DESCRIPTION FOR THE GENERAL PUBLIC (IN ENGLISH)

Nowadays, the growing requirements for agricultural products of high quality, involves the use of various kinds of agrochemicals, which have a harmful effect on human beings and the surrounding environment. is *N*-phosphonomethylglycine is the distinct example of the active substance commonly used in plant protection products. This compound, known by the international name "glyphosate" is the active ingredient of about 60% of the herbicides used in the world, destroying both monocots and dicots. However, excessive use of glyphosate and recent reports about its harmful effects on the environment and living organisms and its uncertain place on the list of commercially available plant protection products have resulted in creation of this project.

Therefore, the main objective of the study is the synthesis of *C*-substituted derivatives of *N*-phosphonomethylglycine, preliminary assessment of their ecotoxic impact and verification of the herbicidal activity of the resulting compounds. Taking into account disadvantages associated with the use of glyphosate, it is assumed that the newly synthesized aryl- and hetarlsubstituted derivatives of glyphosate from different groups by reaction of aza-Pudovik the necessary modifications will be characterized by a lower toxicity with respect to the environment and living organisms.

Ecotoxicological tests of new derivatives of aminophosphonic will include phytotoxicity assessment, based on the OECD Guide 208 (Guideline for the Testing of Chemicals. Terrestrial Plant Test: 208: Seedling Emergence and Seedling Growth Test) using two plant species: monocot oats (*Avena sativa L.)* and dicot ordinary radish (*Raphanus sativus L.*). At this stage, the newly synthesized substances will be given to the soil. It will also be made assessment of phytotoxic effects of tested aminophosphonates on common weeds such as Chenopodium album (*Chenopodium album L*.), sorrel (*Rumex acetosa L.)* and Galinsoga parviflora *(Galinsoga parviflora Cav.)* - tested samples will be given in the form of a foliar spray. Ecotoxicity tests will also include the use of commonly used bioindicative methods such as Microtox analyzer model 500, the Ostracodtoxkit test for testing the toxicity of sediments, soil and water and Daphtoxkit F magna test for testing pure substances, sewage, surface and deep water.

The use of microbiotests to evaluate the toxicity of these compounds should also allow comparisons of intra- and interlaboratory standardization and reproducibility of research. It is important that the ecotoxicological aspect of these derivative of glyphosate, will be taking into account the various stages of the food chain, where producers are the plants used during testing phytotoxicity, consumers are crustaceans *Heterocypris incroguens* and *Daphnia magna* in the proposed Ostracodtoxkit and Daphtoxkit microbiotest, decomposer marine bacteria in the system Microtox. After this step, the investigated compounds will be selected in terms of much lower ecotoxicity than glyphosate, the high selectivity for monocots or dicots, which is of importance to the modern agriculture in the point of view of the development of agricultural production and food economy. The plant protection view will be carefully balanced with the necessity to protect the environment, even if less phytotoxic active substance is used. This is the basis for the production of a new plant protection product in the future.