



## **Guideline: Air Emissions**

**Submission by: Clean Air Society of Australia and New Zealand**  
**To: WA Department of Water and Environmental Regulation**  
**Date: January 2020**

### **SUMMARY**

- CASANZ supports the formulation and publication of the proposed air emissions guidelines, on the basis that they will lead to better standards of air quality management in Western Australia.
- CASANZ considers, however, that the superimposition of up to three levels of conservatism, in the selection of air quality guideline values is excessive. The screening analysis and the screening values to be used will in our view lead to a very conservative determination and may not achieve a significant reduction in the number of cases which we understand is the DEWR objective. Comment on these points have been made by our members.
- CASANZ recommends that the Department consider a relaxation of the screening values, given that in any case, the proponent's assessment can be overridden by the Department. It is also suggested that irrespective of the approach adopted, the Department develop a protocol or procedure that will be used by to override the proponent's assessment and require a full analysis.
- CASANZ members have also raised the need for explicit guidance on how existing background concentrations should be considered in relation to AGVs. There are regions around Western Australia where background concentrations are close to and above the relevant AGVs. Different approaches may be necessary for dealing with different classes of sources, but the approach should desirably be generic rather case by case basis. Such approach could include the U.S. Prevention of Significant Deterioration, emission offsets or outright prohibition, exposure reduction methods, and risk assessment. These issues need however, to be considered in a broader policy context rather than in a single stack assessment whether simple or complex, but could be signaled in the Guide under "other considerations"
- CASANZ also notes that relationships will exist between existing and future guideline documents, including those for odour, dust and air quality modelling, and the DWER risk assessment process. These will need to be clarified.

Specific comments on the points where these issues arise, and on others, follow.

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## INTRODUCTION

The Clean Air Society of Australia and New Zealand (CASANZ) is a non-government, non-profit organization that brings together professionals working across a broad range of air quality management fields. Since its formation in 1966, the Society's members have been intimately involved with the evolving management of air quality in Australia and New Zealand. Members of the Society are working or have worked in all levels of government, as air quality consultants, and as researchers in universities, CSIRO and other agencies. The Society performs important roles in information and technology transfer, and training.

CASANZ welcomes this opportunity to provide a submission on the proposed air emissions guideline. This submission includes the considered views of the Society.

## General Comments

- The title of 'Guideline: Air Emissions' does not accurately reflect the aim of the document, which is to control the effects of emissions rather than the rates of the emissions themselves. This could be reflected in a modified title.
- The guideline as currently formulated appears to be designed for single point sources. This could also be reflected in the title.

## 1 Purpose

- The use of the word 'ensures' here is too strong. Perhaps 'attempts to ensure' would be more suitable, so that it would read 'This Guideline: air emissions (the guideline) attempts to ensure that adequate information is provided ...'
- The shorthand versions 'the guideline' and 'the department' should perhaps be 'the Guideline' and 'the Department' throughout, as they refer to proper nouns.

## 2 Scope

- It is noted that fugitive dust and odour emissions are not considered. The different methodology and acceptability criteria for odour assessments makes that omission reasonable. However, in the case of fine particle emissions from fugitive dust emission sources, the acceptability criteria should be the same as for those emitted from any point source. This similarity should be reflected in the forthcoming dust emissions guidelines.
- The glossary referred to here includes terms and abbreviations, but no acronyms.
- It is stated 'Please note that we conduct all our assessments on a case-by-case basis, considering the application's site-specific characteristics'. But AGVs read like a 'pass/fail' assessment. Does exceeding an AGV from detailed assessment automatically constitute an unacceptable outcome, or compliance with AGV automatically constitute an acceptable outcome and not require further controls?

Similar statements have been seen later in the draft document (section 3, 7.1), and have been noted again there.

- Will AGVs be assessed for all pollutants from a premises, or only those emissions from the prescribed activity on the premises?

