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26 October 2012

Nick Hall
Major Hazards Unit
NSW Department of Planning
23 – 33 Bridge St
Sydney, NSW, 2000

Dear Mr Hall,

ORICA SUBMISSION IN RELATION TO INCITEC PIVOT'S AMMONIUM NITRATE MANUFACTURING FACILITY, KOORAGANG ISLAND (SSD-4986)

I refer to correspondence received from the NSW Department of Planning and Infrastructure (DPI) dated 12 September 2012, informing Orica of the public exhibition of the Incitec Pivot (IPL) Ammonium Nitrate Manufacturing Facility environmental assessment.

Orica has reviewed IPL's environmental assessment and has identified a number of concerns, particularly regarding the analysis detailed in the project's Noise and Hazard and Risk assessments. The main concerns are as follows:

1. **The suitability of IPL's selected noise assessment criteria.**

   The development of IPL's noise assessment criteria appears to be inconsistent with the process outlined in the NSW Industrial Noise Policy (INP). The noise assessment criteria selected by IPL should not result in any increase to the current noise levels at Stockton, nor should compliance by IPL be dependent on work being undertaken by Orica to reduce noise levels.

2. **IPL's choice to use less conservative risk impairment criteria associated with toxic injury and irritation for ammonia and nitrogen dioxide in the Quantitative Risk Assessment (QRA).**

   IPL's choice to use less conservative exposure values associated with toxic injury and irritation for ammonia and nitrogen dioxide (ERPGs), compared to the levels used by Orica (AEGLs), are not consistent with HIPAP principles as understood by Orica, nor utilise the most appropriate standard available. A consistent approach to QRA assessment should be used for similar projects, and selected exposure values should reflect the demography of the general community in which the project is to operate, rather than be based on maximum industrial exposure standards for a healthy male worker as proposed by IPL.

3. **Inconsistencies between assumptions that underpin IPL's QRA assessment and those published in industry recognised guidelines including the Guidelines for Quantitative Risk Assessment (purple book).**

   Variations between QRA assumptions and available industry QRA guidelines are not currently justified and documented in IPL's Hazard and Risk assessment. There are a number of cases where IPL should be required to provide additional justification and documentation.

Additional comments expanding on Orica's concerns are detailed in **Appendix A**. If you require any clarification in regards to comments made by Orica in this submission, please do not hesitate to contact Antony Taylor on 4908 9430.

Orica requests that these concerns be addressed by IPL as part of the assessment process for the IPL proposed ammonium nitrate facility.

Regards,

Sean Winstone
Global Executive - Manufacturing

APPENDIX A

ORICA SUBMISSION IN RELATION TO INCITEC PIVOT'S AMMONIA NITRATE MANUFACTURING FACILITY, KOORAGANG ISLAND (SSD-4986)

NOISE AND VIBRATION IMPACT ASSESSMENT

Orica has reviewed IPL's Noise and Vibration Impact Assessment and makes the following comments in relation to Appendix F of the environmental assessment.

It is Orica's understanding that IPL has undertaken a noise impact assessment (NIA) using the framework outlined in the NSW Industrial Noise Policy (INP) in determining the project's specific noise criteria. IPL have justified change to the INP suburban noise level of 40dB(A), as detailed in Table 2.1 of the INP, through the consideration of a suburban industry interface, proposing an amended acceptable noise criteria for the project of 45dB(A). In reference to noise data collected as part of the assessment process indicating that existing noise levels at Stockton currently exceed 45dB(A), and also taking into consideration that the these levels are likely to decrease in the future due to noise reduction projects currently being undertaken at the adjoining Orica site, a collaborate approach to achieving the projects noise objectives between Orica and IPL has been proposed by IPL. This would require both sites to limit future noise generation to 42dB(A) (page30).

A review of the INP indicates that the policy does not currently recognise a suburban industrial interface and as Stockton is considered as suburban, a maximum noise level of 40dB(A), consistent with Table 2.1 of the INP, would normally apply for a new development.

