

Assessment of soil contamination with Pb and Cu in the area affected by Kardzhali lead-zinc smelter

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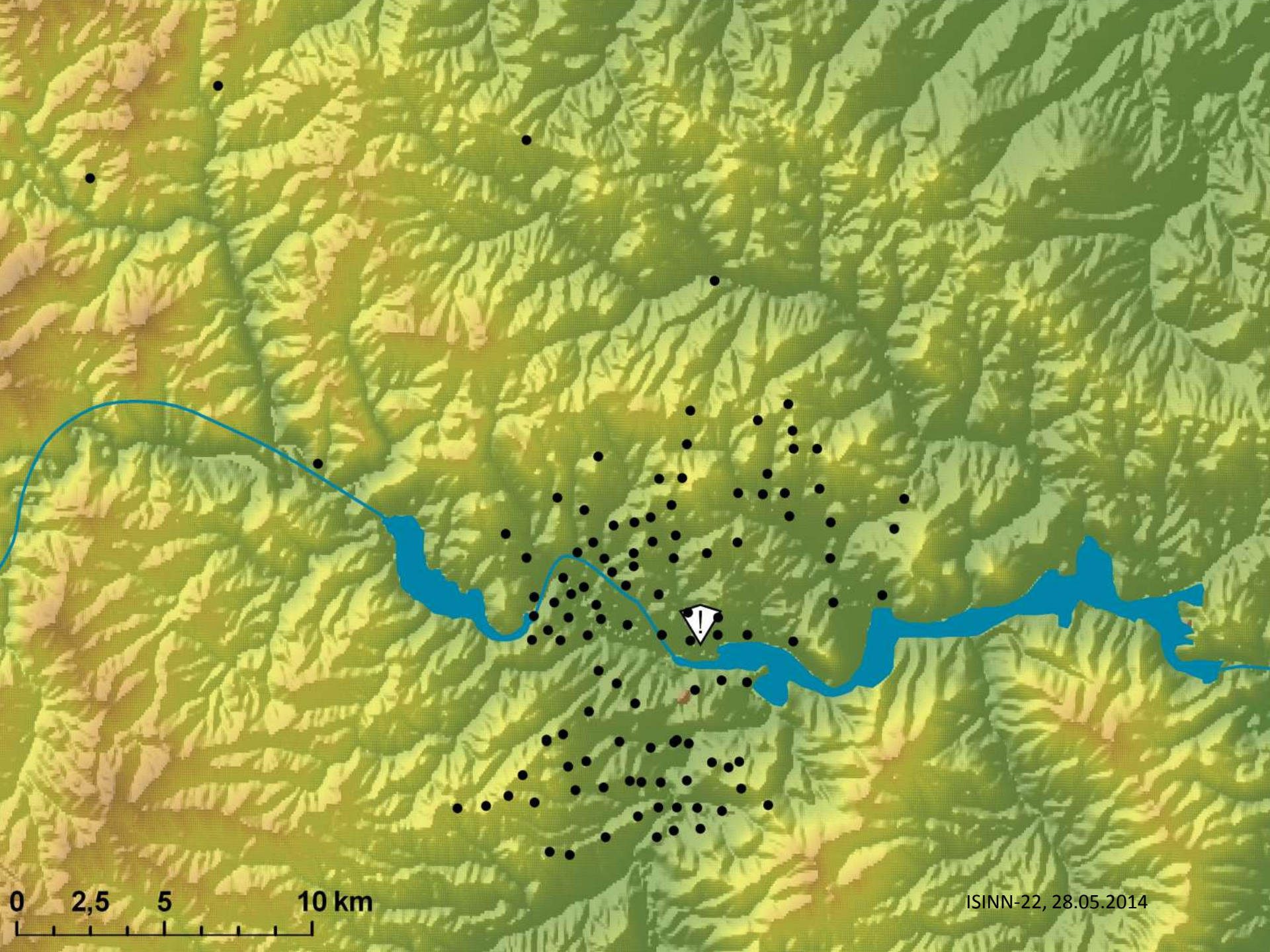
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0 2,5 5 10 km

