Stormwater retention pond = Biocide retention pond ?

Measuring and modeling biocide entry from facades to a retention pond

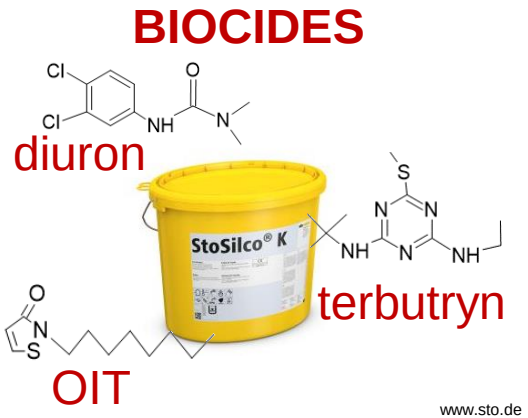
HS2.3.6 – EGU 2022

Albert-Ludwigs-Universität Freiburg

Felicia Linke[1,3], Lena Schnarr[2], Oliver Olsson[2], Klaus Kümmerer[2], Frank Preusser[3], Hannes Leistert[1], Marcus Bork[1], Jens Lange[1]

[1] Hydrology, Faculty of Environment and Natural Resources, University of Freiburg, 79098 Freiburg, Germany
[2] Institute of Sustainable and Environmental Chemistry, Leuphana University of Lüneburg, 21335 Lüneburg, Germany
[3] Institute of Earth and Environmental Sciences, University of Freiburg, 79104 Freiburg, Germany

