

RISKS TO THE POPULATION LIFE ACTIVITY AS A RESULT OF MANMADE ACCIDENTS WITH THE EMISSIONS OF RADIONUCLIDES

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The main priority of the management of the human activities is providing human safety and security. In regards to new devices, equipment and technologies mentioned above priority means, among other things, including elements that decrease the danger from industrial objects. Radioactive elements are, likely, the most dangerous substances which we used in modern technological processes, that why the safety requirements to activities used such substances are strict and regulated by special documents. Unfortunately, the establishment and enforcement of regulations not always mean the safety of radiation-hazardous objects. At the paper we look at the disasters at radiation-hazardous objects, and based on the data of accidents and literature sources analyzed types of the disasters, their reasons, their characteristics and impacts on population and environment.

According IAEA, a radiation accident is a violation of the rules for the safe operation of a nuclear power plant, equipment or device, during which radioactive products or ionizing radiation escapes beyond the limits of the project's safe operation, and leads to population exposure and environmental pollution. Typical disasters and incidents at the radiation-hazardous objects are; (1) ignition of combustible components and radioactive materials; (2) excess of the critical mass of fissile materials; (3) the appearance of leaks and breaks in storage tanks; (4) accidents with finished products. Identification of the sources of emergency situations, the most attention is paid to potentially dangerous objects, the assessment of their technical condition and the threat to the population living near them, as well as objects located in areas of possible adverse and dangerous natural phenomena and processes. Among reasons of radioactive accidents, we should highlight two of them directly linked to "human factor" - violations of technological discipline by NPP operating personnel and shortcomings in its professional training, and "institutional factor" - low level of formal requirements from the agencies responsible for ensuring the safety of nuclear power plants during the design, construction and operation stages.

The main features of the disasters at the NPP are:

(1) radioactive contamination of the area and atmosphere has a complex dependence on the initial parameters (type and power of the reactor, time of its operation, nature of the accident, etc.) and weather conditions, as a result of which the prediction of its possible scale is very difficult and indicative;

(2) the mixture of radioactive substances emitted from the reactor is enriched with long-lived radionuclides (plutonium-239, strontium-90, cesium-137, etc.), and the relative contribution to the total activity of the β -emitting isotopes will increase overtime. As a result, large areas for a long time will be contaminated with



biologically hazardous radionuclides, which later may be involved in migration processes in the landscapes.

In order to protect the population in the area of the NPP location, special areas are set up. They are named a sanitary protection zone and a surveillance zone in which the radiation situation is monitored. The need to set up a surveillance zone, its size and boundaries are determined on the basis of the safety characteristics of nuclear facilities.