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Hygienic Assessment of the Danger of Insecticides in the Environment

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Annotation. The results of the study found that insecticide Insecticide, according to the parameters of acute toxicity, belongs to substances of hazard class IV (low-toxic drug), has a slightly irritating effect on the skin and mucous membranes of the eyes. The drug has a functional accumulation. Hygienic standards and regulations for the use of insecticide in agriculture have been developed.

Keywords: insecticide, toxicity, accumulation.

Relevance.

Insecticides have been widely used in agriculture in recent years against many types of crop pests. Of these, synthetic pretroids have been widely recognized [1,2]. Pesticides from this group are mostly relatively low-toxic to warm-blooded animals with a single exposure, but they are highly resistant to the environment [8,]. The latter feature makes it possible for them to accumulate in the soil, especially in products [3,4]. In connection with these, as well as certain groups of pesticides (insecticides), embryotoxicity, mutagenicity and other manifestations of long-term activity are inherent, the introduction of pesticides into agricultural practice should be accompanied by their diverse study and strict regulation. [9,10].

In Uzbekistan, ZARA TRUST LLC has synthesized a new, promising insecticide Insecticide.

In this regard, the purpose of this study was to assess the dangers of insecticide Insecticide in single and multiple entry into organisms and to develop hygienic standards and regulations that guarantee safety for humans and the environment when using it in agriculture.

The object and methods of research.

The object of the research was the insecticide Insecticide produced by ZARATRUST LLC, Uzbekistan. Synonym: carthage, suspension concentrate. A systemic insecticide with a unique mechanism of action even to insensitive pests on other pesticides. It is highly effective against a wide range of pests from the order Lepidoptera coleoptera on crops of cotton, potatoes and tomatoes.

The parameters of acute toxicity of the Insecticide during intragastric exposure were determined on white rats. The effect of the drug on the skin and mucous membranes of the eyes has also been studied in white rats. The cumulative ability of the drug was studied by the method of "subchronic" toxicity according to Lim in conditions of repeated administration to white rats. The chronic toxicity of the insecticide has also been studied by repeatedly injecting it into the stomach.

Indicators of the effective dose received. (PAD)
LD50–in rats 4750 mg/kg
LD16 – in rats 3000 mg/kg
LD84– in rats 5900 mg/kg
EHF No sensitivity by type
Skin irritation is not present
Planish hususiyati no
Lim cbr 5.0 mg/kg
MND 0.5 mg/kg
DID 0.52 mg/person/day
Oncogene,teratogen,embryotoxic,mutagen No effect

Results and their discussion

The parameters of acute toxicity of the Insecticide during intragastric exposure were determined by administration of the drug in doses from

1000 to 6000 mg / kg. After statistical processing of the results, the average lethal dose of the drug for white rats was 4750 mg / kg. Based on the above, it was judged that the drug belongs to hazard Class IV according to the acute toxicity parameter (SanPiN No. 0321-15)

The drug was applied in its native form to the shaved areas of the skin in the shaving area. The results of the studies found that the drug caused mild irritation of the skin.

In the study of the irritating effect on the mucous membranes of the eyes, the drug was introduced once into the conjunctival sac of the eyes of rats in the amount of 1-2 drops. 10 minutes after application to the eye of the experimental animal, irritation of the mucous membrane of the eye was noted, which was manifested by frequent blinking, anxiety, lacrimation, redness of the conjunctiva. 4 hours after application of the drug, corneal inflammation and swelling were noted, which indicates an irritating effect on the mucous membranes of the eyes.

The cumulative ability of the drug was studied under conditions of repeated administration to white rats. Cumulative properties were judged by the criterion of death and the appearance of animals. It was found that the drug does not have a material accumulation because no death of animals was observed throughout the experiment. However, according to the manifestation of some signs of intoxication, it can be concluded that the drug has cumulative properties of a functional nature.

Based on the results of studying the chronic toxicity of the drug, using mathematical modeling methods, the threshold and maximum inactive doses of the drug were established at the level of 5.0 and 0.5 mg / kg of body weight, respectively.

Based on the data obtained, the permissible daily dose for humans at the level of 0.6 mg/kg / day has been calculated and scientifically substantiated.

Oncogenicity: in an 18-month experiment on mice, it was found that the drug was not oncogenic for males and females, NOAEL was 7000 ppm (equivalent to 935 mg/kg w/day for males and 1155 mg/kg w/day for females.

Teratogenicity and embryotoxicity: in experiments on rats, the effect of the substance on maternal clinical observations, body weight, body weight gain, and food intake at any dose was not detected. There was no effect on external, visceral and skeletal malformations and variations at any dose. The NOAEL for mother and fetus is set at 1000 mg/kg w/day.

Reproductive toxicity and gonodotoxicity: in experiments on 2 generations of rats, NOAEL was established for systemic toxicity to parents, reproductive toxicity and effects on the growth and development of offspring at the level of 20,000 ppm.

Mutagenicity: The insecticide was evaluated in bacterial in vitro and in vivo experiments to study genetic toxicity, a negative result was achieved in all experiments, indicating a lack of mutagenic effects.

Conclusions.

Based on the complex of studies and expertise of the manufacturer's documentation, it was established that the Insecticide is a systemic insecticide with a unique mechanism of action against many types of pests of agricultural crops.

According to the parameters of acute toxicity, the drug belongs to the substance of hazard class IV (low-toxic drug, SanPiN 0321-15).

The insecticide has a slightly irritating effect on the skin and mucous membranes of the eyes. The drug has functional accumulation and does not have long-term effects in threshold doses on a general toxic basis.

Thus, when released into the environment, insecticide Insecticide does not have a negative effect on warm-blooded organisms when using its established standard and observing the recommended hygienic regulations.

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