

Ecological risk assessment of chromium in sediments of the Grote Calie

**Tayebeh Bashnin, Kristine De schamphelaere, Hanne Hetjens, Johnny Teuchies,
Elvio Amato, Lieven Bervoets**

sphere | Systemic Physiological
| & Ecotoxicological Research

 SAMEN MAKEN WE
MORGEN MOOIER
OVAM

 University
of Antwerp

Risk assessment chromium (Cr) in sediment

❖ Cr speciation

- Cr (VI): very soluble & highly toxic
- Cr (III): less toxic and less bioavailable

❖ Cr bioavailability

- Presence of Acid Volatile Sulfides (AVS), low bioavailability of Cr (VI)

Study area-Grote Calie



Assessing bioavailability & speciation

- The concentration of AVS
- The bioaccumulation of Cr in caged biota (*Gammarus pulex* & *Lumbricus variegatus*)
- The fluxes of labile Cr(III) & Cr(VI) species *in situ* (using DGT)

Assessing biological impacts

- Chronic toxicity test

Gammarus pulex

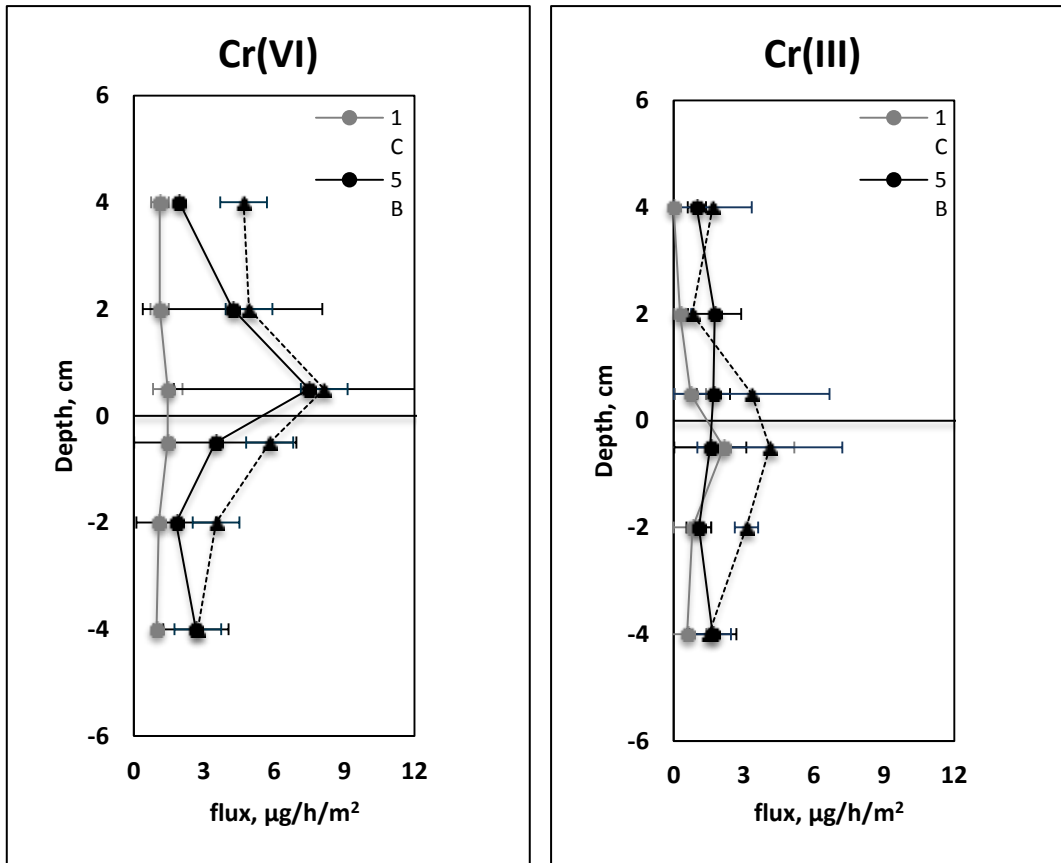


Lumbricus variegatus

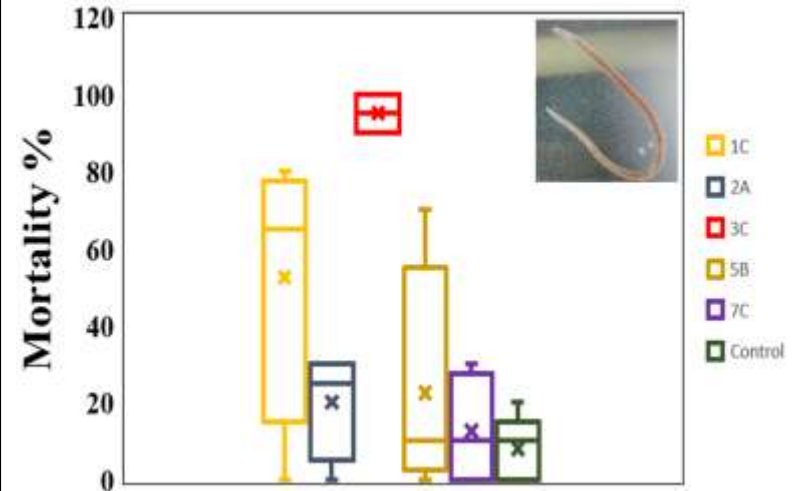


- Macroinvertebrate community assessment

DGT profile Cr(VI) & Cr(III)



Chronic toxicity test *Lumbricus variegatus*



❖ There is no clear relationship between elevated Cr in biota and Toxicity

- ❖ High concentration of total Cr are up to 580 µg/gdw
- ❖ DGT fluxes (availability) of Cr(III) and Cr(VI) is low

Thank you

sphere | Systemic Physiological
| & Ecotoxicological Research



SAMEN MAKEN WE
MORGEN MOOIER

OVAM

 University
of Antwerp