

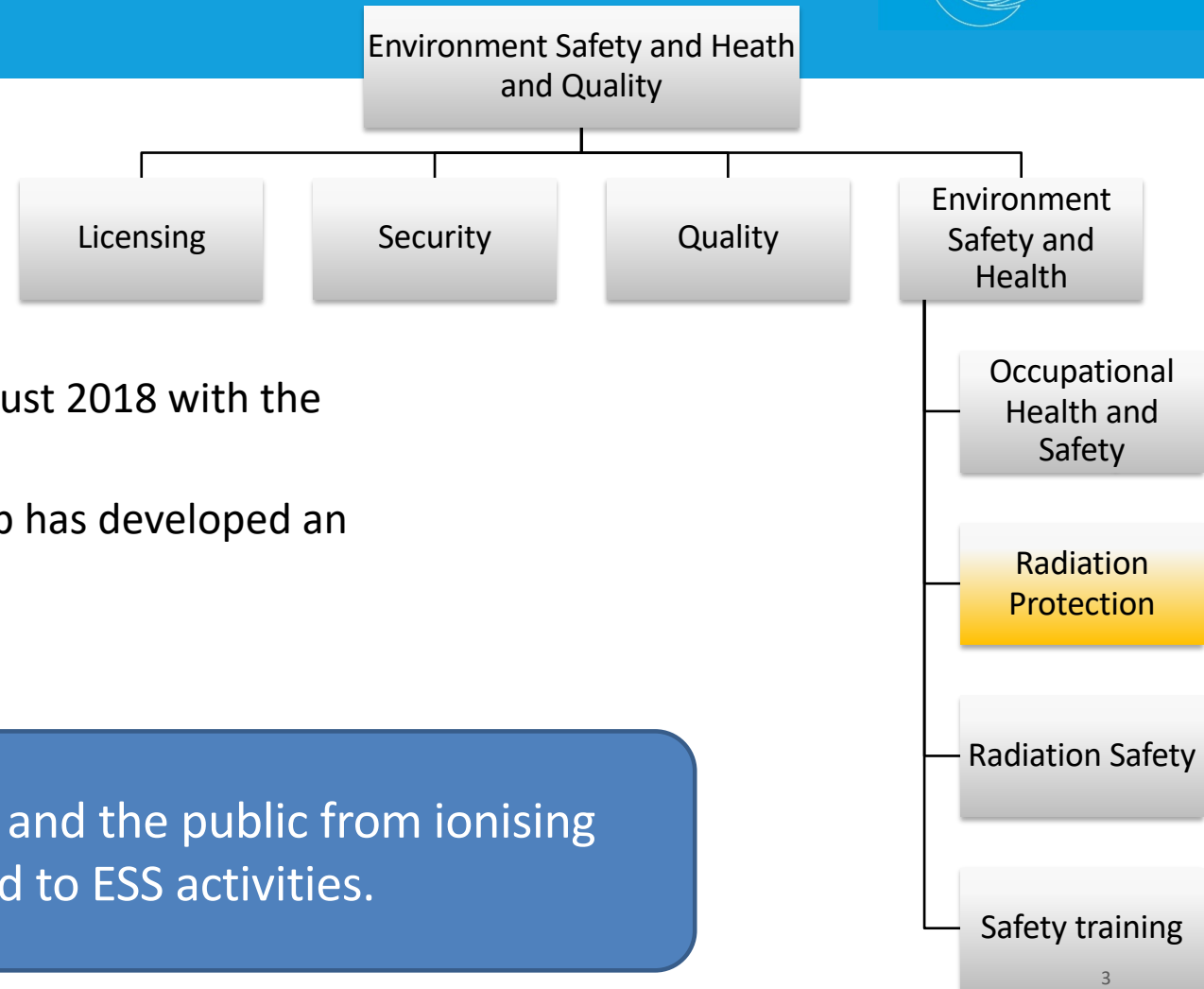
Radiation Protection at ESS

Big Science 2019

Dr. Sigrid Kozielski
Radiation Protection Group leader
European Spallation Source ERIC
26 November 2019

- Radiation Protection Organisation
- Operational Radiation Protection
- Radiation Protection Services
 - Dosimetry Service
 - Radioanalytical Laboratory
 - Radiological and Environmental Monitoring Systems
 - Radioactive Waste Management

Radiation Protection Group in the ESH&Q division



- Radiation protection group started in August 2018 with the recruitment of the group leader
- Since then the Radiation Protection Group has developed an internal organisation and a mandate.

