

Our reference : Licence 2148 DOC09/117998
Contact : Bob Marr, 9995 6825

Ms Lucy Archer
Communications Manager
Botany Transformation Projects
Orica Australia Pty Ltd
16-20 Beauchamp Rd
Matraville NSW 2036

Dear Ms Archer

Re: Scan for semi-volatile compounds in samples collected from groundwater feed to the Groundwater Treatment Plant (GTP)

I refer to your letter dated 9 April 2009 about the above matter. The Department of Environment and Climate Change (DECC) has considered Orica's responses to DECC's request for this sampling and notes the conclusions.

I take this opportunity to thank Orica for carrying out this work to address the concerns raised by Independent Monitoring Committee member John McCracken regarding this issue. DECC will acknowledge this work during the upcoming Community Liaison Consultation Committee in June.

If you have any queries please contact Bob Marr on 9995 6825.

Yours sincerely

 28/04/09

David Gathercole
Acting Head Sydney Industry
Environment Protection and Regulation.

The Department of Environment and Conservation NSW is now known as
the Department of Environment and Climate Change NSW

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09 April 2009

David Gathercole
Acting Head Sydney Industry
Department of Environment and Climate Change
PO Box 668
Parramatta NSW 2124

Dear David,

Introduction

The Department of Environment and Climate Change (DECC) requested, in a letter dated 12 September 2008, that Orica scan for semi-volatile compounds (SVOC) in samples collected from the groundwater feed to the Groundwater Treatment Plant (GTP) and treated water discharged to the Perry Street Canal (EPA identification Point 14). The request was in response to feedback from Independent Monitoring Committee (IMC) member John McCracken on IMC Task 21.

Analytical Methodology

Water sampling was undertaken by appropriately experienced Orica laboratory staff. Sample containers were appropriate for SVOC and samples were sent to a laboratory (ALS) using chain of custody documentation.

Following from DECC recommendations, the following analytical methodologies were used to analyse the water samples:

- Semivolatile Scan for Unknowns EP073 WATER:
 - USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS. This method is compliant with NEPM (1999) Schedule B(3)
- Semivolatile Organic Compounds EP075 WATER:
 - USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3).

The results are provided in the attached tables.

Results

In the groundwater feed, as expected, phenolic compounds (2,4-dichlorophenol, 2,6-dichlorophenol, 2,4,6-trichlorophenol) and chlorinated hydrocarbons (hexachloroethane and hexachlorobutadiene) were detected at concentrations above the limit of reporting. Naphthalene was also detected.

At the discharge, as measured at EPA identification Point 14, only 2,4-Dichlorophenol (mean 5.7 µg/L) was detected above the limit of reporting, but this concentration was well below the ANZECC (2000) 95% trigger value for fresh water of 160 µg/L.

Conclusions

Comparison of feedwater results and discharge results from EPA Point 14 demonstrate that:

- There are semivolatile compounds present in the feedwater to the GTP (made up of groundwater from all three containment lines). Primarily phenolic compounds and chlorinated hydrocarbons.
- Only 2,4-Dichlorophenol (mean 5.7 µg/L) was detected above the limit of reporting (2.0 µg/L) at Point 14. This concentration is well below the ANZECC (2000) 95% trigger value for fresh water of 160 µg/L.
- The significant decrease in concentrations of compounds such as 2,4-dichlorophenol, 2,6-dichlorophenol, and 2,4,6-trichlorophenol at EPA Identification Point 14 compared to the groundwater feed shows the GTP is capable of removing semi volatile compounds effectively from the groundwater.
- Water discharged from the GTP at Point 14 does not present a risk to human health or the environment with respect to the presence of semi volatile compounds.

If you have any queries, please contact the undersigned.

