Community Newsletter

Botany Groundwater Cleanup Project Issue 15

Update from the Botany Groundwater Community Liaison Committee July 2004

New-look newsletter

After considerable feedback from CLC members and local residents, the CLC would like to provide greater detail of the groundwater cleanup project in this newsletter. In the past, the newsletter aimed to reflect the discussion at the quarterly CLC meetings. However, given the range of projects that Orica is undertaking, it seems appropriate to try to use the newsletter to capture highlights of these activities. Hence, it is now a little larger, and hopefully more informative. We would value any feedback on it from members of the community.

Distribution

This newsletter is distributed throughout the suburbs neighbouring Orica's Botany site, including Banksmeadow, Botany, East Botany, Pagewood, Hillsdale and Matraville.

Improving overall communication with the community

Over the past few months Orica has provided regular community updates on the details of its Botany Groundwater Cleanup Plan through the *Southern Courier*. This newsletter provides a snapshot of what has been published within those columns.

Orica has also established a dedicated website to promote public access to the technical documents, including the Groundwater Cleanup Plan. Hard copies of many of these technical documents are also available through the Botany libraries (Eastgardens and Mascot branches).

The website address is: www.oricabotanygroundwater.com

Project Highlights

Residential Sampling

Part of Orica's monitoring program has involved sampling of residential bores. The first round of sampling took place in October 2003, the second in May 2004. The sampling is aimed to provide reassurance to local residents that contaminated groundwater has not affected their bores. Results of the May sampling round will be provided to the residents in early July.

Groundwater Cleanup

Orica has been working to clean up the contaminated groundwater for a number of years, intensifying efforts since submitting a Cleanup Plan to the Department of Environment and Conservation (operating as NSW EPA) in October 2003.

Orica intends to use several methods to clean up the contaminated groundwater. Some of these methods will enable the groundwater to be treated *in situ* (i.e., in the ground), while others will require its extraction from the ground and transportation to treatment facilities (*ex situ*).

In situ treatment options include bioremediation and reactive iron barrier technology. Trials are underway at Orica Southlands to test the effectiveness of bioremediation. Orica hopes to have the results of those trials by the end of the year. Reactive iron barrier technology has been trialed by Orica since 1999. It promises good results for destruction of some chlorinated hydrocarbons, but notably not EDC.

Bioremediation

After extensive laboratory trials and subsequent design based on the results of those trials, Orica began bioremediation field trials in February 2004. The trials involve injecting three different nutrients into the groundwater to help naturally occurring microorganisms break down the target chemicals (mainly EDC). The three nutrients are:

- a mix of potassium oleate and calcium chloride;
- a diluted ethanol solution; and
- emulsified vegetable oil.

By trialing three different nutrients, Orica can choose the most efficient nutrient that best aids in breaking down the chemicals.

The nutrients will be consumed by the bacteria. The bacteria are expected to degrade the EDC into ethane and ethene gas and chloride salts.

Bioremediation Field Trials, Area B, Southlands

The purpose of the trials is to evaluate the feasibility of using bioremediation to intercept and destroy the dissolved contaminants in the groundwater. The trials are expected to be concluded at the end of the year. Orica will present the results to the EPA as well as proposals to use the technology to intercept the contaminant plumes in key areas. As results of these trials become available Orica will advise the community through the *Southern Courier* column and discuss them in more detail in the next newsletter (October).

Botany Groundwater Cleanup Project

Hydraulic containment

Hydraulic containment is a method used to stop contaminated groundwater from passing a certain point or 'containment line'. It is the 'pump' component of what is commonly known as 'pump and treat'. A row of extraction bores is drilled into the ground and the groundwater is pumped out from them. At the surface the water is transferred to a treatment system, where contaminants are removed. Once contaminants are removed, the water can either be put back in the ground, used on site, or sent to sewer.

Hydraulic containment is considered to be an essential first step in halting the spread of the contamination.

Orica has begun design of a groundwater treatment plant at the Botany Industrial Park. It will take about 18 months to develop detailed plans, seek appropriate approvals and build a groundwater treatment plant. The groundwater will eventually be pumped out of the ground at Southlands and transferred via pipeline to the plant.