Protecting people on the ESS site and the public from ionising radiation hazards linked to ESS activities.

Role of the Radiation Protection Group

The Radiation Protection Group tasks include for example

- Assessment of radiological risks
- Classification of work places in radiological areas, signage of radiation areas
- Approval of ALARA work plans and Radiation Work permits
- Control and characterisation of radioactive material and waste
- Monitoring of radiation levels
- Assessment of the impact of ionising radiation on the environment

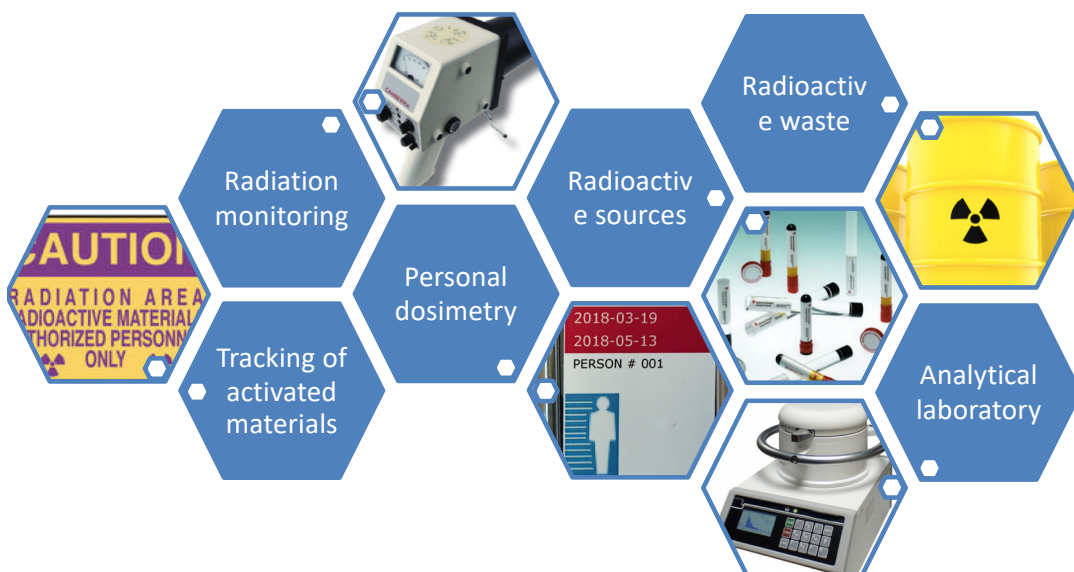
Radiation Protection Group consists of

- Radiation Protection Expert Function (legal requirement)
- Operational Radiation Protection team
- Radiation Protection Services



Radiation Protection Group - Services

The Radiation Protection Group specifies, installs and operates on behalf of ESS



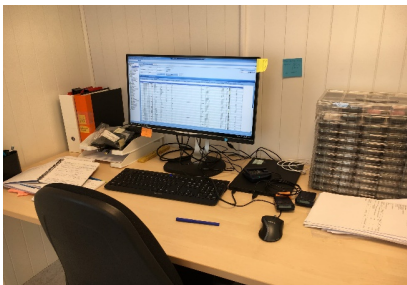
- **Radiation monitoring systems** for ambient dosimetry
- **Radioanalytical laboratory** for operational radiation protection and radioactive waste management
- **Dosimetry service** to monitor individual doses of radiation workers (passive and active)
- **Calibration service** for radiation protection instruments to ensure the metrological traceability of measurements
- **Pre-conditioning and storage facility for radioactive waste**
- **Control of storage and inventory** of activated materials

Radiation Protection Services

Dosimetry Service



- Passive dosimetry
 - Everyone working in a radiation area shall have a personal passive dosimeter monitoring the annual legal dose limits.
 - Request for Personal Passive Dosimeter is done through RP Service desk.
 - Dosimeters distributed by Operational RP group
- Active (electronic) dosimetry
 - Direct-reading dosimeter with alarm capabilities shall be worn in Controlled radiation areas. Also to be used for visitors and pregnant women.
 - So far 115 Electronic dosimeters and 6 self-assignment dosimetry systems delivered.



