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Tracing organic and inorganic pollution sources of soils and water resources in Güzelhisar Basin of Aegean Region, Turkey

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This study was carried out to determine the residue level of major concern organic and inorganic pollutants in Güzelhisar Basin of Aegean Region in Turkey which represents a rather industrialized area having five large iron and steel mills, but also areas of agriculture. Soil samples were collected from GPS determined points at 0-30 and 30-60 cm depth of a grid system of 2.5 km to the east and 2.5 km to the west of the Güzelhisar stream. The area was grouped into three main areas as West, Middle, and East region. Water and sediment samples were collected from the Güzelhisar stream and from Güzelhisar dam every 30 kilometers which is already contaminated due to industrial facilities in Aliaga, is used to irrigate the agricultural land.

Soil pH of the research area was determined within the range from 5.87 to 6.61. Topsoil contamination was examined for all investigated elements with the exception of Cd. An increase in pseudo total metal contents of Cr, Cu, Mn, Ni, and Zn was observed with increasing distance from the coast with a simultaneous decrease in pH.

Due to the analysis of the organic pollutants, a continuous load with the herbicide trifluralin was determined with a few clearly raised points to a possible load of the stream water. Although HCH-Isomers were not found, DDT (DDT and transformation products) residues were ascertained in the soil samples. With regard to the analysis of the water samples of the Güzelhisar stream and dam, a background load with trifluralin was found which is to be explained with transport processes with regard to utilization of trifluralin in the agricultural areas.