

SOFTWARE TOOLS TO AID INTERPRETATION OF SURFACE WATER EXPOSURE ASSESSMENT



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Evaluation of the risks to surface waters associated with the agricultural use of pesticides have been harmonised at the European level (Annex 1). The modelling framework is summarised in FOCUS (2001) and considers worst-case assumptions to predict exposure *via* spray drift and run-off and spray drift and drainage. The models are used to calculate predicted environmental concentration values in water and sediment, which are summarised in separate TOXSWA output files. The reported values are provided in standard format and include time-weighted PEC values at defined time intervals.

This poster provides information on software tools that have been developed by CEA to aid data extraction, whilst providing an error checking mechanism. It also provides information on a potential extension to the software that could present information on the frequency, duration and magnitude of exposure.

Background

The TOXSWA Data Extractor (TDE) extracts Predicted Environmental Concentration (PEC) summary data from TOXSWA summary files. The main advantages of this tool are:

1. Reduction in time taken to extract PEC information from TOXSWA summary files
2. Elimination errors when extracting information
3. Identification of errors in TOXSWA modelling
4. Presentation of information in a format that can be readily inserted into aquatic risk assessment reports

Functionality

The program flow of the TDE is illustrated in Figure 1. The TDE processes all TOXSWA sum files in a given folder producing formatted tables in Excel summarising TOXSWA model outputs as shown in Figure 2. The summarised information allows identification of PECs associated with spray-drift events. In addition to the PEC summary output, the TDE examines the TOXSWA output (cwa) file for each run and extracts the top ten daily PEC values displaying them in rank order with the date and time. The output tables are easily exported into MS Word reports.

Conclusions & future developments

The TDE is a useful tool to aid the extraction of PEC summary information from TOXSWA outputs. Further work is required to develop the TDE for examining TOXSWA output files in more detail, including:

1. Looking specifically at frequency, duration and magnitude of exposure above critical values (e.g. PNEC)
2. Comparing ecotoxicological endpoints with extracted PECs and calculating toxicity exposure ratios (TERs) for use in environmental risk assessments.

The tool could also be developed further to calculate time weighted average PECs over a user specified period and compare the resulting output with ecotoxicological endpoints.

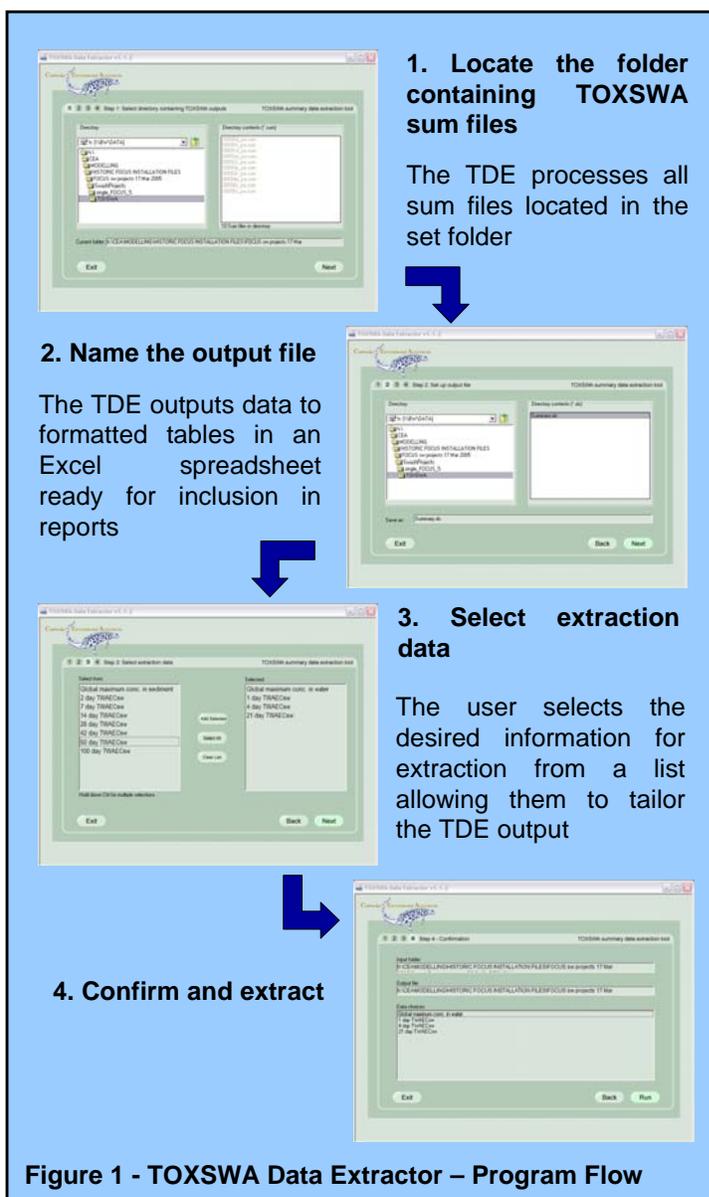


Figure 1 - TOXSWA Data Extractor – Program Flow

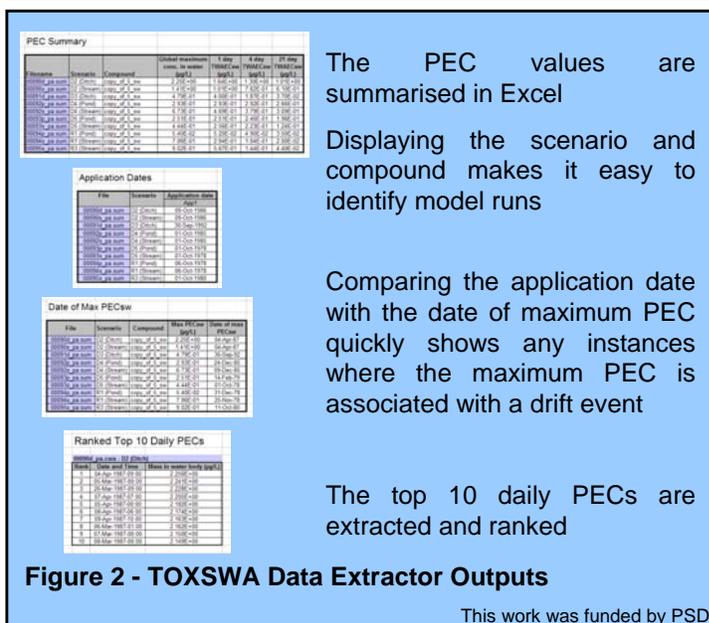


Figure 2 - TOXSWA Data Extractor Outputs

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