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**EFFECTS OF RADIATION FROM INTERNAL EXPOSURE
AND MECHANISMS OF LONG-TERM CONSEQUENCES
FORMATION IN POPULATION OF BELARUS AS A RESULT
OF CHERNOBYL DISASTER**

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The Chernobyl disaster triggered the release of substantial amounts of radiation into the atmosphere in the form of both particulate and gaseous radioisotopes. It has been suggested that the radioactive contamination caused by the Chernobyl disaster greatly exceeded that of the atomic bombing of Hiroshima and Nagasaki in 1945.

As a result of the Chernobyl accident in Belarus for more than 2 million people were exposed to radiation, 23% of the territory was contaminated with radionuclides.

Chernobyl accident has put to the forefront the problem of action on small doses of ionizing radiation (IR) and its long-term consequences. The effect of the IR on the whole organism is revealed in the form of radiation sickness (RS). One of the forms of RS is radiation sickness from internal exposure. RS from an internal exposure is an independent nosologic form that is predominantly a chronic disease, against a background of which the selective damage of individual organs and systems is formed.

According to research the main threat today is: 94% of radionuclides ingested with food, 5% - with water and 1% - inhalation. The main threat to the population of the Republic of Belarus is Cesium-137 (accumulates in the muscle tissue and promotes uniform irradiation of the body) and Strontium-90 (accumulates in bone and chronic irradiation exposes the bone marrow and blood forming organs).

Proved that small doses of radiation increase the frequency of genetic mutations in irradiated cells and the likelihood of developing certain disease groups (most tumors) in the general population. In Belarus, for example, sharply increased the number of thyroid disease: its hyperplasia, nodular goiter, cancer. The reason – the thyroid damage as a result of its exposure to radioactive iodine-131. Of particular concern is the increased level of mutations, chromosomal abnormalities, increasing the number of children with congenital and hereditary malformations.

In formation of long-term exposure effects the following mechanisms take part: 1) damage accumulation in the genetic apparatus of somatic and sex cells; 2) violation of gene activity; 3) disorders of neuroendocrine regulation determining the reduction of the body adaptation.

The basic measures to decrease of violations of organs and systems at radiation damage are the next: recovery hemopoiesis; eliminate the infection, intoxication, hemorrhagic phenomena; restoration of the function of the nervous, endocrine, digestive, cardiovascular system; recovery cellular processes; stabilization of cell membranes; decrease lipid peroxidation; increase tissue respiration; reduction in the intensity of the oxidation process; inhibition of chain radiation-induced reactions; liquidation immunodeficiency.