### 3 Context

- In this section it is stated 'Our guidelines are not mandatory considerations'. However, in Table 1, section 7.1, it is stated for criteria pollutants, 'AGVs are to be met at all existing and future offsite sensitive receptors in the modelling domain'. The two statements appear contradictory. (Related comment for sections 2 and 7.1)
- The word 'considerations' above is superfluous. A simpler expression of the point would be 'Our guidelines are not mandatory; they describe the information we need to make sure that applications are processed in a timely fashion.'
- Given the level of conservatism apparently contained within any AGV, it would be reasonable to expect that a developed Environmental Standard would be a higher value. This seems not always to be the case.
- It is stated 'If not enough information is provided for us to complete our assessment, we may decline or refuse the application'. What constitutes enough information is not stated.

### 4 Legislation

No comments provided.

### 5 Environmental objective

- Is it intended that the SCs and AGVs will be adopted through the Part IV assessments? If so how relevant are the AGVs to the non-human receptors given that the large majority of the criteria are derived from OHS criteria with safety factors applied (refer to the original EPAV 2001 works for the description). Comments on section 7.1 and Appendix A, Table A 2, also relate to this point.

### 6 Air quality

#### 6.1 Definition of air quality

- It is not clear in the definition whether AGVs are intended to apply to indoor air quality.

#### 6.2 Sources of air emissions

- Electric power generation is included in the list of activities that produce air emissions. This is not correct, since solar and wind power generation would not produce air emissions. The entry is also a duplication, since 'fuel combustion' is listed above. It could be beneficially removed.

#### 6.3 Impact of air emissions on receptors

- In paragraph 1, a typographic error needs correcting to: 'Air emissions can also have impacts on vegetation, ...'
- Also in paragraph 1, the terms 'chronic' and 'acute' should be defined.
- Also in paragraph 1, it is not clear what is meant by 'social surroundings', and other items could also be added to this (e.g., materials, including cultural artifacts, and climate).
- The guidelines do not include a definition for 'sensitive receptor', and there is no definition in the EP Act. A definition should be included.

- In the bulleted list of factors, ‘sensitivity of the receptor’ seems related to nuisance impact (outside scope). Should this be ‘receptor type’? (human/vegetation/water etc.)
- Third bullet: ‘inventory’ seems out of place here. ‘mass emission rate’ might have been what was actually meant.
- Final bullet point: emissions from other sources can also influence atmospheric chemistry.

## 7 Factors considered in air emissions assessments

- In paragraph 1, the appearance of the word ‘amenity’ is a potential source of confusion, since in paragraph 2, odour and fugitive dust are explicitly excluded. It is suggested that paragraph 1 be simply omitted.
- In paragraph 2, the abbreviation ‘(GLCs)’ applies to ‘ground level concentrations’, so should follow this term directly, not later. The first sentence also has grammatical errors, and we recommend it be rewritten as ‘The basis of our assessment of air emissions (excluding odour and fugitive dust) involves the comparison of predicted ground-level concentrations (GLCs) with air quality criteria.’

The bullet points in this section could provide more explanation. In particular:

- There is no definition of the term ‘cumulative’ in the document.
- What is an ‘approved future sensitive’ receptor? How is an applicant to determine future sensitive receptors?
- To what does ‘proposed technology’ refer, and why does it appear here? Is this a reflection of section 51 of the EP Act, ‘all reasonable and practicable measures should be taken to prevent or minimize emissions’?
- ‘any air quality issues or complaints we have received’. Here, a distinction should be made between amenity matters like odour and fugitive dust (outside scope) and complaints of impacts on human health.
- Does ‘the compliance history of existing premises’ include the consideration of actual monitored ambient levels?

### 7.1 Ambient air quality guideline values (AGVs)

- While there is a section 7.1, there is no 7.2 (etc). Section 7 is titled ‘Factors considered in air emissions assessments’, and these are listed. But AGVs are not in the list, although they are mentioned above the list. On that basis, section 7.1 should actually be section 8.
- Paragraph 2 should refer to ‘New South Wales Environment Protection Authority’.
- In paragraph 2, the document refers to the ‘approved health guidelines of Western Australia’s Department of Health’, but the bases for these are not readily available. DWER should make available all references used in the derivation of the AGVs, on the DWER website. Transparency is essential to understanding the basis of the AGVs and the degree of conservatism that is being afforded.
- There is an inconsistency in paragraph 2, in which the WA source is referred to without any formal reference, while the NSW source is named in full and included in the reference list. A sentence

more like 'These AGVs are based on the approved health guidelines (WA DoH 20xx, NSW EPA 2016)', with an appropriate addition to the reference list, would have been better.

