



Botany Groundwater Cleanup Project

Fact Sheet 21

December 2009

Residential Bore Monitoring Program

An important part of the Botany Groundwater Cleanup Project is a six-monthly program, which involves Orica Australia Pty Limited (Orica) testing residential bores within the Groundwater Extraction Exclusion Area (GEEA) for volatile chlorinated hydrocarbons (CHCs), the by-product of past chemical operations at Botany Industrial Park (BIP). A map of the GEEA is attached to this Fact Sheet.

Background

In 2003, the then Department of Environment and Conservation, which became the Department of Environment and Climate Change and is now the Department of Environment, Climate Change and Water (DECCW), issued a Notice of Clean Up Action (NCUA) to Orica. The NCUA relates to groundwater contamination originating from Orica's site at Botany. In particular, it relates to a group of chemical contaminants known as volatile CHCs.

Orica prepared a Groundwater Cleanup Plan (GCP) in response to the NCUA in October 2003. The GCP includes regular monitoring of groundwater in residential areas adjacent to the inferred affected area. Under this residential bore monitoring program Orica engages URS Australia Pty Ltd (URS) to collect water samples from residential bores in the GEEA. The residential well sampling program commenced in October 2003.

Collection and Analysis of Bore Water Samples

At the request of eligible residents (whose properties must be located within the GEEA), Orica arranges for a URS representative to collect water samples from the residents' bores. The bore water samples are collected in a manner that ensures they are representative of groundwater in the vicinity of the sampled bore. Sampling, handling and testing protocols are conducted in accordance with relevant regulatory guidelines. The water samples are then sent to Australian Laboratory Services Pty Ltd (ALS) to be analysed for volatile CHCs. ALS is an independent laboratory, registered with the National Association of Testing Authorities.

Full details of the bore sampling and testing program are provided to DECCW.

Extent of Testing

Orica only analyses residential groundwater samples for volatile CHCs, which relate to chemical manufacturing activities at the BIP that have long ceased. However, residents should note that the Botany area has a long history of industrial activity and that there could be contaminants present in bore water from these other sources. Orica's bore testing does not assess the presence of other potential contaminants.

Orica conducts residential bore monitoring twice a year. The following table outlines when testing is available to residents in the GEEA:

GEEA residents who have a detection of Orica-related CHCs in a residential bore monitoring event	Every six months
GEEA residents who have no detections of Orica-related CHCs in a residential bore monitoring event	Annually

Analytical Results

Analytical data is reviewed for appropriate accuracy and precision. The data is then compared with screening level guideline values (see below) and data that has been assessed in Human Health Risk Assessments (see below).

A report discussing the results, including copies of the laboratory reports containing the analytical results for each residential bore event, is sent to DECCW and the Office of Water (formerly the Department of Water and Energy, which is now amalgamated into DECCW) for their information. An abridged version of the report is provided to NSW Health and the City of Botany Bay Council.

Residents are provided with a letter report of the results from their bore test. Residents may also request from Orica a copy of the laboratory report for their bore.

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Groundwater Screening Level Guideline Values

Analytical results for groundwater collected from the residential bores are compared with the following national or international guidelines, which are typically drinking water standards:

- National Health and Medical Research Council (NHMRC) Australian Drinking Water Guidelines (ADWG) (2004);
- World Health Organisation (WHO) Guidelines for Drinking Water Quality. First Addendum to Third Edition (2006 with rolling revisions); and
- United States Environmental Protection Agency (US EPA) Regional Screening Levels (RSL), Residential Tap Water (April 2009).

If the results of the groundwater sample do not exceed the guideline value (i.e., it would meet the standard for tap water for those compounds), then no further assessment of the data is carried out. However, if a screening level concentration is exceeded, then the results for that substance are compared with the concentrations assessed in the Human Health Risk Assessments.

Consideration of the Potential for Human Health Risk

In 2005 URS conducted a human health risk assessment for Orica (Consolidated Human Health Risk Assessment, CHHRA, August 2005) for volatile CHCs contamination in groundwater, including in residential areas. The assessment considered a range of potential uses of groundwater in a domestic situation, including drinking, irrigation (including the subsequent consumption of vegetables and/or fruit irrigated with groundwater) and wading and swimming in pools filled with groundwater.

