

## **Amphibians in metal-contaminated habitats**

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### Abstract:

Mining for heavy metals usually has a strong impact on the environment, including the formation of spoil heaps, mine tailings and mine drainage, all of these strongly contaminated. Heavy metals are generally regarded as toxic for most organisms including amphibians though the effects of heavy metals may be extremely complex and sometimes even positive. This study presents a survey on observations of amphibians at habitats severely contaminated by mining for heavy metals in Central and Eastern Europe. Rocky spoil heaps and sandy mine tailings were generally found to be devoid of amphibians. At moist habitats, especially creeks, puddles and ponds fed by drainage water, however, six species of amphibians were observed, i. e., *Bombina variegata*, *Rana ridibunda*, *R. temporaria*, *Bufo viridis*, *Salamandra salamandra* and *S. atra*. All six species were found in habitats superficially similar to their typically preferred habitats, e. g. *Bombina variegata* in small puddles, *Salamandra salamandra* larvae in a swiftly running creek etc. Moderately increased concentrations of copper, arsenic, antimony and other elements and an acidic pH of soil and water did not keep off amphibians. Highly contaminated or extremely acidic water bodies are usually devoid of amphibians though they may be present in the surrounding; thus, amphibians may be capable of recognising and avoiding extreme degrees of contamination. Since ingestion of the pollutants is highly probable, some amphibians seem to exhibit a limited tolerance against heavy metals.