Kind regards,



Lucy Archer
Communication Manager, Botany Transformation Projects

Attachment – Tables of Results

Table of Results - Groundwater

GTP Job No				GTP0810168-1	GTP0810192-1	GTP0810217-1	Average
Sample Name				GROUNDWATER	GROUNDWATER	GROUNDWATER	
Date				24/10/2008	28/10/2008	3/11/2008	
Time				1100	1130	1530	
Analyte grouping/Analyte	CAS Number	Units	LOR				
Phenolic Compounds							
Phenol	108-95-2	µg/L	2	<2	<2	2	2
2-Chlorophenol	95-57-8	µg/L	2	3	3	3	3
2-Methylphenol	95-48-7	µg/L	2	<2	<2	<2	<2
3- & 4-Methylphenol	1319-77-3	µg/L	2	2	2	<4	2
2-Nitrophenol	88-75-5	µg/L	2	<2	<2	<2	<2
2,4-Dimethylphenol	105-67-9	µg/L	2	<2	<2	<2	<2
2,4-Dichlorophenol	120-83-2	µg/L	2	43	37	38	39.3
2,6-Dichlorophenol	87-65-0	µg/L	2	8	8	10	8.7
4-Chloro-3-Methylphenol	59-50-7	µg/L	2	<2	<2	<2	<2
2,4,6-Trichlorophenol	88-06-2	µg/L	2	4	4	6	4.7
2,4,5-Trichlorophenol	95-95-4	µg/L	2	<2	<2	<2	<2
Pentachlorophenol	87-86-5	µg/L	4	<4	<4	<4	<4
Chlorinated Hydrocarbons							
1,3-Dichlorobenzene	541-73-1	µg/L	2	<2	<2	<2	<2
1,4-Dichlorobenzene	106-46-7	µg/L	2	<2	<2	<2	<2
1,2-Dichlorobenzene	95-50-1	µg/L	2	<2	<2	<2	<2
Hexachloroethane	67-72-1	µg/L	2	15	30	13	19.3
1,2,4-Trichlorobenzene	120-82-1	µg/L	2	<2	<2	<2	<2
Hexachloropropylene	1888-71-7	µg/L	2	<2	<2	<2	<2
Hexachlorobutadiene	87-68-3	µg/L	2	37	40	34	37
Hexachlorocyclopentadiene	77-47-4	µg/L	10	<10	<10	<10	<10
Pentachlorobenzene	608-93-5	µg/L	2	<2	<2	<2	<2
Hexachlorobenzene (HCB)	118-74-1	µg/L	4	<4	<4	<4	<4
Polynuclear Aromatic Hydrocarbons							
Naphthalene	91-20-3	µg/L	2	2	2	2	2
2-Methylnaphthalene	91-57-6	µg/L	2	<2	<2	<2	<2
2-Chloronaphthalene	91-58-7	µg/L	2	<2	<2	<2	<2
Acenaphthylene	208-96-8	µg/L	2	<2	<2	<2	<2
Acenaphthene	83-32-9	µg/L	2	<2	<2	<2	<2
Fluorene	86-73-7	µg/L	2	<2	<2	<2	<2
Phenanthrene	85-01-8	µg/L	2	<2	<2	<2	<2
Anthracene	120-12-7	µg/L	2	<2	<2	<2	<2
Fluoranthene	206-44-0	µg/L	2	<2	<2	<2	<2
Pyrene	129-00-0	µg/L	2	<2	<2	<2	<2
N-2-Fluorenyl Acetamide	53-96-3	µg/L	2	<2	<2	<2	<2
Benz(a)anthracene	56-55-3	µg/L	2	<2	<2	<2	<2
Chrysene	218-01-9	µg/L	2	<2	<2	<2	<2
Benzo(b) & Benzo(k)fluoranthene	205-99-2 207-08-9	µg/L	4	<4	<4	<4	<4
7,12-Dimethylbenz(a)anthracene	57-97-6	µg/L	2	<2	<2	<2	<2
Benzo(a)pyrene	50-32-8	µg/L	2	<2	<2	<2	<2
3-Methylcholanthrene	56-49-5	µg/L	2	<2	<2	<2	<2
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	2	<2	<2	<2	<2
Dibenz(a,h)anthracene	53-70-3	µg/L	2	<2	<2	<2	<2
