

FREQUENTLY ASKED QUESTIONS

Protection of the Environment Operations (Clean Air) Regulation 2002

Part 4 : Emission of air impurities from activities and plant

Version 1.0



Contents

1. Introduction

- 1.1 Protection of the Environment Operations Act 1997
- 1.2 Protection of the Environment Operations (Clean Air) Regulation 2002
- 1.3 About this guide

2. Air emission standards

- 2.1 Summary
- 2.2 What do the Regulation standards apply to?
- 2.3 Do the emission standards apply to whole premises or to individual pieces of equipment?
- 2.4 I operate a non-scheduled commercial/industrial premises. What standards apply to my activities?
- 2.5 I operate a scheduled premises that doesn't fit into one of the industry-specific categories listed in the Regulation. What standards apply to my activities?
- 2.6 I operate a scheduled premises that fits into one of the industry-specific categories listed in the Regulation. What standards apply to my activities?
- 2.7 Why are my licence limits different from (lower than) the Regulation standards?
- 2.8 Do I have to monitor all air impurities specified in the Regulation? How often?

3. Emission standard groups

- 3.1 Summary
- 3.2 Will my licence reflect the emission standard group of every item of equipment on the premises?

4. Major alteration or replacement of equipment

- 4.1 Summary
- 4.2 What is the difference between 'replacement' and 'alteration' of emission units?

5. Review of Group 1 and Group 2 emission standards

- 5.1 Summary
- 5.2 How does the review of old emission standards affect my Group 1 equipment?
- 5.3 How does the review of old emission standards affect my Group 2 equipment?
- 5.4 Some of my equipment is nominally subject to Group 1 or Group 2 standards but I have already upgraded it. What do I need to do?
- 5.5 What will happen if my application for licence variation to continue existing limits or propose alternative standards is not approved?
- 5.6 Why are the Group 2 standards being replaced by Group 5 standards instead of Group 3 or Group 4 standards?

6. Alternative standards

- 6.1 Summary
- 6.2 What is the process for developing alternative standards?
- 6.3 Will my licence be changed if the application for alternative standards is approved?

7. Flares, afterburners and vapour recovery units

7.1 Summary

7.2 If I am installing a flare, afterburner or vapour recovery unit, what information do I need to submit to DEC to support my application for an environment protection licence?

7.3 Do I have to monitor emissions from flares, afterburners and vapour recovery units?

7.4 How do I know if air impurities that I am treating originate from material containing a 'principal toxic air pollutant'?

8. Non-standard fuels

8.1 Summary

8.2 How do I know if I'm using a 'non-standard' fuel?

8.3 What requirements apply if I am using a non-standard fuel?

8.4 What if I am using a non-standard fuel and want to lodge an application for alternative standards?

9. Averaging periods/reference conditions

9.1 Summary

9.2 What reference conditions and averaging periods apply?

9.3 Can an item of equipment be subject to a different oxygen correction from the one specified in the Regulation?

10. Further questions

10.1 My licence requires me to continuously monitor opacity. The Regulation specifies either Ringelmann or opacity standards for smoke. Which do I use?

10.2 Some of the VOC standards list a carbon monoxide standard as well. Do I have to comply with both?

10.3 How do I calculate n-propane equivalent for determining compliance with the VOC standards in the Regulation?

10.4 The old Regulation specified 'hazardous substances'. What has changed?

10.5 We duct air emissions from several sources through our main stack. What standards apply for combined emission sources?

10.6 How do I determine whether equipment is in a 'start-up' or 'shut-down' period?

11. Case studies and examples

11.1 I operate a Group 6 flare for the treatment of landfill gas. What limit, operating and monitoring conditions will be included in my environment protection licence as a minimum requirement?

11.2 I operate two Group 6 afterburners for the treatment of process emissions. Afterburner X treats emissions containing principal toxic air pollutants, while afterburner Y doesn't. What limit and monitoring conditions will be included in my environment protection licence as a minimum requirement?

1. Introduction

1.1 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* ('POEO Act') is the key piece of environment protection legislation administered by the Environment Protection Authority (EPA), which is part of the Department of Environment and Conservation (DEC).

The POEO Act establishes a system of environment protection licensing for 'scheduled' activities with the potential to have a significant impact on the environment. Schedule 1 of the Act lists these scheduled activities, which are licensed by the EPA. Most 'non-scheduled' activities are regulated by local councils and other local authorities.

