

The effects of oilsands process affected water on zebrafish anxiety

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Oilsands mining in Northern Alberta produces large amounts of process-affected water that contains various toxic chemical compounds, including polyaromatic hydrocarbons (PAHs), heavy metals, and naphthenic acids (NAs). Oilsands process affected water (OSPW) cannot be returned directly to its source due to toxic effects on aquatic and terrestrial life; however, efforts are being made to reclaim OSPW so that it can be returned safely to the ecosystem. Reproductive and immunological endpoints have been used to understand the sub-lethal toxicity of OSPW on fish but behavioural measures have not yet been investigated. Subtle alterations in behaviour could have long-term consequences for the survival of the species and may occur at lower concentrations of OSPW than those that cause the above sub-lethal changes. In the present study, we exposed zebrafish (*Danio rerio*) to dilute OSPW (1% or 10% OSPW) for 10 days. Following exposure, zebrafish were tested for both light/dark preference and their tendency to approach a novel object. These measures have been reliable indicators of anxiety-like behaviours in fish. Results from this study will be discussed and may have potential implications on sub-lethal toxicity levels of OSPW on fish.