**LEGISLATIVE COUNCIL SELECT COMMITTEE**

**ON THE KOORAGANG ISLAND ORICA CHEMICAL LEAK**

**RESPONSES TO QUESTIONS ON NOTICE ON WEDNESDAY, 7 DECEMBER 2011**

The responses set out below to the questions on notice from the 7 December 2011 hearing of the Select Committee are made on behalf of Orica and the relevant Orica officers. For ease of reference, we have numbered and set out our understanding of the terms of each question on notice together with the page reference where it appears in the uncorrected transcript (T[page]).

**1. Please provide a copy of Orica's Crisis Management Plan. (T5)**

This document has been provided to the Select Committee. Please see question 4 and Annexure B of the response to questions on notice on 15 November 2011.

**2. Please provide a copy of Orica's KI site emergency plan. (T6-7)**

Parts of this document have been provided to the Select Committee. Please see question 12 and Annexure D of the response to questions on notice on 15 November 2011.

**3. Under the site emergency plan, with whom does the responsibility rest to notify the health department or health agencies in the event of occurrences like the incident on 8 August 2011? (T9)**

The pre-incident KI Emergency Response Plan refers to the involvement of government authorities in responding to emergencies (section 3) and refers to the KI Site Manager as the person who will confirm the exact requirements for reporting to government agencies following the incident (section 11.1). As outlined in the response to question 19 of the questions on notice on 17 November 2011:

(a) prior to the incident, Orica was not aware of any regulatory requirements for notifying NSW Health and the KI site did not have a specific procedure that dealt with notifying the NSW Ministry of Health; and

(b) since the incident, Orica has implemented:

(i) improvements to the KI site emergency response procedure to refer to the involvement and notification of NSW Health Environmental Health Unit if there are any potential toxic or carcinogenic impacts on the community; and

(ii) a new notification procedure, which provides for notification to be made by the KI Sustainability Manager, Plant Manager, Site Manager or delegate to NSW Health Hunter New England Area Health Service's Environmental Health Unit where an incident involves potential for significant off-site impacts on people.

**4. Please provide a copy of Orica's previous KI site emergency plan in place at the time of the incident and a copy of Orica's current KI site emergency plan, which contains revisions since the incident. (T22)**

A copy of the relevant parts of the KI site emergency response plan in place at the time of the incident has been provided to the Select Committee. Please see question 12 and Annexure D of the response to questions on notice on 15 November 2011.

The current KI site Emergency Response Plan (**ERP**) is a confidential document, for security reasons, in that it contains information on the locations and types of hazardous materials on the KI site. WorkCover, Fire and Rescue NSW and the Police Service have a copy of the document, but it is not available to the public.

In Orica's view, it is not in the public interest that aspects of the current ERP about the locations of hazardous substances on site at KI or the response scenarios are revealed. A copy of the Table of Contents for the current KI site ERP, together with the updated sections relevant to notification of government authorities, is **Annexure 1**. If there is any additional part of the current ERP that the Select Committee wishes to review on a confidential basis, please contact Chris Hansen on (03) 9665 7050.

**5. Please provide a copy of the Environmental Risk Assessment that was undertaken prior to the commencement of the turnaround and the expansion project activities that considered the shutting down of the plant, the maintenance activities that were being undertaken during the course of the turnaround and the restarting activities. (T24)**

Orica undertook 'environmental risk assessments' in the form of job safety and environment risk analysis (**JSERA**) for numerous individual maintenance jobs performed as part of the turnaround. The JSERA relevant to the start-up of the ammonia plant carried out prior to the commencement of the turnaround have been provided to the Select Committee. Please see CD1 provided in response to questions on notice on 15 November 2011, which includes copies of the following JSERA documents:

(a) JSERA Ammonia Plant Turnaround 2011 Env. Risk Assessment - Decommissioning , Pre- and Re-commissioning; and

(b) JSERA Ammonia Plant Turnaround 2011 Env. Risk Assessment - General Scope.

**6. Please provide a list of the Orica employees who were involved in the internal Environmental Risk Assessment. (T24 – 25)**

The Orica employees involved in the internal JSERA and their roles or titles are listed in the Study Summary on pages 1 to 2 of the JSERA referred to in response to question 5 above.

**7. Was any testing carried out on the residue found on the Stockton resident's car who made the phone call on 9 August 2011? If so, what did those tests indicate? (T27)**

On 9 August at about 3:20pm, the OEH took a swab sample of the residue found at the residence of the Stockton resident who telephoned Orica on the morning of Tuesday, 9 August. The residence being 204 Fullerton Street, Stockton. The OEH took a swab from a boat parked in the front yard of this residence, but not a swab from a car. The test result for the swab at 204 Fullerton Street, Stockton was 3.5ug/swab of hexavalent Chromium. It appears that this test result was converted to ug/cm$^2$ and published in an OEH document titled "Results of samples collected in Stockton between 9-12 August 2011 to test for Chromium VI" dated 16 August 2011 as being sample number 3 (see **Annexure 2**). The OEH document concluded "No risk to human health identified". The relevant records of swabs taken in Stockton on 9 August 2011 and testing results have been produced by the OEH to the Select Committee in response to the Standing Order 52 request for production of documents (see **Annexure 3** for copies). Based on these records and recent correspondence with the OEH (see further below), it appears that the reported concentration of 0.35ug/cm$^2$ for the sample taken at 204 Fullerton Street, Stockton on 9 August 2011 should have been reported as 0.035ug/cm$^2$.

