

## Publication

### Sulphur behaviour in forest soils near the largest SO<sub>2</sub> emitter in northern Europe

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The impact of 60 a of SO<sub>2</sub> emissions from a Ni-Cu plant in the Kola Peninsula (Russia) on soil S contents was assessed in podzols under pine forests. Sulphate desorption and the possible delay of acidification reversal was investigated, because the plant will be reconstructed in 2006 with an expected emission reduction of 90%. Sites were sampled along a pollution gradient in the prevailing wind direction from 1 to 66 km. The investigated podzols stored S mostly in the organic form. The concentrations of total and organic S in soil organic horizons tended to be higher near the smelter but were only weakly correlated with S deposition. No relationship between distance to smelter and S contents was found for the mineral horizons. Sulphate content and desorption behavior were highly variable due to natural variations of texture and extractable Al and Fe contents of the soils. The lack of a clear strong trend with distance from the smelter except in the organic layer indicated that long range transport and diffuse input of SO<sub>4</sub> played a major role rather than point source impact. It was concluded that biological turnover is most likely the regulating process in these soils and thus low to medium release of SO<sub>4</sub> is expected under decreasing deposition scenarios because organic S was the dominant fraction of total S in all soils. (c) 2007 Elsevier Ltd. All rights reserved.

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