

Monitoring of Territories Using Early Warning Systems

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Radiation early warning systems (REWS), which continuously transmit information about the level of radiation background, volumetric activity of radionuclides, meteorological conditions and other measured parameters to the central control post, can significantly reduce the risks of radiation threats to the population in controlled areas. The structure and composition of the existing REWS in European countries is analysed, the main principles for designing modern REWS are summarized and formulated.

The results of the development of advanced alpha, beta and gamma radiation monitors for detecting radioactive contamination in the atmosphere and determining their activity are presented. Registration of gamma radiation in monitors is carried out either by a SrI2(Eu) scintillation detector ($\varnothing 1.5'' \times 1.5''$, $\Delta E \leq 3\%$ on $E = 662$ keV) or an HPGe detector (30%) with Stirling cooler ($\Delta E \leq 2.0$ keV on $E = 1332$ keV), interchangeable without any monitors structural changes.

To determine the concentration of alpha and beta radionuclides, the monitors use two independent spectrometric silicon detectors having an area of 600 mm^2 ($\Delta E \leq 25$ keV on $E = 5.5$ MeV). The second spectrometric channel is used for real time compensation of background gamma radiation in the beta energy range. The development results of big REWS based on alpha, beta and gamma advanced monitors (including for iodine and water) are presented.

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Promotional text

The objectives of my presentation are to demonstrate the performance of advanced developed monitors, the possibilities to build early warning systems based on those monitors.

Oral preference format

in-person

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