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Flame AAS, 'Varian SpektrAA 220'

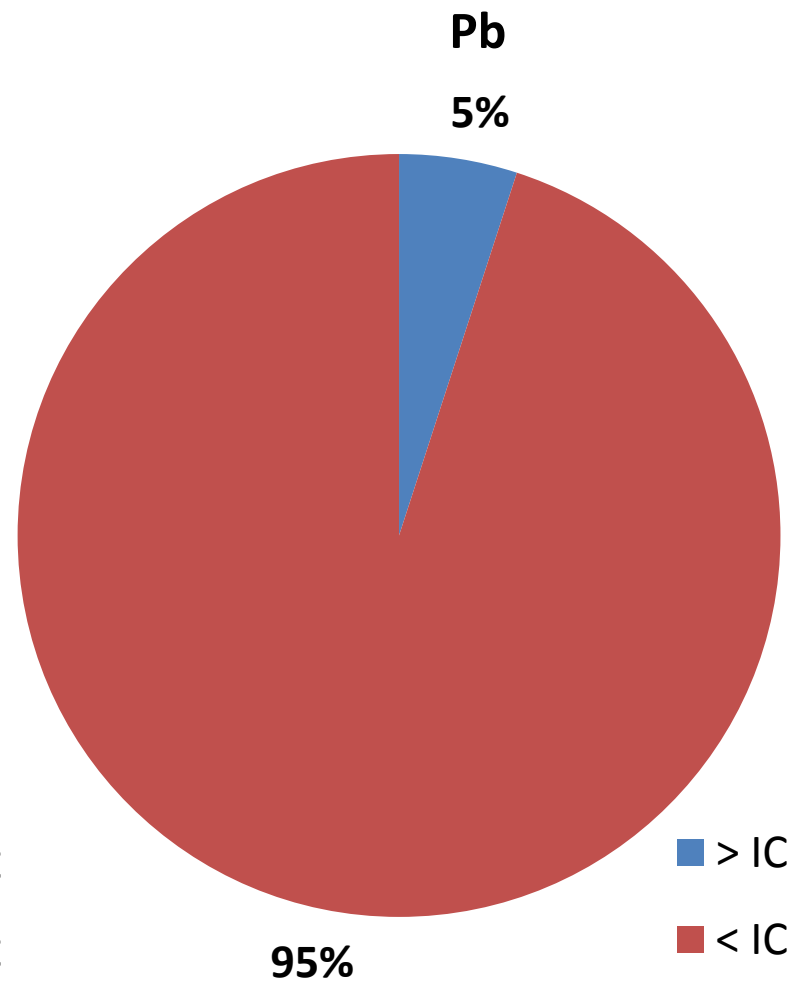
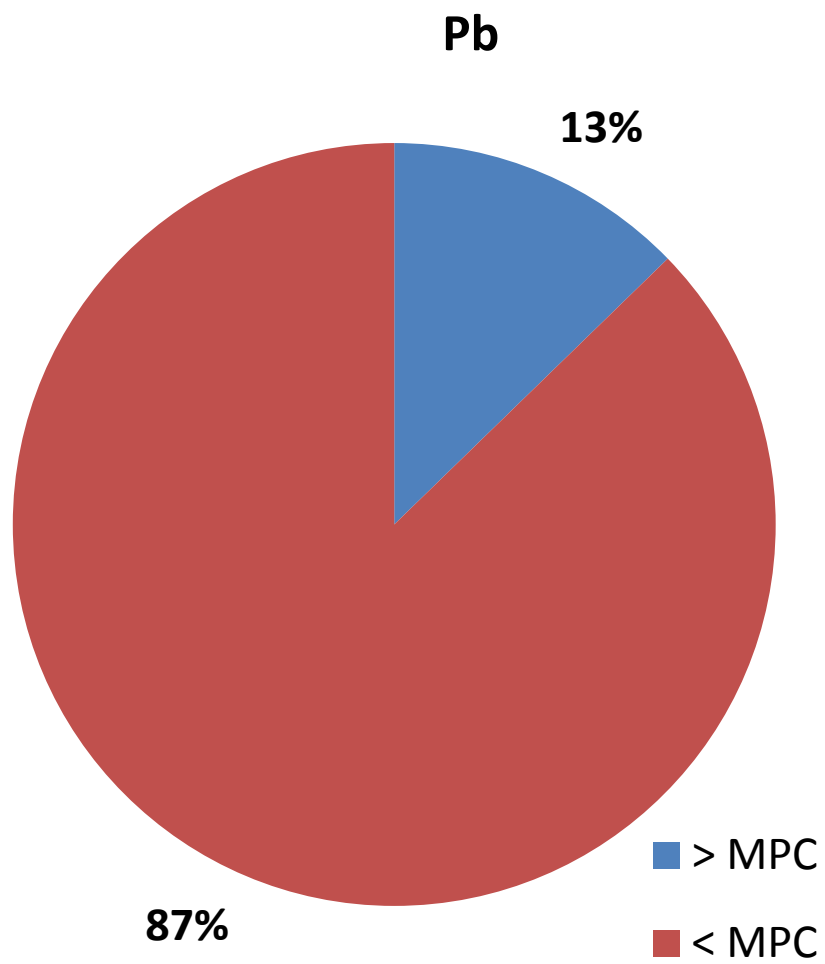


