Curriculum for environmental and radiological training of research fellows

State-of-the-art in air and water pollution assessment

- Impact pathways of pollutants in the environment
- Analytical strategies for environmental particulate matter
    - Collective (bulk) and single-particle analysis
- Environmental monitoring and emission measurements
- State-of-the-art measurement techniques
    - XRF, TXRF, optical spectroscopies, SEM, TEM
- Atmospheric transport modeling
    - local and regional (long-range) scale
- Source fingerprints, source profiling
    - continental and marine aerosols
    - industrial and combustion particles
- Health effect of atmospheric particles
    - Inhalation pathway
    - Lung deposition and clearance models
    - Lung dosimetry modelling
- Laboratory training
    - Air quality monitoring (gaseous and particulate matter)
    - Sampling of aerosols with filters and impactors
    - Spectroscopic analysis (XRF, Optical SEM TEM)
    - Lung deposition modeling practice

Nuclear environmental control

- Presence and concentrations of natural and artificial radioactivity in the environment
- Activities of the International Atomic Energy Agency Incidents and Emergency Centre (IEC)
- Dispersion models of airborne radioactivity
- Inhalation and ingestion of radioactive contamination
- Local and regional monitoring of radioactivity in environmental media
    - air, subsurface water, sea water, soil, biota
- Intervention (action) levels in the course of major nuclear and radiological accidents
    - emergency preparedness and response

Laboratory practices

- Operation of the radiological release control system of Budapest Research Reactor
- Different types of environmental radioactivity monitoring stations at the campus of the Budapest Research Reactor
- Search for non-declared (illicit) radioactive sources by in-situ gamma spectrometry
- Whole body counting for the detection of incorporated radioactivity
- Evaluation of remnants of past nuclear accidents (dosimetry and spectrometry)