Motivation & Research Questions

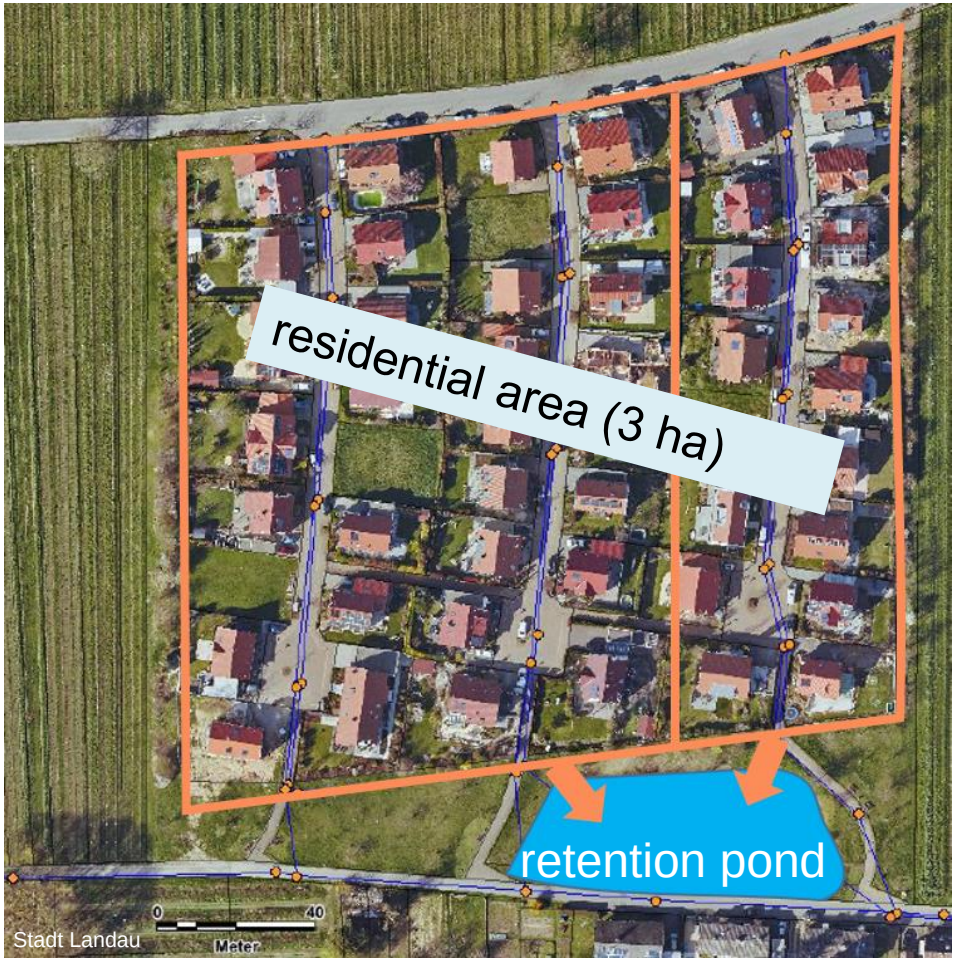


- **Which percentage of biocides leached from facades reaches a retention pond?**

- **How efficiently are biocides retained inside the pond?**

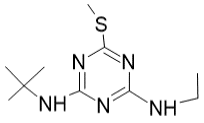
retention pond

Study Area



- Location: Landau, Germany
- 45 houses
- Built 2008-2020

Methods



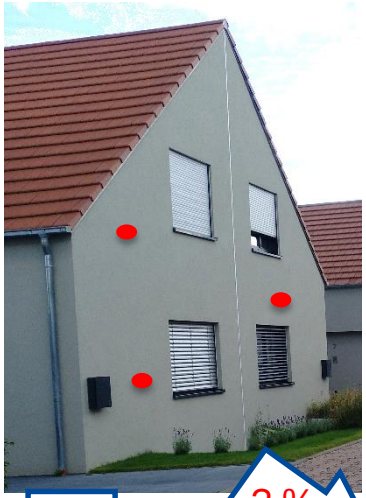
terbutryn

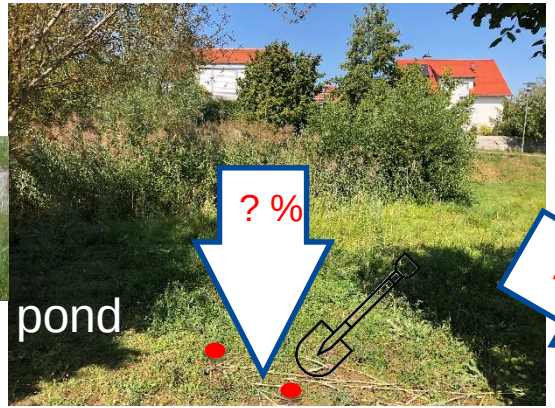
Measure biocides and transformation products