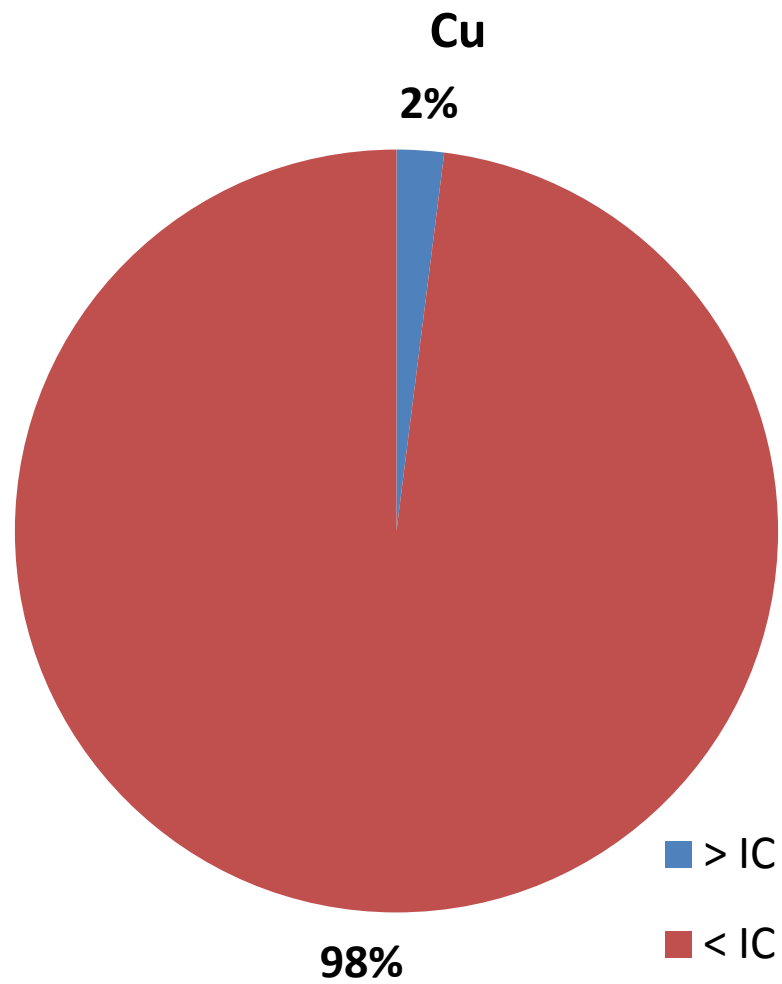
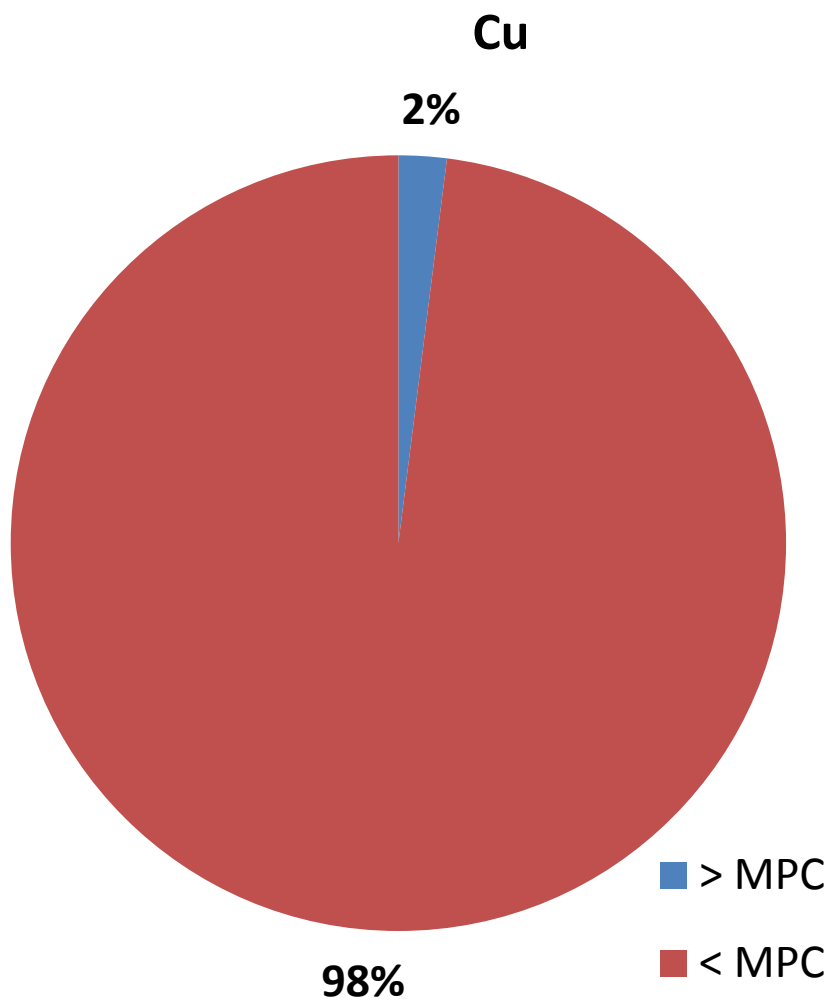
aqua regia

