

## **Energy security: the radiation component.**

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Radiation safety is an important element of national security implies the state of security of present and future generations from the harmful effects of radiation [1].

The rapid development of nuclear power and expanded use of sources of ionizing radiation in various fields of science, technology and national economy has created a potential threat of radiation hazard to humans and environmental contamination with radioactive substances. Accidents at the enterprises of these industries can lead to mass defeat of people over large areas.

Radioactivity and its associated ionizing radiation existed on Earth and in space always, but became famous person recently. Unfortunately, the results of their searches were destined to incarnate and the atomic bomb in 1945. A practical embodiment of their quest for peaceful purposes was the establishment of a nuclear power plant in 1954 in Obninsk in 1956 in England in 1957 in the USA, in 1958 in France [2].

General background radiation, which exists in man, consists of the natural and man-made radiation backgrounds. Natural background creates cosmic radiation; terrestrial radiation, i.e. the natural radioactive substances in land, air and biosphere. Anthropogenic background is caused by the operation of nuclear power reactors; uranium mines, the use of radioisotopes in the national economy; places the processing and burial of radioactive waste.

Depending on the magnitude of the absorbed dose and the individual characteristics of the organism caused by changes can be reversible or irreversible. Small doses of irradiation can lead to development of cancerous lesions or genetic damage appearing in a few or many years.

Large doses of radiation lead to the development in humans of acute or chronic radiation sickness. It is believed that a single irradiation at a dose less than 100 glad (Rem) does not cause acute radiation sickness (ARS). Doses causing development of acute radiation sickness with one exposure or exposure for a short time (4 days): 100 - 200 glad - first degree - slight; 200 - 400 glad - second degree average; 400 - 600 - glad third degree - heavy; 600 - 1000 glad - fourth degree - is extremely difficult [4].

A characteristic feature of the flow with ARS is the power phase (stages or periods in the course of the disease). There are 4 period for ARS at any degree of severity of the initial period, latent period, the height of the disease, the period of resolution of the disease. At the time of exposure the victim is no sensation does not feel.

The severity of ARS symptoms, prognosis and recovery time depend on the intensity of lesions by ionizing radiation and the condition of the body of the victim. Stage of development ARS is presented in [4].

Radiation safety, in the author's opinion, it is advisable to consider mainly three aspects: radiological safety at the facility and around it; the radiation safety of personnel; the radiation safety of the population.

Radiation safety at the facility and around it considering:

- project quality radiation of the object;
  - informed choice of the area and the site for placement of radiation of the object;
  - physical protection of radiation sources;
  - the conditions of operation of technological systems;
- sanitary-epidemiological evaluation and licensing of sources of radiation;
- availability of radiation monitoring system;
  - planning and implementation of measures for safety of personnel and population during normal operation of the object, its reconstruction, and

decommissioning;

- improvement of radiation-hygienic literacy of the personnel and population.

Radiation safety staff is considering:

- restricting access to work with radiation sources according to age, sex, health status, previous exposure and other factors;
- knowledge of and compliance with the rules of work with sources of radiation;
- limit the time of work with sources of radiation;
- create working conditions meeting the requirements of the applicable rules and regulations;
- the use of personal protective equipment;
- compliance with established control levels;
- organization of radiation monitoring system of information on the radiation situation;

Radiation safety of the population considers:

- creation of the living environment that meets the requirements of applicable rules and regulations;
- setting quotas for the radiation from different radiation sources;
- organization of radiation monitoring system of information on the radiation situation
- the effectiveness of the planning and implementation of measures for radiation protection;

The report elaborates on the above regulation and recommendations in radiation protection.

#### List of references

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