



Ministry for the
Environment
Manatū Mō Te Taiao

Good Practice Guide for Assessing Discharges to Air from Industry

Report on Submissions on Draft for Consultation

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1 Introduction

In June 2006, the Ministry published the *Good Practice Guide for Assessing Discharges to Air from Industry – Draft for Consultation*. The guide is one in a series of good practice guides developed by the Ministry for the Environment to promote national consistency and good practice. The target audience includes consenting authorities, consent applicants and advisers (typically air quality consultants).

This document presents an overview of the submissions received on the *Good Practice Guide for Assessing Discharges to Air from Industry – Draft for Consultation*.

The *Good Practice Guide for Assessing Discharges to Air from Industry* has a sister document – the *Good Practice Guide for Assessing Discharges to Air from Land Transport*. These two guides are intended to be consistent with each other. This means that sometimes submissions addressing one aspect of one Guide impact on advice provided in the other. This report therefore, summarises changes made to both draft Guides in response to submissions where submissions cross-over.

2 An Overview of Response to Submissions

Formal comments were received from eight submitters, and their individual contributions have been acknowledged in the updated document. The eight submitters were:

- Auckland Regional Council
- Air and Environmental Services Ltd
- Holcim
- Kevin Rolfe & Associates Ltd
- Mike Farrier Consulting
- NIWA
- Beca
- URS New Zealand Ltd.

A number of the comments were on corrections, detail, formatting, spelling etc – these have all been addressed.

Several comments related to the overall structure of the document (for instance suggesting that the three-tier approach was not appropriate). Significant structural change to the Industry Guide would have necessitated structural change to its sister document (the Transport Guide) and is not generally favoured by the Ministry. In most cases, therefore, such structural change was not carried out.

Several comments related to specific issues for specific councils (for instance not requiring ecosystems effects analysis, or health risk analysis, or inappropriate background values). It is important to note that the Guide is a national document, attempting to cover all jurisdictions and eventualities, not just those relating to individual councils. Where appropriate an attempt has been made to further explain the reasoning behind this.

As can be expected, several comments were also at variance with each other, and with the outcomes of the public meetings and views of the Ministry. Again some attempt has been made to further explain these, but large scale edits were not made (beyond those detailed here).

A new feature has been added to both Guides – a brief summary ‘Recommendation’ for each section. This is to be consistent with other Good Practice Guides (eg, the *Good Practice Guide for Atmospheric Dispersion Modelling*).

Two or three submitters requested ‘more examples’. One submitter offered to provide case studies but unfortunately later withdrew their offer. Examples are valuable and some brief instances are included. The development of detailed case studies, however, requires substantial effort and validation and the results, by their nature, are region and example specific. With one exception (see below) these have not, therefore, been added.

A new section on NO_x conversion has been added as an Appendix. This includes some new analysis, relevant mainly to Auckland and other major urban centres that might experience NO_x issues.

2.1 Specific changes

The following changes were made to address the specific issues raised, covered by order in the document, rather than by submitter. Some comments were made by more than one submitter.

