**TH122**

**The effect of selected biocides on algae communities in water bodies affected**

**by stormwater runoff**

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In urbanished areas many biocides are in use to prevent unwanted growth of

organisms on e.g. construction materials and wood. Over time, the biocides leach

from the urban materials and are transported with stormwater runoff to receiving

water bodies. As biocides are non-selective, they can affect non-target organisms

and thereby cause unintended harm to the surrounding environment. A common

approach for stormwater management is to establish wet detention ponds. They

fulfill dual purpuses. Firstly, they detain the runoff water during heavy rain and

hereby reduce the hydraulic loads on the receiving waters. Secondly, they hold

stormwater runoff for prolonged durations, allowing natural treatment processes to

proceed. Due to their permanent water pool they furthermore present themselves

as habitats for flora and fauna, and rapidly become populated with species similar

to what is found in natural ponds. The biota in the stormwater ponds hence

become subjected to the biocides from the building materials. This study focusses

on four biocides; terbutryn, diuron, irgarol and carbendazim, and their effect on

the algae growth and change in the community composition at conditions found in

stormwater ponds. The biocides were studied in three test systems. Two were

microcosms at controlled laboratory conditions with stabile temperature and a

light exposure of 12 h per day. These ran for 10 days, with algae sampling at day

1, 5 and 10. The first setup was conducted in glass bottles filled with pond water.

Water samples, from a wet detention pond in the city of Silkeborg, was collected

from 5 locations allocate evenly in the pond and mixed thoroughly. The second

controlled microcosms study was performed in glass sediment cores, filled with

pond sediments and water from the same pond. For both setups, stock solutions of

all biocides were added in varied concentrations. The third setup consisted of

mesocosms placed in the pond from where also the water and sediments had been

sampled. Here, the added biocides and algae community were exposed to natural
changes in temperature, sunlight and rain. This experiment ran for 15 days, with

algae and biocide sampling several times during the period of exposure. The

development in algae communities and its dependence on biocide levels were

compared in the 3 setups, yielding results on the impact of the biocides on

community composition and on cell numbers and cell sizes.