DESCRIPTION FOR THE GENERAL PUBLIC (IN ENGLISH)

The World Health Organization estimates that about 20% of diseases are caused by environmental factors, including chemical pollution. The ubiquity of these substances means that the general population is chronically exposed to relatively low doses of chemical substances that do not naturally occur in their organisms. One of the groups that is particularly noteworthy due to their toxicity are biocides. Most of these compounds are potent neurotoxins in high doses, but they can cause diverse toxic effects as a result of chronic exposure to low doses. Epidemiological research document that quite significant source of human exposure to pesticides is their use in the households for controlling insects. One of the least known sources of exposure is the use of insecticides to fight against parasites in domestic animals: dogs and cats. Worldwide, preparations containing biocides in the form of sprays, powders, solutions or collars are authorized on the market. Some of the most commonly used active substances in this type of preparations include fipronil. There is a number of studies documenting the negative impact of exposure to this substance in laboratory animals (experimental research) but only limited number of epidemiological studies due to the lack of reliable method for exposure assessment. The extent of exposure to any chemical can be measured by determining the concentration of this compound or its metabolite (a product of the chemical in the body) in biological fluids. Urine is the most commonly used for this purpose.

The first aim of this project is to find fipronil metabolites that will be present in the urine or saliva of people exposed to them and will reliably reflect the magnitude of the exposure. At a later stage of the project, an attempt will be made to use saliva as a biological material, alternative to urine, in which the concentration of specific metabolites of fipronil can be determined. Saliva due to a very simple way of collectiont would be an alternative material for use in epidemiological studies.

The main objective of the project is to determine the exposure and health risk to fipronil during the use of anti-parasitic preparations in domestic animals. In the studied population (a total of 15 families), a higher exposure can be expected in children than in adults (it was shown in our pilot study).

Impact of results. It should be emphasized here that such studies have not been carried out so far and constitute an element of scientific novelty. **The project will a) deliver the first human toxicokinetic data on fipronil b) select and validate fipronil biomarker,** and finally **c) assess the health risk for humans resulting from exposure to fipronil used in domestic animals**. The results obtained as part of this project may be used in the future to establish recommendations regarding the conditions of use of biocides containing test substance in the aspect of user health safety.