- DWER has not provided a justification for the AGVs in Table A 1 being applicable at only sensitive receptors while those in Table A 2 and A 3 apply everywhere within the modelling domain.
- In addition to the above issue, the AGVs in Table A 1 'are to be met', while those in Tables A 2 and A 3 'should be met'. But the phrase 'air quality guideline value' (AGV) implies something that is non-binding. If that is the intent, it should be made clear that a modelled concentration above the AGV (except perhaps for criteria pollutants in Table A 1) is not automatically considered 'pollution' or 'environmental harm', given the level of conservatism in the generation of the AGVs. DWER must confirm that such AGVs will not be applied as 'Environmental Standards'.
- The majority of the AGVs have been defined based on human health endpoints, but some exceptions are present (for example, HF). Is it DWER's intent to apply the AGVs as default for protection of non-human receptors in the absence of criteria (e.g., protected fauna). If so, what confidence is there in this application and the level of conservatism is appropriate?
- The general approach to the selection of AGVs in Table 2 is open to interpretation. This relates particularly to rank 1 items, where three potentially different sets of guideline values have equal rank.
- The AGVs in Table A 1 are expressed for both 'standard conditions' (0°C, 101.325 kPa) and 'ambient conditions' (25°C, 101.325 kPa). To avoid ambiguities we strongly recommend that only one set of conditions for AGVs is used. Of the two options, the former matches that used for the NEPM standards, so is to be preferred.
- In addition, it should also be made clear that any background concentrations are to be stated for the same conditions.
- It should be noted that NSW values in Table A 1 and A 2 use those from EPAV 2001, and EPAV references the basis for derivation of the criteria as coming from OHS values that include safety factors. NSW has adapted these values further (conversion from a 3-minute to a 1-hour value, generally) but have not documented the basis of change. DWER should provide clarification of the basis of the numbers so that the level of (conservative) protection being afforded is transparent. Both NSW and EPAV justify this within their guidance but DWER's justification within the WA framework is missing.
- In Table 1: The terms 'modelling domain', 'principal toxic substances' and 'individual toxic substances' are not defined.
- Is the phrase 'excluding industry premises' to be interpreted as meaning the industry premises from where the emission is a source, or all neighbouring industry premises as well?
- After Table 1, it is stated 'The department may make exceptions on a case-by-case basis (e.g. premises in remote or industrial areas) to allow an alternative approach.' There are some issues in this statement. Firstly, it provides no actual guidance to a proponent. It also it located in a section dealing with air quality guideline values, so the term 'approach' seems inappropriate. Is a different set of AGVs, or a different area of applicability of the AGVs, contemplated?

It is also noted that this statement duplicates ones made in sections 9.1 and 9.2. Was this intentional?

- It is stated 'In some circumstances we may use an AGV other than what is presented in Appendix A – Ambient air quality guideline values'. How will DWER document these case-by-case decisions so that transparency is maintained – e.g., at the moment you would need to manually track each licence for a decision. Will DWER maintain a consolidated and 'live' list of exceptions on the DWER website?
- In the above circumstances, will DoH / DWER accept or be open to considering derivation of alternative AGVs via a risk based approach, and if so is there a preferred protocol to follow?
- On page 6, paragraph 1, it is suggested to add 'the applicant should' to make the sentence read 'If no suitable alternative can be identified, the applicant should contact the department or DoH for further advice'.
- Given the statement 'contact the department or DoH for further advice', is DoH adequately resourced for this advisory role, and if so, who is the necessary contact?
- On page 6, paragraph 2, it is stated 'More stringent requirements may apply to airsheds where estimated air quality is close to exceeding AGVs ...'. There is no explicit attention paid to the application of AGVs where background concentrations are high, although this is an issue in a number of WA airsheds. This issue is addressed again in comments on section 9.
- In Table 2, EU standards are excluded. Is there any reason, or is it an oversight?
- Table 2, row 3: the UK department is now actually the Department of Health and Social Care. Perhaps the intention here is to refer to the Committee on the Medical Effects of Air Pollutants (COMEAP). Whilst COMEAP does advise on air quality standards, in the context of the WA Guideline the more relevant authority would probably be the Department for Environment Food & Rural Affairs, which administers the UK standards (as legislated).
- Table 2, row 4: RIVM is the National Institute for Public Health and the Environment (not 'of')