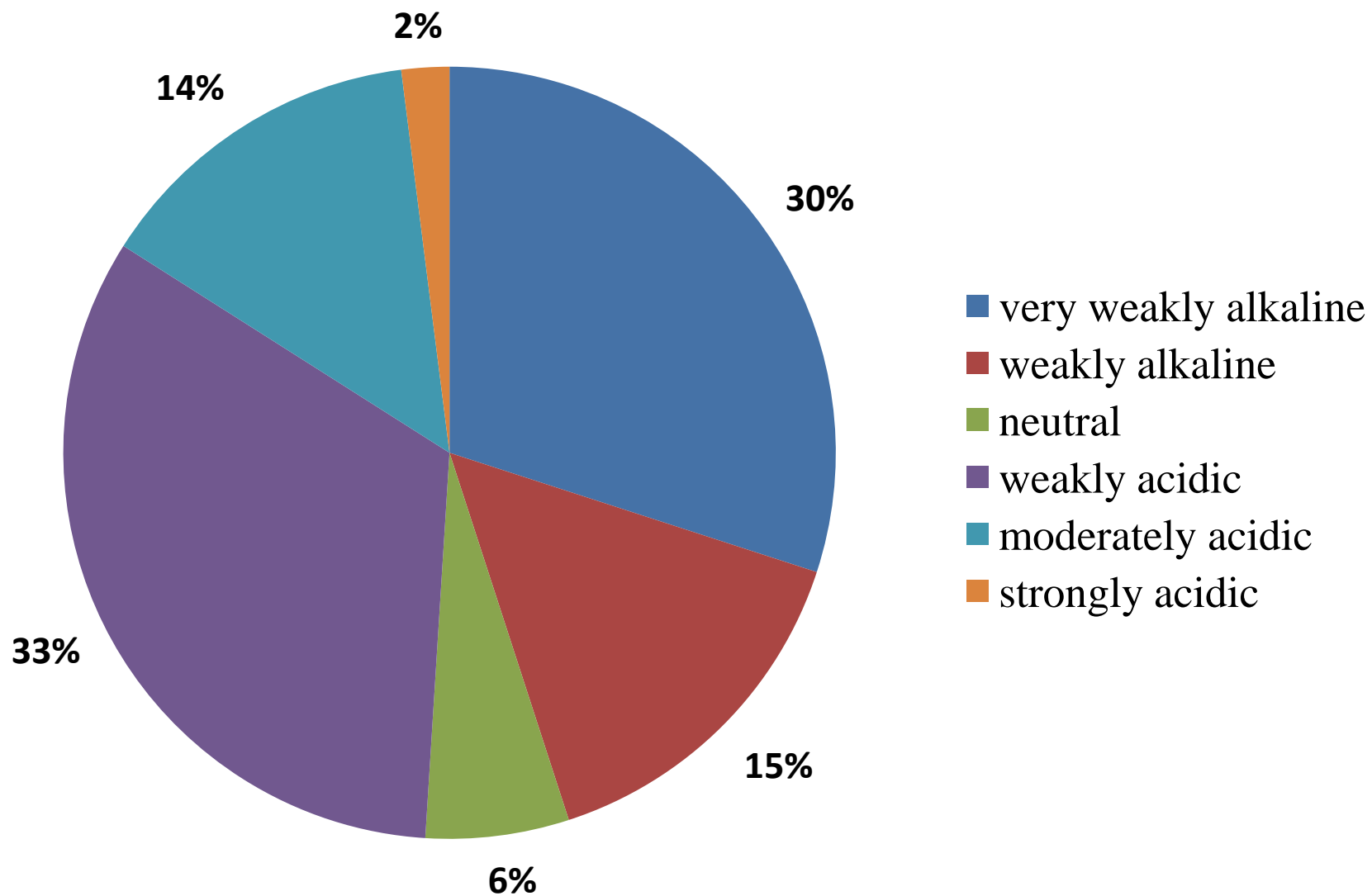
Pb: 217.0 nm

Cu: 324.8 nm

Statistical data	pH	Pb	Cu
Number of samples	113	113	113
Average, mg/kg	6.86	504.19	77.04
Median, mg/kg	7.04	66.66	20.36
Minimum value, mg/kg	4.60	16.67	5.96
Maximum value, mg/kg	8.05	40412.63	4296.24







Statistical data	Pb , mg/kg	Cu, mg/kg
Number of soil samples	113	113
Number of moss samples	77	77
Median, mg/kg	66.66	20.36
moss data	124.85	13.69
Minimum value, mg/kg	16.67	5.96
moss data	4.21	7
Maximum value, mg/kg	40412.63	4296.24
moss data	2168	126

