



Assessment of the radiation situation using a mobile laboratory*

International Workshop

"Organization of Technical Support for Regulatory
Activities in the Field of Nuclear and Radiation Safety"

**Produced by UAB "LOKMIS" within the framework of the
European Union technical assistance project*



Speaker:

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Measuring equipment

Two Mirion Canberra NaI(Tl) spectrometers;



Typical resolution at 662 keV (^{137}Cs): 7.5%
Energy range: 30 keV to 3 MeV

Forward looking fast Mirion Canberra LaBr₃(Ce) spectrometer;



Typical resolution at 662 keV (^{137}Cs): 3%
Energy range: 30 keV - 3 MeV

Number of energy channels: 2048



Measuring equipment



Portable HpGe nuclide identifier Canberra Falcone 5000

Typical resolution: ≤ 2.0 keV at 1332 keV

Energy range: 20 keV - 3 MeV

Number of energy channels: 8192



Gamma radiation detection unit BDKG-24 (Atomtech)

Energy range: 25 keV – 10 MeV

*Measurement range of ambient dose equivalent rate:
30 nSv/h – 1 Sv/h*

Measuring equipment



Neutron radiation detection unit BDKN-01 (Atomtech)

Energy range: 0.025 eV – 14 MeV

*Measurement range of ambient neutron radiation
dose equivalent rate: 0.1 μ Sv/h – 10 mSv/h*



PNM-200/S Portable Unit for Neutron Dosimetry (Canberra)

Energy range: 2 keV - 15 MeV

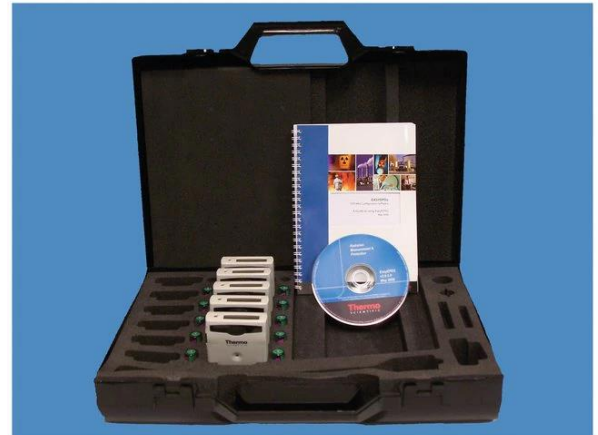
*Measurement range of ambient neutron radiation
dose equivalent rate: 2 μ Sv/h - 200 mSv/h*

Aerosol and dust collector systems (Tracelab)

model MDS-1.5-50/60
model MDS-40/100/60



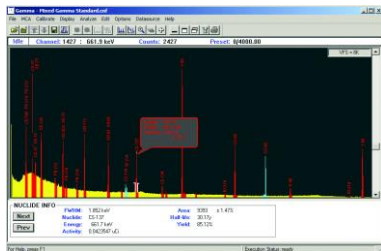
Electronic Personal Dosimeters





Equipment and hardware-software complex

- Two high-performance workstations;
- portable generator;
- weather station;
- GPS;
- software packages:



Genie 2000 (data acquisition, display and analysis of gamma spectrometry data) [Mirion Technologies].

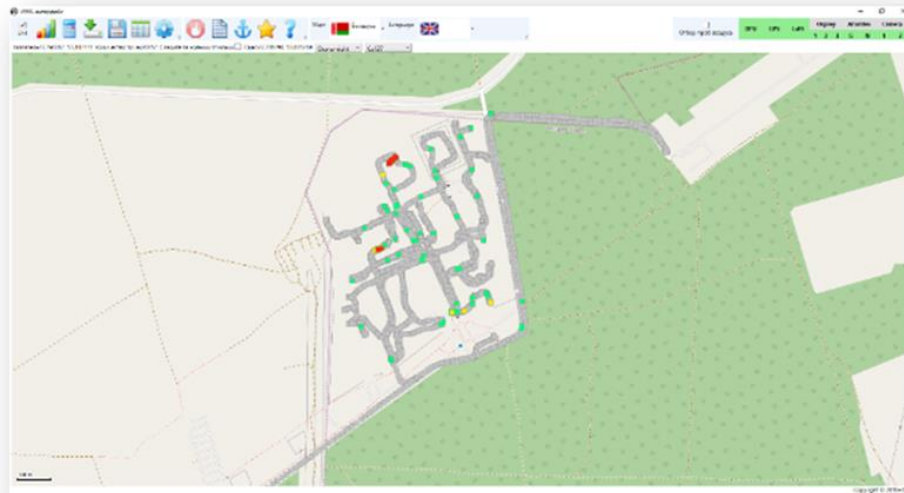
ATech (measurement range of ambient dose equivalent rate) [Atomtech]

Falcon 5000 (data acquisition, display and analysis of gamma spectrometry data, identification of radionuclides, measurement range of ambient dose equivalent rate, counts of gamma radiation) [Mirion Technologies]



Hardware and software system

VRSS UI (Software package, processing of incoming information from all devices simultaneously, mapping, measuring the total number of pulses from spectrometers, dose rate, determining the geographic location, linking radiometric and dosimetric parameters to the geographic location.) [*Lokmis*].



The parameters used to assess the radiation situation in real time in **VRSS UI**

- ✓ Range of ambient dose equivalent rate, $\mu\text{Sv/h}$
- ✓ count rate of γ -radiation per second

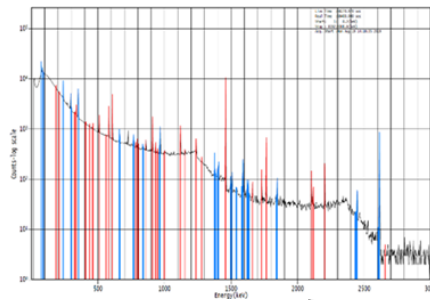


The main tasks performed by the crew of the mobile laboratory:

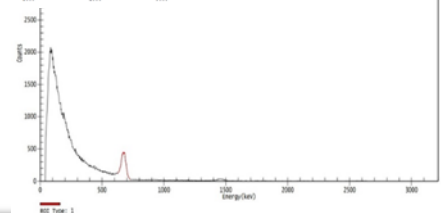
- estimation of the parameters characterizing the radiation situation (*Range of ambient dose equivalent rate, count rate of γ -radiation per second*);



- processing spectra and identifying the radionuclide composition in the field.



POINT3-LEFT.CNF





The main tasks performed by the crew of the mobile laboratory :

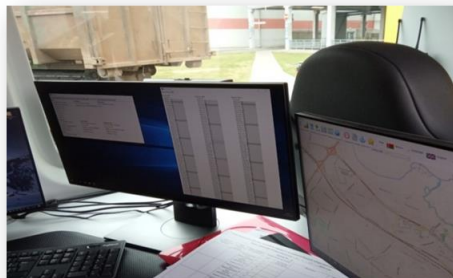
- “in situ” γ -spectrometric measurements;
- sampling the surface air layer;





Main duties are:

patrolling and assessment of the radiation situation in places where mass cultural and sporting events are held;



Search, detection on the ground with reference to GIS and identification of sources of ionizing radiation on the ground, including in the case of radiation incidents.



Main duties are:

Assessment of the radiation situation in the impact zone of nuclear facilities;



Conducting a radiation survey of the territories of facilities using sources of ionizing radiation in their activities.





Thank you for attention!

