



EPA Community Forum
The Alf Kay Community Hall
Florence Avenue, Eastlakes

**Answers to questions raised at the
Orica community forum meeting of 7 March 2013**

Unit conversion table

Unit (symbol)	Equivalents	Converted to grams
1 kilogram (kg)	1000 grams	1000 g
1 gram (g)	1000 milligrams	1 g
1 milligram (mg)	1000 micrograms	0.001 g
1 microgram (µg)	1000 nanograms	0.000,001 g
1 nanogram (ng)	–	0.000,000,001 g

Orica on-site contamination

- 1. How are mercury emissions being controlled from the identified contaminated areas at the Orica Matraville site that are not covered by the temporary emission control enclosure?**

Blocks A and M are the areas identified as mercury-contaminated that are not covered by the temporary emission control enclosure. These areas are not heavily contaminated with mercury and are covered with soil, bitumen, concrete and/or plastic sheeting to control emissions. As a result, these areas are not expected to cause emissions of mercury that would be harmful to human health (*Assessment of Mercury in Air from Remediation of the Former Chlor Alkali Plant at the Botany Industrial Park, for Thiess Services Pty Ltd – PAE Holmes, 19 November 2010*).

In early 2012, the EPA issued Orica with a Management Order under the *Contaminated Land Management Act 1997*. Orica prepared a detailed remediation options analysis which the EPA has approved. The company has now submitted a detailed Remediation Action Plan, including a timeframe for completion of the works and ongoing community consultation and this is currently under review by the EPA. The works must be completed by the end of 2014. Blocks A and M will be remediated as a part of this proposed remediation project.

- 2. How are these mercury-contaminated areas going to be managed?**

It is proposed to excavate the mercury-contaminated materials from Blocks A and M gradually, to validate the excavation surfaces against the remediation criteria and then back fill with clean soil. Based on previous site investigation works (*Block A and M Chlor Alkali Plant, Orica Botany Industrial Park Remediation Action Plan – Golder 2012*), Orica anticipates only a relatively small volume of material will need to be remediated: approximately 50 cubic metres (m³) from Block A and 1150 m³ from Block M. Air monitoring will take place while all works are underway. Exposed areas will be covered when work ceases for the day.

While it is expected that the required excavations will generally be between 1.0–1.5 metres deep, Orica may have to chase out contamination in localised areas. Excavations in these areas would continue until validated or until further excavation is no longer practicable due to the groundwater table or due to physical, geotechnical or structural constraints (*Golder 2012*).

3. How deep does the mercury contamination go down in Block G under the temporary emission control enclosure?

Most of the contamination is in the top 1–2 metres. Localised spots with mercury concentrations of up to 200 milligrams per kilogram (mg/kg) are found to depths of 3–5 m. Also preferential pathways down the side of concrete footings and other former structural features have allowed some of the mercury (with concentrations less than 90 mg/kg) to migrate down to about 18 m below ground surface. The proposed containment barrier wall will be keyed into bedrock at depths between 20 and 25 m.

4. What happened to the water used in the soil washing by Orica?

The water used in the soil washing plant was recycled within the process which led to little wastewater being created. Wastewater was assessed for suitability to be discharged to sewer in accordance with the trade waste criteria set for Orica by Sydney Water and sent through its sewage treatment process. Water not suitable for discharge to sewer was handled by a licensed liquid waste contractor. Wastes which had low water content, such as slimes, were disposed of to a licensed waste management facility with a special monocell for this purpose.

5. How much mercury is being emitted from the site?

It is not possible to know precisely how much mercury is emitted from the whole site. However, what is known is that mercury emissions from the largest known source enclosed by the temporary emission control enclosure are small and ambient data demonstrates that mercury levels in the air around the facility are very low.

Measurement of mercury emissions from each stack discharging filtered air from the temporary emission control enclosure is required under Environment Protection Licence No. 2148.

Current mercury emission concentrations from the stacks are very low. The average mercury emission concentration between February 2012 and 2013 was less than 0.004 milligrams per cubic metre (mg/m³). This is 25 times lower than the Environment Protection Licence limit of 0.1 mg/m³ which is designed to prevent adverse impacts to human health and the environment. Significant dilution occurs after it leaves the stack.

Monitoring of mercury in ambient air between the temporary emission control enclosure and the Botany Industrial Park boundary along Denison Road is also required under Environment Protection Licence 2148. The site was chosen to be between the remediation site and the closest residences along Denison Road because houses in this area have the potential to feel the greatest impact as identified in project dispersion modelling (*PAE Holmes – November 2010*).

Mercury concentrations are currently verified by monitoring one day per week continuously for 24 hours using a sophisticated, high-precision and reliable device (Lumex RA-915+ Mercury Analyzer).

Monitoring at this location demonstrates that mercury levels in the ambient air here are very low. The average 30-minute ambient air mercury concentrations measured between January 2012 and March 2013 was less than 4 nanograms per cubic metre (ng/m³). The *WHO (2000) Air Quality Guidelines for Europe* found that in European areas remote from industry, atmospheric levels of mercury are about 2–4 ng/m³ and in urban areas about 10 ng/m³ and that exposure to mercury from outdoor air at these air levels is not expected to have direct effects on human health.