- 1.2 Section on “Target Audience” added.
- Figures 1.1 and 1.2 amended to indicate other relevant Good Practice Guides.
- 2.3 Section on “Regional Policies” added.
- 3.2.3 “Pre-hearing” vs. “Pre-application”. All references to “Pre-hearing” clarified.
- 4.2 Section on 3 Tier approach. The Auckland Regional Council in particular suggested this was confusing and unnecessary. This point was accepted, and further justifications added throughout the document.
- 4.2.1 Some further description sought on defining what Tier 1 represents. This is regarded as potentially being too prescriptive. The current wording is adequate – although note is made in several places about early discussions with Council. More relevant in some regions than others.
- 4.2.4 Section on “How to decide which tier” added.
- 4.3.1 Section on PM₁₀ and standards amended to include others (mainly NO₂ and SO₂).
- 4.4 Section on “Receiving Environment” added.
- 5.0 major update to this section to highlight importance of regional plans and give clear recommendations on order of priority of application of criteria.
- 5.1 Redefining ‘fine particulates’ as PM₁₀ (consistent with Ministry for the Environment policy and to avoid confusion). Also throughout document.
- 5.3 Section on Regional Plans added.
- 5.4 Section on WHO guidelines updated for 2005 release.
- 5.5 International guidelines section added.
- Table 7.1 Background. Submitters found this contentious. It was left in but made more clear that it is an ‘Example’ and a starting point – not an absolute reference.
- Figure 7.1 Amended to indicate recent updates.
- 7.3.1 Making it more clear that ‘screening’ modelling has strict limitations.
- 8.2.1 Clarification on ‘10 years’ as ideal time for assessing trends. Emphasis on ‘ideal’, accepting that it will not be possible in many regions. It is noted, however, that more and more 10-year long records ARE available and within the lifetime of this documents there will be dozens.
- 8.4.2 Section on “Accumulation effects” added.
- 8.4.4 Section on background air concentrations (from Baring Head) added.
- 8.5 Section on health risk assessment largely deleted.
- References updated (eg, WHO Guidelines, NSW EPA Guidelines).

3 Individual Submissions

3.1 Auckland Regional Council – Rachael Nicoll

Section	ARC summary points of submission	Review	Edits actioned
	Comments from “Group 3 Workshop Minutes” reflect ARC’s position.	Noted.	No action.
	The target audience is unclear and should clearly state its directed at skilled air quality practitioners.	Noted. To include section on target audience (cross-reference submission by Michael Farrier).	1.2 Section on “Target Audience” added.
	Too much emphasis on national environmental standards (NES), need more emphasis on regional plans, e.g. the term ‘significant’ in the good practice guide (GPG) is implied in same manner as NES, but the term ‘significant’ is used differently in RMA and other regulation.	To review use of ‘significant’ and amend as necessary. To note importance of regional plans in Assessment Criteria section.	Done – three minor changes. Major update to Section 5. New section on regional plans added (and WHO guidelines).
	Inconsistent level of detail – need more detail on ‘sensitivity of receiving environment’ and ‘details of control equipment’ etc. Should consider section on ‘risk’ assessment.	Beef up receiving environment section. Leave emergency incidents out of GPG (too specific). No to new risk section (beyond scope of GPG) – instead delete current section.	Section 4.4 on “Receiving Environment” added. Section 8.5 was subject to considerable dissatisfaction at workshop on draft GPG. This has been largely deleted to streamline the guide.
	Should provide a summary of main recommendations at the end of major sections (as per GPG Ambient Monitoring).	Yes – to do.	A new feature has been added – a brief summary ‘Recommendation’ for each section (again to be consistent with other GPGs).
2	Need new section on regional plans and policy statements.	Agree.	2.3 Section on “Regional Policies” added.
3.2 (12)	Website reference needs to be updated to 2006.	Amend link to: http://www.mfe.govt.nz/publications/rma/everyday/index.html .	Done.
3.2.2 (para 3)	Change “Consenting authorities <i>will</i> not make a decision” about notification to “ <i>must</i> not make a decision” until all necessary info has been provided.	Check legislation before amending.	Done.
4.2	ARC considers tiered approach unnecessary and confusing. Better for all applicants to consult ARC prior to AEE. Should only be two-tiered if necessary.	Noted. Retain three tiers.	This was beyond the scope of the review, with the three-tier approach used for consistency with companion documents (eg, the GPG on transport). This has not been changed.
4.2.1	Change to only one question: “is the activity permitted or is a resource consent required?”	Noted but not applicable to other regions. Retaining three tiers – no action.	NA.
4.2.2	Need more clarity on the differences between Tier 2 and 3.	Include example provided.	4.2.4 Section on “How to decide which tier” added.

