3.11P.7 Nickel and chromium marine ecotoxicity: relevant for risk assessment of enhanced olivine weathering in coastal zones G. Flipkens, Systemic Physiological and Ecotoxicological Research (SPHERE), University of Antwerp / Biology; R.M. Town, Systemic Physiological and Ecotoxicological Research (SPHERE), University of Antwerp / Department of Biology (SPHERE Research Group); R. Blust, University of Antwerp / Biology. Global warming should be kept well below 2°C in order to minimize the potential impacts of climate change. Reducing greenhouse gas emissions will not be sufficient to meet this goal; CO_2 will also have to be actively captured from the atmosphere by so called negative emission technologies (NETs). Enhanced silicate weathering (ESW) is a NET which could be applied in coastal environments. The mineral olivine ($Mg_{2x}Fe_{2(1-x)}SiO_4$) is a prime candidate for this application due to its fast dissolution rate and relatively widespread abundance. ESW aims to increase the CO_2 storage capacity of the oceans by artificially speeding up the chemical silicate weathering process ($Mg_{2x}Fe_{2(1-x)}SiO_4 + 4H^+ \rightarrow 2xMg^{2+} + 2(1-x)Fe^{2+} + H_4SiO_4$). However, associated trace metals are released upon weathering. Nickel (Ni) and chromium (Cr) are of highest concern and might have adverse effects on marine organisms if concentrations rise significantly above background levels. The first objective of this research was to assess the toxicity of Ni and Cr to marine organisms based on literature ecotoxicity data. Species sensitivity distributions (SSDs) were constructed using both external media concentrations and body concentrations. Additionally, bioconcentration and bioaccumulation factors were collected to determine the metal bioaccumulation potential. Finally, environmental exposure distributions for open-ocean and coastal zones were constructed using reported metal concentrations in seawater and sediments worldwide. The hazardous concentration for 5% of the species (HC5) derived from SSDs based on external media concentrations were 0.23 and 0.42 µM for Ni^{2+} and Cr^{6+}, respectively. These concentrations are approximately 60 and 145 times higher than ambient seawater concentrations for dissolved Ni^{2+} and Cr^{6+}, respectively. Nevertheless, trace metal concentrations resulting from enhanced olivine weathering could reach levels similar to or higher than the calculated HC5s for the individual metal ions in shallow water systems with a relatively long residence time. In addition, the potential for mixture toxicity effects must be taken into account. These preliminary results indicate that enhanced olivine weathering could have potential adverse effects on marine biota and care should be taken in setting up field experiments testing enhanced olivine weathering. This research will provide useful information necessary to evaluate one of the possible solutions to achieve the long-term climate goal.