

## **DESCRIPTION FOR THE GENERAL PUBLIC**

Chlorinated aromatic compounds are widely used as solvents and reagents in production of pesticides, varnishes, dyes or disinfectants. They can be also formed in thermal processes, where the aromatic and chlorine compounds are presented. Hence, they are one of the ubiquitous environmental pollutants. They are toxic and can accumulate in soil, sediments and living organisms. Moreover, they degrade relatively slowly and their concentration in the environment is still increasing. Then, it is important to better get to know processes of their biodegradation and their influence on environmental microorganisms.

Toxic compounds cause the changes in cell membrane structure and in expression of the enzymes involved in biodegradation of contaminants. These mechanisms are directly connected with effectivity of degradation efficiency of hydrophobic pollutants. In case of hydrophobic pollutants, like chlorinated derivatives of benzene, the effectiveness of its biological removal from environment is limited by their low bioavailability to a bacterial cells. The microorganisms can increase their adhesion to pollutants by changing their surface properties, production of biosurfactants, etc.

All these cells adaptation processes are in the center of attention of the project. Cell surface properties, extracellular substances production, enzyme activity and other cells parameters after long-term contact of bacterial cells with chlorinated aromatics compounds will be studied. The results will be compared between soil bacterial strains grown on standard medium and medium with chlorinated aromatic compounds as only carbon and energy source.

The obtained results will allow to understand better the adaptation mechanisms occurring during contact of soil bacterial cells with chloroaromatic compounds. It will expand the knowledge about interactions between contaminants and microorganisms present in ecosystem and soil bioremediation processes taking place in environment.