## 8 Assessment overview

- The hierarchies of conservatism proposed are of broad concern. The AGVs (with the possible exception of those in Table A 1) are conservative, the screening analysis is conservative, and the fractions of the AGVs required for a screening analysis to be passed are highly conservative. This will lead to many proposals with very low actual impact being required to go through the detailed assessment phase.
- In paragraph 3 and 4, consider rewording to read only 'If an emission is not screened out, a detailed analysis should be completed. This process is outlined in Sections 10 and 11'.
- The screening process appears to be very similar in form and function to the process used in the UK – however based on a quick review of 10 pollutants common to both lists shows that the DWER criteria (hourly) are significantly more stringent than the UK criteria.
- In Figure 1, the processes do not appear to take into account if ambient monitoring data is available, to verify background concentrations prior to screening step 1.

## 9 Screening analysis

- The definition of screening concentrations (SCs) as percentages of the AGVs does not allow for differences in the likely background concentration for different pollutants. For example, for 24-hour



PM<sub>10</sub> the background may be relatively high, whereas for CO it is likely to be low, relative to the respective AGVs. DWER might therefore wish to consider a modified screening criterion which addresses this issue.

For example, in the US, Prevention of Significant Deterioration (PSD) increments are set for different areas, so that in Class 1 areas very little deterioration is allowed and the PSD increment is lower than for Class 2 areas. Another possible approach would be to only apply SCs in certain areas. For example, similar to the tiered ozone assessment procedures for NSW, non-attainment areas could be defined where the 5-year average for a particular pollutant is greater than some fraction of the NEPM standard. Screening approaches to air quality assessments could be deemed inappropriate for these areas.

- The screening concentration should be defined. It is our understanding that this is the contribution from the source or sources alone, regardless of background concentration.
- It has been suggested that a proponent might use a more rigorous screening approach, employing a model like AERMOD with a simple meteorology file and a conservative source configuration and emission rate. What is DWER's perspective of this suggestion, and would it allow use of less conservative SCs?
- It should be stated that the screening analysis may be used for volume or area sources, with their representation as a point source providing extra conservatism.
- Page 8, paragraph 1, does not state anything new, and can be removed without harm to the document.
- In page 8, paragraph 2, we suggest deleting 'Despite this apparent limitation' for the same reason.

## **9.1 AGV screening tolerances**

- We suggest replacing the use of the term 'tolerance' with 'threshold'. The former has a meaning generally related to an acceptable level of variation in a measurement or other estimate, which is not what seems intended here.
- We note that the screening tolerances used may have been taken from the United Kingdom Environmental Agency's H1 Annex F document, which has now been withdrawn, but this (or whichever other source has been used) has not been cited.
- Repeating the point made for section 8, the screening tolerance values have been included without scientific justification, and appear extremely conservative. As a consequence we expect the majority of proposals would require detailed analysis.
- Most fundamentally, it must be asked whether there is any potential circumstance in which a detailed analysis will generate concentrations higher than those provided by a screening analysis. There are two possible answers:
  - If yes, then the screening analysis is inadequate, and needs improvement.
  - If no, then there is no objective basis for a screening tolerance for any averaging time to be less than one.
- In paragraph 2, the sentence includes errors of terminology – e.g., 'low background emission situations'. We suggest it be reworded to 'On a case-by-case basis, the department may accept a

screening tolerance higher than those described below for isolated sources, remote areas or regions with low background concentrations’.

- A comparison of the UK  $C_{UE}$  values shows that for annual criteria, for  $H_{eff}$  at 0-10m the value is significantly lower for DWER, but notably higher for heights 20m to 200m. Similarly, for 1-hour criteria, for  $H_{eff}$  at 0m to 30m is significantly lower for DWER, but notably higher for heights 40m to 200m.