**8. Please provide a copy of the presentation made in early October 2011 to executive management at Orica about what was learnt through the process of crisis management of the incident on 8 August 2011. (T27)**

The presentation made to executive management at Orica in relation to what was learnt through the process of the crisis management of the incident is a document subject to legal professional privilege.

**9. Leaving aside the engineering report, in reviewing what could be learnt from the incident on 8 August 2011, were any issues to do with the way in which the plant was operated during the start-up phase during the day shift [on 8 August 2011] a matter specifically looked at by Orica? (T30)**

In addition to the Johnson Matthey Catalyst report, Orica has conducted its own internal review of the 8 August incident. Orica's internal review and any publication of its internal findings are subject to legal professional privilege.

**10. What deviations were there from Orica's written Operating Procedures that impacted on or caused the incident on 8 August 2011? (T30)**

Orica has responded to what it understands to be an identical question in relation to the Ammonia Plant start-up procedure. Please see the responses to question 2 of the questions on notice on 15 November 2011 and question 3 of the questions on notice on 17 November 2011.

## CLARIFICATIONS AND COMMENTS RELATING TO THE EVIDENCE GIVEN DURING THE 7 DECEMBER 2011 HEARING

**AT PAGE 10:**

***The Hon. ADAM SEARLE:*** *In response to a query from health, Orica on 11 August indicated to that approximately 21 kilograms of Chromium VI was deposited on the Orica site and somewhere between one and 10 kilograms was released beyond the Orica boundary. Are you familiar with that information?*

***Mr BONNER:*** *I am aware of those numbers, yes.*

***The Hon. ADAM SEARLE:*** *One of the experts engaged by Orica to do those calculations was a Dr Bruce Niven, do you understand that?*

***Mr BONNER:*** *Yes.*

**Clarification**

Mr Bonnor wishes to clarify that the person who performed the initial calculations as to the quantity of Chromium VI deposited on the Orica site and released offsite was Dr Rodney Williams, not Dr Bruce Niven. Dr Rodney Williams' mass balance calculations are set out in a report Orica provided to NSW Health on Thursday, 11 August 2011.

**AT PAGE 11:**

***Mr BONNER:*** *There was work being done through mass balance work and developing initial views on air modelling and those views were being formulated along with the fact there was a very low visual incidence of any residue in those four to six ~~suburbs~~ streets in the Stockton area. There was a very light residue in that area which, combined with developing the views on the modelling work and mass balance work, formed the basis for the view of how much Chromium was on-site and possibly went off-site. That was an early view. It was on the Thursday or Friday that view was formed.*

***The Hon. ADAM SEARLE:*** *That view has not been substantially altered from Orica's point of view, has it?*

***Mr BONNER:*** *No. The final position was somewhere between 10 and 20 kilograms. Through additional external air modelling and work that was done those were the numbers that were arrived at.*

***CHAIR:*** *Before we proceed, could you say more clearly the "something" modelling?*

***Mr BONNER:*** *Air modelling.*

***The Hon. ADAM SEARLE:*** *By air modelling you mean the direction which the air was travelling at the time?*

***Mr BONNER:*** *I am not an expert in this area, but looking at variables that would contribute to the likely zone and concentration of the compound, the emission, that went out of the site that night.*

***The Hon. ADAM SEARLE:*** *You say 10 to 20 kilograms was the ultimate assessment, you mean as the total emission or the amount that was emitted off-site?*

***Mr BONNER:*** *The amount emitted off-site. That is my understanding of those numbers that were quoted.*

**Additional comment and clarification:**

Mr Bonnor and Orica wish to note the following matters:

(a) The ultimate assessment of 10 to 20 kilograms for off-site emission of Chromium VI was based on the work of PAE Holmes, an independent air quality consultant, in a report dated 14 October 2011 (**PAE Holmes Report**). That report is published on Orica's website and Orica notes the Select Committee has a copy of this document.

(b) The PAE Holmes Report, in turn, assumed that the concentrations of Chromium VI reported by the OEH in a document titled "Results of samples collected in Stockton between 9-12 August 2011 to test for Chromium VI" (**OEH Report**) were correct.

(c) Orica made reference to the 10 to 20 kilogram estimate in its written submission to the Select Committee. Mr Bonnor and other Orica witnesses also made reference to these figures in the course of their evidence. In so doing, all assumed the accuracy of the OEH Report information and the PAE Holmes report conclusions based on that information.

