lowest fluxes were in autumn. The compositions of deposition fluxes of particle-associated PAHs were compared with those of total suspended particles (TSP) in the air. It is observed that wet deposition contributed more heavyweight PAHs to the lake, whilst dry deposition along with low temperature favoured the deposition of lightweight PAHs. With increasing rainfall, the compositions of particle-associated PAHs deposits onto the earth surface became similar to those of TSP. Gaseous phase PAHs were sampled along with the particle phase PAHs in the atmosphere using the high volume sampler, and the precipitation scavenging of vapours PAHs was calculated based on the previous theories combining the gaseous PAHs and the volume of rainfall *in-situ*. The results showed that the gas wet deposition fluxes of total PAHs ranged from 0.15 to 8.29 g • m^{-2} • d^{-1}, and the predominant PAHs in the vapor wet deposition fluxes were three to four-ring compounds. SPMDs were deployed to assess the concentrations of the dissolved phase PAHs in water of the Luhu Lake concurrently. Based on the stagnant two-film model, the direction and magnitude of diffusive exchange fluxes of PAHs across the air-water interface in Luhu were calculated. The results showed that the net fluxes were from air to water (net deposition) on all the sampling period. They range from -3.2 to -31.3 μg m^{-2} •d^{-1} and averaged -17.7 μg m^{-2} •d^{-1}. For the individual compounds, the flux direction varied. Naphthelene, acenaphthylene, and acenaphthene had net fluxes from water to atmosphere, and naphthalene had the highest magnitude of exchange flux (Ave 2.8 μg • m^{-2}).

Key words PAHs; air deposition; air-water exchange; urban lake; flux

Organochlorine pesticides in marine environment of Quanzhou Bay, Southeast China

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As one of the most important buildup of persistent organic pollutants (POPs), organochlorine pesticides (OCPs) have received more and more attention. Samples including sediments, water and marine products were collected. In the lab, nineteen types of organochlorine pesticides were tested using GC-ECD following US-EPA 8080A method. In the top sediments, the concentration of HCHs was 0.1–3.08 ng/g and the concentration of DDTs was 3.53–75.83 ng/g. In the bottom sediments, the concentration of HCHs was 0.1–3.59 ng/g and the concentration of DDTs was 1.56–81.68 ng/g. The concentration ranges of HCHs and DDTs in sea water were 1.31–9.96 ng/L and 0.78–6.51 ng/L, respectively. And the concentration ranges of HCHs and DDTs in land surface water were 7.04–14.08 ng/L and 3.82–9.66 ng/L, respectively. The residual levels of HCHs and DDTs in marine product samples ranges from 0.1 to 0.6 ng/g and from 0.57 to 85.02 ng/g, respectively. In this thesis, discussions of DDTs and HCHs in sediment, water and marine product samples were made. The following are the main results and conclusions: A general decreasing trend was found from the inner to outer sectors of the Bay for both sediment and water samples. The distribution of OCPs depends greatly on the different properties pertaining to them. The topography, redox, hydrodynamic condition as well as other factors also play an important role in controlling the distribution and fate of OCPs. The Quanzhou Bay has been contaminated by OCPs in sediments, water and biota. When compared to remote sites, the pollution of OCPs in the Quanzhou Bay is elevated. Compared with other seriously polluted sites, the pollution of OCPs in the Quanzhou Bay is moderate. Bioaccumulation factor of DDTs and HCHs was also calculated. All these provide basic data to local government for the management of the Bay. However, further studies are indispensable to obtain a more profound understanding.