## 9.2 Screening calculations

- In Figure 2, it is stated that calculation of the emission rate requires volume flux and emission concentration. While this is sometimes the case, there are many other means of calculating mass emission rate (e.g., fuel usage and fuel sulfur content).
- It should be stressed that the ‘effective emission height’ considered here is not the effective emission height normally used in air quality modelling, which is the final level of a plume after completion of plume rise. It is stated earlier that plume rise is excluded from the screening method.
- In Step 1, a worst case emission rate is required. While this is appropriate for short-term averages, it is not so for the annual average. A ‘conservative average’ emission rate would seem to be more appropriate.
- The applicant is required to provide a reliable emission estimate, but the basis to be used is not explained. For example, if an ‘upset condition’ might occur once in two or three years, is it to be used? Given that start up and shut down would normally occur during particular times of day, is it appropriate to use in this case  $C_{UE}$  values based on all hours of a year?
- On the use of the 99.9<sup>th</sup> percentile in this section and others, a comment was received querying why it has been chosen. One of our members, Dr Peter Rye, who worked with DWER and its predecessors from 1990 to 2015, has contributed this comment which might be useful to record:

*‘The use of the 99.9<sup>th</sup> percentile for hourly concentration peaks originated in the management of sulphur dioxide concentrations at Kwinana. As outlined in section 4.3 of the EPA bulletin 644, “Development of an environmental protection policy for air quality at Kwinana”, modelling work had shown that the peak hourly concentration in any one year was highly variable, so difficult to model. Dr Ken Rayner and (I believe) Mr John Rosher of the department analysed hourly average concentrations measured at both Kwinana and Kalgoorlie. These locations both had isolated sources, or sources grouped closely together in comparison to their receptor distances. It was found that in all cases, the peak hourly average concentration was less than twice the 99.9<sup>th</sup> percentile value (typically a factor of 1.6 to 1.8), and that the 99.9<sup>th</sup> percentile was much more readily modelled to an acceptable standard of accuracy. So, for a chosen health limit (for the Kwinana EPP) of 700  $\mu\text{g}/\text{m}^3$ , a limit of 350  $\mu\text{g}/\text{m}^3$  for the 99.9<sup>th</sup> percentile could be used, with the confidence that when it was met in modelling, the health limit would also be met.*

*I feel it is important that the detailed origins of this choice be kept on record, as neither of the staff members involved is now with the DWER.’*

- For short term concentration peaks, it might be more appropriate to use the 99.9<sup>th</sup> percentile, given the use of this statistic for many other criteria. However, given that the 99.9<sup>th</sup> percentile was chosen on the basis of hourly average concentration statistics, its use for estimation of emission rates requires justification.



- For cases where hourly emissions data are available, and the emission rate is variable, the final paragraph contradicts the preceding paragraph.
- In section 'Step 2', page 13, it is stated that  $C_{UE}$  is a computed value from the air quality model ADMS 5, using 12 months of meteorological data collected in 2002–03 from Caversham air quality monitoring station and the Bureau of Meteorology station at Perth Airport. It is not stated why data from two sites were required. Was one site the major source, the other only used to fill data gaps? If so, were the climatologies of the two sites sufficiently similar?
- Was the period used for modelling shown to be a reasonably representative year?
- Given the need for all aspects of the emissions guidelines to be verifiable, is the meteorological data available for review?
- On the last line of page 12, a stack of varying height seems an unlikely structure. We suggest 'a stack of a given height'.
- In using Table 4 values, does the user need to interpolate/extrapolate for intermediate or higher stacks?
- For consistency and clarity, the Table 4 title should use the term 'effective emission heights'.
- After Table 4, the phrase 'unreasonable impacts' is used. The term 'unreasonable' is highly subjective and should be avoided. We suggest the three words 'for unreasonable impacts' can be deleted without harm to the meaning of the sentence.
- At the top of page 14, the section headed 'Exceptions and special cases' represents a new thread of discussion, and should perhaps be section 9.3 (with section 9.3 becoming section 9.4).
- Given the 'hypothetical combination' approach is accepted, that option should be included in the screening stage. It is not really an exemption, and is no more a special case than the treatment of a volume or an area source.
- The first bullet point here refers to 'significant variation in ground level'. Can this be quantified, in terms of distance, stack height etc?
- The phrase 'complex meteorological factors' is very vague, and could be applied to a large fraction of applications (meteorology rarely being simple). Clarification of this point is requested.
- We suggest that constrained airsheds should also be considered a special case. An approach to this issue was presented as a comment on section 9.

