

ENSURING RADIATION SAFETY IN ECOLOGY AND ENVIRONMENTAL PROTECTION

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ANNOTATION: This article addresses issues related to radiation safety in radiation ecology. It analyzes the damage caused by light to the organs of the human body and its consequences. Information on sources of light emitting harmful to human organs, radiation level measuring instruments, radiation and ionizing radiation and guidelines, facilities and means of their protection, as well as potentially radiation-hazardous weather Information about the objects is given.

KEYWORDS: astrophysicists, cosmologists, helioseismologists, astroseismologists. hazard, radiophobia, b-beta light, nuclear energy, Radiation, uranium, plutonium, lead.

INTRODUCTION

“Action Strategy for the five priority areas of development of the Republic of Uzbekistan for 2017-2021” developed on the initiative of the President of the Republic of Uzbekistan Shavkat Mirziyoyev on the basis of analysis of current legislation, law enforcement and best international practices and has played an important role in further developing the activities of government agencies in the field of environmental protection. In accordance with the laws and other normative

legal acts of the Republic of Uzbekistan, the Cabinet of Ministers of the Republic of Uzbekistan, the State Committee for Ecology and Environmental Protection of the Republic of Uzbekistan myths are carried out by local government agencies. They are subdivided into several sectors and several natural resource governing bodies, as well as sectoral, that is, governing bodies of a particular natural resource. Another important task is to establish environmental cooperation with foreign countries or to attract foreign investment to solve environmental problems, as well as to study and implement in our country the environmental protection measures taken in foreign countries. is an urgent demand.

In the 21st century, the world's climate is changing dramatically. Over the past decade, the crisis of climate change has continued. For example, earthquakes, typhoons, floods, extreme cold, high temperatures are causing great damage to nature and people. So far, scientists and humans have not fully understood and evaluated the impact of space and geological processes on climate change. Because scientists around the world have different views on climate change. But over the next hundred years, global warming has been confirmed.

Now physicists, astrophysicists, cosmologists, helioseismologists, astroseismologists and climate scientists say that the impact of cosmic processes on the Earth is enormous. The radiation environment is also a major concern. But scientists now say that man can no longer influence this process and must be prepared for any eventuality on the planet.

RELEVANCE OF THE TOPIC

Radioactivity is not a completely new phenomenon, as some have so far associated with the construction of nuclear power plants and the emergence of nuclear warheads. Long before life appeared on Earth, there was radioactivity and the accompanying ionizing radiation. On Earth, underground, in water, in the atmosphere, in space - everywhere there is a natural radiation background with an average value of ionizing radiation or an equivalent dose of about 2 mSv per year.

The existence of a natural radiation background is a necessary condition for the evolution of life on Earth.

Without the natural background of ionizing radiation, there would probably be no modern life on Earth. The use of ionizing radiation in medicine has opened up great possibilities for the diagnosis and treatment of many diseases. There is a well-founded idea that small doses of ionizing radiation can be beneficial, and in practice this is reflected in the treatment of some diseases with radon baths. On the other hand, it should be understood that such values of the level of safety in nuclear power plants are ensured by the implementation of the basic principles, methods and tools of labor protection in everyday activities.

In the event of an accident, despite the protective measures taken, the threat to the lives and health of workers will increase significantly, and the level of risk will be incomparable to the risks of daily activities. On the one hand, it is wrong to ignore it, and on the other hand, it is important not to overdo it and fall into radiophobia. Only a rational approach to ionizing sources, taking into account the possible consequences, can ensure adequate compliance with radiation safety requirements.

DISCUSSION

In various sectors of the economy, there are industrial equipment that emits harmful radiation to humans. In recent years, there have been potential dangers in radio engineering, medicine, nuclear physics, information, and other fields. Misuse, malfunction, and other causes can lead to radiation sickness. Radioactive radiation-related equipment used in the medical field is not guaranteed by their absolute protection devices and equipment.

In addition to health workers, teenagers are also affected by radiation sickness. According to sources, the latest generation of TV screens, computer monitors are well protected from light, and their previous generations had much lower protection measures. It can also be caused by chronic use.

Modern means of communication, techniques and their manufacturers are also exposed to potential radiation hazards. Especially miners: uranium, plutonium, lead and other miners, participants in their transportation, storage and processing, users of light-emitting devices, laboratory of nuclear physics - experimental work. conductive researchers can also receive radiation.

Radiation is the distribution of energy in the form of particles or waves. Light, ultraviolet light, infrared heat radiation, microwaves, and radio waves are all different forms of radiation. Some irradiations are called ionizers, which cause ionization in irradiated substances. Their negative effects on humans can have serious consequences. The transmittance of radiation (b) to the human body is shown in Figure 1 (Figure 1).

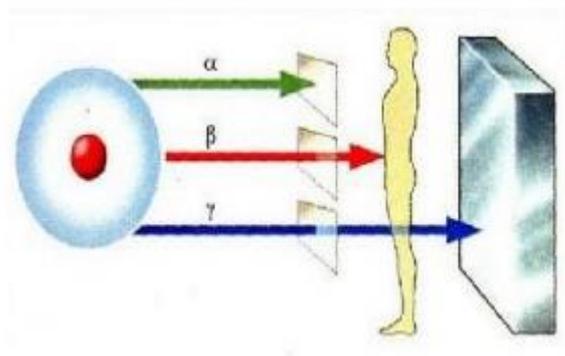


Figure 1. Transmission of radiation to the human body: alpha light, weak, can be blocked by a sheet of paper; b-beta light, which can be blocked by human skin, is harmful when ingested; passes through the human body, which can be protected by high-density materials.

Human organs have different tendencies to radiation. The amount of radioactivity received per unit dose affects each organ differently. We can see this in the example below (Figure 2).

