

charged particles results in high-energy penetrating muons that reach the ground and penetrate deep underground and underwater. A small proportion of protons and neutrons from the flux, which increases with the energy of the initial cosmic particle, also reaches the surface. In general, highly permeable secondary muons are responsible for about 85 % of the total equivalent dose that cosmic rays deliver at surface level. Their interactions, and the interactions of their products with electrons and nuclei in living cells, ionize atoms, break down molecules and damage DNA and RNA due to the displacement of electrons, atoms and nuclei from their places. The total energy dose released from penetrating muons, which results in 50 % mortality within 30 days, is 2,5 to 3 Grey.

There is a theoretical correlation between GRB radiation and mass extinction of biota on Earth occurring at least five times in history. It is assumed that GRB could have contributed to the Late Ordovician mass extinction that occurred about 440 million years ago. The Earth's biota has been exposed to increased levels of ultraviolet radiation, associated mainly with ozone layer destruction. Then came the late Ordovician Ice Age, associated with an increase in the concentration of nitrogen dioxide NO₂ in the atmosphere and its absorption of solar radiation in the visible region of the spectrum.

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WETLAND BIRDS OF MINSK AS A POTENTIAL FOCUS OF CERCARIOSIS

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Mass species of wetland birds were explored as a potential focus of cercariosis. The estimation of the number and population density of wetland birds was made in different parts of the Svisloch. Recreation areas which are the most dangerous for the citizens have been identified.

Keywords: wetland birds, cercariosis, urbanization loading, schistosomicide invasion, urban landscape, recreation area.

One of the priority areas of research made by ornithologists is the study of wetland birds in urban areas. Cities are attractive for wetland birds due to the presence of favorable living conditions on their territory.

The main issues in the study of wetland birds are: species composition, nesting ornithofauna, adaptation to the urban landscape, species which are left for winter and the biology of individual species. At the same time, researches on cercariosis in Minsk don't get enough attention. Such researches gets special attention only in cases of the exacerbation of the problem of cercariosis in urban landscapes and recreation areas. The problem of cercariosis is a worldwide problem [1].

Cercariosis, or swimmer's itch, is a skin lesion by cercariae – larvae of flatworms of trematodes. Although cercariosis is not a very serious disease, but it can completely ruin your vacation and show itself for a long time. This issue is especially acute in the resort area of the Narochansky region, which main feature is the concentration of a large number of people on the coast. Local birds have developed a special type of behavior, which is unusual for

their natural conditions. They are not afraid of people and they concentrate in significant numbers on the beach areas where holiday-makers feed them.

To study the influence of environmental factors on the formation of the communities' structure of wetland birds in Minsk during the summer period of 2015-2016, 2019, the perimeter, pond area, water table area, surface area of islands of vegetation were determined using satellite imagery in OziExplorer v. 3.95.5 n and also based on available information from personal observations [2].

Statistical processing of the results was carried out by generally accepted methods in GraphPad Prism version 5.00 software packages.

The modern ornithocomplex of wetland birds in Minsk is characterized by high abundance of species including 73 species, 29 of which are nesting.

The mallard (*Anas platyrhynchos*), which is characterized by a high number throughout all seasons and forms wintering populations, plays the major role in the formation of cercaria-hazardous zones in Minsk [3]. The European pochard (*Aythya ferina*), the tufted duck (*Aythya fuligula*), the mute swan (*Cygnus olor*), the Eurasian wigeon (*Mareca penelope*), the Eurasian coot (*Fulica atra*), the great crested grebe (*Podiceps cristatus*), the black-headed gull (*Larus ridibundus*), the common gull (*Larus canus*), the common tern (*Sterna hirundo*) can serve as an additional source of schistosomatidae in the city's pond during the spring-autumn period. These species are noted as the final owners of schistosomatidae in Europe. The secondary role of these species is associated with their lower representation in water bodies, due to relatively low abundance (the diving ducks, the mute swan, the Eurasian wigeon, the great crested grebe, the Eurasian coot, the common tern).

In order to prevent cases of cercariasis among the population of Minsk, we offer personal protective equipment, as well as the placement of information stands on Komsomolskoye Lake, the water reservoirs Drozdy and Tsnyanskoye. The information stands will reflect the mechanism of infection and also contain a list of necessary precautions to minimize the infection.

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METHOD DEVELOPMENT FOR DETERMINATION OF PHARMACEUTICAL WASTE IN WATER BY UV-VIS SPECTROSCOPY

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The efficient treatment of pharmaceutical wastes is a big challenge because they are biologically active and resistant to biodegradation. Although pharmaceuticals can appear at low concentration in ground water, surface water, and drinking water, they can cause serious harm to the environment. The conventional treatment of wastewater is not efficient at removing pharmaceutical waste. Photocatalytic degradation is shown to be a promising method to remove pharmaceuticals from the water. Thus, the recent research efforts focus on the enhancement of the catalysts' performance. The aim of this study is to choose a model substance most suitable to simulate the pharmaceutical wastes in photocatalytic experiments.

Keywords: photocatalyst, UV-Vis spectroscopy, acetylsalicylic acid, sodium caffeine-benzoate, ibuprofen, acetaminophen, amoxicillin, optical density.

Over the past few years there has been considerable interest in the removing of pharmaceuticals from the environment as they usually consist of biologically active lipophilic substances. The pharmaceuticals can be found in hospital wastewater and industrial wastewater. They also appear at a trace level in ground water, surface water, and