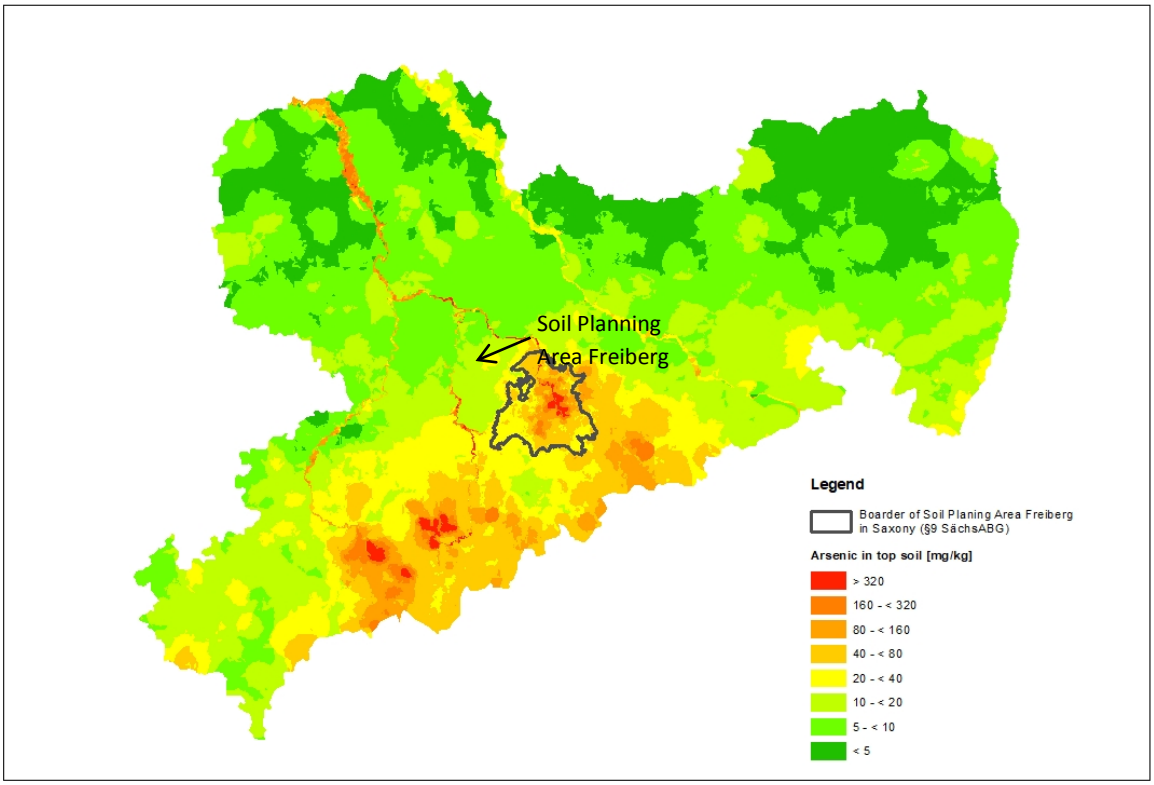
Saxony, Germany

Centre of mining industry

Soil planning area Freiberg

The German target site is located in the federal state Saxony. The area of Freiberg is characterized by a widespread contamination of arsenic, due to the specific geochemical situation in the Ore Mountains and the aftermath of mining and ore processing activities for more than eight centuries.

Lots of investigations were carried out in order to obtain a profound data base for risk assessment. As a result, there is information on soil composition and concentration of pollutants in soil, water and plants. Based on that information, measures and recommendations were derived and thus, farmers and land owners can optimize agricultural and gardening procedures to decrease the hazard of arsenic in soil. Furthermore there are several permanent soil monitoring sites giving information for the fate of arsenic under changing seasonal conditions. One of those sites (Hilbersdorf) will be used for taking samples within the framework of the AgriAs project. In addition to investigative actions, measures for an efficient management of contaminated sites were taken. One of them is the Soil Planning Area Freiberg, which was established to simplify the application of regulations by law for different sites in an area of about 400 km².



Concentration of Arsenic in top soil for the federal state Saxony, Germany. The black framed part represents the Soil Planning Area Freiberg. Source: Geochemical Survey of Saxony, scale 1 : 400000, LfULG (2010).

Permanent soil monitoring site Hilbersdorf

The permanent soil monitoring site Hilbersdorf, which is used as arable land, was installed 1995. The altitude is at 425 m. The total annual precipitation is 628 mm, the annual temperature 8 °C.

It is dominated by characteristic soils of mountain and hill countries with a high percentage of acidic to intermediate igneous and metamorphic rocks. Eroded Planosol-Cambisol developed from shallow sandy flux loam with gravel (from loess loam and gneiss) above a gravel containing flux loam (from gneiss and loess loam) above flux gravel-loam-sand from gneiss.

On site, weather and climatic data are recorded as well as soil characteristics such as temperature and soil moisture. Next to this, a suction cup allows the collection and examination of leachates. Vessels for collecting bulk and atmospheric deposition are installed, too. Agricultural management data were registered in detail along with analytical data of all yielded crops.

Permanent soil monitoring site Hilbersdorf (Source: H. Forberg, LfULG).