Section	ARC summary points of submission	Review	Edits actioned
4.3	Add to list: 'elevated background levels' (to be more specific than 'existing air quality').	Agree, to amend.	Done.
4.3.1 Last sentence	Include other ambient pollutants or add reference to NES.	Agree, add NO ₂ for Auckland and SO ₂ for Marsden Pt.	4.3.1 Section on PM ₁₀ updated to incorporate new airsheds and amended to include other pollutants (mainly NO ₂ and SO ₂).
Figure 4.2	Remove table – may be used to justify lower assessment. If retained – should be modified to include two tiers with some Tier 1 should go to Tier 2: no gazetted airshed and industrial land-use (if consent required).	Noted. No action.	NA.
4.4 Last paragraph	AEE reports should include details of existing consent requirements. Should not include approximate page number for Tier 3 assessment.	Agree, to amend. Guide only and notes each report different. No action.	Done.
5	Update to include WHO.	Agree, to amend.	Section on WHO guidelines added. References updated (WHO Guidelines, NSW EPA Guidelines).
5.2.1	Name the five pollutants for (Australian) national environmental protection council (NEPC). ARC recommends factor of 50 for low and 100 for highly toxic substances.	Agree, to amend. Agree, to amend.	Done.
6 p.35 para 3	Tier 1 unnecessary (as 4.2.1 re permitted activity). Information too complex for Tier 1 (local geography and meteorology should be Tier 2. Any activity requiring offsets go to Tier 3.	Noted.	NA.
7.3 p.41	Need more detail on background concentrations: i.e. conservatism, modelled v monitored, percentiles, average times. Use caution with advice on double-counting.	Agree, to amend in part. Noted.	Some minor amendments to address concerns – but major edits not attempted.
Table 7.1	Caution – concern will be used as absolute. Need more context.	Noted.	Concerns noted but decision to leave in – making it more clear that it is an 'Example' and a starting point, and not an absolute reference.
7.4 para 2	Treat screening methodology with caution – should use local meteorology data where available.	Include note cautioning use of screening met.	7.3.1 Paragraph added making it more clear that 'screening' modelling has strict limitations.
8.4.2	Suggest use Baring Head for NO ₂ maximum O ₃ (unless localised data available).	Agree.	8.4.4 Section on background air concentrations (from Baring Head) added.
8.5.2	Would like to debate 80% figure.	80% is only an indication, not a recommendation.	NA.

3.2 Air and Environmental Services Ltd – CD Stevenson

Section	Air and Environmental Services Ltd summary points of submission	Review	Edits actioned
5.2.1	Criteria for non-criteria air pollutants should be derived traceably from toxicological data: <ul style="list-style-type: none"> • WHO Guidelines • US EPA Reference Concentrations (IRIS) • California Office of Environmental Health Hazard Assessment Reference Exposure Levels. 	Agreed.	Significant rewrite of section 5.
	Questions inclusion of Washington acceptable source impact levels. These are supposed to be the same as IRIS reference concentrations (annual average) but use a different time average (24-hour average).	Agreed.	Washington ASIL recommendations removed.
	Should include hazard quotient/hazard index approach – for multiple pollutants.	Noted.	No action.
5.2.1	Should cross-reference to 8.5.2 (or bring 1 in 10,000 acceptable risk into 5.2.1).	Agreed.	Done.
	Attached report on “Comparative Health Risks from General Population Exposures to Hazardous Air Pollutants” by S Stevenson and B Mills, Ministry of Health. Examines the likelihood of adverse health effects in pop as a result of exposure to hazardous substances – reviewing local and international literature. Focus on long term exposure of majority of population. This includes likely levels of some pollutants. Suggests the GPG could refer to it (although MoH may need to add to website first).	Noted.	No action.
p.57	Should consider ingestion of pollutants in depositing dust (pollutant concentrations can be much higher in depositing dust than soil accumulation).	Noted.	Overtaken by removal of health risk assessment section.

3.3 NIWA – Tom Clarkson

Section	NIWA summary points of submission	Review	Edits actioned
8.4.2	Ref to GPG for atmospheric dispersion modelling on NO _x / NO ₂ assessments. Ozone Limiting Method (not clear for practitioners). GPG industry opportunity to update description of NO ₂ . Suggest brief description in 8.4.2 and new appendix. Attached unpublished report which attempts to simplify process – this report could be reduced for GPG.	Much appreciated.	A new section on NO _x conversion has been added as an Appendix. This includes some new analysis, relevant mainly to Auckland and other major urban centres that might experience NO _x issues.