This indicates that the temporary emission control enclosure and emission control system are operating effectively by controlling the escape of mercury vapour and that emissions of mercury to ambient air from other contaminated areas are also low.

The total emissions for the site are low and as a current source of mercury, the former chlor alkali plant has appropriate controls in place to ensure an ambient air quality that is safe to human health.

6. How much is the financial assurance for the former chlor alkali plant remediation going to be?

The purpose of a financial assurance is to secure or guarantee funding for the carrying out of works, such as remediation work, required by a licence.

This secures funding for the works required if the holder of a licence fails to do so in accordance with the conditions of the licence. The EPA may recover or fund the reasonable costs or expenses by making a claim on or releasing the financial assurance or part of it.

When the remediation plans for the former Orica chlor alkali plant remediation are finalised, the EPA will require an independent assessment of the cost of the work for which the financial assurance is required. The EPA will also seek further third party advice to determine the appropriate value of the financial assurance.

If satisfied, the EPA will require the financial assurance in the form of an unconditional, irrevocable and maintained bank guarantee. Credit conditions are applied and the monetary value is reviewed and updated periodically.

Once the work for which the financial assurance was required has been carried out satisfactorily and the premises are, in the opinion of the EPA, environmentally secure, the EPA will then make a decision on the requirement to maintain the financial assurance.

7. Why not shut down Orica?

The mercury contamination being cleaned up at the Orica site is a legacy issue, the chlor alkali plant is no longer in operation and closed in 2002. The current plant and operation are meeting the regulation and licence limits.

Independent Review Steering Panel

8. Will there be more community people on the independent panel?

The EPA believes that the Steering Panel has an appropriate balance of membership in order to ensure that the process and issues are worked through efficiently and in recognition of the time devoted to it by members. It is also important to recognise that local councils represent their communities in the area and hold the needs and concerns of the local population in high priority.

9. Why is the process taking so long?

To address the historical legacy in a comprehensive and robust manner, the Independent Review needs to target resources and effort to priority areas for sampling.

Other questions

10. How much mercury is being emitted per year by Qenos? Is this a danger? Why is this not on the licence?

Qenos has two coal-fired boilers and both are registered as discharge points on the licence. The boilers are regularly tested for air emissions.

Based on the coal used by Qenos (including testing for its mercury content), it is estimated that 22 kilograms of mercury is emitted from Qenos each year. This is consistent with national and international practice when estimating emissions of mercury from coal-fired boilers.

Based on the emission rate of the boilers and the testing completed, the boilers would comfortably meet the regulatory mercury limit of 0.1 mg/m³ required by the Protection of the Environment (Clean Air) Regulation 2010.

11. Can we eat the crops grown in our gardens?

The EPA has no information which suggests that the consumption of crops and vegetables grown in the community near the former chlor alkali plant at Botany is unsafe.

Uptake of metallic or inorganic mercury from soil by food plants is at a level of approximately 1-in-1000 to 1-in-3000 of the levels in the soil. Although this suggests negligible uptake, the calculations of exposure from food plants would need to factor in the levels in the soil.

We now have the Orica Mercury Independent Review process in place to analyse the data and carry out appropriate testing and health risk assessment to answer this question in more detail. This will be overseen by a steering committee with community representation, as well as scientific and health experts who will ensure that this is based on robust, quality data.

If you are concerned about your health status, please consult your health professional and ask for their advice.

12. Should the community stop drinking the water?

Groundwater

The NSW Department of Primary Industries has advised that Botany and its surrounding suburbs have been heavily used by a range of industries for at least 100 years. As a result, chemicals such as chlorinated hydrocarbons and other solvents, petroleum hydrocarbons (such as petrol and diesel), and some heavy metals, such as chromium, nickel, lead and arsenic, may have contaminated the aquifer.

While only a small proportion of the Botany Sand Beds aquifer area is known to be contaminated, given the history of the area, shallow water table and highly permeable soils, a precautionary approach to managing groundwater use in areas that sit above the aquifer is needed.

To ensure public health is not put at risk from exposure to potentially contaminated groundwater, residents in these areas are advised that domestic groundwater use is banned, especially for drinking water, watering gardens, washing windows and cars, bathing, or to fill swimming pools.

For more information about groundwater in the Botany Sand Beds aquifer area, see the NSW Department of Primary Industries website:

www.water.nsw.gov.au/Water-management/Water-quality/Groundwater/Botany-Sand-Beds-aquifer/Botany-Sands-Aquifer/default.aspx

Tap water

The water supplied by Sydney Water to homes and businesses for drinking, cooking and showering comes from a protected catchment, has been treated and is extensively monitored to confirm it meets a set of criteria called the Australian Drinking Water Guidelines. The frequency and scale of monitoring is defined by the guidelines and reviewed by NSW Ministry of Health to ensure the water is high quality and safe to drink.

For more information about tap water, see the Sydney Water website:

www.sydneywater.com.au/SW/index.htm

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