

Foam in Darebin Creek: EPA-CAPIM-Council joint investigation

Information
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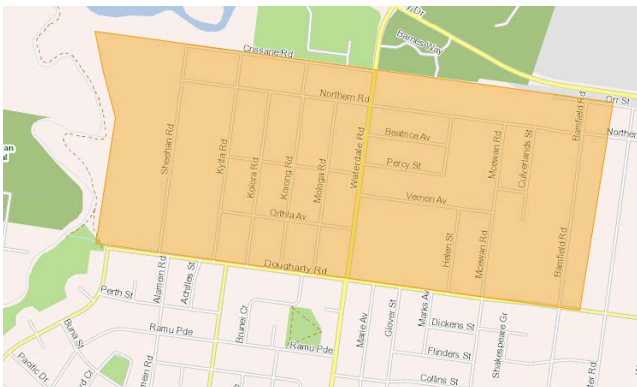
Publication 1537 July 2013

Authorised and published by EPA Victoria, 200 Victoria Street, Carlton

Darebin Creek experienced frequent pollution in the form of detergent foam in the first half of 2012. This caused fish deaths and analysis of creek waters showed elevated levels of surfactants (which produce foam); however, there was no pattern to the pollution. The pollution was found to be coming from an industrial area in Heidelberg West that drains into a common outlet, the Lilimur Avenue drain, then to Darebin Creek. EPA, the Centre for Aquatic Pollution Identification and Management (CAPIM) and Banyule City Council launched a campaign of media, education, industrial site visits and scientific analysis, which stopped the pollution.

A pollution problem

Heidelberg West Industrial Estate occupies an area of 90 hectares. The entire catchment drains to a single drain, the Lilimur Avenue drain, and into Darebin Creek. Between January and May 2013, EPA received 23 reports of white foam in Darebin Creek. In addition, dead fish were reported on 1 and 4 April. The observations were all downstream of the Lilimur drain.



Heidelberg West Industrial Estate catchment

Investigation

EPA officers who investigated were unable to trace the foam much further than the Lilimur Avenue drain. This was due to the random and transient nature of the pollution and the fact that, unlike other pollutants such as paints or oils, the pollution did not leave a trail that investigating officers could track back through the stormwater system.

Site inspections

EPA's initial response to these results was to inspect and provide compliance advice to 11 premises that were identified as likely to carry out washing activities with detergents. The sites were inspected between April and May 2012. Although some minor issues were uncovered, these inspections proved inconclusive.



Foam in Darebin Creek, 18 May 2012

Confirmation of pollution

During the course of the April/May inspections, EPA officers were able to collect a sample of a live fish that was under stress, and this enabled analysts to identify what was causing the fish deaths. Officers also took water samples, which were tested for surfactants and other pollutants.

Initial analysis of the water samples showed elevated levels of metals and *E. Coli*. However, these levels were typical for urban streams and didn't explain the fish deaths or the foam.

An important turning point in the investigation was when analysis of the water samples showed the presence of surfactants commonly found in detergent. If the concentration of surfactants is high enough in a waterway it can be toxic to aquatic life such as fish, frogs, insects and algae. Autopsies of the fish supported this finding, in that they showed that the fish died due to chemical injury of the gills and this was a result of chronic exposure.

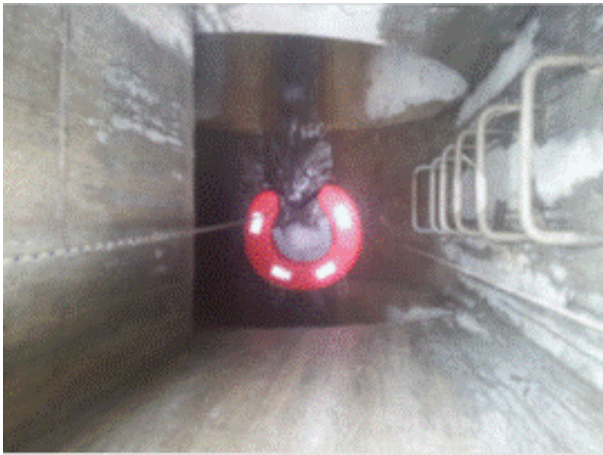
We believed that the likely source of the pollution was wash waters or greywater. Reports of the foam incidents continued (a further 20 reports were received between June and September). A new approach was required.

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A joint approach

In Early June 2013 a planning session was held with officers representing Banyule City Council and EPA, along with Melbourne Water and CAPIM. To track down the source of pollution in the Lilimur catchment an investigation and engagement plan was created and involved:

- deploying passive samplers (developed by CAPIM) in stormwater drains at 5-6 junction areas in the Lilimur drain catchment to narrow down the source
- providing sampling jars to local Waterwatch volunteers to correlate foam events with passive sampling
- an education and communication campaign, including the distribution of stormwater protection brochures
- a media campaign.



Passive sampler deployed in a stormwater drain

A problem solved

The passive sampling investigation narrowed the source of the pollution down to a smaller section of the catchment in the north-east of the industrial estate, parallel with Crissane Road.

However, this area still covers over 100 properties. Interestingly, no major foaming event has been reported during or since this monitoring program, suggesting that the problems associated with the major episodic discharges of the surfactants were either remedied at the responsible businesses or the businesses were previously unaware that a problem was occurring.

It is possible that the consistent presence of EPA officers and ongoing media throughout the study period had a role in stopping the discharges. This would have increased awareness amongst business owners of ongoing investigations in the area.

Since reports of foam stopped after 12 September 2012 and passive sampling results did not identify any further surfactant discharges, we stopped sampling in December 2012.

Tracking results



Author: David Sharley
0.0 0.1 0.2 0.3 0.4
Kilometers
CAPIM

Legend	
—	hotspot_drain
—	council drains
—	Melbourne Water drains
	industrial areas within the subcatchments

Sub-catchment showing hotspot drain

Project close





EPA closely monitored pollution reports for a further six months from September 2012. In that time there was no reoccurrence of foam in Darebin Creek. EPA will still continue to investigate reports of pollution in the creek, as we would elsewhere in Victoria.



Darebin Creek, 19 August 2012

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Five steps for protecting stormwater

Step		What you should do	
1	Secure loose material	<ul style="list-style-type: none"> Control the escape of raw materials, product and wastes from where they are used or stored. Store and use fine material undercover or indoors. Store all waste securely undercover or in closed bins and skips. Sweep up escaped material and place it in a bin. 	
2	Washing plant, equipment or products	<ul style="list-style-type: none"> Don't discharge wash effluent into stormwater drains. Detail cars and wash equipment in a covered, bunded wash bay. Connect your wash bay to the sewer system via a water/oil separator. Use a commercial wash bay facility if you only do this work occasionally. 	
3	Check your drains	<ul style="list-style-type: none"> Keep drains clear, and clean of litter, cigarette butts, metal shavings, sand, sediment, raw materials or other products. Regularly pick up litter, sweep outdoor areas and clean up drips and spills. Store fine material securely to stop it blowing away. Stop forklifts and trucks tracking materials into outdoor areas. 	
4	Store and manage liquids properly	<ul style="list-style-type: none"> Use bunds around areas where liquids are used or keep them stored to contain them in a spill. Use a spill pallet to catch any spills or drips if you only keep a few 205-litre drums. 	
5	Spill kits and spill response plans	<ul style="list-style-type: none"> Ensure your spill kit and response plan is up to date and close to where liquids are used and stored. Include absorbents, brooms, personal protective equipment, contaminated waste bags, drain seals and leak sealing putty in your spill kit. Maintain a spill response plan that describes what to do and who to contact in the event of a spill or leak. 	