Although the Orica site is located closest to Stockton, it is misleading to suggest that the Orica site is the only noise contributor that can influence noise levels received at the community. It is also worth noting that the INP noise guidelines outlined in Table 2.1 are only relevant for the noise assessment of new developments, with the existing noise environment taken into consideration through any modification of the policy's noise guidelines. A review of Section 2.2.1 of the INP would suggest that any modification to the policy guidelines as a result of an elevated existing noise environment should be developed in accordance with the requirements outlined in Table 2.2. Of particular relevance to the IPL proposal is the process for modifying the suburban noise criteria, taking into consideration that existing noise levels are greater than 2 dB(A) above the policy acceptable noise level, for which the policy indicates that an appropriate noise criteria should be developed by taking into consideration:

1. If existing noise levels are likely to decrease in the future the noise criteria applied to the IPL proposal should be the established as the **acceptable noise level** minus 10dB(A); or
2. If the existing noise level are *unlikely* to decrease in the future the noise criteria applied to the IPL proposal should be set at **existing noise level** minus 10dB(A).

Selected noise criteria developed by IPL should be consistent with the requirements outlined in Table 2.2 of the INP and should not result in any increase to the current noise

environment at Stockton. Nor should it encroach or be reliant on future noise reduction measures currently being implemented at the Orica site.

HAZARD AND RISK ASSESSMENT

Orica has reviewed IPL's Hazard and Risk Assessment and would like to make the following comments in relation to QRA analysis outlined in Appendix D of the environmental assessment:

It is Orica's understanding that IPL has undertaken a QRA assessment of their proposed ammonium nitrate manufacturing facility with consideration to the requirements outlined in the NSW Department of Planning Hazardous Industry Planning Advisory Paper 4 (HIPAP 4) – Risk Criteria for Land Use Safety Planning (2011). Orica notes that the risk impairment criteria that forms the basis of the IPL QRA assessment has predominately been derived using the Emergency Response Planning Guideline (ERPG) values. Orica considers the selection of appropriate chemical exposure concentrations that are reflective of the broader community is important in determining compliance of a proposals hazard and risk assessment in relation to the Department of Planning assessment criteria. This is particularly relevant when determining IPL's proposal's compliance to HIPAP 4 injury and irritation criteria. A review of the guidelines outlined by the US Emergency Management Issues Special Interest Group (ENI SIG, 2012) would suggest that ERPG values should only be applied as a basis for QRA modeling when published Acute Exposure Guideline Levels (AEGL) values are not available. This is due to AEGL values considered more reflective of the general population through the greater inclusion of susceptible individuals compared to those considered under the ERPG exposure limits.

Of particular concern to Orica is the selection of ammonia exposure concentration for:

- Toxic injury of 300ppm, which is equivalent to the US National Institute for Occupational Safety and Health (NIOSH) Immediate danger to life and health (IDLH) for a healthy male worker; and

- Irritation of 41ppm, which is higher than the ammonia short term exposure limit (STEL) of 35ppm.

This would suggest that the toxic injury and irritation exposure level selected for ammonia by IPL to represent the general community are less stringent than the health standards that are presently applied to a healthy male worker operating in an industrial workplace. A review of AEGL values available for ammonia would suggest a more conservative exposure concentration of 220ppm for 10 minutes associated with toxic injury and 30ppm for 10 minutes, consistent with the exposure values considered in Orica's expansion project, should be considered by IPL as part of their QRA process.

In addition Orica is concerned with the selection of nitrogen dioxide irritation exposure value of 5ppm by IPL, justified by IPL as being consistent with industrial workplace exposure criteria outlined for OSHA Ceiling Limit PEL and ACGIH 2011 STEL. Orica considers the use of industrial workplace exposure standards as being not appropriate as they do not reflect

the broader demographic of surrounding Kooragang Island community. A review of the April 2012 ACGIH NO2 criteria also indicates that there is currently no published value for NO2 STEL and therefore the justification provided by IPL for using this value, in preference to the AEGL value of 0.5ppm, is considered by Orica as no longer valid.

A consistent level of assessment should be applied by the Department of Planning when assessing IPL's QRA, compared to the standards applied to Orica's approved expansion project. This would require the consistent use of the more conservative AEGL exposure values in IPL QRA assessment, in preference to ERPG exposure values, when establishing the proposals compliance to HIPAP 4 planning assessment criteria associated with Injury and Irritation.

Further comment in regards to assumptions underpinning IPL's hazard and risk assessment are detailed in Table 1.