The risk assessment indicated that the presence of volatile CHCs in groundwater in residential areas (based on concentrations reported prior to 2005) did not pose an unacceptable risk to human health.

The CHHRA was reviewed and accepted by the then DECC (Department of Environment and Climate Change) and the Department of Health. It was also independently reviewed and accepted by Professor Brian Priestly, Director of the Australian Centre for Human Risk Assessment of Monash University (endorsed by DECCW). The report of the human health risk assessment is available on the Orica Botany Groundwater website www.oricabotanytransformation.com

Separate amendments to the CHHRA are prepared for areas within the GEEA if groundwater contamination is found at concentrations higher than those considered in the CHHRA.

Dent Street Residents

An Addendum to the CHHRA, Residential Bores (URS, March 2006) was prepared when the concentration of vinyl chloride (VC) detected in a residential bore in Dent Street Botany in May 2005 was greater than that considered in the CHHRA. This additional assessment indicated that the extraction and use of groundwater from a number of residential bores in Dent Street had the potential to result in unacceptable exposure under a worse case scenario. Since these properties were located in the GEEA, where groundwater should not be extracted or used, the groundwater was considered not to pose an unacceptable risk to human health. The 2006 assessment included additional shallow groundwater sampling and soil vapour monitoring, and concluded that residents were unlikely to be exposed to vapour emissions from the plume.

Collins Street and Surrounding Area Residents

The 2006 Addendum to the CHHRA also considered the detection of elevated concentrations of tetrachloroethene (PCE) and trichloroethene (TCE) in residential bores in Collins Street. The Addendum to the CHHRA for Collins Street considered risks associated with groundwater use but did not assess exposure from vapour emissions from the ground surface. This report indicated that extraction and use of groundwater by residents within Collins Street had the potential to result in unacceptable lifetime risks to residents' health. However, given that Collins Street is located within the GEEA and consequently groundwater should not be extracted and used in this area, groundwater was considered unlikely to present an unacceptable risk.

Source of Groundwater Contamination in Residential Bores in the Collins Street Area

In 2005 the then DECC declared a former industrial property on Page Street, Pagewood as a remediation site. Chemicals formerly used on this site - some of which are CHCs included in Orica's analyses - are considered a potential source of groundwater contamination in the Collins Street area. If you have any questions about the Page Street site please contact DECCW on the number provided below.



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Reminder – Residential Use of Groundwater is Prohibited

Current regulatory classification prohibits the use of groundwater from residential bores in the GEEA. Please contact the Office of Water (contact details are provided below) if you have any queries regarding this issue.

Orica Commitment to Groundwater Cleanup

Orica is committed to the groundwater treatment project. Extraction and treatment of contaminated groundwater at our Groundwater Treatment Plant commenced in January 2006 and is achieving significant containment of the Orica-related groundwater contamination. The groundwater cleanup is a long-term project that will take many decades to complete. Orica will continue to inform the community of developments, as they occur, through the Community Liaison Committee, newsletters, regular columns in local papers and our website www.oricabotanytransformation.com

Further Questions

If you have further questions regarding the residential bore monitoring program, please contact any of the following people during business hours Monday to Friday.

Ms Lily Roberts-Everett Community Relations – Botany Transformation Projects Orica Australia Pty Ltd	(02) 9352 2015
Mr Matthew Hart Project Officer Contaminated Sites Section Department of Environment, Climate Change and Water	(02) 9995 5707
Mr Santo Cannata Senior Environmental Health Officer & Business Coordinator South Eastern Sydney and Illawarra Area Health Service	(02) 9382 8333
Mr Greg Russell Groundwater Manager Sydney South Coast Region Office of Water	(02) 9895 6273

Links to further references

- Orica Botany Groundwater website: www.oricabotanytransformation.com
- Office of Water website: <http://www.dwe.nsw.gov.au>

Attachment

Map of Groundwater Extraction Exclusion Area