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Assessing diuron short-term effects on biofilms using time-response curves

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Assessing diuron short-term effects on biofilms

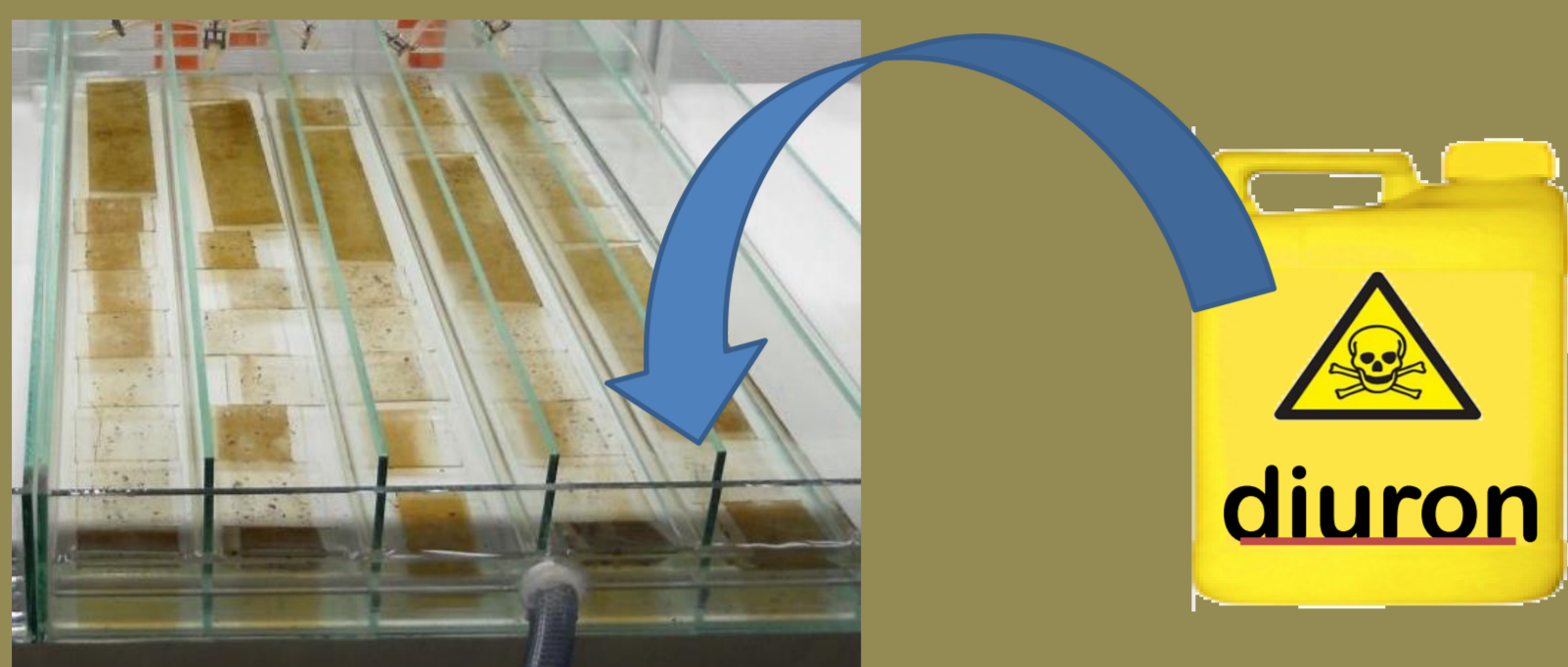
using time-response curves

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Methods

MICROALGAL BIOFILMS
4-wk old, on glass slides



DIURON-induced inhibition of photosynthetic efficiency (Φ_{PSII})

In agricultural watersheds, stream pollutions by **ORGANIC PESTICIDES** occur as short-time events.

In the case of rapidly-acting compounds such as the herbicide **DIURON**, pulse exposure may lead to dramatic impacts on biofilm microalgae. Assessing the effects of diuron over short periods of time is therefore necessary.

