

Benzidine is an artificially produced chemical compound that was broadly used in industry and agriculture. It is known as a dangerous chemical for human health mostly because of causing cancer. In the environment benzidine could be transformed into several other chemical compounds such as 3,3'-dimethylbenzidine (o-toluidine) that is highly carcinogenic and toxic [1]. However the products of 3,3'-dimethylbenzidine degradation could be more toxic than the original substance that demands their urgent inactivation.

Despite the fact that benzidine and 3,3'-dimethylbenzidine are not highly water soluble there is a necessity of water purification in case of contamination. Enzymatic method is one of the most effective for this purpose and laccases (E.C.1.10.3.2, p-benzenediol:oxygen oxidoreductase) could be an appropriate enzymes for 3,3'-dimethylbenzidine destruction [2].

We investigated the effectiveness of intracellular laccase isolated from mycelium of *Plerotus ostreatus* [3] for the purpose of 3,3'-dimethylbenzidine degradation in water. During the first stage of the study the optimal conditions for 3,3'-dimethylbenzidine oxidation such as pH within the range 4.5–5.0; temperature 50–60°C and concentration of compound 1–1.5 mM were determined.

During the second stage elimination of the enzymatic reaction products was done using an absorption chromatography which allowed the level of specified water purification within the range of 97–99 %.

Our results demonstrate a good ability of proposed method for benzidine compounds removal from water.

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PROTECTION OF PEOPLE LIVING IN LONG-TERM CONTAMINATED AREAS AFTER A NUCLEAR ACCIDENT OR A RADIATION EMERGENCY

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The International Commission on Radiological Protection (ICRP) is the main agency for protection from radiation ionization. The commission considers the impact of ionizing radiation on the people living in long-term contaminated areas, as well as practical aspects of the protection strategy both the authorities and the affected communities.

Keywords: Post-accident; Rehabilitation; Optimisation; Reference level; Effective residual dose; Radiation emergency; Contaminated sites; Contaminated foodstuffs.

The International Commission on Radiological Protection (ICRP) Publication 111 “Application of the Commission’s Recommendations to the Protection of People Living in Long-term Contaminated Areas after a Nuclear Accident or a Radiation Emergency” provides guidance for the protection of people that living in long-term contaminated areas after a nuclear accident or radiation emergency. Also this Publication considers the effects of such events on the affected population, for example the pathways of human exposure, the types of exposed populations, and the characteristics of exposures. Although the focus is on radiation protection considerations, the report also recognizes the complexity of post-accident situations, which cannot be managed without addressing all the affected domains of daily life, i.e. environmental, health, economic, social, psychological, cultural, ethical, political, etc. The report explains how the 2007 Recommendations apply to this type of existing exposure situation, including consideration of the justification and optimisation of protection strategies, and the introduction and application of a reference level to drive the optimisation process [1].

At its meeting in Paris in March 2005, the Main Commission of the ICRP approved the formation of a new Task Group, reporting to Committee 4, to develop guidance on the implementation of its new Recommendations (ICRP, 2007) for the protection of people living in long-term contaminated areas after a nuclear accident or a radiation emergency. The terms of reference of the Task Group were to provide guidance on:

- setting reference levels for planning long-term protection strategies;
- implementing optimised protective actions;
- involving stakeholders in radiological protection;
- developing radiation monitoring and health surveillance; and
- managing contaminated commodities.

In developing its guidance, the Task Group was encouraged to co-ordinate with the concurrently approved Task Group in charge of elaborating recommendations on the application of the Commission's Recommendations for the protection of people in emergency exposure situations [1]. The report takes into account past experience of the protection of populations living in contaminated areas, particularly in the Commonwealth of Independent States countries affected by the Chernobyl accident, and to a lesser extent to other past accidents and events that resulted in the contamination of large areas. It takes also into account recent methodological and practical developments at international and national levels: the International Nuclear Exercises (INEX) programme of the Committee of Radiation Protection and Public Health of the Nuclear Energy Agency/Organisation for Economic Co-operation and Development (Network Energy Accumulator (NEA)/Organisation for Economic Co-operation and Development (OECD)), the European approach to nuclear and radiological emergency management and rehabilitation strategies (EURANOS) Project of the European Commission, the French Committee for the Management of the Accident Phase(CODIRPA) exercise, the Instituto Ethos De Empresas e Responsabilidade Social(ETHOS) Project, and the CORE Programme on post-Chernobyl rehabilitation in Belarus [1].

The guidance offered by the Task Group is generic, providing a basic framework that can be tailored for specific circumstances. The detailed implementation of the Commission's Recommendations is a matter for the relevant national authorities [1].

The resolution of this publication requires study and development of recommendations for its implementation in the program to post-remedial action the consequences of the Chernobyl disaster in Belarus, first of all the recognition of the current situation of existing exposure and the use of recommendations for assessment of performance of attempted countermeasures.

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HELMINTHS OF HOOFED INHABITANTS OF MINSK ZOO

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The article is devoted to the infection of the hoofed of Minsk zoo helminths and the preventive maintenance of helminthiasis is.

Keywords: helminth, parasitofauna, parasite cenosis, infection, invasion.

A whole series of special features has conditions of inhabiting for the hoofed organisms in the zoos. One of them is the congestion of animals, which creates conditions for the formation of parasite cenosis of hoofed animals. Under the conditions of limiting the will of animals and their denser, and more prolonged accumulation in the specific territory infection and reinfection of animals by helminths is more intensive and is more dynamic.

The subject of a study is hoofed and their parasites in Minsk zoo. 19 species have been examined on the presence of parasites, the representatives of solid-hoofed and cloven-hoofed orders. It is established that parasitofauna of hoofed inhabitants of Minsk zoo is helminths, that belong to 5 the kinds: Trichocephalus, Capilaria, Fasciola, Strongylata and Nematodirus. Species composition of parasite cenosis of hoofed includes from 1 to 3 forms. Richest parasitofauna is revealed for the form the deer of David (*Elaphurus davidianus*). In the deer of David there are 3 kinds of the helminths (Fasciola, Strongylata, Nematodirus). But in others hoofed there is one form: collared peccary (*Tayassutajacu*) – Capilaria; the vietnamese pig (*S. bucculentus*), european roe is (*Capreolus capreolus*), aurochs (*Bison bonasus*), cameroon goat (*Copragircus*), cameroon sheep (*Ovis ammonaries*), the domestic horse (*Equus caballus*), of the pony (*Equus caballus*) – Strongylata.

The indices of infection vary from 0,33 and to 93,8. The smallest extensiveness of invasion is noted for the form the deer of David and comprised 0,33 to one individual. The greatest extensiveness of invasion is noted for the form of markhoor and comprised 93,8 to one individual.

The preventive maintenance of helminthiasis requires systematic character. To secure animals is possible and it is necessary by regular preventive measures for by worming. It is important to use preparations with the wide spectrum of action.