The activity of ticks was determined by the collection area. Studies have shown that the most common (62.5%) mites were found in the area with high grass vegetation. In areas of the Park, where birch and pine ticks were found less frequently (16.67%).

Thus, we have established that in the territory, which is a popular recreation area of the population of Minsk, the occurrence of ticks is high enough and it is necessary to carry out additional anti-acaricide measures.

DETERMINATION OF THE RADIATION BACKGROUND AND THE DEGREE OF RADIOACTIVE POLLUTION OF DIFFERENT OBJECTS

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The article presents the sources of background radiation.

Keywords: radiation background, radioactive pollution, cosmic radiation, radon.

Background radiation comes from both natural and man-made sources.

The global average exposure of humans to ionizing radiation is about 3 mSv (0.3 rem) per year, 80% of which comes from nature. The remaining 20% results from exposure to man-made radiation sources, primarily from medical imaging. Average man-made exposure is much higher in developed countries, mostly due to CT scans and nuclear medicine.

Natural background radiation comes from five primary sources: cosmic radiation, solar radiation, external terrestrial sources, radiation in the human body, and radon.

The background rate for natural radiation varies considerably with location, being as low as 1.5 mSv/a (1.5 mSv per year) in some areas and over 100 mSv/a in others.

Cosmic radiation: the Earth, and all living things on it, are constantly bombarded by radiation from outside our solar system.

The cosmic-radiation dose rate on airplanes is so high that, airline flight crew workers receive more dose on average than any other worker, including those in nuclear power plants. Airline crews receive more cosmic rays if they routinely work flight routes that take them close to the North or South pole at high altitudes, where this type of radiation is maximal.

Cosmic rays also include high-energy gamma rays, which are far beyond the energies produced by solar or human sources.

External terrestrial sources: most materials on Earth contain some radioactive atoms, even if in small quantities. Most of the dose received from these sources is from gamma-ray emitters in building materials, or rocks and soil when outside. The major radionuclides of concern for terrestrial radiation are isotopes of potassium, uranium, and thorium.

Internal radiation sources: all earthly materials that are the building-blocks of life contain a radioactive component. As humans, plants, and animals consume food, air, and water, an inventory of radioisotopes builds up within the organism. Some radionuclides, like potassium-40, emit a high-energy gamma ray that can be measured by sensitive electronic radiation measurement systems.

Radon: an important source of natural radiation is radon gas, which seeps continuously from bedrock but can, because of its high density, accumulate in poorly ventilated houses.

Methods of indication of ionizing radiation: *photographic method* is based on the properties of ionizing radiation to affect the sensitive layer of photographic film like a visible light. According to the degree of blackening of the photographic film or paper it can be determined the intensity of ionizing radiation; *chemical method* is based on the properties of certain chemical substances to change its structure or color under the influence of radioactive radiation; *ionization method* is that under the influence of radioactive radiation gas molecules are ionized, as a result its electrical conductivity increases. If the volume of gas is locked between two electrodes , which is supplied with electrical voltage , than ionization current that occurs between them can be measured. The strength of this current will depend on the intensity of ionizing radiation; *scintillation method* is that under the influence of ionizing radiation some substances (zinc sulfide activated with silver , – ZnS (Ag), sodium iodide , thallium activated, – NaI (TI), and others) can shine. The energy of light flashes (scintillation) in the photoelectric tube is converted into the pulses of electric current due to the photoelectric effect.

Table 1

The measurement report of the gamma background

Measurement region	Device indication, mR\h			Average indications, mR\h	Control level of the radiation background in Kiev, mR\h
	1st	2nd	3d		
Measurement at the University	12	10	11	11	18
Measurement is the library	8	10	12	10	18
Measurement of granite steps	28	30	32	30	25

DETERMINATION OF THE TOTAL DOSE OF IONIZING RADIATION

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Abstracts contain ways to protect from radiation.

Keywords: ionizing radiation, absorbed dose, equivalent dose, effective dose.

Ionizing radiation is called one, that leads to the formation of ions (charges of different signs) in the environment.

Types of radiation doses:

Absorbed dose is a fundamental dose quantity D representing the mean energy imparted to matter per unit mass by ionizing radiation. The SI unit is joules per kilogram and its special name is gray (Gy).

Equivalent dose is a dose quantity used in radiological protection to represent the stochastic health effects (probability of cancer induction and genetic damage) of low levels of ionizing radiation on the human body. It is based on the physical quantity absorbed dose, but takes into account the biological effectiveness of the radiation, which is dependent on the radiation type and energy. The SI unit of measure for equivalent dose are:

the *sievert*, defined as one Joule per kg.

or the *roentgen equivalent man* (rem), equal to 0.01 sievert, is still in common use.

Calculating equivalent dose from absorbed dose:

$$H_T = \sum_R W_R \times D_{T,R}$$

where,

H_T is the equivalent dose absorbed by tissue T;

$D_{T,R}$ is the absorbed dose in tissue T by radiation type R;

W_R is the radiation weighting factor defined by regulation.

Table 1

Radiation weighting factor

Radiation	Radiation weighting factor (W_R)
Photons	1
Electrons, muons	1
Photons, charged pions	2
Alpha and other nuclear fragments	20
Neutrons	Varies with energy

Effective dose is the tissue-weighted sum of the equivalent doses in all specified tissues and organs of the body and represents the stochastic health risk, which the probability of cancer induction and genetic effects of ionizing radiation delivered to those body parts. It takes into account the type of radiation and the nature of each organ or tissue being irradiated. The SI unit for effective dose is the sievert (Sv) which is one joule/kilogram (J/kg).

Effective dose = Equivalent dose × tissue weighting factor

Effective wholebody dose:

100mSv × 0,12 = 12 mSv