REFERENCES

ENI SIG (2012) *US Emergency Management Issues Special Interest Group* available at: http://orise.orau.gov/emi/scapa/chem-pacs-teels/default.htm

EPA (2000) NSW Industrial Noise Policy (INP)

Table 1 - Additional Comments by Orica's Following Review of IPL's Hazard and Risk Assessment

	Item	PHA issue	Comments	Recommended action in IPL PHA
1	Separation distances for AN storages	Separation distances for existing AN storages	1. Recommendation 10 notes that the SAFEX recommended separation distances will be applied to new AN storages but does not state that this will be done for the existing site AN storages.	Further clarification is sought by Orica as to whether IPL plan to upgrade existing storages to SAFEX recommended separation distances.
2	NO2 properties	NO2 ACGIH STEL	2. The PHA uses a value of 5 ppm for the ACGIH STEL. However, ACGIH NO2 toxic exposure levels published in February 2012 no longer recommends a TLV-STEL value and therefore the justification is no longer valid.	The PHA should consider a NO2 irritation criterion of 0.5ppm, consistent with the current AEGL values.
3	Toxic irritation map	Stockton area is partially pixellated	3. On the toxic irritation contour map, it is hard to distinguish the residential zoned area. It is important to do so in order to compliance to HIPAP 4 criteria.	A greater resolution toxic irritation map, clearly distinguishing the residentially zoned areas of Stockton should be included in the hazard and risk assessment.
4	Assumption no. 9	On shore process isolation time of 3 minutes for isolation of remotely operated actuated valves achieved in 99% of isolations	4. The Purple Book states that with automatic leak detection and remotely actuated operation of isolation valves that the isolation time is 10 minutes (4.4.1). This is much higher than the 3 minutes the PHA asserts as achievable in 99% of releases.	Additional information on how IPL's amended isolation time is to be achieved including a timeline breakdown for: - Detection time - Response time to locate - Operation time to activate Should be detailed in IPL's assessment. Further Justification for the deviation from the Purple Book isolation time value of 10 minutes should also detailed in the assessment.

	Item	PHA issue	Comments	Recommended action in IPL PHA
5	Assumption no. 9	On shore process isolation time of 15 minutes for isolation of local manual valves achieved in 99% of isolations	5. The Purple Book states that with automatic leak detection and manual operation of isolation valves that the isolation time is 30 minutes (4.4.1).	Provide a further detailed breakdown of the time basis for achieving 15 minute isolation for automatically detected and manually isolated leaks. Additional justification for the deviation from the Purple Book isolation time value of 30 minutes should be detailed in the assessment.
6	Assumption no. 9	Marine arm automatic isolation time of 25 seconds	6. The Purple Book states that for a fully automatic isolation system, the isolation time is 2 minutes (4.4.1). This is much longer than the 25 seconds stated in the PHA.	Provide a further detailed breakdown of the time basis for achieving 25 seconds automatic isolation should be detailed in the assessment. Additional justification for the deviation from the Purple Book isolation time value of 2 minutes should also be detailed in the assessment.
7	Assumption no. 11	Liquid transfer systems are assumed to be flow controlled upstream of the leak which means the leak flow rate is largely controlled at the normal process flow rate.	7. This assumption depends on flow measurement always being upstream of the leak and controlling the pump speed or upstream flow control valve. 8. The Purple Book states (4.3 Note 9) that the presence of pumps must be taken into account and suggest outflows are modelled using 1.5 times the nominal pumping rate due to loss of downstream pressure. 9. For a pipeline rupture, double-sided flow will occur and the flow from the end downstream of the leak should be included.	A review of model leak rates associated with pipeline ruptures should be undertaken taking into consideration the Purple Book factor of 1.5 times. Confirmation by IPL that double-sided pipe rupture flows have been considered in the risk modelling.
8	Assumption no. 25	Vessel rupture cases are modelled as “a hole size equal to the largest pipe diameter or nozzle connected to the vessel”.	10. The Purple Book requires a vessel rupture case to be modelled as both an instantaneous release and a hole size equivalent to a 10 minute release case.	Carry out a sensitivity analysis for fatality, toxic injury and irritation risks using the Phast Risk instantaneous release model instead of “a hole size equal to the largest pipe diameter or nozzle connected to the vessel”.