

Zinc and lead smelter wastelands, located in postindustrial zones of Upper Silesia, pose a major environmental risks. They are surrounded by arable lands, hobby gardens and settlements constituting secondary source of potentially toxic elements and their dispersion within the environment where people live and still produce food. Natural processes of wasteland colonization by plants are slow, however certain ecotypes have developed or possess tolerance or adaptation mechanisms. Previous studies inform about list of plant species common on the wastelands. So far there is lack of knowledge on role of microorganisms in spontaneous colonization processes. It can be assumed such role is substantial , since microorganisms appear as first organisms on the barren wastelands and create conditions for plants. Coverage of wasteland by plants is crucial for reducing environmental risk, limiting erosion of waste and transport of pollutants. Understanding all processes related to vegetation of the wastelands is therefore very important. It must be assessed what is the role and potential of microorganism in optimizing wasteland phytostabilisation. The field studies will be performed on wastelands in Upper Silesia, that are very valuable sites because of long-term character of spontaneous vegetation and almost 20-year history of phytostabilisation experiments located in Piekary Slaskie. Field and greenhouse studies are aimed at assessing mechanisms of microbiological support of plant growth on wastelands under spontaneous processes and fully planned phytoremediation actions.