



Hg contents in soils and olive-tree (*Olea Europea*, L.) leaves from an area affected by elemental mercury pollution (Jódar, SE Spain).

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Data from soil and olive tree leaves around a decommissioned chlor-alkali plant are presented in this communication. The factory was active in the period 1977-1991, producing during these years a heavily pollution of Guadalquivir River and hydrargyrisism in more than local 45 workers. It is located at 7 km South of Jódar, a locality with some 12,120 inhabitants. Mercury usage was general in this type of plants, but at present it is being replaced by other types of technologies, due to the risks of mercury usage in personal and environment.

A soil geochemistry survey was carried out in the area, along with the analysis of olive-tree leaves (in the plots with this culture) from the same area. 73 soil samples were taken at two different depths (0-15 cm and 15-30 cm), together with 41 olive tree samples. Mercury content of geologic and biologic samples was determined by means of Atomic Absorption Spectrometry with Zeeman Effect, using a Lumex RA-915+ device with the RP-91C pyrolysis attachment. Air surveys were carried out using a RA-915M Lumex portable analytical device.

Soil mercury contents were higher in topsoil than in the deeper soil samples, indicating that incorporation of mercury was due to dry and wet deposition of mercury vapors emitted from the plant. Average content in topsoil is 564.5 ng g⁻¹.

Hg contents in olive-tree leaves were in the range 46 – 453 ng g⁻¹, with an average of 160.6 ng g⁻¹. This level is slightly lower than tolerable level for agronomic crops established by Kabata-Pendias (2001) in 200 ng g⁻¹. We have also compared soil and leaf contents for each sampling site, finding a positive and significant correlation ($R=0.49$), indicating that Hg contents in the leaves are linked to Hg contents in the soils. BAC (Bioaccumulation Absorption Coefficient, calculated as ratio between soil and leaf concentration) is 0.28 (consistent with world references, BAC = 0.7), considered “medium” in comparison with other mineral elements.

Main conclusions of this research work are the following: i) The Jódar decommissioned chlor-alkali plant is still a mercury source 20 years after its cease of activities without any reclamation measures; ii) The activity of the plant has produced an important dissemination of mercury in the surrounding environment; and iii) The corresponding pollution levels, in particular in soils, may suppose a risk to the main crops of the area (olive trees present significant accumulation of Hg in leaf).