Plans for the pipeline have been submitted to the Department of Infrastructure, Planning and Natural Resources (DIPNR).

As interim measures to provide more immediate interception of the groundwater, it will be pumped out of the ground and transported to two locations:

1. Initially, the Waste Service NSW Liquid Waste Treatment Facility at Lidcombe; and then

2. The Steam Stripping Unit at the Botany Industrial Park (when it is recommissioned).

The proposed pipeline will transfer the groundwater to the Steam Stripping Unit (***pictured at right).*** Tankers will transport it to Lidcombe.

History of the Plumes

Orica believes that its contamination of the Botany groundwater occurred in three ways:

- The chlorinated hydrocarbons that make up the southern plumes were probably released to the ground in the 1950s and 60s before proper liquid effluent disposal infrastructure and methods were introduced.
- The EDC that makes up the majority of the central plume is likely to have leaked from several onsite storage and processing areas during the 1970s and 80s and been mobilised by contamination investigations in the 1990s.
- The northern plumes probably originate from leakages from open drum storage areas in the northern parts of the Botany Industrial Park that occurred during the 1960s and 70s.

Orica first identified the plumes in 1990 when a survey of the Botany groundwater was undertaken. Since then, Orica has regularly monitored surface water, groundwater, air emissions and marine organisms to track the plumes and any changes in environmental conditions and associated risks to human health.

A number of remediation activities have taken place since that time including:

- Relining of stormwater pipes between the operating site and Springvale Drain
- Relining of stormwater pipes on the operating site
- The realignment and dredging of contaminated sediments from Springvale Drain

Fact Sheets

There is a range of fact sheets available on the website. These fact sheets have been designed to provide members of the community with simple and easy-to-understand information on environmental science and technology.

To date the fact sheets include summaries on:

1) Trials at Lidcombe Waste Treatment Plant
2) Steam Stripping Unit Recommissioning
3) Bioremediation
4) Chlorinated Hydrocarbons
5) Ethylene Dichloride (EDC)
6) Hydraulic Containment
7) Reactive Iron Barrier
8) Tanker Loading Facility
9) Transfer Pipeline

Orica is continuing to develop these fact sheets as the project progresses. Currently under development are fact sheets for:

10) Groundwater Treatment Plant (GTP)
11) Environmental Impact Statement Process for the GTP
12) Project Milestones
13) Monitoring Programs
14) Dense Non-Aqueous Phase Liquids (DNAPL)

If there are any specific relevant technologies or issues that you would like to see prepared as a fact sheet, please advise the CLC secretariat (James Stening – 02 9352 2213) or the Community Hotline (1800 025 138).

Botany Groundwater Cleanup Project

2 June CLC meeting highlights

Meeting Overview

Niall Johnston of the NSW Department of Conservation (formerly the EPA), and Bruce Gotting of Orica each gave an update on the Botany Groundwater Project to the members. These presentations are available on our Botany Groundwater website: www.oricabotanygroundwater.com The briefing paper prepared for members for the meeting is also online.

Highlights of these discussions have been summarised for this newsletter.

Discussion about thermal oxidation

The groundwater treatment process requires high temperature destruction of the volatile contaminants following their separation from the groundwater. While use of thermal oxidation is a robust and proven method to destroy chemicals, it is not accepted by a number of Non-Government Organisations (NGOs).

During the CLC meeting on 2nd June a letter from the National Toxics Network was tabled, identifying some of the issues associated with Orica's proposed use of thermal oxidation in the Groundwater Treatment Plant. The content of the letter opposed any incineration process at Botany.

There are different incineration processes for different chemicals which are also dependent on the technology being used. While there have been bad experiences of incineration historically, it doesn't necessarily mean all incineration processes are poor. They each need to be evaluated on their merit with respect to emissions.

The Environmental Impact Statement (EIS) process for the plant will be very transparent and open and will provide people with several opportunities to state their points of view.

Environmental Impact Statement - Workshops

Orica is holding a series of community workshops on the Environmental Impact Statement for the proposed Groundwater Treatment Plant. The first, held on Wednesday 16 June provided community members with an outline of the project and a chance to raise relevant questions. A more detailed report of this first workshop is on page four.