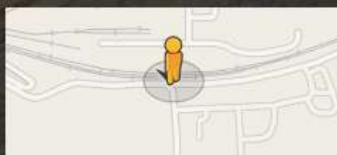
← **Unnamed Rd**

Kardzhali, Bulgaria – approximate address

Street View - Mar 2012



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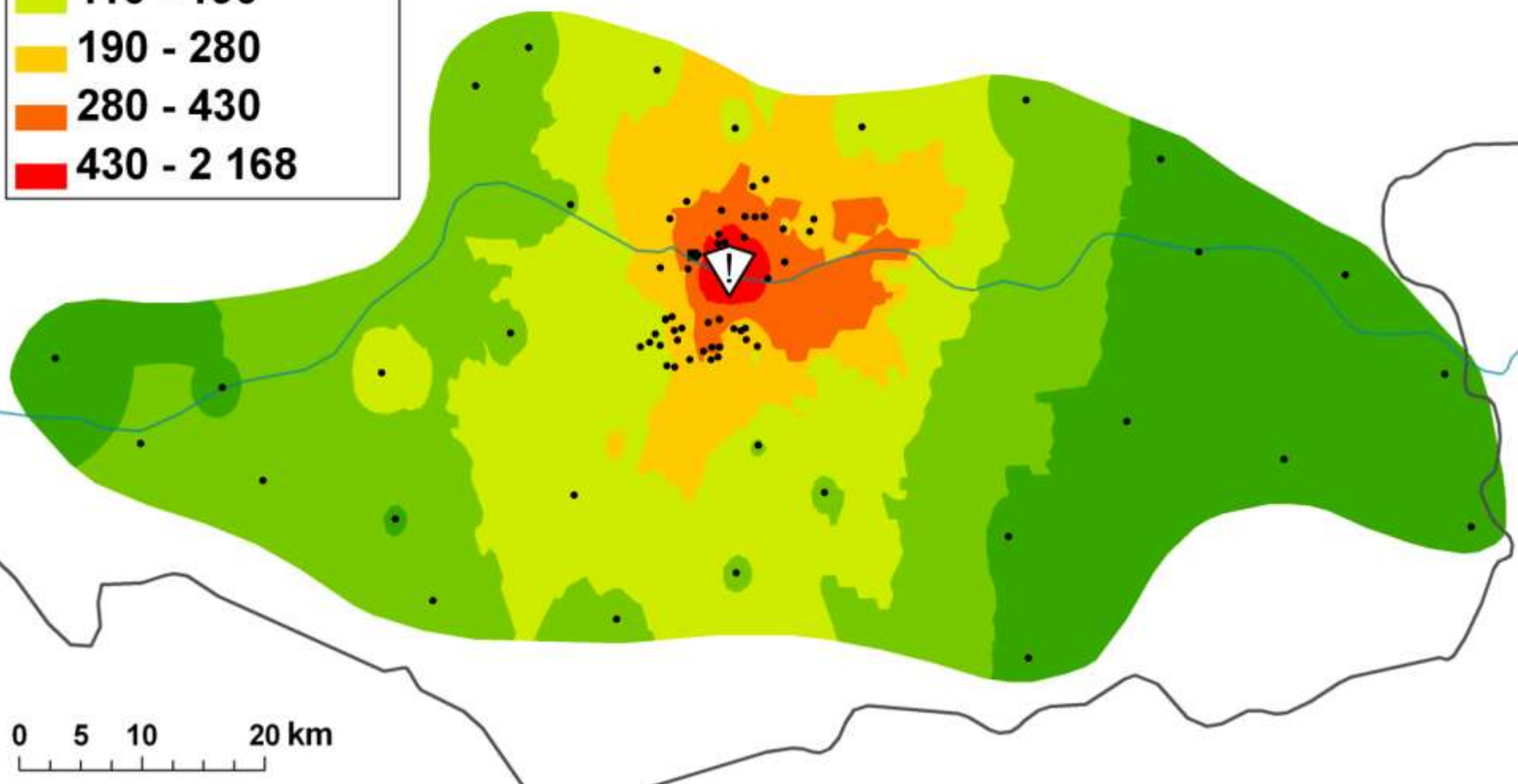
Image capture: Mar 2012 © 2014 Google [Terms](#) [Privacy](#) [Report a problem](#)

