202 Metal mixture complexity: The antagonistic action of a Ni-Zn-Cu mixture to C. dubia becomes additive when Cd is added C. Nys, University of Ghent / Laboratory for Environmental Toxicology and Aquatic Ecology GhEnToxLab unit; C. Janssen, University of Ghent / Laboratory of Environmental Toxicology and Aquatic Ecology; R. Blust, University of Antwerp; E.E. Smolders, KULeuven - BE0419.052.173 / Department of Earth Environmental Sciences; K. De Schamphelaere, Ghent University (UGent) / Applied Ecology and Environmental Biology. There is a need for more understanding about combined and interactive effects of metal mixtures during chronic exposure to be able to incorporate metal mixture toxicity effects into risk assessment procedures. Therefore, we investigated the possible interactive effects in ternary and quaternary mixture combinations of metals; Ni-Zn-Cu and Ni-Zn-Cu-Cd, respectively, on reproductive toxicity to *Ceriodaphnia dubia* using a a ray design in a modified natural water (l'Ourthe Oriental, Belgium; pH=7.3, Dissolved organic carbon= 7.3 mg/L and hardness=84 mg $CaCO_3$/L). Furthermore, we also investigated the influence of varying the metal concentration ratios within the ternary mixture on the magnitude of the interactive effects. Interactive effects were significantly antagonistic according to both the Independent Action (IA) and Concentration Addition (CA) model in the ternary Ni-Zn-Cu mixture. However, the type of interactive effect was dependent on the applied mixture concentration. At low mixture concentrations treatments, IA and CA predicted relative reproduction (RR) were not significantly different from observed RR, i.e., additive. When Ni, Zn and Cu were combined at higher mixture concentrations treatment specific significant antagonistic effects started to occur for both IA and CA. Varying the metal concentration ratios in the ternary mixture did not result in significant differences in the magnitude of the antagonistic effect. However, when Cd was added to the mixture combination, the global mixture effect became additive. The results of this study point out that there is a clear need to better mechanistically (e.g. physiologically) understand metal mixture interactions. Nonetheless, both CA and IA provide conservative models for predicting for *C. dubia* reproductive toxicity in Ni-Zn-Cu and Ni-Zn-Cu-Cd mixtures.