IAEA project on occupational radiation protection and risk management during decommissioning activities at NPPs

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IAEA

International Atomic Energy Agency

Outline of presentation

Project on ORP and decommissioning

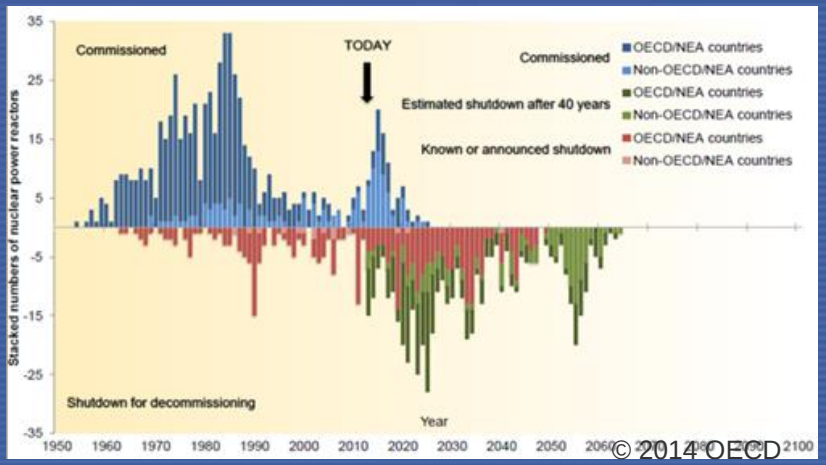
- Background, Scope, Objective
- Implementation

Output

- General overview of content
- Specific examples

Background

Decommissioning of NPPs is a growing activity



Need for further practical guidance in managing radiation protection of workers, taking into account non-radiological hazards

Scope and objective

Management of worker protection during decommissioning of nuclear installations

- focus on NPP and research reactors
- not including decommissioning after severe accidents

Planned output

- Practical guidance on ORP in decommissioning of nuclear installations, including aspects on management, planning and conduct. To be published in IAEA Tecdoc series
- Aimed at managers, regulators, contractors

Project is conducted during 2014-2016

Implementation

2014: meetings with

- operators, service providers and RP experts involved in decommissioning
- regulators from member states
- information exchange with ISOE and ILO

2015: meetings with

- consultants to develop and prepare the guidance material

2016: publication

Content of the planned guidance

Impact of decommissioning on protection of workers

Setup of ORP for decommissioning

ORP during the conduct of decommissioning

Impact of decommissioning on protection of workers

Hazards for workers

- different to operation, changing environment, history of operation and industrial hazards

Safety culture

- change in perception, uncertainty in future, use of contractors

RP aspects of decommissioning strategy

- early RP involvement, radiological situation, availability of waste facilities

Set-up of ORP for decommissioning

Adaption of Radiation Protection Program

- Sufficient flexibility to handle unforeseen tasks

Establishment of RP organization

Radiological characterization

- Nature, location and concentration of radionuclides
- Care in deciding level of detail initially
- Nuclide vectors need careful derivation

Site preparation

Radiation protection areas

- Access, control measures

Monitoring programme

- workplace, dosimetry, clearance monitoring

Bradwell (UK): example of a typical temporary structure used for a contamination area work

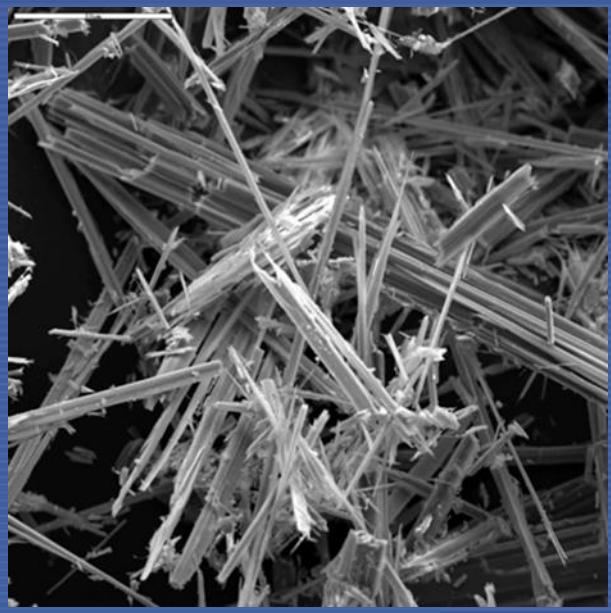
Facilities and systems, PPE and contamination control measures

- procedures, action/investigation levels, zones, equipment including airborne activity