in inflow to pond

in pond sediment

for 7 events during 2 years





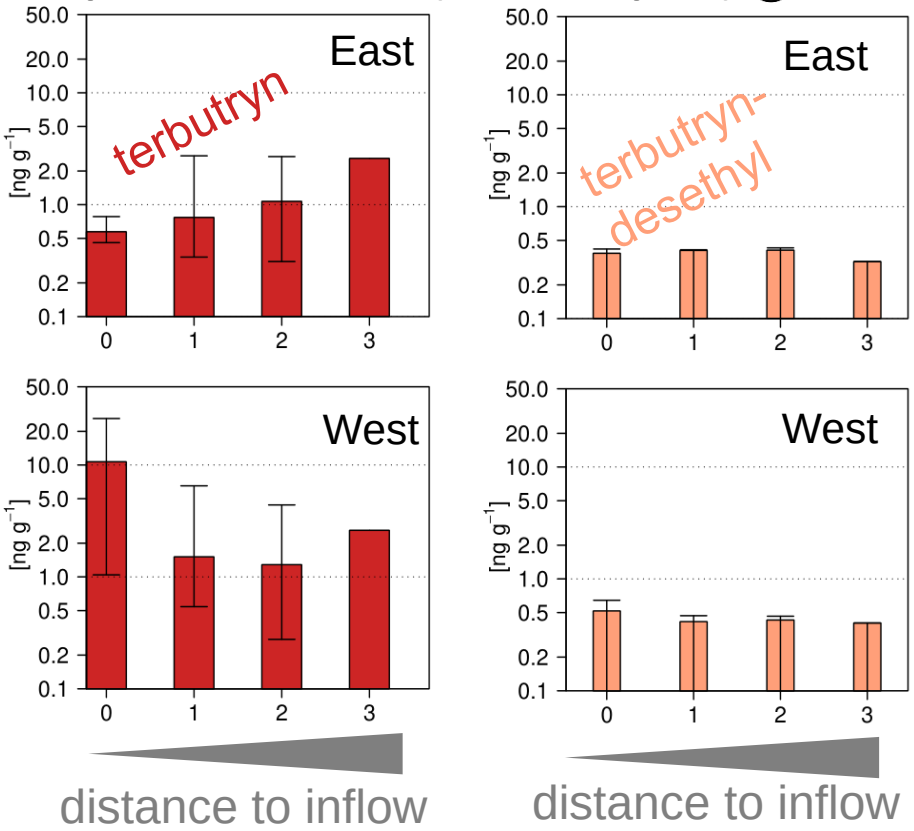
Model biocide and water flow

- leached
- lost before arriving at pond
- inside pond sediments
- to sewage

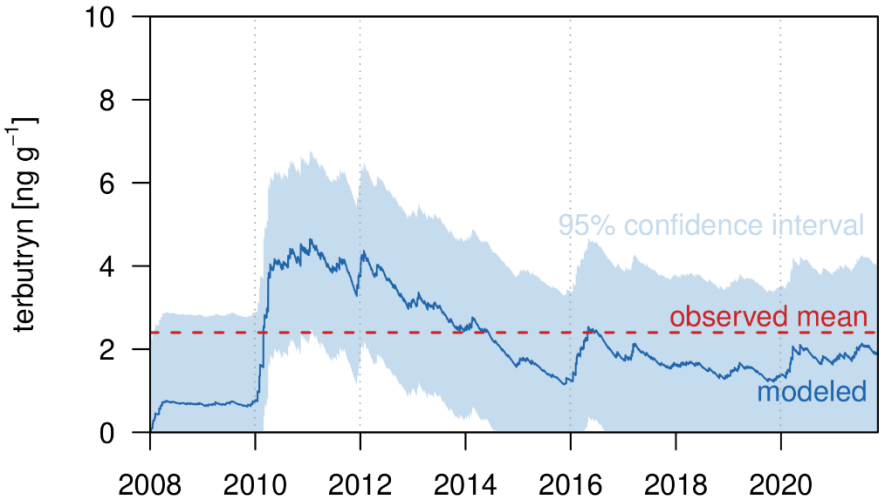
for 13 years

Results – terbutryn in pond sediment

Measurements of terbutryn in pond sediment (116 samples)



Modeling of terbutryn in pond sediment



Results – mass balance of terbutryn

100% = terbutryn leached at the facade

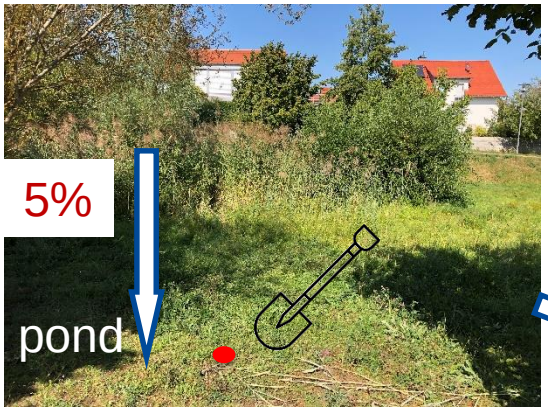
Based on modeling and various assumptions.

11% of leached terbutryn reaches the pond

89%

terbutryn lost in study area

5%



6%

sewage

Conclusion & Contact

- Only 11% of biocides leached from facades reach the retention pond.
- The majority is diffusely lost in the residential area upstream.
- Approximately 5% are retained inside the pond.

- Our results are site-specific but they suggest that biocide retention in ponds is limited, environmental entry pathways are diverse and that biocide use should be limited at its source.

✉ felicia.linke@hydrology.uni-freiburg.de
FLinke11