

# Exposure in surface waters for the aquatic risk assessment at EU level

Theme: Risk assessment procedures for pesticide registration

BO-06-010-002

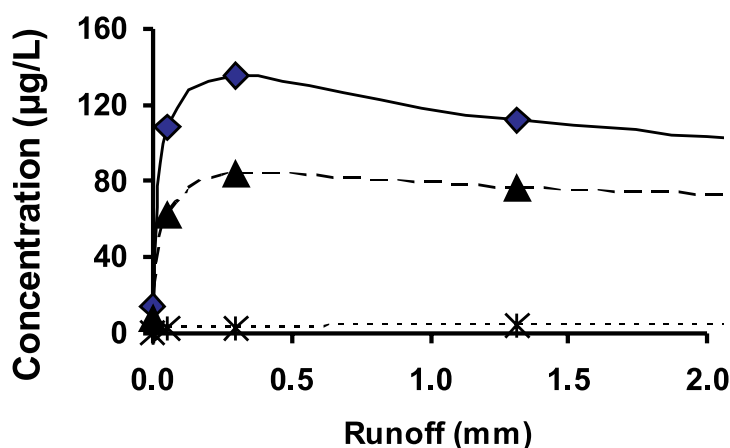
## Problem

In the FOCUS Surface Water Scenarios, an important entry route for plant protection products (PPP) into the water course is run-off from the adjacent field. Not much is known on the effect of run-off on the concentration in the FOCUS stream.

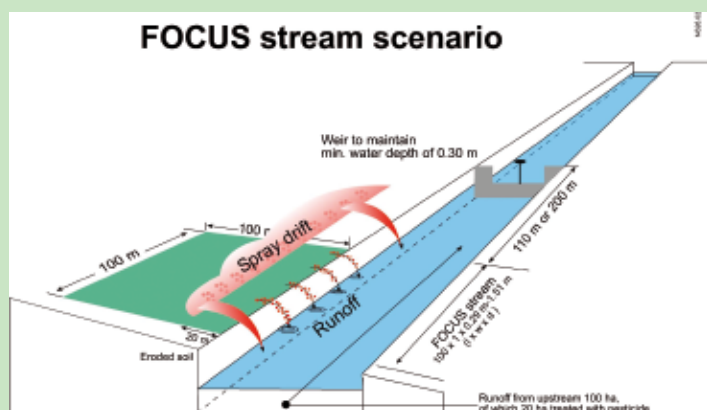
## Approach

The TOXSWA and PRZM models were used to perform calculations with two FOCUS run-off scenarios. Firstly, the PRZM model is run to calculate the run-off of PPPs from the field into the water course. Next, the TOXSWA model calculates the concentration of the PPPs in the water course. The runs in this study were defined as follows:

- The R2 and R4 scenarios for maize were taken, as these are expected to give the highest run-off
- The sorption coefficient in soil ranged from 0 to 10000 L kg<sup>-1</sup>. Other properties did not vary
- A run-off event was introduced at 14 days after application, ranging from 0 to 50 mm
- The maximum concentrations at the end of the FOCUS stream were calculated



Concentration of PPPs with different  $K_{oc}$  at the end of the stream of the R4 scenario as a function of run-off.  $K_{oc} = 0 \text{ L kg}^{-1}$  (—◆—);  $K_{oc} = 100 \text{ L kg}^{-1}$  (---▲---);  $K_{oc} = 10\,000 \text{ L kg}^{-1}$  (---\*---).



Lay-out of the FOCUS Stream.

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## Results

For weakly sorbing PPP the concentration in run-off water may be as high as 1000 µg/L at small run-off events (<0.1 mm).

Concentrations of strongly sorbing PPP ( $K_{oc} > 1000 \text{ L kg}^{-1}$ ) are low and do not depend on the size of the run-off event.

PPP concentrations at the end of FOCUS streams increase rapidly with the size of the run-off event and reach their maximum at approximately 0.3 mm run-off (see figure).

At larger run-off events concentrations remain relatively constant.

## Future use in risk assessment

This study provides insight in concentrations of PPP in surface waters caused by run-off. This is used for improvement of the run-off scenarios in the EU registration procedure.