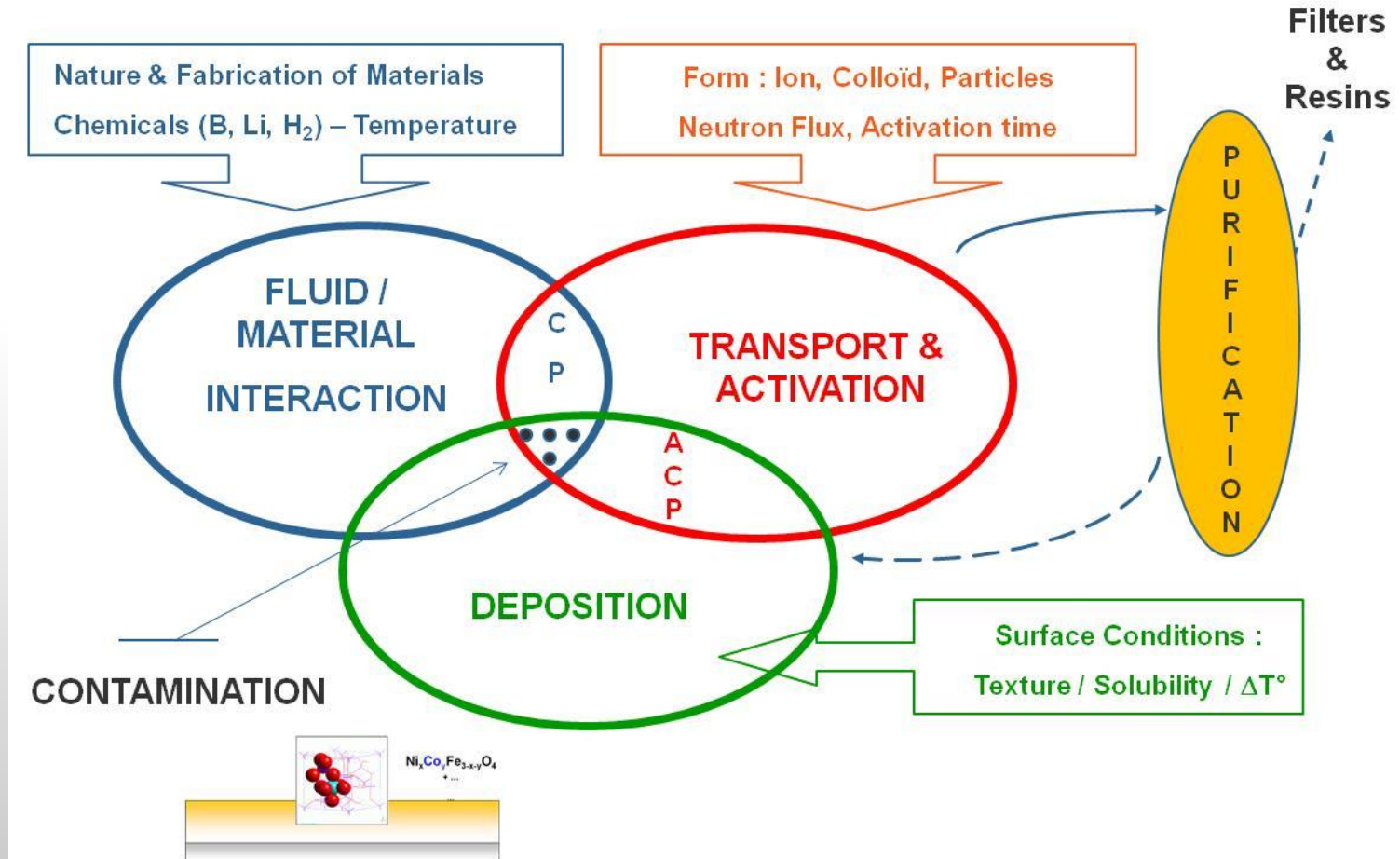
# The Information System on Occupational Exposure (ISOE) - 1

- Created in 1992 by OECD Nuclear Energy Agency and co-sponsored by IAEA.
- A forum for radiation protection professionals from nuclear electricity utilities (70) and national regulatory authorities (27) worldwide:
  - RP management,
  - Operational experience,
  - ALARA improvement.
- A key organisation in developing safe, sustainable and socially acceptable strategies for emerging issues in the field of occupational radiation protection.

# The Information System on Occupational Exposure (ISOE) - 2

- A well-established and still growing global base of radiological protection information and experience:
  - Benchmarking comparisons,
  - Exchange of experience,
  - Networking of members.
- Collection and analysis of occupational exposures data.
- [www.isoe-network.net](http://www.isoe-network.net):
  - Data base on occupational exposures,
  - RP Library,
  - RP forum.

## Key RP issues associated with source term management



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- **Specific Plant results include:**
  - pH control
  - Zinc injection programs
  - Use of specific resins
  - Removal of cobalt contribution components
- **This contributes to an out-of-flux circuit dose rate reduction.**
- **For example,** recently the dose integrated during a refuel outage with full scale SG inspections was less than 300 mSv because good source term management practices were applied.

## ISOE work in the field of source term management – MOU

- **Memorandum of Understanding (MOU) in an agreement between ISOE Management Board and EDF (2011) on a win win basis:**
  - EDF possesses knowledge and know-how in the **development and use of CZT Gamma Spectroscopy technology**
  - Interest in **facilitating the use of CZT measurement technology** and EDF protocols in other NPPs to permit the increase in the knowledge, data and understanding of methods to reduce the formation, transport and deposition of corrosion products.
  - EDF agrees to transfer previous results for CZT measurements and permit access to this information by utility members of ISOE.
  - ISOE and its technical centres agree to facilitate the transfer of NPP CZT measurement data.

## ISOE work in the field of source term management - EGWC

- **Objectives:**
  - **Review and analysis** of current knowledge, technology and experience on radiation protection aspects of primary water chemistry and source-term management,
  - **Develop a report** in order to reflect the current state of knowledge, technology and experience on radiation protection issues directly related with radiation protection.
  - What are the **key parameters and associated good practices?**
- For your information members are:
  - Representatives from EDF (Fr), Vattenfall (Sw), EPRI (USA), CEPN (Fr), Exelon (USA), ENEL (Sk) and OCDE/NEA (Secretariat).

# ISOE work in the field of source term management - EGWC

- **The group is developing a report aiming at:**
  - Providing basic knowledge and resources available for RP staff who are not expert in chemistry.
  - Structure of the report:
    - **Strategies and techniques** (Background information on radiation field generation, Material issues, Chemical methods, Remediation of contamination during outages)
    - **Radiation field measurement techniques** (Dose rate measurement, Germanium detector, CZT detector)
    - **Measurement location and indices** (Dose rate measurement, Gamma spectroscopy)
    - **Radiation protection outcomes** (Plants specific feedback)
  - Address these topics for PWR, BWR, VVER and PHWR.



## ISOE work in the field of source term management - EGWC

- The report once drafted will be reviewed by RP experts to ensure its valuable input for the RP community among the ISOE network.
- After approval by the management board of ISOE, the report will be **published by the OECD/NEA**, and made available for download on NEA and ISOE web sites.

## Discussion

- **Networking is a key:**
  - **To develop a common understanding of current RP issues** for nuclear utilities - source term management, dismantling activities, preparation of accidental situation from a RP perspective (SAM Expert Group), etc.
  - **To share good practices** so as to bring operational answers to identified issues/weaknesses,
  - **To contribute to the development of a sustainable RP culture** among professionals when sustainability of competences is a major issue for the coming 5 to 10 years for most utilities.
- **ISOE: a key actor in that context.**