Benzo(g,h,i)perylene	191-24-2	µg/L	2	<2	<2	<2	<2
Phthalate Esters							
Dimethyl phthalate	131-11-3	µg/L	2	<2	<2	<2	<2
Diethyl phthalate	84-66-2	µg/L	2	<2	<2	<2	<2
Di-n-butyl phthalate	84-74-2	µg/L	2	<2	<2	<2	<2
Butyl benzyl phthalate	85-68-7	µg/L	2	<2	<2	<2	<2
bis(2-ethylhexyl) phthalate	117-81-7	µg/L	20	<20	<20	<20	<20
Di-n-octylphthalate	117-84-0	µg/L	2	<2	<2	<2	<2
Nitrosamines							
N-Nitrosomethylethylamine	10595-95-6	µg/L	2	<2	<2	<2	<2
N-Nitrosodiethylamine	55-18-5	µg/L	2	<2	<2	<2	<2
N-Nitrosopyrrolidine	930-55-2	µg/L	4	<4	<4	<4	<4
N-Nitrosomorpholine	59-89-2	µg/L	2	<2	<2	<2	<2
N-Nitrosodi-n-propylamine	621-64-7	µg/L	2	<2	<2	<2	<2
N-Nitrosopiperidine	100-75-4	µg/L	2	<2	<2	<2	<2
N-Nitrosodibutylamine	924-16-3	µg/L	2	<2	<2	<2	<2
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	µg/L	4	<4	<4	<4	<4
Methapyrilene	91-80-5	µg/L	2	<2	<2	<2	<2
Nitroaromatics and Ketones							
2-Picoline	109-06-8	µg/L	2	<2	<2	<2	<2
Acetophenone	98-86-2	µg/L	2	<2	<2	<2	<2
Nitrobenzene	98-95-3	µg/L	2	<2	<2	<2	<2
Isophorone	78-59-1	µg/L	2	<2	<2	<2	<2
2,6-Dinitrotoluene	606-20-2	µg/L	4	<4	<4	<4	<4
2,4-Dinitrotoluene	121-14-2	µg/L	4	<4	<4	<4	<4
1-Naphthylamine	134-32-7	µg/L	2	<2	<2	<2	<2
4-Nitroquinoline-N-oxide	56-57-5	µg/L	2	<2	<2	<2	<2
5-Nitro-o-toluidine	99-55-8	µg/L	2	<2	<2	<2	<2
Azobenzene	103-33-3	µg/L	2	<2	<2	<2	<2
1,3,5-Trinitrobenzene	99-35-4	µg/L	2	<2	<2	<2	<2
Phenacetin	62-44-2	µg/L	2	<2	<2	<2	<2
4-Aminobiphenyl	92-67-1	µg/L	2	<2	<2	<2	<2
Pentachloronitrobenzene	82-68-8	µg/L	2	<2	<2	<2	<2
Pronamide	23950-58-5	µg/L	2	<2	<2	<2	<2
Dimethylaminoazobenzene	60-11-7	µg/L	2	<2	<2	<2	<2
Chlorobenzilate	510-15-6	µg/L	2	<2	<2	<2	<2
Haloethers							
Bis(2-chloroethyl) ether	111-44-4	µg/L	2	<2	<2	<2	<2
Bis(2-chloroethoxy) methane	111-91-1	µg/L	2	<2	<2	<2	<2
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	2	<2	<2	<2	<2
4-Bromophenyl phenyl ether	101-55-3	µg/L	2	<2	<2	<2	<2
Anilines and Benzidines							
Aniline	62-53-3	µg/L	2	<2	<2	<2	<2
4-Chloroaniline	106-47-8	µg/L	2	<2	<2	<2	<2
2-Nitroaniline	88-74-4	µg/L	4	<4	<4	<4	<4
3-Nitroaniline	99-09-2	µg/L	4	<4	<4	<4	<4
Dibenzofuran	132-64-9	µg/L	2	<2	<2	<2	<2
4-Nitroaniline	100-01-6	µg/L	2	<2	<2	<2	<2
Carbazole	86-74-8	µg/L	2	<2	<2	<2	<2
3,3'-Dichlorobenzidine	91-94-1	µg/L	2	<2	<2	<2	<2
Organochlorine Pesticides							
alpha-BHC	319-84-6	µg/L	2	<2	<2	<2	<2

