Adverse Outcome Pathways and Their Relevance

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INTRODUCTION
There are millions of chemicals registered for use worldwide, but only a fraction of them have been studied to prevent environmental health effects especially in aquatic environments (van Dijk et al. 2021). While hazard assessment is a key component for ensuring chemical safety, documentation on the hazards associated with chemical exposure is often incomplete for nontarget ecologically relevant aquatic species due to lack of ecotoxicological data. Some of the main impediments to generating such data include limited understanding of sensitive life stages, most vulnerable species, and underlying toxicity mechanisms which are critical to identify relevant toxicity endpoints (Breitholtz et al. 2006). As a result, to date, many currently used chemicals do not have sufficient information to determine environmental hazard and risk to aquatic environments. In parallel, public awareness of the potential risks of chemical exposure in the environment is increasing, and environmental managers are now actively considering the use of precautionary approaches to prevent ecological health impacts. This is a significant shift in the current paradigm which typically relies on evidence of impacts before actions are taken.

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