

**ASSESSING THE IMPACT OF MULTIPLE STRESSORS ON THE SURVIVAL
AND FECUNDITY OF *Daphnia pulex***

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Sub-lethal concentrations of both natural and introduced toxins are often found in aquatic systems and can have a significant impact on the growth, reproduction and survival of the aquatic organisms exposed to them. However, these effects are frequently overlooked in favour of the effects of short-term (1-4 days) acute tests. Tests are also often conducted primarily in conditioned laboratory water, potentially missing the effects of interactions between the toxins and the suspended sediments found in natural surface waters. Therefore, in order to better incorporate lethal and sub-lethal effects into a single parameter while reducing cost and time, ten day population growth studies with *Daphnia pulex* neonates (Branchiopoda, Cladocera) were run in the laboratory using both laboratory and natural surface water.

Pesticides commonly found in Puget Sound ground waters (determined from the USGS Fact Sheet – 097-99) were tested individually and in combination at the concentrations detected by the USGS, as well as at 2X, 2.5X, 5X and 10X the detected concentrations. These pesticides included Diazinon, Chlorpyrifos, Carbaryl, Malathion, and 2,4-D.

At the original detected concentrations there did not appear to be any significant effect by the pesticides, individually or mixed in laboratory water, or individually in ground water. However, there did appear to be a significant difference between the mixtures of pesticides depending on the water source. Preliminary tests indicate that the effect of Diazinon individually depended on the water source.