

## Assessing total and bioavailable contents of lindane and other hexachlorocyclohexanes in polluted soils

<sup>b</sup>Rodríguez-Garrido B, <sup>a</sup>Santos-Ucha P, <sup>a</sup>Macías F, <sup>a</sup>Monterroso C

The aim of this work was to evaluate the efficiency of selected methods to determine the "total" and "bioavailable" content of hexachlorocyclohexane ( $\alpha$ -,  $\beta$ -,  $\gamma$ -, and  $\delta$ -HCH isomers) in polluted soils. Total HCH was extracted with a mixture of n-hexane and acetone as solvent, using either an accelerated solvent extraction (ASE) procedure ( $\text{HCH}_{\text{ASET}}$ ) or an extraction with ultrasounds ( $\text{HCH}_{\text{US}}$ ). Bioavailable HCH was extracted with water, using either an ASE procedure ( $\text{HCH}_{\text{ASEW}}$ ) or a XAD2-resin procedure ( $\text{HCH}_{\text{XAD}}$ ). Results indicated that the soils were severely polluted, with  $\text{HCH}_{\text{ASET}}$  ranging from 25.4 to 350.4 mg kg<sup>-1</sup> (mean value 178.2 mg kg<sup>-1</sup>). The extraction method with ultrasounds ( $\text{HCH}_{\text{US}}$ ) was insufficient to determine the total content of HCH in the soils of this study. To evaluate bioavailable HCH, similar results were obtained with the two HCH extraction methods

using water and there was a good positive correlation between  $\text{HCH}_{\text{ASEW}}$  and  $\text{HCH}_{\text{XAD}}$ . These methods showed that an important fraction of the contaminant was potentially bioavailable and lixiviable.

<sup>a</sup> Departamento Edafología e Química Agrícola, Universidade de Santiago de Compostela 15782, Spain (carmela.monterroso@usc.es)

<sup>b</sup> Instituto de Investigaciones Agrobiológicas de Galicia, CSIC, Apdo. 122, Santiago de Compostela 15780, Spain