

# Heavy metals in the atmosphere coming from a copper smelter in Chile

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The Chilean mine El Teniente is the world's largest underground copper mine. It operates a giant smelter at Caletones (34° 7' S, 70° 27' W) and we have found it is the major source of air contamination in the region. In August 1991 a special circumstance occurred due to a labor strike, with total cessation of activities. A time series analysis of airborne particles collected at a site about 13 km from the smelter was performed in a period including the strike. The PIXE method and other techniques were used to analyse fine (<2.5 µm) and coarse (2.5-15 µm) particles on Nuclepore filters. S, Cu, Zn and As were quite enriched in normal working periods relative to the strike period. Elemental characterization of soil samples by radioactive source analysis demonstrated that this group of elements did not come from airborne soil dust. Cluster analyses of the interelement correlation matrices, resulting from PIXE data, showed one group (Si, K, Ca, Fe) with main origin in soil and another group