



**BOTANY GROUNDWATER CLEANUP PROJECT
INDEPENDENT MONITORING COMMITTEE
TASKS 12 & 13 FOR MEETING WITH CLC 2 MAY 2007**

At the March 2007 meeting of the CLC, members of the IMC were requested to provide comment on the following two issues:

- Task 12: Provide comment on the progress of the Botany Cleanup project to date;
- Task 13: Advise of specific questions that IMC members think the CLC should be asking about the project

IMC members were provided copies of *Groundwater cleanup plan progress report No. 13*, dated 28 February 2007, along with information available via the Orica website maintained for this project and the March 2007 issue of the Community Newsletter. My comments relate to information drawn from these source documents.

Since my IMC role is to provide expert comment on issues relating to human health risk assessments (HHRA) relating to the project, my comments are largely confined to issues raised in Section 4.2 of the February 2007 progress report (No. 13).

Task 12: Progress on the Botany site cleanup

It is noted that Orica has complied with reporting requirements under the NCUA and that the current report (No.13) provides an adequate summary of actions taken to commission and run the SSU and GTP plants during the latest reporting period. It also contains summarised information on ongoing monitoring activities, notably including a December 2006 monitoring event, which assessed hydraulic containment effectiveness and groundwater/surface water sampling at relevant locations across the southern, central and northern plumes, Springvale drain and Penrhyn Estuary. The report also addresses some sampling of vinyl chloride (VC) concentrations in soil, groundwater and air on the Botany Golf Course.

The report infers that total CHC concentrations at sampling sites are generally consistent with those predicted by previous modelling, and suggest that movements of the plumes are within anticipated parameters. There is also evidence that the containment programs are beginning to effect removal of CHCs at a satisfactory rate, and that the GTP program in particular is ramping up the number of megalitres of groundwater being treated.

From a HHRA perspective, three issues stand out from the current report.

1. **Vinyl chloride concentrations.** The report notes that VC concentrations in groundwater have exceeded ANZEC trigger values at a number of sampling points, including at the discharge interface in Penrhyn estuary, in the Floodvale and Springvale drains, and in shallow groundwater on the Botany Golf Course. Since the ANZECC guidelines primarily address management of risks to the environment, this may not be a significant issue for the HHRA, although because of its carcinogenic potential, exposure to VC was a significant contributor to the overall estimates of health risk in the 2005 HHRA conducted by URS.

The golf course findings prompted further investigation of VC soil gas phase and air levels. It appears that, consistent with the vapour migration modelling, VC has not been detected in air sampling or in the soil gas phase, suggesting that some limitation of release into air is occurring via degradation of VC. It is comforting to note that nil findings in air samples suggests minimal risk of inhalational exposure to VC at Penrhyn estuary and the Botany Golf course.

2. **EDC concentrations in the Springvale drain.** Because EDC was detected in ambient air above the Springvale drain in 2006 (report No. 10), and this merited further analysis of potential risks to workers, further evaluation of EDC concentrations was undertaken in the current report. It is noted that, while the EDC air levels were substantially below the occupational health-based standard (TWA) of $40000 \mu\text{g}/\text{m}^3$, the concentrations reported in May-October 2006 ($140\text{-}230 \mu\text{g}/\text{m}^3$) were substantially higher than the $23 \mu\text{g}/\text{m}^3$ modelled in the 2005 HHRA conducted by URS.

It is noted that the current report concludes that "*the conclusions of the human health risk assessment remained applicable taking into account the December 2006 data*", However, it is also noted that a further draft report addressing the HHRA implications of the December 2006 data has been prepared for Orica. Since I have not had an opportunity to review the updated HHRA report, I would like to reserve any further comment on the HHRA implications of the latest data.

3. **Dioxin emissions from the GTP.** The current report notes the progress which has been made with respect to identifying sources of dioxin emissions in the GTP and manipulating the combustion conditions to minimise these emissions. The report notes that dioxin emissions exceeded the stringent licence conditions only once in the 7 samples taken over December 2006 – January 2007, and that this exceedence was quite minor. I will not comment further on this issue, since my report to the IMC in November 2006 (Task 2) effectively discounted any health risks from the reported dioxin air emission data.

Task 13: Questions the CLC may ask of Orica

I note that other members of the IMC have raised queries about the fate and future utility of recovered water from the GTP, and the possibility of the recycled water being used by other industries around the site. This is a matter which should be pursued, since it offers an opportunity for effective reuse of scarce water resources.

The resolution of the problem of carryover of chloramines into the discharged water also needs to be pursued. While I doubt this will have any human health implications, this should be assessed more thoroughly. Furthermore, the environmental discharge of water containing such high levels of chloramines needs to be managed.

Both DEC and the CLC may wish to consider whether it is appropriate to commission an independent review of the updated HHRA, prepared in response to the December 2006 data and referred to in Section 4.2 of Report No. 13.



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