

Critical loads of heavy metals for European forest soils.

G.J. Reinds^a, J.Bril^b, W.de Vries^a, J.E. Groenenberg^a, A Breeuwsma^a.

^a DLO Winand Staring Centre for Integrated Land, Soil and Water Research.
Postbox 125, 6700 AC Wageningen, The Netherlands

^b DLO Research Institute for Agrobiological and Soil Fertility
Postbox 129, 9750 AC Haren (Gn.), The Netherlands

Abstract

Recently, concern has arisen about the impact of the dispersion of heavy metals and persistent organic pollutants in Europe. Therefore, a study (ESQUAD) was initiated to assess critical loads and steady state concentrations of cadmium, copper and lead and lindane and benzo(a)pyrene for European forest soils and the North sea. This study was carried out by five Dutch research institutes. This poster will present critical loads and steady state concentrations, in both adsorbed and dissolved phase, of Cd, Cu and Pb for European forest soils. Heavy metal adsorption in the soil was computed using transfer functions between adsorption constants and soil properties such as CEC and pH. The (steady state) pH was calculated using models and databases developed for acidification research.

Excess loads were computed using results from the emission inventory and subsequent deposition calculations for Cd, Cu and Pb. Results show that the computed critical loads and associated excess loads strongly depend on the threshold values chosen and on the soil phase (adsorbed/dissolved) considered. When the most stringent threshold values are used, excess loads are found all over Europe, whereas the less stringent threshold values lead to critical loads that are hardly exceeded. Further research is needed to improve both input data and the modelling of heavy metal adsorption.