GTP Job No				GTP0810168-4	GTP0810192-4	GTP0810217-4	Average
Sample Name				EPA POINT 14	EPA POINT 14	EPA POINT 14	
Date				24/10/2008	28/10/2008	4/11/2008	
Time				1100	1130	1600	
Analyte_grouping/Analyte	CAS Number	Units	LOR				
Phenolic Compounds							
Phenol	108-95-2	µg/L	2	<2	<2	<2	<2
2-Chlorophenol	95-57-8	µg/L	2	<2	<2	<2	<2
2-Methylphenol	95-48-7	µg/L	2	<2	<2	<2	<2
3- & 4-Methylphenol	1319-77-3	µg/L	2	<2	<2	<4	<2
2-Nitrophenol	88-75-5	µg/L	2	<2	<2	<2	<2
2,4-Dimethylphenol	105-67-9	µg/L	2	<2	<2	<2	<2
2,4-Dichlorophenol	120-83-2	µg/L	2	6	3	8	5.7
2,6-Dichlorophenol	87-65-0	µg/L	2	<2	<2	<2	<2
4-Chloro-3-Methylphenol	59-50-7	µg/L	2	<2	<2	<2	<2
2,4,6-Trichlorophenol	88-06-2	µg/L	2	<2	<2	<2	<2
2,4,5-Trichlorophenol	95-95-4	µg/L	2	<2	<2	<2	<2
Pentachlorophenol	87-86-5	µg/L	4	<4	<4	<4	<4
Chlorinated Hydrocarbons							
1,3-Dichlorobenzene	541-73-1	µg/L	2	<2	<2	<2	<2
1,4-Dichlorobenzene	106-46-7	µg/L	2	<2	<2	<2	<2
1,2-Dichlorobenzene	95-50-1	µg/L	2	<2	<2	<2	<2
Hexachloroethane	67-72-1	µg/L	2	<2	<2	<2	<2
1,2,4-Trichlorobenzene	120-82-1	µg/L	2	<2	<2	<2	<2
Hexachloropropylene	1888-71-7	µg/L	2	<2	<2	<2	<2
Hexachlorobutadiene	87-68-3	µg/L	2	<2	<2	<2	<2
Hexachlorocyclopentadiene	77-47-4	µg/L	10	<10	<10	<10	<10
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Hexachlorobenzene (HCB)	118-74-1	µg/L	4	<4	<4	<4	<4
Polynuclear Aromatic Hydrocarbons							
Naphthalene	91-20-3	µg/L	2	<2	<2	<2	<2
2-Methylnaphthalene	91-57-6	µg/L	2	<2	<2	<2	<2
2-Chloronaphthalene	91-58-7	µg/L	2	<2	<2	<2	<2
Acenaphthylene	208-96-8	µg/L	2	<2	<2	<2	<2
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bis(2-ethylhexyl) phthalate	117-81-7	µg/L	20	<20	<20	<20	<20
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Nitrosamines							
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2,4-Dinitrotoluene	121-14-2	µg/L	4	<4	<4	<4	<4
1-Naphthylamine	134-32-7	µg/L	2	<2	<2	<2	<2
4-Nitroquinoline-N-oxide	56-57-5	µg/L	2	<2	<2	<2	<2
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Bis(2-chloroethyl) ether	111-44-4	µg/L	2	<2	<2	<2	<2
Bis(2-chloroethoxy) methane	111-91-1	µg/L	2	<2	<2	<2	<2
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	2	<2	<2	<2	<2
4-Bromophenyl phenyl ether	101-55-3	µg/L	2	<2	<2	<2	<2