Part 5.4 of the POEO Act (sections 124–135) deals specifically with air pollution. This includes the general obligation that the occupiers of non-residential premises do not cause air pollution by failing to operate or maintain plant, carry out work or deal with materials in a proper and efficient manner (sections 124–126).

Section 128 of the POEO Act requires occupiers of non-residential premises to comply with any air emission standards prescribed by regulations. Even where standards for a particular air impurity are not prescribed by regulation, occupiers must still take all practicable means to prevent or minimise air pollution.

A number of regulations made under the POEO Act establish obligations for operators of premises where either scheduled or non-scheduled activities are carried out.

1.2 Protection of the Environment Operations (Clean Air) Regulation 2002

The Protection of the Environment (Clean Air) Regulation 2002 (the 'Regulation') replaces the Clean Air (Domestic Solid Fuel Heaters) Regulation 1997, Clean Air (Motor Vehicles and Motor Vehicle Fuels) Regulation 1997 and Clean Air (Plant and Equipment) Regulation 1997.

The Regulation deals with the sale of domestic solid fuel heaters and requires the heaters to be certified as complying with emission limits set out in the relevant Australian Standard. It also prohibits tampering with such heaters.

In relation to motor vehicles, the Regulation deals with the following matters:

- the emission of air impurities, including excessive smoke from motor vehicles
- the compulsory fitting and maintenance of anti-pollution devices, and exemptions from these requirements
- the method of transfer of petrol into a vehicle's fuel tank.

In relation to plant, equipment and activities, the Regulation:

- sets maximum limits on emissions from activities and plant for a number of substances, including chlorine, dioxins, furans, smoke, solid particles and sulfur
- deals with the transport and storage of volatile organic liquids
- restricts the use of high sulfur liquid fuel
- imposes operational requirements for certain afterburner, flares, vapour recovery units and other treatment plant.

The full text of the Regulation can be downloaded from www.legislation.nsw.gov.au

On 1 September 2005, significant amendments to the Regulation in relation to activities and the operation of plant and equipment came into effect, replacing the requirements of the Clean Air (Plant and Equipment) Regulation 1997, which was repealed.

These new requirements are contained in the Regulation's Part 4: 'Emission of air impurities from activities and plant' and largely focus on industrial, agricultural and commercial scheduled activities but also specify some requirements for non-scheduled activities.

1.3 About this guide

This is a guide to Part 4 of the Regulation. It **does not** cover other parts of the Regulation which relate to domestic solid fuel heaters and motor vehicles and motor vehicle fuels.

It is intended to provide general information and answer common questions about the revised requirements for plant, equipment and activities which came into effect on 1 September 2005. The information is not exhaustive and DEC should be contacted to discuss case-specific details before acting on information contained in these pages: please call DEC's Environment Line (phone 131 555) or contact your nearest DEC office.

DEC will add new questions and answers to this guide as the need arises. You can check for an updated version of this guide at www.dec.nsw.gov.au.

For questions about the Regulation not answered in the guide or to provide feedback, please email DEC at Clean_Air_Reg@environment.nsw.gov.au.

Please note that all questions relating to a specific premises or development proposal should be directed to the relevant regional DEC in the first instance, and will not be answered via this email address.

2. Air emission standards

2.1 Summary

The Regulation specifies general emission standards for various air impurities emitted from scheduled premises (in Schedule 4 of the Regulation) and from non-scheduled premises (in Schedule 6).

In addition to these general emission standards, the Regulation also sets standards on an industry-specific basis for major categories of scheduled premises (in Schedule 3). The categories are consistent with those used in the POEO Act for licensing purposes and with the load-based licensing (LBL) scheme. Industry-specific standards are specified in the Regulation for:

1. Agricultural fertiliser and ammonium nitrate production
2. Cement or lime production or cement or lime handling
3. Ceramic works
4. Electricity generation
5. Glass production
6. Paper, paper pulp or pulp products industries
7. Petrochemical production
8. Petroleum refining
9. Primary aluminium production
10. Secondary aluminium production

11. Primary iron and steel production
12. Secondary iron and steel production
13. Primary non-ferrous production (excluding aluminium)
14. Secondary non-ferrous production (excluding aluminium)

If a scheduled premises can be classified in one of the above 14 categories, the industry-specific standards apply to the specified activities and equipment listed in the tables in Schedule 3. All other activities or equipment on the premises not covered in the industry-specific table must comply with the general standards in Schedule 4. Where a scheduled premises does not fit in one of the above 14 categories, the general standards of Schedule 4 apply to all activities or equipment at or on the premises.

