HEAVY METAL DETERMINATIONS OF INDOOR AND OUTDOOR DUSTFALL DEPOSITIONS USING ICP-OES TECHNIQUE

M.S. Dündar¹, H. Altundag², F. Ozdemir, N. Deryaoglu, Z. Karacoban³

¹,² Sakarya University, Fen Edebiyat Fakültesi Kimya Bölümü, 54140, Serdivan-Adapazarı
³ Sakarya University, Fen Bilimleri Enstitüsü, 54140, Serdivan-Adapazarı
¹ dundar@sakarya.edu.tr, ² altundag@sakarya.edu.tr

The health effect of air pollution is a well known reality. One of the main components of air pollution is the suspended dust particles in air [1,2]. The pollution products from industrial effluents, sub-products from the processes, chemical fertilisers, herbicides, pesticides, hormones to promote fast growing are released to the environment without controlling. Thus, the environment and the human health are effected by released pollution [3].

This study presents two approaches of heavy metal determinations in dustfall depositions: The first approach includes indoor heavy metal profiles of dustfall depositions according to collection heights, collection time, heating type, and collection site. The samples were collected from residences located in six different places across Adapazarı. In each house, two samples were collected at a height of 30 cm and two were collected at a height of 150 cm above the floor. The arithmetic mean mass deposition rates for all houses were 0.98 µg/cm²/day at 30 cm height and 0.57 µg/cm²/day at 150 cm height. Mass depositions were observed to decrease in magnitude according to houses in areas: Çark > Yeşiltepe > Erenler > Kampus > Serdivan > Ozanlar.

The second approach shows outdoor heavy metal profiles of dustfall depositions. The mass deposition rates for the six places in Adapazarı ranged from 20.5 to 84.9 µg/cm²/day were calculated for each sampling plate over the 30 day collection periods. The arithmetic mean deposition rate for all places was 45.3 µg/cm²/day. Total dust deposition and elemental loadings typically increased in magnitude according to area: Kampus > Serdivan > Çark Caddesi > Ozanlar > Erenler > Yeşiltepe and Kampus > Çark Caddesi > Serdivan > Erenler > Ozanlar > Yeşiltepe.

The collected dust samples obtained from sampling locations were analysed for Pb, Cd, Cr, Ni, Zn, Cu, Co, Al, Mn, Fe, Ag, Sn, Na, K, Ca, Mg, V, Se by using ICP-OES technique.