Toxicity tests

DOSE-RESPONSE CURVES

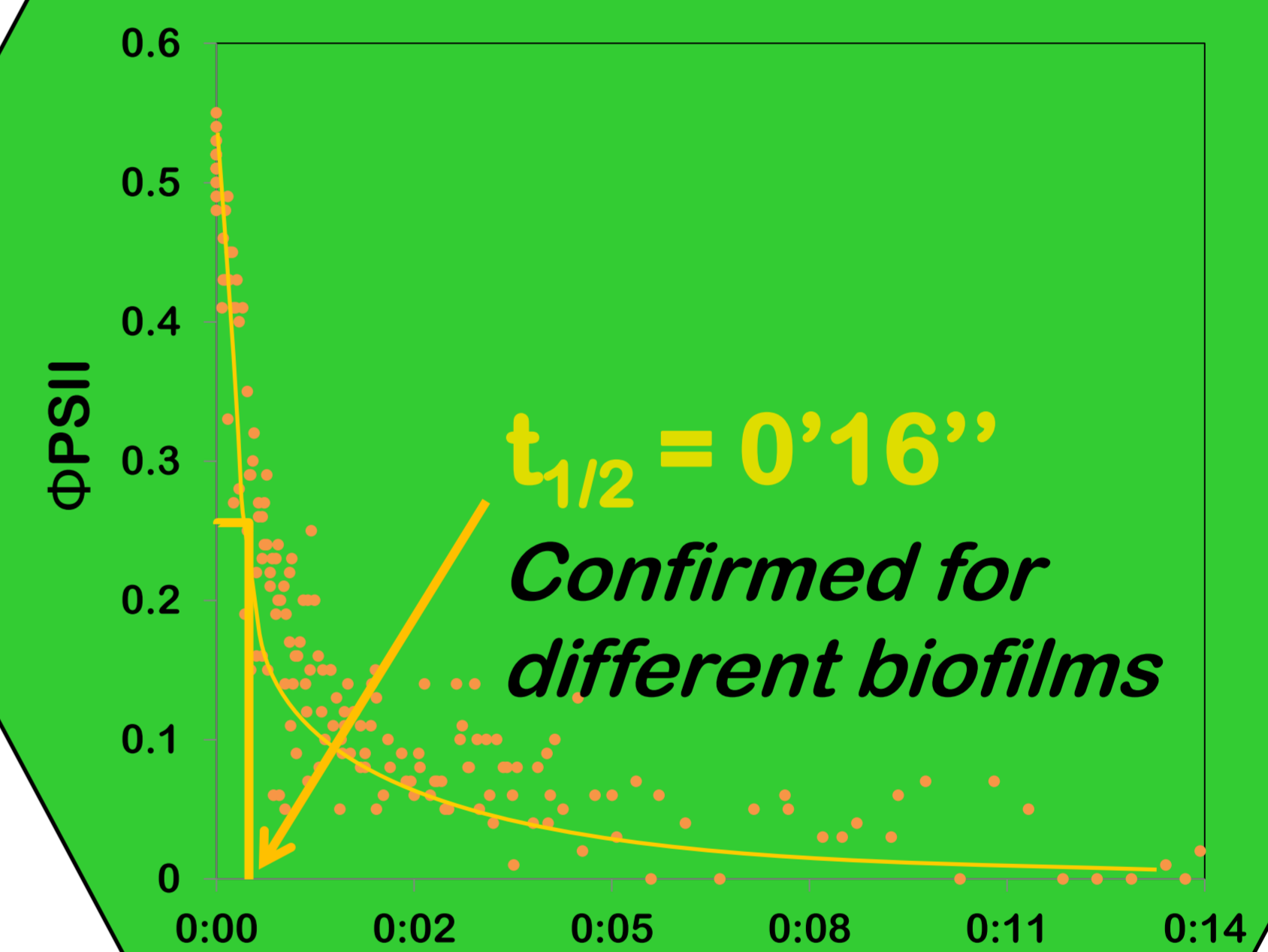
$\Phi_{PSII} = f([\text{diuron}])$,
exposure duration = fixed

Here we assess the **DOSE, TIME** and **DOSE-TIME RESPONSE** of freshwater **BIOFILMS** to diuron, using photosynthesis inhibition as an endpoint.