In other words, the general standards of Schedule 4 apply to any activity or equipment on any scheduled premises for which there is no industry-specific standard in Schedule 3.

2.2 What do the Regulation standards apply to?

The Regulation standards apply to the emissions of specified air impurities from activities and plant on commercial, agricultural and industrial premises, when discharged to the atmosphere through a vent, stack or similar discharge point. In most cases a discrete discharge point needs to be identified in order to satisfy monitoring/sampling requirements.

The Regulation specifies standards of concentration for the point of discharge. These should not be confused with the ambient air standards which apply at locations that are not directly influenced by emissions from point sources.

Emissions from area/volume sources and fugitive emissions may be regulated in other ways (such as through licence conditions) or DEC may, where appropriate, require them to be captured and treated and discharged through a discharge point.

The POEO Act outlines general requirements for operating and maintaining equipment and dealing with materials in a proper and efficient manner, as well as a general obligation that occupiers of premises take all practicable means to prevent or minimise air pollution.

2.3 Do the emission standards apply to whole premises or to individual pieces of equipment?

The emission standards apply to individual items of equipment, not whole premises.

It is common, however, to refer to a premises as being in a particular group, determined by the date it originally commenced operation. For example, a factory built in 1990 is said to be in 'Group 4', because those were the standards that applied to new premises at that time. However, any significant new equipment installed on the premises after 1 August 1997 and before September 2005 would fall into the Group 5 category and be subject to those standards. Similarly, equipment installed after 1 September 2005 would need to meet Group 6 standards.

It is therefore possible that separate items of equipment on the same premises will be subject to different groups of standards.

2.4 I operate a non-scheduled commercial/industrial premises. What standards apply to my activities?

Schedule 6 of the Regulation specifies standards for emissions of smoke and solid particles from non-scheduled premises. Relevant test methods, averaging periods and reference conditions are specified in Schedule 7.

For air impurities not covered by the Regulation, the POEO Act outlines general requirements for operating and maintaining equipment, and dealing with materials in a proper and efficient manner, as well as a general obligation that occupiers of premises take all practicable means to prevent or minimise air pollution.

2.5 I operate a scheduled premises that doesn't fit into one of the industry-specific categories listed in the Regulation. What standards apply to my activities?

The general standards contained in Schedule 4 apply to any activities or equipment on those premises.

If you operate a flare, afterburner (or other thermal treatment plant), or a vapour recovery unit, the requirements set out in Schedule 2 apply to these items of equipment. Additional requirements for new Group 6 flares, afterburners (or other thermal treatment plant) and vapour recovery units are specified in Part 4, Division 4 of the Regulation.

Further requirements, including any monitoring or sampling requirements, may be specified in your environment protection licence.

2.6 I operate a scheduled premises that fits into one of the industry-specific categories listed in the Regulation. What standards apply to my activities?

The industry-specific standards of Schedule 3 apply to the specific activities and equipment listed there. The general standards in Schedule 4 apply to any other activities or equipment on the premises which are not specified in Schedule 3.

If you operate a flare, afterburner (or other thermal treatment plant), or a vapour recovery unit, the requirements set out in Schedule 2 apply to these items of equipment. Additional requirements for new Group 6 flares, afterburners (or other thermal treatment plant) and vapour recovery units are specified in Part 4, Division 4 of the Regulation.

Further requirements, including any monitoring or sampling requirements, may be specified in your environment protection licence.

2.7 Why are my licence limits different from (lower than) the Regulation standards?

The Regulation specifies air emission standards that provide a minimum performance level for all industrial activities across NSW. Licensing is used to manage site-specific environmental issues and is additional to, and independent of, the Regulation requirements.

Licence conditions may specify emission limits that are more stringent than the Regulation standards or include emission limits for pollutants not covered by the Regulation. These tighter requirements are included where warranted by the individual circumstances of each premises, such as the proximity of local population or the unique nature of the pollutants emitted.

A licence cannot, however, specify emission limits that are less stringent than the applicable Regulation standards.