Notes on attached paper, *Practical Methods to Estimate Nitrogen Dioxide Concentrations from Nitrogen Oxide Levels* (T Clarkson and S Xie).

- Robust estimates of NO₂ concentration in most cases must be derived for information about emissions of NO_x from nearby sources.
- This paper is aimed at practitioners.
- Most areas of NZ are below the NES.
- Process consistent with GPG tier assessment.
- Outline two methods for practical / conservative estimation of a relationship between NO₂ and NO_x.

- Can determine spread of NO_x by dispersion models but difficult to determine fraction that is NO₂. Need knowledge of the chemical transformation and oxidants etc.
- Initially use ‘Total Oxidation Method’. If not go to less conservative ‘Ozone Limiting Method’.

3.4 Beca – Tracy Freeman

Section	Beca summary points of submission	Review	Edits actioned
	Appreciates the efforts of MfE guidance.	Noted.	
Figure 1.1	Should add GPG for dust (2001) and odour (2004).	Agree.	Figures 1.1 and 1.2 amended.
Figure 1.2	Remove “Odour Management under the RMA” (Superseded by “Odour GPG”).	Agree.	Figures 1.1 and 1.2 amended.
Table 6.1	Sensitivity similar to odour table in Odour GPG – however these ratings are not similarly applicable to human health or ecosystems Suggested deletions where disagree (in table attached).	Agree.	Table 6.1 clarified, rural residential upgraded to ‘medium to high’ sensitivity.
Figure 7.1	Missing link from assessment of PM ₁₀ in airshed back to assessment of other contaminants.	Agree – incorporate.	Done.
Overall comments	Useful overview of regional council process. Need guidance on ground level concentrations for comparing dispersion modelling results with ambient air quality guidelines and standards ie, ARC tiered approach “Assessing Discharges of Contaminants to Air”. Need guidance on SO ₂ regarding GPG on dispersion modelling, i.e. compare 99.9% of NES on 350 or 570 µg/m ³ value?	Noted. Noted. Agreed, to address.	Whilst clear guidance on ‘acceptable levels’ when comparing model outputs with criteria would be helpful, it would not be applicable for PM ₁₀ . There is further, always an exception to disprove the rule. This is not considered doable in a national guidance document attempting to cover all eventualities. Section 8.45 added to provide guidance on comparison of modelling values with NES.

3.5 URS New Zealand Ltd – Rhys Kevern/ Andrew Curtis

Section	URS summary points of submission	Review	Edits actioned
General	Good background to assessment. Section on NES too big (covered in other documents).	Noted.	Section included on request from other parties. No action.
3.2.3 (p.14 para 2)	Last sentence not clear if 'pre-hearing' meeting or 'pre-application' meeting (last sentence indicates before application).	This section about pre-hearing meetings requires clarification.	3.2.3 'Pre-hearing' vs 'pre-application'. All references to 'pre-hearing' clarified.
4.2.1 (p.18 para 2)	If activity permitted does not need to notify regional council – unless to confirm (i.e. certificate of compliance).	Some permitted activities require notification – but none require consent so agree that assessment not necessary.	Amended.
4.4 (p.21 para 5)	Description of receiving environment does not fit under description of proposal.	Agreed, to amend.	4.4 Section on "Receiving Environment" added.
Table 5.2 (p.24)	24 Category – people unlikely to be at schools/libraries for 24 hours.	Category applies to both 8 hour and 24 hour standards.	Some additional discussion added to make this clear.
p.27 "Offsets"	Offsets are not mitigation measures themselves.	Agreed, to amend.	Done.
5.1.4 p.28	Change 'permitted' to 'allowed' or 'consented' as permitted has planning connotation.	Agreed, to amend.	Done.
Table 5.4 p.29	Change 'Chromium V1' to 'Chromium VI'.	Agreed, to amend.	Done.
p.32 Last paragraph	Only use WES as last resort. There are other ambient guidelines, i.e. "Texas Commission on Environmental Quality Effects Screening Levels".	Agreed. Note, criteria section considerably changed following submission by Craig Stevenson.	Done – and highlighted in the 'recommendations' for the section added.
S6 pp.33–37	Tier 1 = too detailed for permitted activity – assessment should focus on conditions of the rule. Example of tyre re-treading given. Tier 2 = majority of applications where full assessment required. Tier 3 = large dischargers where there is likely significant public interest / need site specific meteorology / need ambient monitoring / calpuff monitoring.	Agreed.	Section 4.2.4 amended to clarify.
8.2.1 p.49	10 yrs of data = rare. Recent data would reflect area emissions profile, more than effect of meteorological changes.	Clarify recommendation of 10 years refers to <u>met conditions</u> – which should be reviewed in addition to ambient air quality data.	8.2.1 Clarification on '10 years' as ideal time for assessing trends. Emphasis on 'ideal', accepting that it will not be possible in many regions.
8.4.2 p.51	Two times background too tough in New Zealand.	Clarify this is for pollutants with no data, ie, not PM ₁₀ .	Done.
8.4.2 p.51	Ground level ozone only relevant for Auckland.	Noted.	This is the current thinking in 2007 – but may change within the lifetime of the GPG. No action.

