

Sewage Sludge Land Disposal Effects on Groundwater – Marek Agopsowicz, Andrzej Białowiec, Piotr Pijarczyk

Summary

Three year, lysimetric research on the influence of land application of sewage sludge on the ground water quality was done. Three plant species were tested as possible ways of sewage sludge application: grass – for restoration of contaminated soils; corn – for feeding staff production, and willow – for energy production from biomass. As control, plantless lysimeters were used. The following sewage sludge doses were applied: 0, 10, 50, 50, 110, 225, and 450 Mg d.m./ha. Significant ($p < 0.05$), linear correlations between the increase in the sewage sludge dose and EC, COD_{Cr} and NO₃ content in the ground waters indicate a potential risk of contaminating ground waters during the land application of sewage sludge, particularly with high doses exceeding 50 Mg d.m./ha. These correlations and risks of ground water contamination were observed during all three years of experiment for indicators such as EC and COD_{Cr}. In the case of nitrates the risk of their migration was detected only in the first year after sewage sludge application. Additionally, the very low level of heavy metals and pathogens in ground water was determined. The applied plants did not reduce the negative effect of the increasing doses of the sewage sludge on the ground waters quality.