

**LICHENS AND TREES AS INDICATORS OF AIR POLLUTION:
A CASE STUDY FROM CENTRAL ITALY**

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During the last decades, heavy metal contamination of biotic components of the environment has attracted the attention of many investigators. The environmental and human health effects of heavy metals depend on the mobility of each metal through environmental compartments and the pathways by which metals reach humans and the environment. Environmental biomonitoring to assess the impact of a waste co-incinerator was conducted through lichens and dendrochemistry. The study area includes the northeastern territory of Pozzilli (Molise, Central Italy). The pollution source was investigated considering the trace elements in lichens *Xanthoria parietina* (L.) Th.Fr. and in leaves and wood of *Quercus pubescens* Willd., and stable isotope ratios in tree rings. Three sampling plots, 25 m² each, were located at 400 m distance from each other along a transect of decreasing fallout. In each plot, a mixed sample of lichen thalli was collected by a minimum of three trees, once per year, in the last four years (2010-2013), and two increment cores at breast height (1.3 m) from three trees were collected. The impact of the co-incinerator on levels of As, Cd, Co, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Sn and Zn was evaluated by means of *X. parietina*. Trace elements were characterized also in tree rings. The fingerprint of anthropogenic disturbance in tree rings was detected by $\delta^{13}\text{C}$, $\delta^{18}\text{O}$ and $\delta^{15}\text{N}$. Stable isotope ratios of carbon and oxygen might provide information on biological processes altered by plant growth constraints, whereas, nitrogen stable isotope ratio might identify atmospheric pollutants. Here we discuss the responses of trees and lichens to environmental pollution through a retrospective analysis on stable isotope ratios and trace elements in tree rings and lichen thalli, in relation to co-generation activity's periods.