(d) There is now reason to believe the OEH Report information may in fact be materially inaccurate. Orica has exchanged correspondence with OEH on the issue and copies of that correspondence are attached at **Annexure 4** (Orica letter dated 23 December 2011, OEH response dated 30 December 2011 and Orica letter dated 6 January 2011). The specific problem identified with the OEH Report information concerns the way in which the reported Chromium VI concentrations (ug/$cm^2$) have been derived from the measured swab tests by OEH (ug/swab). The extent of the error and its implications are yet to be resolved as the OEH has not yet reviewed all of the OEH Report's swab data. However, as the correspondence indicates, OEH concedes an error in relation to the limited data reviewed by it so far so. Orica and Mr Bonnor are concerned that if the same error applies more widely to the other like data in the OEH Report, then the true position as to the amount of Chromium VI emitted during the 8 August incident that landed in Stockton could be significantly lower than the previously stated estimates.

(e) In supplementation of Orica's earlier submission and the witness evidence, Orica notes that a further important point that does not appear to have come across in the above quoted exchange during the course of the 7 December session is that the PAE Holmes Report suggests that the estimated quantity of Chromium VI that landed in Stockton is a small proportion of the total quantity of Chromium VI emitted in the 8 August incident. Putting aside for the moment, the point noted in (d) above and assuming for argument's sake a worst case scenario of 20kg of off-site Chromium VI emission, the air modelling work conducted by PAE Holmes concludes that between 1.3 and 1.6kg of Chromium VI would have been deposited over Stockton. If the amount released off-site was 10kg, then the amount of Chromium VI deposited in Stockton would have been between 0.65 and 0.8kg. Based on the small number of positive samples detected in OEH sampling in Stockton, PAE Holmes noted that these predictions as to amounts deposited are a "significant over-estimation" (see page 15, PAE Holmes Report). This comment by PAE Holmes assumes, as noted above, the accuracy of the OEH Report information. However,

as noted in (d) above, if the OEH Report information is wrong and the reported amount of Chromium VI in Stockton estimated from their swab tests overstated the concentrations, then it would follow that the PAE Holmes conclusions would result in even lower estimates than those stated.

(f) Assuming OEH undertakes the review of its swab test result information promptly, Orica may seek to make a limited further submission relating to any revised OEH information and its implications.

**AT PAGE 12:**

> ***The Hon. LUKE FOLEY:*** *Is it fair to say that overnight, until Mr Bonner's actions on the Tuesday morning, the Kooragang Island site emergency plan informed or regulated the response that you and your colleagues took overnight? Is that a fair statement?*
>
> ***Ms WOODROFFE:*** *Overnight the plan was around the management of the issues we identified which could have an impact in the environment and so we dealt with those. The emergency plan was not enacted during that event but we used the principles of emergency response in addressing the issues as we saw them on the evening.*
>
> ***The Hon. LUKE FOLEY:*** *Okay, you used the principles, but the site emergency plan was not formally activated?*
>
> ***Ms WOODROFFE:*** *No, that is correct.*

**Clarification:**

Ms Woodroffe wishes to clarify that there are three levels of emergency events in the Emergency Response Plan (**ERP**):- a local incident, a site emergency or an external emergency. Following an assessment of the incident (called a SIZEUP), Orica did not activate the part of the ERP in relation to a "site emergency" or "external emergency" as there were no injuries to personnel, there were sufficient personnel onsite to deal with effluent containment and it was believed the incident had been contained to site.

**AT PAGE 28:**

> ***The Hon. ADAM SEARLE:*** *I understand it occurs only during the start-up phase but that phase goes for a number of days?*
>
> ***Ms WOODROFFE:*** *No. The start up is divided into a number of components: The component is the ~~H2 for~~ HT shift catalyst reduction and that occurs over a period of several hours once you introduce the hydrogen containing gas, so a reducing environment, into the plant, and the chromium is converted from chromium VI to chromium III.*

**Clarification:**

Ms Woodroffe wishes to clarify that the HT shift catalyst reduction is one of the first components of the start-up procedure.

**ON PAGE 30-31:**

> ***The Hon. CATE FAEHRMANN:*** *In WorkCover's submission there was an email from a professional officer at WorkCover specialising in chemical hygiene and toxicology. This was sent to New South Wales health; it was not sent to Orica. It outlined his concerns about the urine testing of Orica employees after the incident. The officer states: Urine testing did not begin, of Orica employees, until three days post exposure. For some workers there was a delay of a week which meant the tests were next to useless. He also states that the half-life of absorbed Chromium is in the order of 8 to 20 hours and after three days the Chromium levels in urine will be down to 1 to 5 per cent of maximum levels and may represent zero to 2-3 per cent of the absorbed dose. What faith do you have in your company's ability to test for hexavalent Chromium?*

***Mr BONNER:*** *I am not qualified to give an opinion on that.*

***The Hon. CATE FAEHRMANN:*** *Would you commit to looking into that given that information?*

***Mr BONNER:*** *I can take it on notice.*

***The Hon. CATE FAEHRMANN:*** *You do not need to get back to me, you could just commit to looking into that knowing that there is information given from WorkCover that possibly urine testing for hexavalent Chromium is not the way to go about it and that it should have been blood testing.*

***Mr BONNER:*** *I can give that feedback.*

**Clarification:**

Orica refers to the response to question 2 of the questions on notice to Hon Greg Pearce in relation to the health surveillance of workers at the KI site.