### **9.3 Screening outcome**

Comments received here were reflected in prior comments. Their focus was on the excessively conservative nature of the screening analysis.

## **10 Detailed analysis**

- There are likely to be linkages with DWER risk assessment process which will need to be clearly defined.

- It is stated 'In a detailed analysis, the modelled GLCs are compared against the relevant AGVs at 25°C', But in section 7.1, it is stated 'AGVs are expressed at standard conditions of temperature and pressure (0°C, 101.325 kPa) and at ambient conditions (25°C, 101.325 kPa)'. These statements are contradictory.
- If the department may disagree with a screening analysis, this indicates a lack of faith in the conservatism of the method set out in Section 9. It is important that should DWER disagree, detailed reasons are provided, backed by quantitative justification.
- Given the high level of conservatism in a screening analysis, a detailed analysis will almost certainly generate decreased concentration estimates.

### **10.1 Modelling requirements**

- Comments have been received on the words 'Our expectations in respect to air quality dispersion modelling and associated meteorological monitoring and/or modelling are outlined in the Air quality modelling guidance notes (DoE 2006) or its successor. Note that this publication is scheduled for review in the near future'. There are relationships between that document and the current one that could change in the future. How will these be managed?
- The description of the 'worst case' modelling approach here is actually an alternative screening approach. Does DWER anticipate accepting such alternative approaches?
- Paragraph 2 refers to the 'proponent', whereas in other locations the term used is 'applicant'. One or the other should be used for consistency, not both.

### **Criteria pollutants**

- The sentence 'Cumulative emissions (pre-proposal and proposed) are reported as the maximum concentration' does not make grammatical sense, since emissions are not concentrations. It is presumed that the intended meaning is 'Concentrations arising from cumulative emissions (pre-proposal and proposed) are reported as maxima'.
- It should be made clear that the cumulative concentration is the sum of those existing (current sources plus background) and those due to the proposal.

### **Principal toxic and individual toxic substances**

- Minor point of inconsistency of terminology: in the first two bullet points, simulations are to be reported. In the third, concentrations are to be reported.
- It is stated 'Note: The modelling analysis may be limited to emissions from the applicant's facility only, if the applicant shows (to the satisfaction of the department) that the background concentrations of the identified pollutants and other local sources of these pollutants are insignificant'. By what method will DWER require background concentrations to be demonstrated?
- It has been requested that DWER maintain a list of agreed background concentrations (both average, and acceptable values for shorter averaging periods) for various regions across the state. This would simplify the preparation of detailed analyses, and make good use of data monitored by DWER, and submitted in confidence by applicants to DWER.

## **11 Reporting**

No comments received

## Document Implementation

- It is stated 'This guideline comes into effect on the day it is published. Applications received after the publication of the guideline will be processed in accordance with the information contained within this guideline', but we have received a comment that DWER is processing applications now to the requirements specified. The actual status of the guidelines should be confirmed and clarified.

## Related documents

- Regarding 'WA EPA - Guidance for the assessment of environmental factors – separation distances between industrial and sensitive land uses' and 'A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities' - it is not clear how these documents are to be interpreted in the context of the AGVs.

## 12 Appendices

### *Appendix A – Ambient air quality guideline values*

#### **Appendix A – AGV values.**

- It is stated 'The department has adopted a set of AGVs as a tool to assess the level of risk associated with a proposed emission'. This purpose does not appear to be consistent with some of the implementation guidance within earlier sections of the document. In the interests of consistency, this statement could be simply deleted.