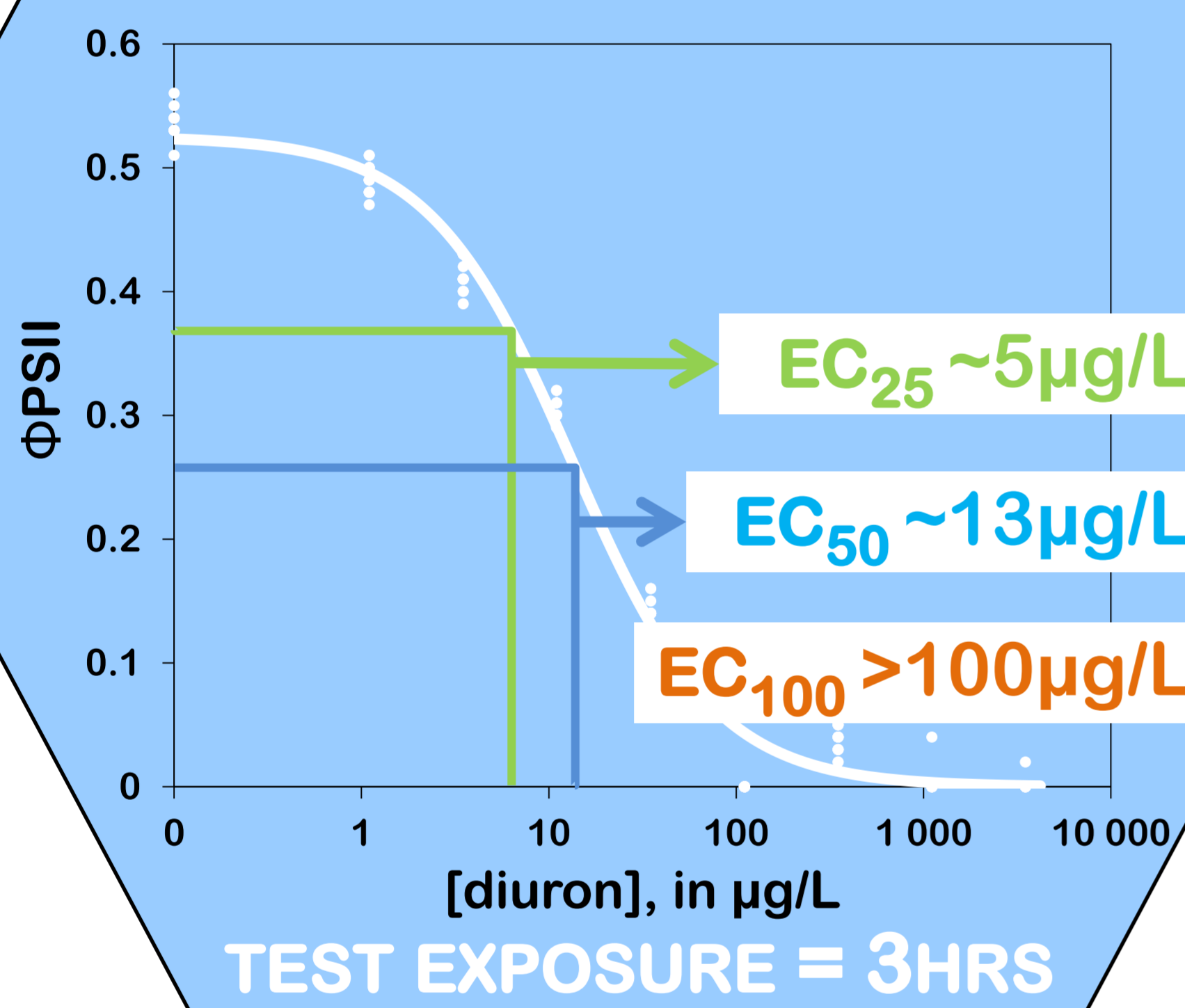
TIME-RESPONSE CURVES

$\Phi_{PSII} = f(\text{exp. duration})$,
[diuron] = fixed

