

## Abstract

Perfluorinated compounds are a broad class of manmade chemicals. Even though they have been linked to hepatotoxicity, neurotoxicity, nephrotoxicity and carcinogenicity, the mechanism of toxicity still remains unclear. Only recently, two compounds (perfluorooctanesulfonic acid and perfluorooctanoic acid) have been phased out. This has led to a production of so-called “novel perfluorinated compounds”. This work focuses on the evaluation of toxicity for 4 perfluorinated compounds, including the novel perfluorinated compounds (perfluorooctanesulfonic acid PFOS, perfluorooctanoic acid PFOA, hexafluoropropylene oxide dimer acid GenX, and hexafluoropropylene oxide trimer acid HFPO-TA). Gonadal and liver cell lines of rainbow trout were used for testing. Relevant toxicity tests were performed, such as viability tests (carboxyfluorescein diacetate, alamar blue and neutral red uptake), cytochrome P450 1A activation (ethoxyresorufin-o-deethylase, EROD) and measurements of reactive oxygen species generation (2',7'-dichlorofluorescein diacetate). HFPO-TA dramatically reduced viability and resulted in a statistically significant increase in intracellular reactive oxygen species. GenX caused an increase in EROD activity, but no effect on viability or reactive oxygen species formation was observed. The measurement of phospholipid fatty acids showed that all tested substances can change the phospholipid fatty acid content of at least one of the cell lines and thus can potentially disrupt its function.