#### **Table A 1: Ambient air quality guideline values for criteria pollutants.**

- Most minor of points: the headings for Tables A 1 and A 3 end with a full stop, the others do not.
- There are some inaccuracies in the conversions. For example, 25 ppm CO equates to 28.6  $\mu\text{g}/\text{m}^3$  at 25°C, while 9 ppm CO equates to 10.3  $\mu\text{g}/\text{m}^3$  at 25°C
- The multiple footnotes and toxicity codes are confusing.
- The HF criterion appears to be incorrectly referenced at 25°C. ANZECC (1990) clearly states concentrations are referenced to 0°C and 101.325 kPa.
- In addition, it does not seem appropriate to adjust PM results for temperature, given that measurements are made using a range of different instruments having characteristics that affect the results (e.g. inlets heated to different temperatures, which affects water and VOCs), and given the non-standardised data on which air quality standards are based.
- If, as suggested in section 7.1, the 0°C temperature reference is used, most of the above issues disappear.

#### **Table A 2: Ambient air quality guideline values for principal toxic substances**

- The basis for use of NSW EPA AGVs must be explained. These originate from Vic EPA SEPP design guidelines, which are derived from OHS standards, with various factors included for different exposure scenarios presented from workplace to environmental.

The SEPP is well overdue for revision to reflect current thinking in toxicology.

The Victorian SEPP guidelines are 3 minute averages, while NSW AGVs are 1-hour averages, calculated from SEPP values using power equation. This is a generic conversion that assumes a certain peak to mean concentration ratio. We understand that DWER does not favour use of the power equation to adjust time averages. If so, then the basis for using NSW AGVs is not valid.

- There is inadequate attention devoted to the variation of toxicity of various metal compounds. For example, for nickel, antimony, arsenic, beryllium, manganese and each of their compounds, the method of calculation for these needs clarification.
- Uranium (insoluble compounds) and Uranium (soluble compounds) are assigned different criteria. Why is not a similar approach used for other pollutants, such as the above?
- Asphalt (bitumen / petroleum) fumes [2B] – in what form are these to be measured?
- Copper dusts – in what form are these to be measured?
- One member lodged objections for the use of 1-hour averages for dioxins. The validity of this concern could not be investigated, because the reference for dioxins [1C] does not exist, there being only [1], [2A] and [2B].
- It is noted that EPA waste to energy guidelines reference IED substances, but the list of AGVs does not include thallium.

### **Table A 3: Air quality guideline values for individual toxic substances**

- Barium (soluble compound): can it be assumed that insoluble' components can be excluded from the assessment?
- For items like 'copper fume and mists' (also for iron, magnesium oxide, silver, zinc chloride, zinc oxide) in which form is the mass concentration to be calculated? (e.g., Cu, or CuO, or copper equivalent of a mix of compounds, in first case). Inclusion of a CAS number for each criterion would be helpful.
- For mercury (organic), it is presumably the case that inorganic mercury is excluded from the calculation

### **Table A 4: Toxicity codes and references for standards or guidelines**

- Not all references are publicly available on the internet. DWER should make all references available within the DWER website so that the basis of derivation, and purpose is transparent and understood.

### **Appendix B – Screening analysis form**

No comments received

### **Appendix C – Example calculations for screening analysis**

- Further worked examples would be welcome for calculating metals and their compounds, soluble compounds (assuming not to include insoluble component), metals and other pollutants as fumes

## Calculating emission rate (E)

- It is stated 'For this example, it is assumed that NO<sub>x</sub> is present as 100% NO<sub>2</sub>' Is this a general recommendation? If so, it should figure earlier in the document.

## Glossary

- It is stated for 'Insignificant', that air emissions screened out are considered insignificant and need no further analysis'. Should this make reference to potential risk?
- Screening concentration is stated to be for a worst case, but the screening calculation form suggests multiple options.
- The 'GLC' entry makes reference to human exposure, but by definition AGVs do not apply non-human receptors. It might be advisable to remove the 'human' reference, to avoid misinterpretation.
- Additional definitions to add to list: chronic, acute, industry premises, industry area, sensitive receptor, cumulative, modelling domain, principal toxic substances, individual toxic substances.

## References

Repeating points made in comments for section 7.1 and for Table A 4 in section 12, all references used should be available on DWER website.