Radiation Protection Services

Radioanalytical laboratory



- BeGe Detector, Liquid Scintillation for Radiation Protection Laboratory procured and operational
- α/β counter and free release material monitor delivered awaiting commissioning
- Radioactive source management part of the Radiation Protection Service

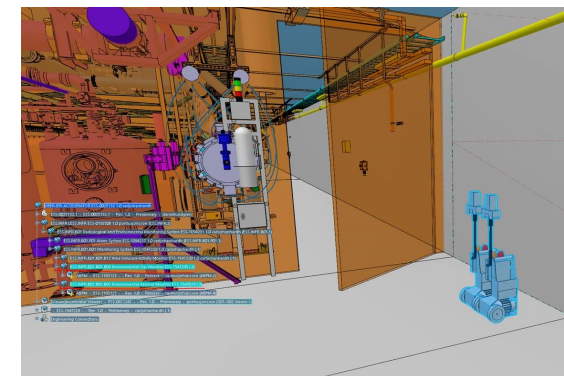
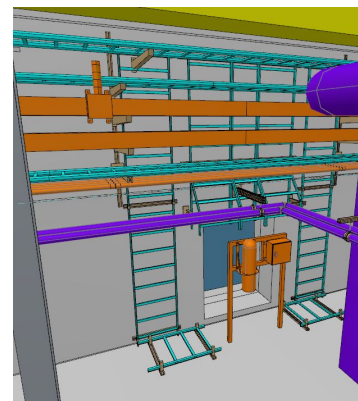
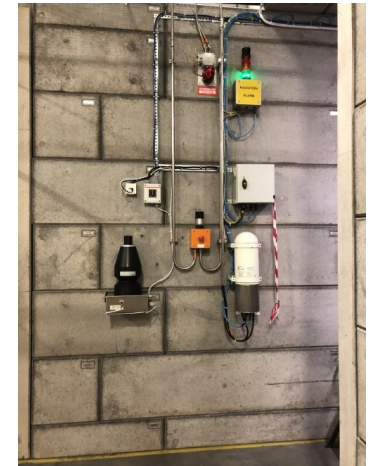


Radiation Protection Services

REMS – Radiological & Environmental Monitoring System



- First radiation area monitors installed in the Test Stand facility of Accelerator division for Cryocavity testing
- Windows and Linux virtual machines for both supervisory systems operational
 - EPICS integration project started
- Portal monitoring contract signed
- 4.1M€ Framework contract signed with Gammadata
- Particulate, Gas and Hand & Foot monitors procured for commissioning of part of the accelerator (normal conducting linear accelerator)



Radiation Protection Services

Environmental Monitoring



- 45m weather monitoring mast installed in October this year.
- Stray radiation monitor cabinet fabrication started.
- Particulate Sampler System from Lund University for zero point measurement to be installed on northern site perimeter using EP infrastructure.
- Environmental OSL dosimetry now on site.



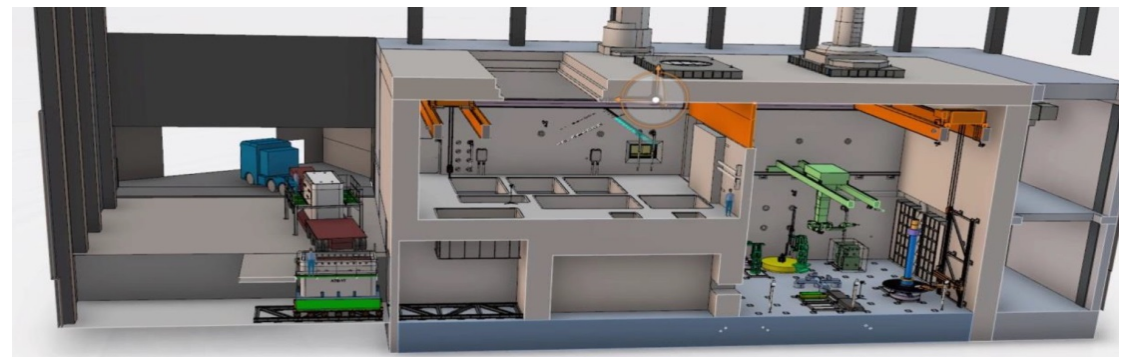
Radiation Protection Services

Radioactive Waste Management



ESS will have a facility for treatment of radioactive waste.

- The construction of this facility will be ready in 2021.
- The radioactive waste processes are currently under development.
- Installation of equipment for transport, water treatment, conditioning, decontamination, etc. will need to be installed.





EUROPEAN
SPALLATION
SOURCE

EUROPEAN
SPALLATION
SOURCE

Thank you!