

CHANGES OF PAHs CONCENTRATION IN SEWAGE SLUDGE MODIFIED BY ZnCl₂

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Summary

The aim of the investigation was to determine the impact of the presence of Zn in concentrations of sludges applied in agriculture (exceeding concentrations determined in sludges drained from the treatment plant) on the disappearance of PAHs in sewage sludge stored under aerobic conditions. The studies were carried out using dewatered and biochemically stabilized sludges. The changes in the concentration of PAHs were studied in four series: in sludge samples taken after filter press, in sludge with the addition of a standard PAH mixture, in sludge with Zn added, in sludge with the addition of both the standard PAH mixture and Zn. The standard PAH mixture used in the studies contained 16 compounds in benzene – dichloromethane (1:1) solution with a concentration of 32000 µg/cm³ of 16 PAHs. Zn was added to the sludge samples as a solution of chloride zinc, the final amount was below 2500 mg Zn/kg d.m. (taking into consideration the initial concentrations). The sludge samples were incubated for 90 days at 20°C with limitless access of oxygen. The determination of PAHs in sludge samples was done in duplicates at the beginning of the experiment (the initial concentration) and then six times at 15-day intervals (after 15, 30, 45, 60, 75 and 90 days). A gas chromatography-mass spectrometry (GC-MS) was used to qualify and quantify the PAHs. 16 PAHs listed by EPA were identified.