Abstract: The Sudety Mountains are located close to industrial areas of Germany, Poland and the Czech Republic and are the most polluted Polish mountains. Among air pollutants such as SO$_2$, NO$_x$, fly ashes from local and transboundary power plants emission have a significant input. In determination of soil pollutants, magnetic susceptibility measurements find application. The use of magnetic measurements as a proxy for chemical methods is possible because air pollutants and magnetic particles are interrelated. The major sources of air pollution in the Sudety Mountains are fly ashes from burning process of fossil fuels. This paper presents content and distribution of heavy metals in soil profiles, depending on their natural or industrial origin and the results of magnetic susceptibility measurements.