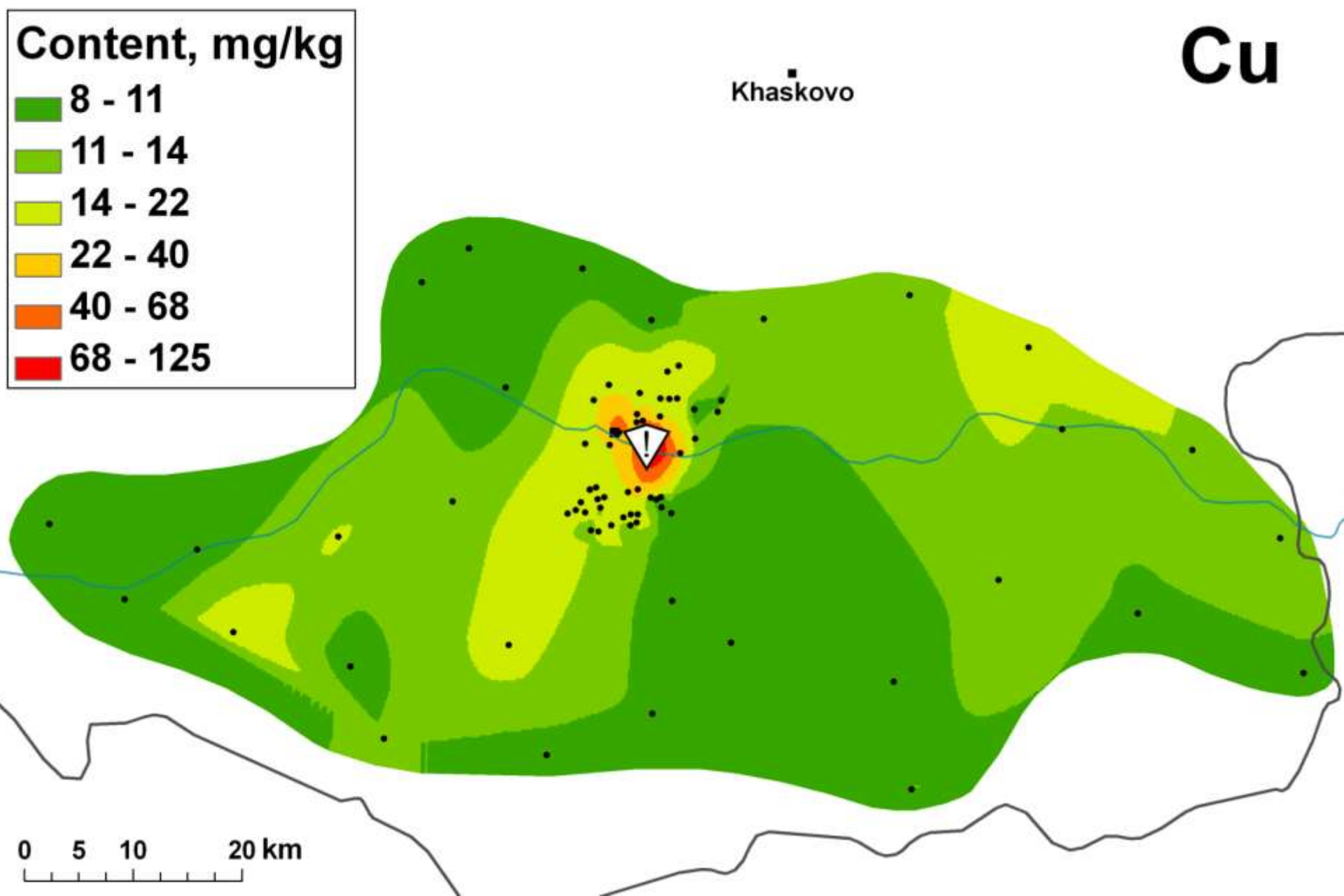
Content, mg/kg



Khaskovo

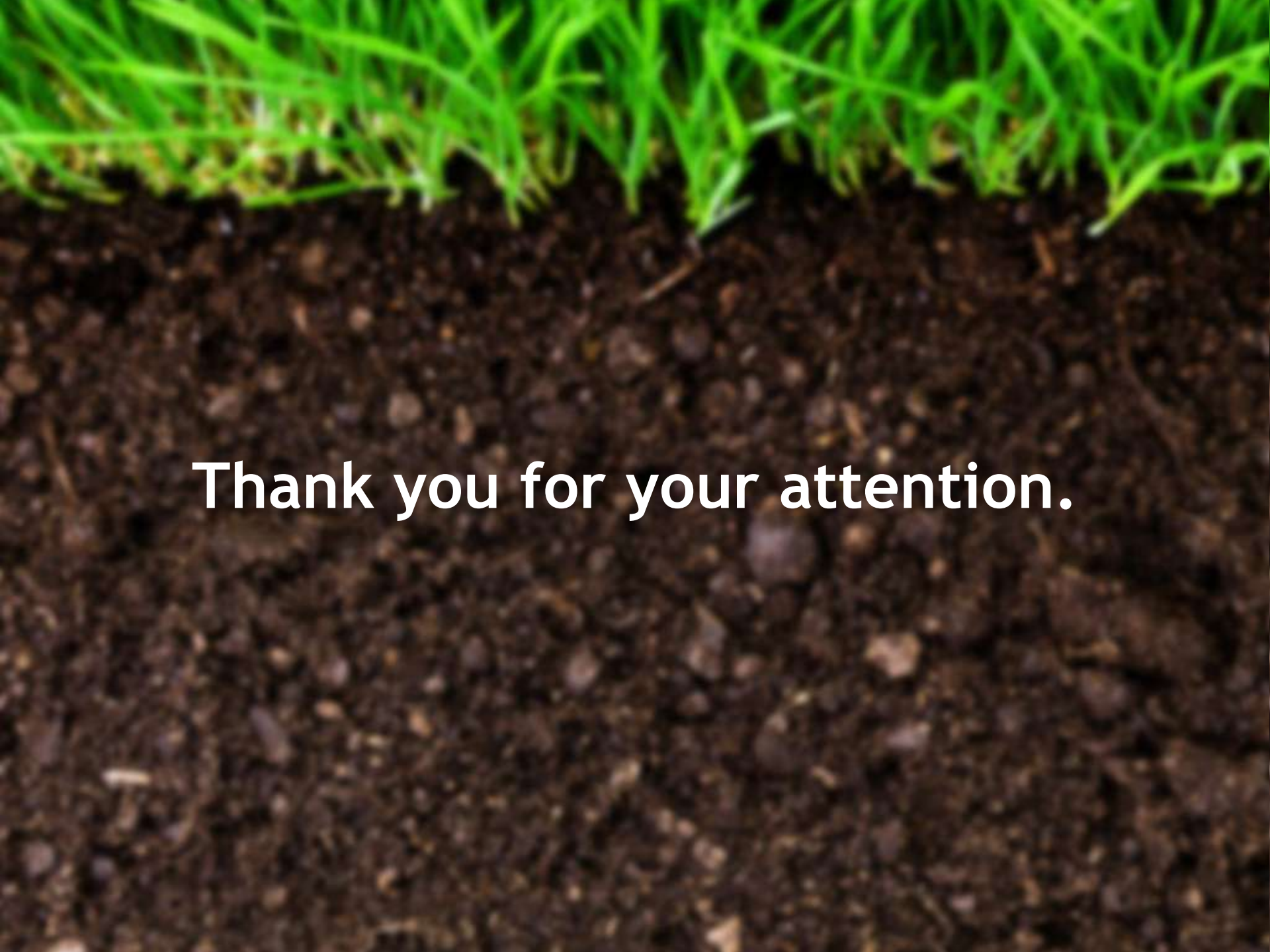
Pb





Conclusions

- In the majority of the soil samples the concentrations of Pb and Cu meet the standards for IC and MPC. Therefore, in most locations, adoption of measures to better and restore the soil condition is unnecessary.
- The locations in which the concentrations surpass MPC and IC can be regarded as contaminated. These are found primarily in the close vicinity of the LZC. Lead contamination is particularly pronounced.
- Appropriate land use and implementation of ameliorative measures for the recovery of land is needed for the polluted areas in order to restrict the entry of heavy metals in agricultural production.



Thank you for your attention.