Key words organochlorine pesticide; Quanzhou Bay; biota; sediment core; eco-system

PAHs in surface soils from the western watershed of Bohai Sea

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Three hundreds and two surface soil samples were collected from the western watershed of Bohai Sea and measured for 16 polycyclic aromatic hydrocarbons (PAHs). The arithmetic mean and standard deviation of the total PAHs were 546±854 ng • g^{-1}. The spectrum of the PAH species was similar to that observed in soils from other places with domination of 3- and 4-ring compounds. The relatively high concentrations were observed in the Beijing-Tianjin-Tangshan metropolitan area, southwest of Hebei along Xingtai-Handan-Shijianzhuang-Zhangjiakou and two isolated cities in Shandong (Zibo and Ji'nan). The sampling sites with relatively lower PAHs concentrations extend from north mountainous area of Hebei to alluvial plain of northwestern Shandong. The

spatial distribution pattern of PAHs in surface soil was associated with the distribution of emission sources of PAHs. The concentration variability of the lower molecular weight compounds in surface soil is generally lower than that of the higher molecular weight ones.

Key words PAHs; surface soil; western watershed; Bohai Sea

Selected aspects of studies of sediments from the Ebro River (Spain) and the Dobczyce drinking water reservoir (Poland) within the frames of the European and national research projects

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Mineral and organic matter either soluble or suspended are transported by the rivers and when deposited in the bed of the river or in the water reservoir, sediments are formed, whose chemical composition may serve as a fingerprint of the history of the ecosystem. The results of the studies of sediments in water systems (river catchments, reservoirs) can be used not only for the evaluation of the current state of the ecosystem but also to prevent any dangerous environmental changes. Bottom sediments can in many ways accumulate both suspended and soluble components. The process is influenced by several factors like pH, red-ox potential, oxygen content, interactions, etc. The complexity of those phenomena causes that in order to study the accumulation processes of compounds in sediments the application of various analytical techniques is required. The authors participate in two big projects on sediment studies. The AquaTerra Project is the EU funded project on understanding river-sediment-soil-groundwater interactions for support of management of river basins and catchment areas. Our group's studies are focused on mercury determination and its speciation in sediments and fish from the Ebro River in Spain. The Dobczyce Project is the national project funded by the Ministry of Education and sciences of Poland which is also a EU member country. The latter covers many aspects of accumulation and fate processes of chemical compounds in sediments of the reservoir which supplies 60% of drinking water to about one million population in the city of Krakow in Poland. Selected aspects and parts of analytical protocols being the results of our participation in the Projects will be the subject of this presentation.

Key words sediment; accumulation process; analytical technique; mercury; vacuum drying

Heavy metals in soil of the Baikal biosphere reserve (in connection with degradation of fir forests of the northern macroslope of Khamar-Daban Range)

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The Baikal biosphere reserve (Khamar-Daban Range, South Pribaikalye) demonstrates withering of fir forests, progressing from 1970's. As to possible reasons of this phenomenon concerned, there are many viewpoints; the main among them is the technogenic influence of the Baikalsk pulp and paper plant (BPPP) and Irkutsk industrial center (IIC) on forest ecosystems. Geochemical characteristics of the snow cover within the Baikal reserve, investigated by us earlier indicate that degradation of fir forests at present does not result from the transfer of industrial emissions from BPPP and IIC to places of growing fir forests. Aimed at further revealing of reasons of fir forests withering, we investigated the chemical composition of soil (as a substratum feeding trees) in the Baikal biosphere reserve. We studied brown mountain-forest and alluvial-turf soil predominating in the reserve, which are characterized by weak differentiation profiles, in places (at the slope's bottom) by significant (up to 2.5–3 m) thickness. Samples of 250–300 gr. were collected from the genetic soil horizons distinguished visually and roughly by the thickness. Total contents of heavy metals (HM)-Cu, Cr, Ni, Zn, Co, Mn, Cd, Li, Rb, Sr, their mobile modes of occurrence (m/m), extracted by acetate-ammonium buffer with pH=4.8 were determined. We also measured the concentrations of metals in the insoluble (fixed) residue (FR) obtained after extracting their mobile modes by atomic-absorption (Perkin-Elmer -503 spectrometer) method. The analytical error by this method does not exceed 10 %. Variations of element concentration in the sample for identical soil horizons are 3%–8% (at analytical