ICYESS2013-87
Interdisciplinary Conference of Young Earth System Scientists
Hamburg, Germany, 22 – 25 September 2013

A consequence of Addition; sub lethal effects of the plastic additive Bisphenol A on a marine copepod

T. Carlsson

Department of biology and environmental sciences, University of Gothenburg, Gothenburg, Sweden
(therese.my.carlsson@gmail.com)

Worldwide there are 4000 different additives used in plastic products. With plastic being the biggest contributor to marine litter, 50% of the plastic produced in Europe being placed in landfills , and a continuous leaching of chemicals that often are not treated in the waste water treatment plants from the products themselves, there is an increased need to understand the effects that these chemicals have on marine life. Bisphenol A is one of the highest production volume chemicals in the world and has shown to mimic oestrogen. Little is known of how it affects organisms in the ocean and a lot of the research has focused on vertebrates. Of all known animals 95% are invertebrates. They often have important ecosystem functions and are essential parts of the marine food web. Additionally they often have other hormones and could therefore react differently. Through looking at non-lethal effects on several different parameters on a species of marine zooplankton I have shown that short term exposure to very small amounts of Bisphenol A decrease their egg production and growth efficiency which can have a negative effect on the species fitness. The chemical also affected the alga used which shows the importance of having an integrated ecosystem perspective when assessing chemicals in the environment.

Working with the effects of hormonal compounds on the environment there are several uncertainties that should be addressed. Through looking at biological effects such as egg production I wanted to get a better understanding of how it affects zooplankton as they are important to predict the effects on ecosystem structure and function. I used a species and a concentration that has previously been investigated, using other parameters, to further increase the understanding of the effects that this chemical has. Although it was not an objective of the investigation I saw an unexpected effect of the chemical on the algae used. This further amplifies the need of searching to understand the effect on the ecosystem as such and not only on isolated species. Moreover Bisphenol A has been observed to not always have a dose dependent effect and in my experiments I saw a stronger effect on the smaller concentration than on the slightly higher. For future research it is important to investigate this further as it creates a larger uncertainty around “safe limit values”.