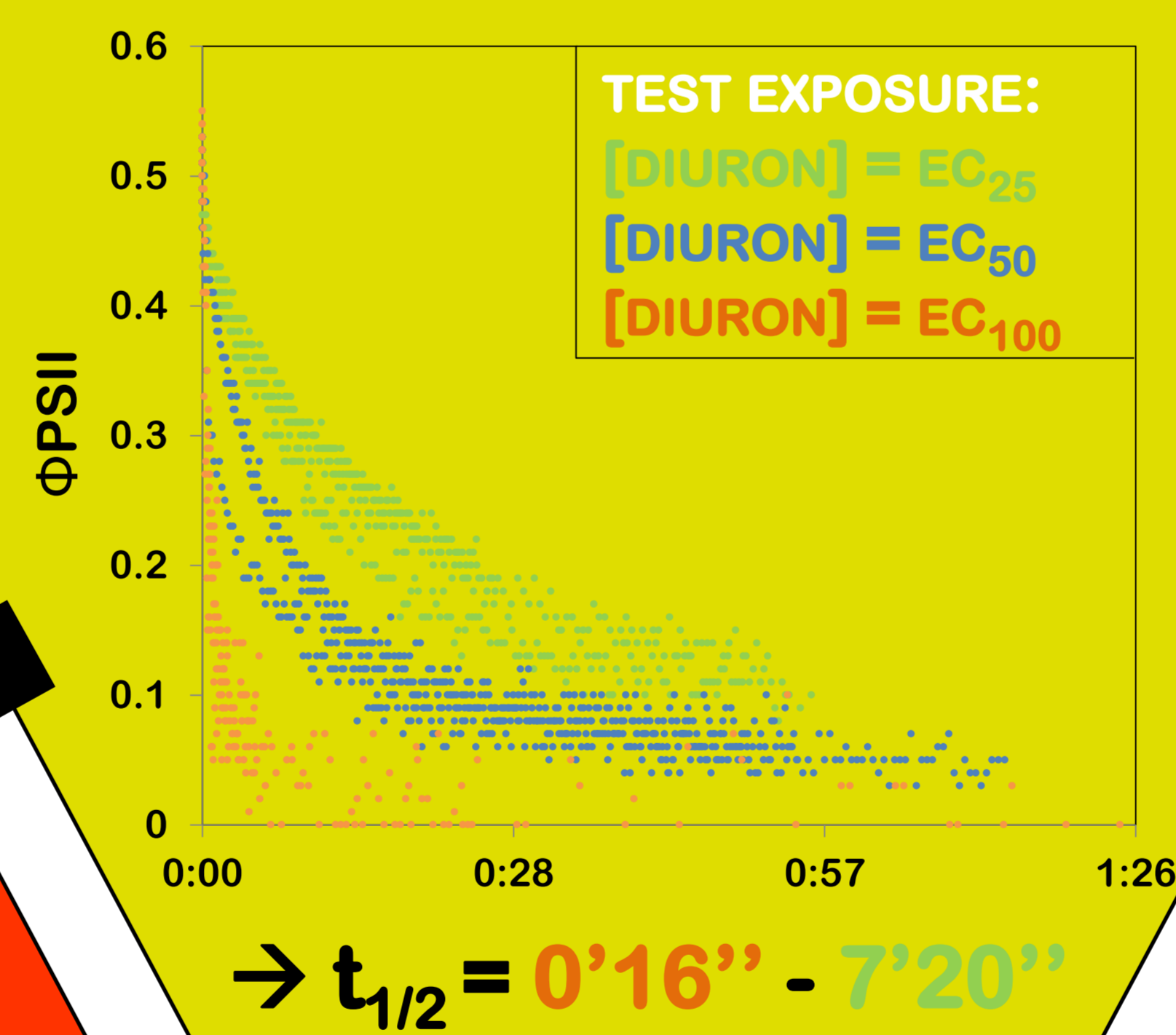
Diuron reaches its cellular target in a very short time-span