Non-radiological hazards

Examples of hazards to consider

- Asbestos
- Chemical
- Oxygen deficient atmosphere
- Electric shock
- Heat stress
- Fire
- Falling debris



Magnitude of risk is difficult to quantify

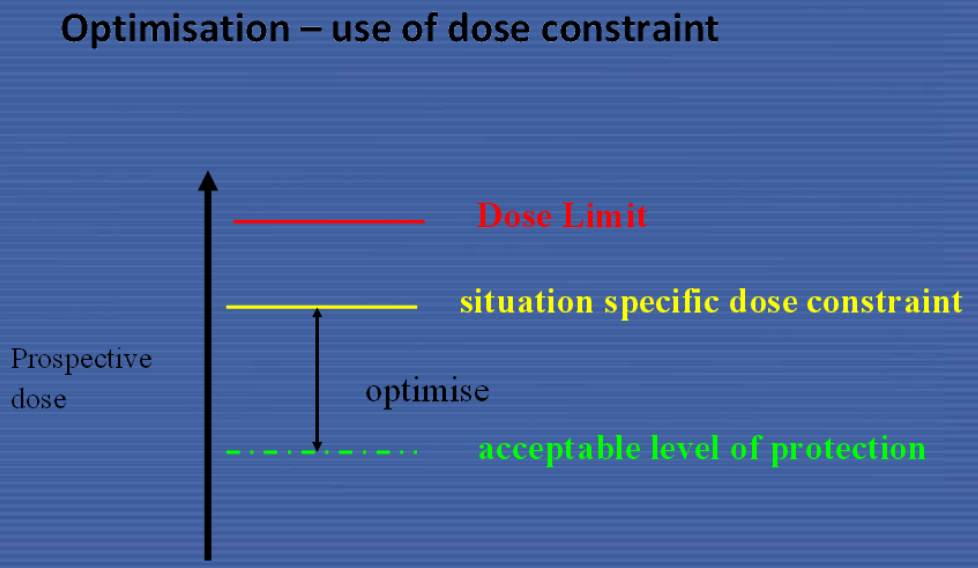
ORP in decommissioning activities (1)

RP Optimization

- graded approach
- consider what can be done to reduce doses

Useful tools

- action levels
- investigation levels
- dose budgets
- dose constraints

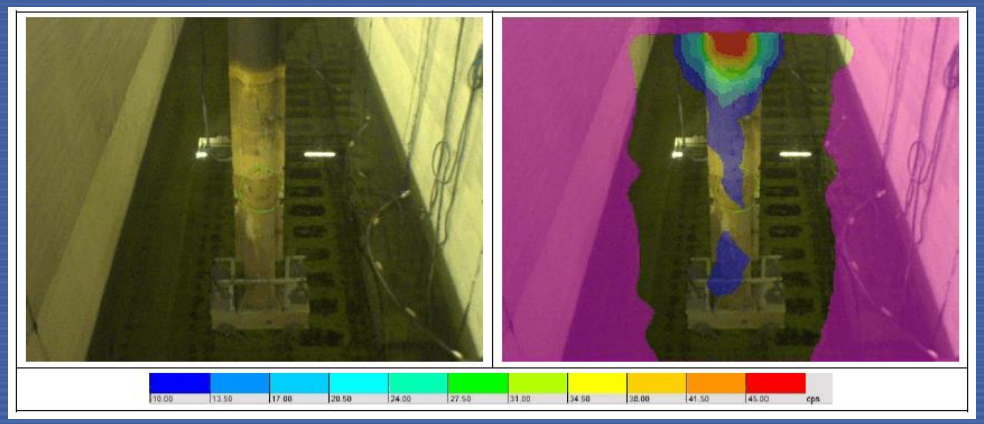


ORP in decommissioning activities (1)

Selection of technique

- Experience/dose criteria
- Gamma cameras
- Chemical decontamination
- Remote cutting techniques

Chooz A decontamination (2014)
Left - decommissioning of the fuel building
Right - pipework before and after cleaning



Gamma-ray imaging at Hinkley Point A Site by Cavendish Nuclear in Feb 2015

ORP in decommissioning activities (2)

Operating experience and knowledge transfer

- Records and knowledge of long term workers

Detailed planning

- Information on ALARA measures, layouts, work sequence relevant for exposure, list of monitors, samplers, other RP equipment, etc

Detailed radiological characterization

- Lists of dose rate and contamination measurements, nuclide composition and vectors

ORP in decommissioning activities (3)

Work permits

RP interaction

- with management, workers and contractors

Cleanliness

- helps promote a positive culture

Classification of areas

Training in RP

Waste management

Acknowledgement

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Thank you for your attention…

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