The second workshop, planned for Tuesday 20 July, will outline Orica's preliminary findings. An agenda for this workshop will be prepared and advertised in the *Southern Courier* at the beginning of July.

The third workshop, planned for Monday 16 August, will be the final review before the development application and EIS are submitted to DIPNR for exhibition.

If you would like to register for the July and/or August workshop, please contact Louise Walker on 02 9352 2307. Please see the insert in this newsletter for more details about the workshop program.

DIPNR strategy

Based on the recommendations of the Healthy Rivers Commission, DIPNR reported to the meeting that it is creating a Botany Groundwater Strategy. Its objectives include:

- Prevention of overextraction;
- Protection of the environment and the local community's health;
- Prevention of further degradation of the resource;
- Restoration and remediation of the resource (which includes but is not limited to Orica's current work);
- Better communication; and
- Helping government make better decisions.

Numerous agencies will be involved including NSW Health, DIPNR, Department of Environment and Conservation, Botany Bay City Council, Randwick City Council and Sydney City Council. An inter-agency working group has been created and it has held three meetings. There will be opportunities for communication with the community in the coming months.

Next meeting

The next CLC meeting will be held on Thursday 26 August 2004 at Botany Town Hall.

Community Matters
Orica Australia Limited
16-20 Beauchamp Road
Matraville NSW 2036

Community Hotline
1800 025 138

Botany Groundwater Cleanup Project

Issues raised in the Groundwater Treatment Plant EIS Workshop 1 16 June 2004

Overview

The workshop was chaired by Assoc. Professor Ronnie Harding, Director of the Institute of Environmental Studies at the University of NSW, Kensington.

Orica provided members of the community with an overview of the groundwater treatment plant and the processes being planned to recover the water, destroy the contaminants, and reuse the water.

Environmental consultants, URS provided the community with an overview of the environmental impact statement process and the studies that were being undertaken to evaluate the plant design and operation.

Summary of issues raised

The key points raised during workshop discussion that will be considered as part of the Environmental Impact Statement include:

Alternatives to building the plant

- The exploration of alternatives to the Groundwater Treatment Plant including:
  - 'do-nothing' approach
  - bioremediation
  - other ways of destroying chemicals after they have been stripped (rather than using an incinerator)

The thermal oxidation process

Thermal oxidation is being evaluated as the preferred technology because it is a robust and proven method used in other parts of the world to destroy contaminants and can be installed within the time constraints of the Notice of Clean Up Action issued by the EPA. Key issues raised by some workshop participants included:

- Australia has recently ratified the Stockholm Convention that includes dioxins on its list of persistent organic pollutants (POPs). The National Toxics Network and Greenpeace do not agree with using this technology, as dioxins are produced by incineration.
- The need to understand the expected level of compliance with emission standards for dioxins.

Health Risk Assessment

- Protection of workers on plant
- Regular health checks for workers on plant
- Protection of other personnel on Botany Industrial Park
- Protection of local community
- Geographic boundaries for community protection – determined by sources and pathways
- Important to consider cumulative impacts associated with other industrial sites

Hazard Risk Assessment

- Safety of workers
- Involvement of WorkCover
- Training of workers
- Consider need to update existing studies in light of the proposed works

Groundwater modelling

- Consideration of outside (beyond Orica) influences over groundwater flow (e.g. high rainfall)
- Risk of subsidence
- Risk of contamination of shallow residential bores
- Extent of boundaries
- Assumptions
- Groundwater modelling study to be publicly available

Air quality

- Considerations of cumulative effects – important not to look at site in isolation
- Modelling assumptions – including weather variations

Treated water quality

- Outline the standards to be applied

Reuse of water

- Explore the possibility of reusing all treated water

Construction

- Dust content
- Spread of dust
- Geotechnical studies

EDC Storage

- Security of storage
- Regulations
- Managed risks (e.g. fire, leakage)

Future workshops

- 20 July and 16 August
- allow for specific sessions for review of preferred and alternative process technologies, preliminary health and environmental study findings.

For further information there is a two page report available on the Botany groundwater website with more details on the summary of issues. *Please refer to the newsletter insert detailing the community workshop session for 20 July 2004.*