

Proposal of the Environmental Project

**Soil – Water – Air Pollution by Heavy Metals in the Czech
Republic**

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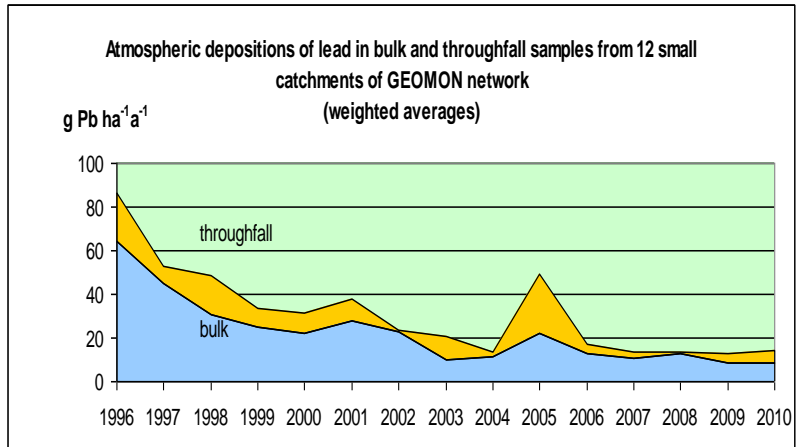
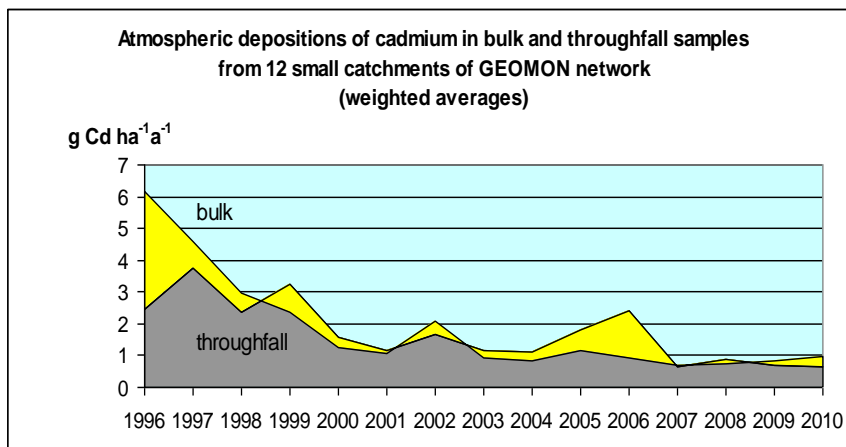
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Soil – Water – Air Pollution by Heavy Metals in the Czech Republic

Why?

The atmospheric depositions of heavy metals and fertilizing the agricultural land have decreased in CR in the last 20 years but significant harmful effects can persist. The cause of lasting human toxicological and ecotoxicological risks is the ability of the trace elements **to accumulate in the soil in a large quantity** through adsorption in the solid phase. The amount of adsorbed trace metals depends on free metal concentrations (activities) in the soil solution and soil properties. In addition, metals accumulate in the soil and therefore, vegetation and other organisms (including humans) could potentially be exposed to higher metal concentrations in the future via uptake from the soil or via resuspension of wind-blown dust.

Skořepová et al., 2013 – Examples from the CR



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Proposed project

It should be focused on soils in the forested and agricultural areas.

Total contents of heavy metals (such as As, Be, Cd, Co, Cr, Cu, Hg, Mo, Ni, Pb, V, Zn), soil characteristics and possible sources of heavy metals should be investigated in the areas selected according to both geochemical properties of the background and anthropogenic activities.

The old data measured by the Czech Geological Survey in the last decades of the 20th century should be used for the interpretation of results. They comprise chemical and mineralogical data on background rocks, stream sediments and soils. Surface running water and lake water chemistry (7 lakes in the Sumava Mts. have been investigated since 1984) are very important data for the evaluation of time development of heavy metals.

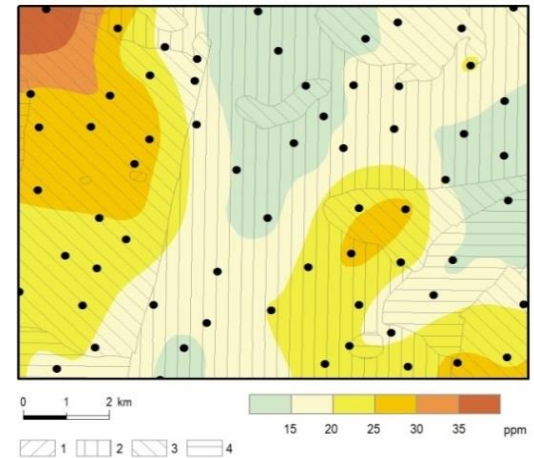
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Project objectives:

- Maps of Heavy Metal Distributions
- Distinction of Sources of Heavy Metals in the Soils (nature and anthropogenic)
- Trends and Development of Methodologies

Main activities:

- Sample collection
- Chemical analyses, textural analyses of soils
- Application of mobility model



*Example: Distribution map of As in soil,
Map sheet 1:25 000, 12-133, CR*

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Main Outputs:

- Distribution maps
- Improvement of modelling - a model for mobility of some heavy metals
- Use of all data on heavy metals from the area and their summary
- Maps of critical loads of heavy metals and their exceeding

Estimated Total Budget: 300 000 Euros/3 years

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