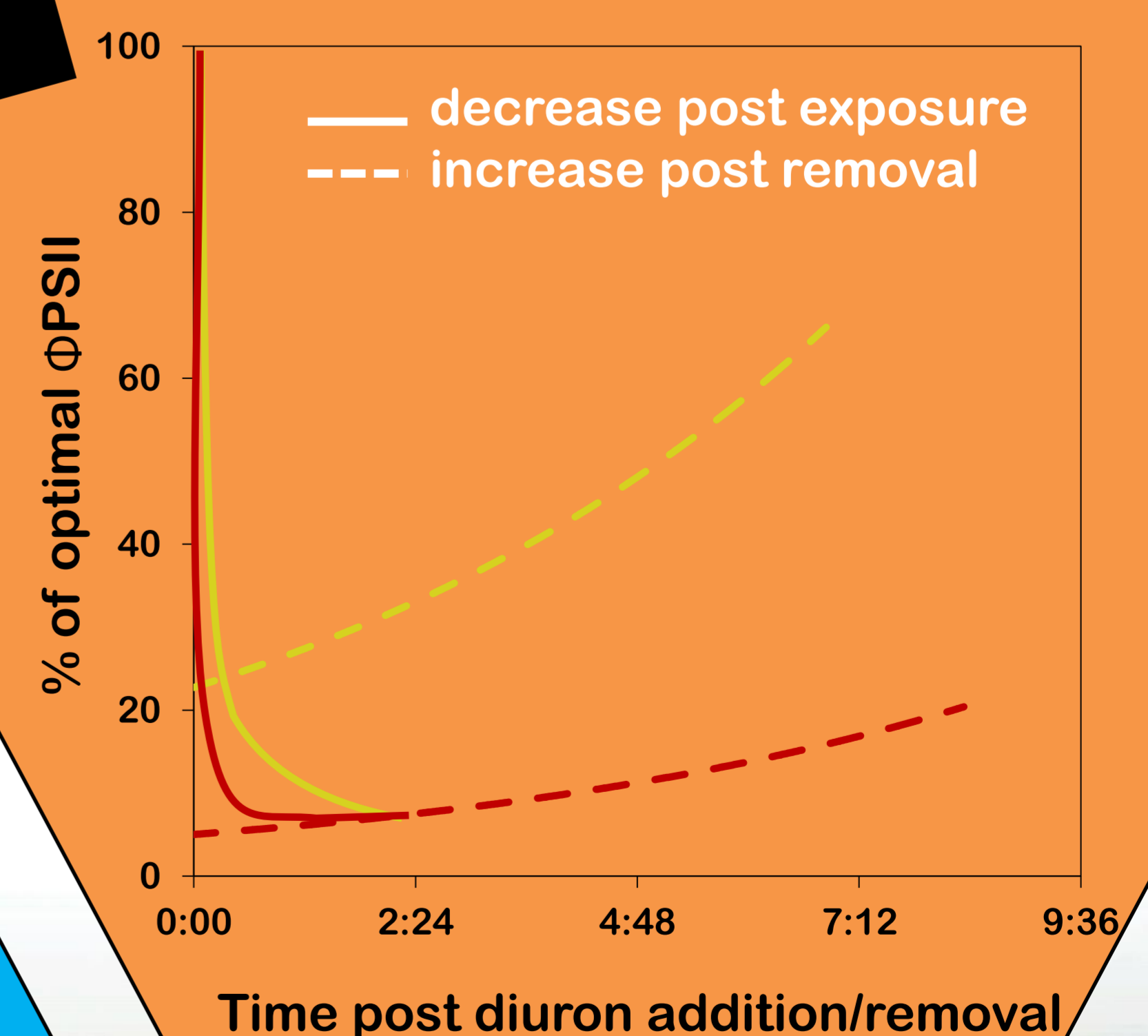
Increasing diuron concentrations cause photosynthesis inhibition