Section	URS summary points of submission	Review	Edits actioned
8.5 p.54	Last bullet: If background levels of PM ₁₀ exceed the guideline then no consent can be granted anyway (after 2013).	This document applies to all, not just PM ₁₀ .	No action.
8.5.2 p.55	Suggest include examples of use of multiple chemical exposure.	Noted.	Overtaken by removal of health risk assessment section.
Appendix 1	1: Rare to find a site with only one source, makes this form hard to use. What does 'online' process description mean? 2: MW/hr not a common unit – tonnes/day, units produced/day. 6: Suggest "Are the processes being undertaken in a designated air shed". No mention of potentially affected parties / consultation.	Noted. Remove 'online' Agreed, to amend. Agreed, to amend. Noted – to include.	Done. Done. Done. Done.

3.6 Holcim – Greg Slaughter

Section	Holcim summary points of submission	Review	Edits actioned
General	Support guide and nationally consistent approach. Concern that local authorities may not pay attention to it given their inconsistent approach to defining airsheds and consent processing. Expressed concerns over NES in current form.	Noted.	No action.
Specific	Guide would be improved with more examples and Holcim could assist with this.	Offer appreciated, however, considered that smaller sites less useful than a larger case study. No appropriate example available at time of writing.	No action.
3.1	Recommended change: "Air discharge consent applications can be complex" to "Air discharge consent applications <i>can range from relatively simple to complex</i> ".	This sentence intends to note that majority of assessment of environmental effects for air quality is actually quite complex.	Clarified original text.
3.1.1	Strongly support recommendation for pre-application meeting.	Noted.	Highlighted in the new "Recommendations".
Figure 4.2	Figure indicates that the tiers relate to type of consent required, but not always true in practice. Recommend delete row "type of consent".	Agreed, to amend.	Done.
5.1.1	Offset guidance concerning/confusing. If on / below path to compliance, need to offset change in concentrations. This may be harsher than requirements for above path to compliance. Recommend: if on / below path, offsets only required where concentrations push levels above path.	Noted.	This section specifically refers only to airsheds that breach the PM ₁₀ standard. It is acknowledged that this area is still evolving and difficult to address.

