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Loibner, A. P.; Scherr, Kerstin E.; Edelmann, E.; Humel, S.; Kopp, D.; Mayer, Philipp

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MO412 Aged spiked soils cannot resemble desorption and bioaccessibility of native PAHs in historically contaminated soils A.P. Loibner, Boku, IFA-Tulln / Department for Agrobiotechnology IFATulln; K.E. Scherr, University of Natural Resources and Life Sciences, Vienna / IFATulln; E. Edelmann, University of Natural Resources and Applied Life Sciences / Agrobiotechnology- IFA Tulln: S. Humel, D. Kopp, BOKU / Department for Agrobiotechnology IFATulln; P. Mayer, Technical University of Denmark / Department of Environmental Engineering. In the present study, 25 Austrian soils were collected and spiked with four selected polycyclic aromatic\ncompounds. Using the contaminant trap, PAH desorption behaviour from freshly contaminated and aged\nsoils was monitored and then compared with three historically PAH-contaminated soils. The aim was to\ndetermine fundamental differences in desorption behaviour between spiked and native PAHs. \nDesorption of PAHs was determined for ground and non-ground samples of historically contaminated soils\nsince increased desorption from ground samples would indicate physical entrapment of PAHs. Desorption\nexperiments were repeated at high additions of toluene since increased desorption in the presence of\ntoluene would indicate competitive binding, which is consistent with adsorption to high affinity sides. \nSubstantial differences were observed between PAH desorption curves for historically polluted soils and nspiked soils, and aging of spiked soils was not able to reduce this difference. The bioaccessible PAHfraction\nwas at least one order of magnitude larger in spiked soils compared to real world samples from historically\ncontaminated sites. The observed differences could not be explained by physical entrapment of PAHs in\nhistorically contaminated soils since grinding of these soils did not enhance PAH desorption from the soils. \nThe addition of high amounts of toluene to historically contaminated soil resulted in enhanced PAH\ndesorption and a lower desorption resistant fraction. This observation is in line with competitive binding to\nhigh affinity sorption sites being the governing retention mechanisms of native PAHs in historically\ncontaminated soils. \nThese results are consistent with two sorption mechanisms occurring in the two types of soils: In historically\ncontaminated soils, PAHs appear to be bound to high affinity sorption sites. A much lower retention in spiked/nsoils is consistent with sorption to a much larger population of low affinity sorption sites. This has very\nimportant implications for real world situations. It challenges the significance of extrapolations of desorption\nand bioavailability results that were obtained with PAH spiked soils. Further, a much higher PAH retention in/nhistorically contaminated soils suggests limited mobility and exposure of native PAHs. However, the addition\nof co-solutes can reduce this retention and as a consequence, lead to a re-mobilisation of PAHs.