# Water Monitoring in Tasmania

*The following summary was prepared by Mr Peter Lee-Archer of the Spray Information & Referral Unit, the Department of Primary Industries and Water (DPIW), Tasmania, and distributed to participants shortly after the conclusion of an 'atrazine forum' which was held at the premises of the Australian Pesticides and Veterinary Medicines Authority (APVMA) on Friday 22 June 2007.*

Since 2005 there has been a Baseline Pesticide Monitoring Program operation in Tasmania. This program now involves the sampling of 55 different locations, with the majority of sampling sites situated near the mouths of rivers. These samples are taken approximately every 3 months and 10 rounds of testing have been completed as at 22 June 2007. Each of these samples is tested for 19 different pesticides that were selected as the more common agricultural and forestry chemicals used in Tasmania.

Assays are conducted for: *alpha-cypermethrin, atrazine, chlorothalonil, chlorpyrifos, fenitrothion, haloxyfop-methyl, hexazinone, pendimethalin, permethrin, simazine, terbacil, 2,4-D, clopyralid, MCPA, metsulfuron-methyl, sulfometuron-methyl, glyphosate, metalaxyl* and *spinosad*.

A second program, the flood monitoring program, uses automated sampling machines which are activated by rising water levels to take samples at four locations across Tasmania. The sampler may take up to 12 samples per event. Again, all samples are tested for the 19 different chemicals.

The water monitoring program is designed to indicate the nature and extent of any water contamination from pesticides and to inform the community. Importantly it will also assist DPIW to get a more informed understanding of chemical occurrences in rivers, and to identify priority areas where additional regulatory focus may need to apply.

The program is not designed to provide early warning of events in particular locations and it cannot do that because there is often a considerable time lapse between sampling and finalisation of water analysis.

There have been over 550 samples taken and tested during this program and each sample was tested for the entire range of 19 chemicals.

There have been a total of 20 detections of chemicals (out of over 16,000 assays) during this time and these detections have come from 10 of the 55 rivers tested.

The 20 detections included only 7 of the chemicals ie. 12 of the 19 chemicals assayed for have never been detected during the ongoing monitoring program.

All readings have been around Guideline Values (limit of detection) and none have approached Health Values.

Follow-up sampling of the 20 positive results indicated subsequent detections in 2 cases; however there were no ongoing detections from any of the 20 events.

Detections of pesticides reported as part of this program are routinely followed up to try and determine the likely source and to ensure there is no further contamination. These follow-up investigations occur regardless of the level of contamination and independent of whether it is likely to constitute an offence under Tasmanian legislation.

Any compliance activity that can be taken following low-level detections is followed up. From the broad perspective, the water-monitoring program has demonstrated that some herbicides may occasionally be found in Tasmania's waterways at trace levels. However, there is no evidence yet to show this is common or that it occurs at levels that represent any risks to human health or the environment.

Details of all detections are as follows:

**Detections in the Baseline Monitoring Program to date**

| **Monitoring Round** | **Date** | **Outcome** |
|---|---|---|
| Round One | January 2005 | Nil detections |
| Round Two | April 2005 | 0.09 ppb simazine - Prosser River |
| Round Three | July 2005 | 0.14 ppb atrazine - Rubicon River |
| Round Four | October 2005 | 2.2 ppb simazine - South Esk<br>0.1 ppb terbacil - South Esk |
| Round Five | January 2006 | Nil detections |
| Round Six | April 2006 | 0.07 ppb simazine - Montague River |
| Round Seven | July 2006 | 0.1 ppb MCPA - Duck River<br>0.18 ppb simazine - Rubicon River<br>0.67 ppb 2,4-D - Rubicon River<br>0.13 ppb simazine - Brid River<br>0.14 ppb atrazine - Jordan River |
| Round Eight | October 2006 | Nil detections |
| Round Nine | January 2007 | 0.27 ppb MCPA - Duck River<br>0.05 ppb atrazine - Duck River<br>0.05 ppb hexazinone - Inglis River |
| Round Ten | April 2007 | 0.10 ppb MCPA - Jordan River |

**Flood monitoring results to date**

| **Date** | **Chemical** | **River** | **Levels & duration** |
|---|---|---|---|
| June 2005 | terbacil | Little Swanport | Various |
| June 2006 | MCPA | Duck | Various |
| February 2007 | MCPA | George | 0.1 – 1.11 ppb 4 days |
| | 2,4-D | George | 0.53 – 0.2 ppb 2 hours |
| 30 April –1 May 2007 | Metsulfuron methyl | George | 0.14 - 0.30 ppb 2 days |
| Follow-up<br>4-6 May 2007 | Metsulfuron methyl | George | 0.10 – 0.24 ppb 3 days |

**Summary of pesticide detections**

| Pesticide and no. of detections | Range of Detections (ppb) | Guideline Value (ppb) | Health Value (ppb) |
|---|---|---|---|
| Atrazine (3) | 0.05-0.14 | 0.1 | 40 |
| Simazine (5) | 0.07-2.2 | 0.5 | 20 |
| MCPA (5) | 0.1-1.11 | 2 (WHO level) | Not Determined |
| Metsulfuron methyl (2) | 0.10-0.30 | Not Determined | 30 |
| 2,4-D (2) | 0.2-0.67 | 0.1 | 30 |
| Terbacil (2) | 0.1 | 10 | 30 |
| Hexazinone (1) | 0.05 | 2 | 300 |

In relation to the APVMA's atrazine forum, the Tasmanian monitoring agency (DPIW) would like to highlight two issues from the summary table:

- There have been only 3 atrazine detections since 2005. All these were one-off detections with no ongoing contamination. Follow-up tests were taken in all cases to ensure the rivers were clear.

- Detections of chemicals in the George River since 2005 are limited to MCPA, 2,4-D and metsulfuron-methyl and have occurred at extremely low levels. These detections have all occurred in the first half of 2007.

Full details of all tests can be found on the Tasmanian DPIW website www.dpiw.tas.gov.au under the 'Water' heading (then click on 'Pesticide Monitoring in Water Catchments').

There is another project currently in progress in Tasmania called "The Tasmanian River Catchment Water Quality Initiative". Two of the objectives of this project are to:

- Determine the nature and extent of agricultural and forestry pesticide usage in Tasmania;
- Research chemical behaviour in the Tasmanian environment.

Findings from this project will be utilised in determining future monitoring requirements within Tasmania. Further details of this project can be found on the DPIW website.

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