3.7 Mike Farrier Consulting

Section	Mike Farrier Consulting summary points of submission	Review	Edits actioned
General	Limitations of the guide need to be carefully specified.	Noted. To include section on target audience (cross reference submission by Auckland Regional Council).	Section 1.2 added.
	Modelling requires data which is not often precise and assumptions need to be made. This needs to be carefully explained for those not familiar with modelling.	Noted.	The target audience for this document is now clearly explained.
	Accuracy of emissions measurement does not reflect reality. Comparative measurements of mass emissions of stack testing are precise to $\pm 15\%$ if done by the same person, compared to $\pm 25\%$ if done by different people. Accuracy of measurement is likely to be of the same order. Emissions are not necessarily constant due to process variations. Vapour, which will condense as PM ₁₀ , is not accounted for.	Noted. The GPG for Dispersion Modelling includes recommendation to use maximum emission rate. Vapour condensation is beyond the scope of this GPG.	Section 8.1.2 amended to include cautionary note regarding accuracy of measured emissions data and reiterate recommendation in GPG for dispersion modelling.
	Meteorological data needs to be collected over substantial time frame. Wind direction and stability vary, and these dictate where worst dispersion occur.	Section 8, p.53 includes recommendation for review of 10 years met data where available.	
	Good to first discuss application with controlling authority only if the authority provides site specific details. Suggest meeting of consultants and control authority promoted prior to modelling.	Already included in Section 2.4.	Highlighted in new "recommendations" section.
	Caution is needed on interpretation of output data.	Agreed, the GPG reflects this (refer Section 8.6).	No action.
	Recommend control authorities request monitoring at time of consent (to allow comparison of predicted with actual air quality). Accountability needs to be built into the process.	Agreed. Unfortunately, this is outside the legislative scope of this GPG.	No action.
	Endorse site specific ambient monitoring, but fraught with difficulty of measurement technique / interpretation / location.	Noted.	No action.
	Guide should include best practice in abatement technology. Lack of knowledge of what technology is available. Consents should lead operators to best practice. Guide should discuss importance of control technologies in detail.	Agreed. Reference to the New South Wales emissions limits already provided in section 6.2. A full reference would run to over 30 pages.	No action.
	Efficiency of installed air control devices often neglected.	Noted. This is a guide for <i>assessment</i> , not the setting of consents.	No action.
	Characterising receiving environment possibly the most important – should be an initial consideration in any assessment (not just Tier 3).	Reporting section makes it clear that this is required for all tiers.	Refer addition of "Receiving Environment" in section 4.4 in response to submission by URS.
	Limitations of the AUSPLUME computer dispersion model are not often appreciated, or explained sufficiently.	Noted. The GPG for dispersion modelling has extensive discussion on this.	No action.

Section	Mike Farrier Consulting summary points of submission	Review	Edits actioned
	Do not support that industry fund a modelling study on industrial PM ₁₀ emissions from high stacks (suggested at Christchurch workshop). Suggest ministry fund a study of emitters from low stacks in rural areas – to compare the accuracy of current dispersion modelling practice.	Whilst outside the scope of this GPG the Ministry notes research of this nature is currently being undertaken.	No action.
	Need information on how the METSAMP data used with AUSPLUME is best interpreted. Suggest not suitable for representing the exposure of individual receptors.	Not applicable in this GPG.	No action.
	MfE should continue to work with control authorities to develop meteorological data sets.	The Ministry continues to push for this in the FRST programme (no success to date). This is beyond the scope of this GPG.	No action.
Overall	Would like to see more accountability and integrity in modelling work – the guideline should be a tool for industry, and not simply something opposing modellers can use for debating purposes.	Noted. The GPG for Modelling covers this point.	No action.

3.8 Kevin Rolfe & Associates Limited

Section	Kevin Rolfe & Associates Ltd summary points of submission	Review	Edits actioned
Section 5 Air quality criteria	Concern over remarks at workshop about EPA Victoria air quality criteria. The 1999–2002 review of ambient air quality guidelines adopted a risk assessment approach for hazardous risk pollutants. Provided an example report prepared in 2000 – <i>An Assessment of Dioxin and PCB Emissions to Air from Steel Making at Pacific Steel, Otahuhu</i> .	Noted. Noted.	No action.
	Concern over support for Texas Commission effects screening levels; these primarily relate to occupational exposure. Attached a copy of <i>Ethics, Threshold Limit Values and Community Air Pollution Exposures</i> by Jim Tarr.	Section 5 now references California and US EPA criteria (including unit risk factors for carcinogens). Noted.	No action.