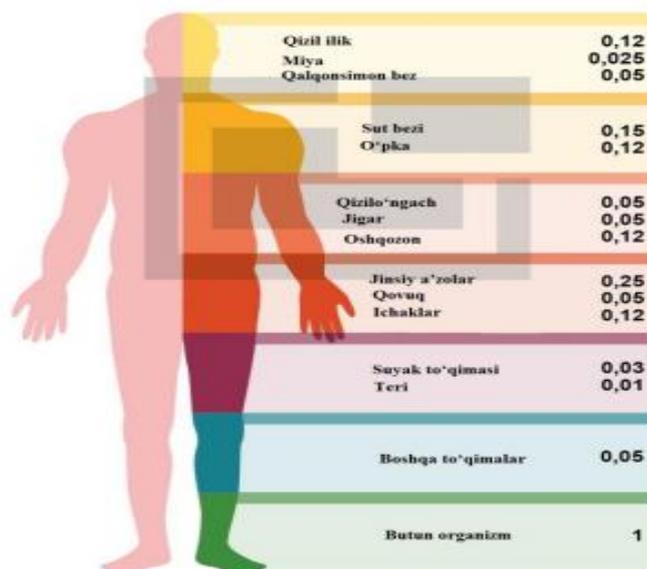


Figure 2. A relative measure of the human body's response to radiation.

The following tasks are set to ensure safety in the field of “radiation ecology”:

- develop an understanding of radiation and light sources in humans;
- know the causes of radiation;
- generating information about radiation that is harmful to the human body;
- formation of knowledge about radioactive decay, ionizing radiation;
- knowledge of radiation safety and its legal basis;
- the law of radioactive decay;
- use of radioactive substances in the economy;
- nuclear energy sector;
- formation of information on radiation diseases and their treatment;
- biological consequences of radiation exposure;
- study of radioactive pollution and its impact on the environment and people;
- to understand the basics of dosimetry, dosimetry of ionizing radiation;
- study the use of dosimetric instruments;
- study the use of radiometry and radiometric instruments;
- access to information on radiation-hazardous facilities, nuclear energy;
- provide information on radiation accidents around the world.

THE RESULT

About 90% of the 2,500 nuclei of known chemical element isotopes are unstable or unstable. Because the decay of unstable nuclei is accompanied by the scattering of different rays, it is called radioactive decay, and isotopes and nuclides that have the ability to decay are called radioisotopes and radionuclides, respectively. Radionuclides can be present in the Earth's crust and can be formed under the influence of cosmic radiation (cosmogenic) or as a result of human activity (man-made). We see this in Table 2.1.

Table 2.1. The most important natural and man-made radionuclides that form the radiation background on the Earth's surface.

| Tabiiy radionuklidlar | | texnogen radionuklidlar |
|--|---|--|
| terrigen | kosmogen | |
| ^{40}K , ^{210}Po , ^{222}Rn , ^{220}Rn (Tn), ^{226}Ra , ^{232}Th , ^{235}U , ^{238}U va boshq. | ^3H , ^{14}C , ^{32}P va boshq. | ^3H , ^{90}Sr , ^{85}Kr , ^{131}I , ^{137}Cs , ^{239}Pu va boshq. |

The reason for radioactive decay is a violation of the balance between the number of protons in the nucleus and the number of neutrons. When the required balance is disturbed, the nucleus becomes overpowered and has to go into a less energetic state to get rid of it.

In order to prevent radiation safety and ensure its safety, Article 12 of the Law of the Republic of Uzbekistan "On Radiation Safety" specifies ways to ensure radiation safety, which include: :

- development and implementation of radiation safety programs;
- adherence to a single state system for the control and accounting of individual doses of radiation received by citizens in the use of ionizing radiation sources;
- determining the types and amount of compensation to be paid for the high risk of damage to the health of citizens due to radiation exposure;
- reimbursement of damage to health and property of citizens as a result of radiation accidents;
- identify activities related to the use of ionizing radiation sources;

- government regulation of exports and imports of ionizing radiation sources;
- preventive medical measures;
- informing citizens about the radiation situation and radiation safety measures;
- educating citizens on radiation safety measures;
- Assistance to citizens exposed to radiation as a result of radiation accidents;
- introduction of special rules for the residence of citizens in areas of radioactive contamination;
- elimination of the consequences of radiation accidents in the relevant area;
- organize and conduct emergency response in the event of a radiation accident.

Article 13 of this law sets out the procedures for assessing the state of radiation safety. According to him, the assessment of the state of radiation safety is carried out by local public authorities, state bodies regulating radiation safety, as well as users of ionizing radiation sources in the planning and implementation of radiation safety measures, analysis of the effectiveness of these measures. .

Radiation safety assessment includes the following key indicators:

- description of radioactive pollution of the environment;
- analysis of radiation safety measures and compliance with radiation safety norms and regulations and hygiene standards;
- probability of radiation accidents and their scale;
- level of preparedness for radiation accidents and their consequences;
- analysis of radiation doses received, received and likely to receive from all sources of ionizing radiation by employees and the population;
- the number of people exposed to radiation above the established limit of radiation doses.

CONCLUSION

Based on the above, the protection and preservation of nature, its transmission to future generations is one of the most important tasks in the life of every person

living in the country today. Many people can get sick and suffer from radiation exposure.

We need to comply with the radiation requirements and meet the established requirements. Legislation in this area is well established, and we are only required to ensure and monitor its implementation.

In conclusion, fines for environmental pollution also apply to individuals and legal entities in the country. Accordingly, it would be appropriate to impose large fines for non-compliance with the environmental safety of large quantities of radioactive waste and to prevent repeated violations of such safety requirements.

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