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P01

Modelization of environmental fate and transport of nitrates and pesticides in an agricultural soil by LEACHN and LEACHP models

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In the present study, LEACHN and LEACHP models have been used to simulate fertilizer and pesticide dynamics in an agricultural soil of the Vulnerable Zone of Vitoria-Gasteiz (Basque Country, Spain) during a sugar beet growing period. Firstly, LEACHN model was calibrated by adjusting input parameters (soil and crop data) until fitting their predictions of piezometric level evolution and NO_3^- content in groundwater to measured data in a piezometer located in the agricultural plot. Since the water flow module is common to these two models, the same input parameters were used in LEACHP model to simulate pesticide behaviour in both soil and leachings. LEACHN simulations of NO_3^- dynamics proved to be in satisfactory agreement with measured values. According to LEACHP predictions, however, the model described accurately ethofumesate leaching, but in general overestimated pesticide residual content in soil profiles. This phenomenon could possibly be related with the fact that the model does not take into account the influence of preferential macropore flows. As model predictions are approximations, the risk of basing agricultural management decisions on approximated estimations could be high. Nevertheless, both LEACHN and LEACHP predictions could serve as preliminary estimations for the expected pesticide evolution in soil and the subsequent leaching or not.

P02

The potential risk from manure-borne steroid hormones in northeastern region of China

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Animal feeding operations (CAFOs) have been recognized as one of the most important contributors of natural steroid hormones which show significant endocrine-disrupting properties in aquatic environments. Based on China statistical data of animal production and the research methods in developed countries, the potential environmental risk of manure-borne steroid hormones to the surface water in Chinese northeastern provinces has been preliminarily assessed. As a result of the rapid development of animal production, the excretions of manure-borne steroid hormones have been continuously increasing in three northeast provinces. Liaoning province has discharged the largest amount of manure-borne steroid hormones, as well as the highest concentration of predicted estradiol equivalency (EEQ_s) in surface water system, the predicted EEQ_s value has been reached 17.1 ng/L till 2008. According to the recommended limitation of the lowest observable effect level for 17 β -estradiol (10 ng/L), which is proposed by the Environmental Agency of United Kingdom, the manure-borne estrogens in Liaoning province may be able to disrupt the normal endocrine function of aquatic organisms already.

P03

Aldehydes measurements in public indoor environments in Palermo (Italy) using voltammetry

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Studies on indoor air quality are important since people spend more than 80% of life in confined environments, thus it is necessary to evaluate indoor contaminant concentrations and distributions for assessing total human exposure to them (Mannino and Orecchio, 2008; Orecchio, 2011). Aldehydes are indoor and outdoor chemical pollutants of particular interest due to their potential impact on health. Formaldehyde is usually the most abundant aldehyde in air and also the most studied since it is classified as *human carcinogen*. It is well known that formaldehyde is directly emitted from building materials, wood combustion, cigarette smoking, and is used as a bactericidal agent. One purpose of this research was to develop a reliable, economic, simple and fast method for the determination of formaldehyde and acetaldehyde in air. In this work, we use voltammetry to measure the concentrations of formaldehyde and acetaldehyde in indoor air.

Aldehydes were determined in several public environments in Palermo University (libraries, studies, museum, laboratories, etc.). The mean concentrations of formaldehyde and acetaldehyde are respectively about 40 and 5 $\mu\text{g}/\text{m}^3$.