



# DEC

Environmental Contractor

## “Kisaska”

### 1. What is “kisaska”?

“Kisaska” is the residue formed during roasting (heating in air) of pyrite for the production of sulphur dioxide and sulphuric acid. Pyrite ( $\text{FeS}_2$ ) contains mostly smaller amounts of other sulphite minerals with presence of copper, zinc, lead, cadmium and arsenic. During the roasting process  $\text{FeS}_2$  is oxidised to  $\text{Fe}_2\text{O}_3$  (hematite) and the latter constitutes the main portion of the residue which we call “kisaska” in Sweden.

The present heavy metals are to some extent in soluble form but also as adsorbed cations in the oxide matrix. The remaining sulphites can also be maintained where the heavy metals are bound.

### 2. Where is it found?

Kisaska is a fine-grained material that can be described as a red-brown to reddish-purple sand-fine sand. It consists mainly of iron oxide,  $\text{Fe}_2\text{O}_3$ . The ashes are environmentally and health hazardous because they also contain high concentrations of heavy metals. Until the 1950's, kisaska was used as raw material for the production of iron, and exported to Germany. The economic value has been low. A significant dealing strategy has been dumping or reuse as a filler. The management of pyrites and kisaska ceased in most cases during the 1960's.

In Sweden today there are a large number of kisaska landfills spread over the country. In northern Sweden, kisaska was stored on land or in water at old production plants and in landfills. The Institute of Environmental Medicine decided in 1996 that the material is so hazardous that they would not let children and dogs residing in Essvik outside Sundsvall, an area with kisaska (Report, 1996).