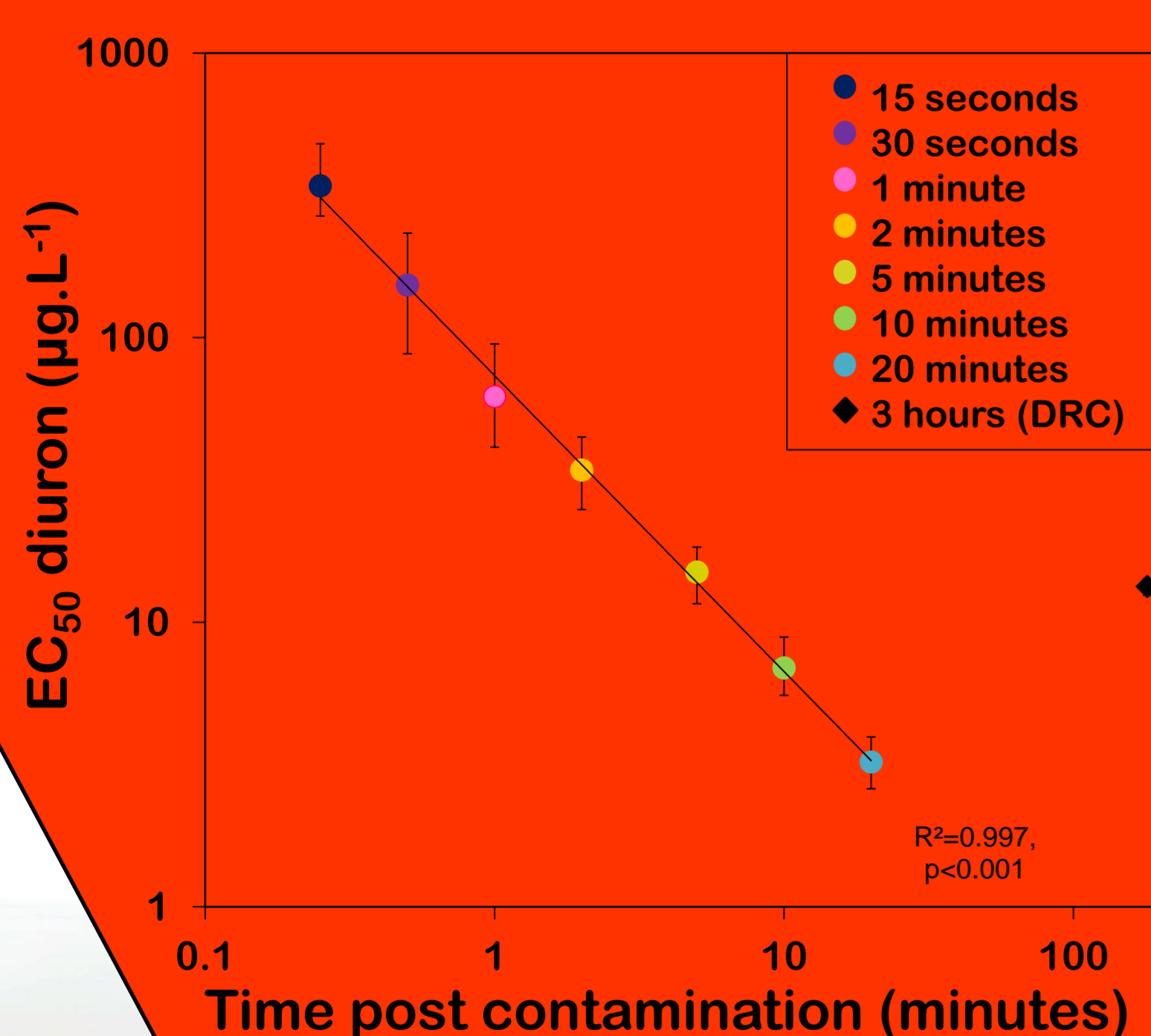
The delay ($t_{1/2}$) to halve photosynthesis depends on test [diuron]



Diuron binding is faster than its release



But EC_{50} is dependent on exposure duration



More about diuron bioaccumulation on:

Wed, 10:40

Transfer and distribution of diuron in biofilms and joint toxic effects

by Betty Chaumet

Financial support:

