

Abstract

This bachelor thesis is focused on microplastics as small fragments of plastics which represent a burden for the environment and can be probably dangerous for living organisms including mankind. Serious health consequences caused by a long term exposition of the microplastics to organisms have been demonstrated in the recent years. It has been proven that the level of harm increases with ability to adsorb toxic substances on their surface. Primarily, it is necessary to eliminate entrance of these microparticles into the ecosystem and therefore this thesis describes routes of microplastic inputs into the environment. The microplastics occur in all levels of the environment, that represent various environmental matrices with different conditions, that must be considered for successful separation and subsequent analysis of samples. This thesis provides summarization of currently used analytical methods including their advantages and comparisons. The most frequently used techniques of separation are based on the principle of density flotation. Further identification of fragments is performed using microscopy, spectroscopy or gas chromatography. This work describes principles of the individual techniques of detection including also particular cases of analyses. The subject of this thesis is also the issue of much smaller plastic particles, so called nanoplastics, which infiltrates the environment in a similar way as the microplastics. However, research results suggest that their effects are more harmful, particularly due to minor proportions and the increased ability to penetrate bodies of organisms.

Key words: microplastics, identification, ecotoxicity