272 and 273 of the Criminal Code, as well as in the implementation of the main directions of the Water strategy of Republic of Belarus for the period until 2020, approved by the Ministry of Natural Resources in 2011, contributes to the implementation of the program for the modernization of existing sewage treatment plants of large cities with the use of modern technologies remove organic pollutants and nutrients nitrogen and phosphorus compounds that improve the ecological status of open water bodies.

Ezerski A., Tushin N.

International Sakharov Environmental Institute
of Belarusian State University, Minsk, Republic of Belarus

MICRODOSIMETRY

In this report, I examine the basic principles associated with microdosimetry. If you wish to better understand the effects of radiation, the connection between some basic characteristics of the absorption of ionizing radiation in the matter with dimensions and, possibly, the nature of the structures, which are affected by this radiation should be taken into account. This is the purpose of microdosimetry.

The term microdosimetry came when Rossi et al. (Rossi, 1955a, 1959, 1960, 1968v, 1972) developed a conceptual approach and relevant experimental methods for systematic analysis of microscopic distribution of the absorbed energy in the irradiated material. They were identified and measured stochastic quantities such as the energy density of z, and the linear energy y. These values describe the energy transfer events in microscopic structures, such as small spherical volumes. These values and their distribution function are central concepts microdosimetry and over the past two decades with the help of their description was conducted a wide range of radiation phenomena. At the same time it was determined microdosimetry's other important concepts and quantities that allow complement the description of the spatial distribution of the energy transfer events.

Microdosimetry is branch of physics dealing with the study of transmission and distribution of energy of ionizing radiation in the matter at the cellular and subcellular levels.

The dosimetric quantities determining the radiation field and the interaction of radiation with the matter, such as the density of the energy flux density of the particle flux, radiation dose, kerma, and other is the macroscopic quantities.

A distinctive feature of macroscopic quantities is fairly smooth continuous change them when changing the parameters of the system, which they describe. For example, the radiation intensity is continuously varies with the thickness of the absorber, the dose of radiation with a change in the radiation flux density and so on.

Ionizing radiation, however, it is made up of discrete particles that transmit the energy of the matter in small, but the fixed portions. The interaction of radiation

with the matter of a statistical nature, and this leads to the fact that many physical factors, defining the dosimetric values are subject to random fluctuations.

These dosimetric quantities not describe microdosimetry system. The reason is that the concept of dose in its ordinary sense is only applicable to systems in which there is a sufficiently large number of events to fluctuations in individual acts of interaction didn't affect the value of a macroscopic quantity.

Development microdosimetry mainly determined by the needs of radiobiology, but its findings can be applied to any reaction of the irradiated material, depending on the microscopic distribution of energy.

The applied value of microdosimetry is determined by the ability of prediction and explanation of radiation effects in cases when these effects are caused by the defeat of sensitive microstructures such a small size that are significant fluctuations of the absorbed energy. For example, the genetic effects of radiation caused by the body's defeat of individual sections of the chromosomes that is carriers of heredity.

This discipline is in the active stage of development and continuous improvement. Research and development are carried out by the commission of the ICRP and ICRU.

Filippovich K., Prashko T.

International Sakharov Environmental Institute of Belarusian State University, Minsk, Republic of Belarus

ANALYSIS OF THE LARGE-TONNAGE WASTE HANDLING IN THE REPUBLIC OF BELARUS

We have reviewed the handling of the large-tonnage wastes in the Republic of Belarus for the period from 2005 to 2014. For this analysis we selected the wastes with the maximum amount of the waste production during the period of this study. According to the state statistical reporting in 2005 there were such wastes as hard halite waste phosphogypsum, and hydrolytic lignin. In 2014 the construction waste came in the third place.

The amount of accumulated and annually produced large-tonnage industrial wastes are estimated by millions of tons. Therefore, the problem of their use and recycling is extremely important. In Belarus, the total percentage of the large waste recycling has been amounted to 1.5% in recent years.

The greatest amounts of waste production in the Republic of Belarus are characterized by halite waste and clay-salt slimes of JSC "Belaruskali", which were accounted in 2014 for more than 62% of the annual output of waste production in the country. In 2005, the percentage of using halite wastes was 3.3%, but by 2014, the volume of waste production had increased by 4 million tons, therefore, the usage percentage had dropped to 2.2%. The traditional directions of waste utilization are manufacturing of the new forms of fertilizers and ameliorants for agriculture, construction materials additives, and drilling mud additives, as a mineralizer for the in-