PERSAM: a software tool for calculating PECs in soil


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Introduction

European pesticide authorisation requires risk assessment procedures using standardised exposure scenarios developed by the European Food Safety Authority (EFSA). Currently, the Guidance Document on persistence of Plant Protection Products (PPPs) in soil (SANCO/9188VI/1997) is under revision by the Panel on Plant Protection Products and their Residues and the EFSA Pesticide Unit. A revised methodology has been developed for the assessment of exposure of soil organisms to PPP active substances and their transformation products.

Methodology

The methodology has been developed for both the concentration in total soil and in the soil pore water. The goal of the exposure assessment is the 90th percentile of the exposure concentration in the intended area of use in each of the three regulatory geographical zones (North, Centre, South). The exposure assessment methodology is currently restricted to spray applications to annual crops under conventional or reduced tillage. It is foreseen that the methodology will be developed to also cover perennial crops and row crops. A tiered approach is proposed where all tiers aim to assess the same exposure assessment goal (Figure 1). Given the complexity of the calculations in the different tiers, efficient use in the regulatory process requires the development of software tools.

![Figure 1. Outline of the different tiers in the exposure assessment of spray applications to annual crops for conventional and reduced tillage.](image-url)
The aim of this project is to develop such a software tool in support of the EFSA guidance document currently in development. The tool is based on an analytical model for which the concepts and the mathematical equations are described in the Scientific Opinion (EFSA, 2012) and is able to:

(i) calculate TIER-1 PEC’s,
(ii) calculate TIER-2B 95th-percentile PEC’s,
(iii) calculate TIER-2C 95th-percentile PEC’s using output from TIER-2A simulations for the soil load including wash-off, and
(iv) select the grid cell, including the scenario properties, corresponding to the 95th-percentile PEC as needed for the scenario development of TIER-3.

The concepts of the calculation procedure are discussed and the software will be demonstrated.

References