



Pesticide Detectives

Interpretation of results

Sampling Blitz 2 - Sept - Oct 2019

KEY FINDINGS

Pesticides were detected at 8 out of 63 sites (less than 13%); meaning most sites did not have pesticides detected, which is good news for the ecological health of the waterways surveyed in terms of pesticides.

Dieldrin, an organochlorine insecticide, was found at Brickmakers Creek (NSW) at 0.0028 mg/kg (normalised to 1% organic carbon). This concentration is very low when compared to the threshold Sediment Quality Guideline Values (SQGV) of 0.12 mg/kg dieldrin (Simpson et al., 2013). Dieldrin is a legacy pesticide. Degradation of this pesticide will occur slowly over time.

Aldrin, an organochlorine insecticide, was detected at Cuthbertson Creek (VIC) at 0.0037 mg/kg (normalised to 1% organic carbon). There are no specific guideline values for Aldrin. Aldrin breaks down into dieldrin, so the above figures can be used to gauge the level of future environmental impact.

Tebuconazole, a fungicide, was detected at Western Flat Creek (SA) at 0.027 mg/kg.

SQGV are not available for Aldrin and Tebuconazole.



- Bifenthrin, a synthetic pyrethroid, was detected at 7 out of the 8 sites that pesticides were detected at.
- The highest concentration of bifenthrin was found at Orphan School Creek (NSW) at 26.09 $\mu\text{g/gOC}$ (normalized to $\mu\text{g/gOC}$). Values higher than 1.91 $\mu\text{g/gOC}$ can cause impacts on crustacean populations (Jeppe et al., 2017). SQGV is not available for bifenthrin. Values were normalised based on Jeppe et al. (2017) to toxicity comparisons.
- Bifenthrin values higher than 1.91 $\mu\text{g/gOC}$ but lower than 3.5 $\mu\text{g/gOC}$ were found at Crace Creek (ACT) and Kippax Creek (ACT), with the remaining four sites; Forde Creek (ACT), Cuthbertson Creek (VIC), Bruce Creek (VIC) and Brickmakers Creek (NSW) having levels below the 1.91 $\mu\text{g/gOC}$ threshold. It is suggested that further investigation in the next rounds of sampling occurs where Bifenthrin has been detected above the impact threshold.
- Permethrin, a synthetic pyrethroid, was detected at Cuthbertson Creek (VIC). SQGV is not available for Permethrin.



PROJECT PARTNERS



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Interpretations

Results displayed on the Pesticide Detectives map at <http://pesticidedetectives.com.au/> results are raw pesticide data in mg/kg for all pesticides. In this interpretation of results, for some pesticides, such as bifenthrin, an organic carbon normalisation is undertaken to determine bioavailable concentration of the pesticide in sediments. The organic carbon normalised values are used to assess risk posed to aquatic biota through comparisons to sediment quality guidelines.

My site has pesticides detected- what do I do now?

- Please contact the Australian Pesticides and Veterinary Medicines Authority (APVMA) for information on the chemical of interest. APVMA: +61 2 6770 2300.
- There are two more rounds of pesticide surveys occurring in February and April 2020. Further collections of samples from these sites, possibly also upstream and downstream will assist with investigations for possible sources of the pesticide. A single sample gives us an idea of the occurrence of pesticides, additional samples can confirm their presence and concentrations over time and help work out next steps. Go to www.pesticidedetectives.com.au for more information about the next two sampling blitzes.

Why didn't we get many sites with pesticides detected?

- Pesticides may not have been present at the sites tested, which is good news!
- New pesticides are being created every day- while we have screened for an extensive list of pesticides, there may not be a test available to detect a particular pesticide that is present. Some
- pesticides are more water-soluble and, if present, may not have adsorbed to sediment sufficiently for detection to occur.
- Dynamics of the waterway may mean that pesticides could have been present in different parts of the waterway but not at the specific sites that were sampled.
- Quality of sediment may affect detection of pesticides. Pesticides may not adsorb to sandy or coarse sediment compared to fine sediment.

For specific information on each of the pesticides detected please go to the Fact Sheets on our website or the Australian Pesticides and Veterinary Medicines Authority (APVMA): +61 2 6770 2300.

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