



SSS11.2 Analytical methods as tools for new experimental approaches in soil science

Correlations between magnetic enhancement and heavy metal pollution in the urban soils of an industrial area in Shanghai

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sampling

- **Physical-chemical properties**
- magnetic susceptibility
- main heavy metal content



Conclusion

- The contents of Mn, Cr and Ni in the topsoils were more than 2 times the background values in the soils of Shanghai, and Pb and Zn were more than 4 times the background values.
- Moreover, magnetic susceptibility of the topsoils was positively significantly correlated with the content of Zn, Mn and Ni (r=0.884, 0.819, 0.564, p<0.01; n=53).









1.Idea

2.Workflow

3.Conclusion

4. Outlook







>> Idea



Studied profiles

2019



1. Industrial smelting

2. Fuel burning

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3. Vehicle emissions



Industrial dust and the burning of fossil fuels will release a lot of substances rich in magnetic particles. These magnetic particles will enter the urban soil in various ways. These pollutants not only cause heavy metal pollution in the urban soil, but also make the soil magnetically enhanced.

Workflow



Collect soil samples















Conclusion

- The contents of Mn, Cr and Ni in the topsoils were more than 2 times the background values in the soils of Shanghai, and Pb and Zn were more than 4 times the background values.
- Moreover, magnetic susceptibility of the topsoils was positively significantly correlated with the content of Zn, Mn and Ni (r=0.884, 0.819, 0.564, p<0.01; n=53).</p>
- Therefore, the magnetic techniques are a promising means to study and evaluate the pollution of urban soils.

>> Outlook



Sampling site of Shanghai Bao shan Iron and Steel Company

- **①** The green sampling point in the picture is the content shown in the abstract.
- ② Future work will mainly focus on the study of the remaining sampling points in the figure, comparing the pollution of heavy metals in different soil functional areas and the relationship between heavy metal pollution and susceptibility.