2.8 Do I have to monitor all air impurities specified in the Regulation? How often?

No. All relevant standards in the Regulation must be complied with, but the Regulation itself does not specify monitoring or sampling frequency. Requirements to monitor or sample

emissions of air impurities, including frequency (such as annual, monthly, continuous, etc.), may instead be specified in individual licences.

A licensee may choose to monitor and/or sample air impurities beyond what is required by their licence in order to demonstrate that the Regulation standards are being met.

3. Emission standard groups

3.1 Summary

The legislation specifying air emission standards has been reviewed a number of times over the 35 years it has been in operation. At each review new pollution control technologies and information about pollutant health impacts have become available. As a result, more stringent standards have been set for new industry at the time of each review. These new standards have not generally been applied retrospectively to existing industry and so several groups of emission standards exist as a result of the introduction of progressively tighter requirements.

For scheduled premises prior to 1999, the standards applicable are determined by the date of application for pollution control approval. Since 1999 the date a premises became scheduled (and licensed) under the POEO Act determines the applicable standards. There are six different groups of emission standards that apply to scheduled premises, as follows:

Group 1 – any activity commenced to be carried on, or equipment operated, before 1 January 1972. Also any activity commenced, or equipment operated after 1 January 1972 as a result of an application for a pollution control approval made before 1 January 1972.

Group 2 – any activity commenced to be carried on, or equipment operated, on or after 1 January 1972, as a result of an application for a pollution control approval made on or after 1 January 1972 and before 1 July 1979.

Group 3 – any activity commenced to be carried on, or equipment operated, on or after 1 July 1979, as a result of an application for a pollution control approval made on or after 1 July 1979 and before 1 July 1986.

Group 4 – any activity commenced to be carried on, or equipment operated, on or after 1 July 1986, as a result of an application for a pollution control approval made on or after 1 July 1986 and before 1 August 1997.

Group 5 – any activity commenced to be carried on, or equipment operated, on or after 1 August 1997, as a result of:

- an application for a pollution control approval made on or after 1 August 1997 and before 1 July 1999
- an application for an environment protection licence made on or after 1 July 1999 and before 1 September 2005.

Group 6 – any activity commenced to be carried on, or equipment operated, on or after 1 September 2005, as a result of an application for an environment protection licence made on or after 1 September 2005.

For non-scheduled premises, the group of standards applicable are determined by the date of development application, as follows:

Group A – any activity commenced to be carried on, or equipment operated, before 1 August 1997, or any activity commenced, or equipment operated after 1 August 1997, as a result of a development application made before 1 August 1997.

Group B – any activity commenced to be carried on, or equipment operated, on or after 1 August 1997, as a result of a development application made on or after 1 August 1997 and before 1 September 2005.

Group C – any activity commenced to be carried on, or equipment operated, on or after 1 September 2005, as a result of a development application made on or after 1 September 2005.

So it is possible for items of equipment at a premises to be subject to different groups of standards, depending on the date the equipment was installed.

3.2 Will my licence reflect the emission standard group of every item of equipment on the premises?

No. Licences may identify the main air discharge points at a premises and specify any emissions monitoring or sampling that is required. Where monitoring or sampling is necessary, a licence may also specify the emission limit to be met. This limit may be the same as the Regulation standard or in some cases a more stringent site-specific requirement.

The Regulation standards apply regardless of whether a licence identifies them for particular sources of emissions. However for clarity a licence may note the emission standard group applicable under the Regulation in particular circumstances. For example, if the group of standards applicable to an item of equipment changes as a result of the Regulation, this may be noted in the licence.

It is a licensee's responsibility to identify which standards apply to activities and equipment on their premises and to ensure that those standards are complied with.

4. Major alteration or replacement of equipment

4.1 Summary

An 'emission unit' is defined in the Regulation as 'an item of plant that forms part of, or is attached to, some larger plant, being an item of plant that emits, treats or processes air impurities or controls the discharge of air impurities into the atmosphere'.

The Regulation provides that any emission unit that undergoes alteration becomes subject to the latest (Group 6) emission standards. An 'alteration' is one which both:

- requires modification of development consent pursuant to an application made on or after 1 September 2005, or a licence variation for the plant

and

- the effect of the alteration is that there is an increase in the emission of air impurities or a change in the nature of the air impurities emitted or the intensity with which air impurities are emitted from the plant of which the emission unit forms part or to which it is attached.

In addition, the Regulation requires that when any emission unit operated in the Greater Metropolitan Area ('GMA', see clause 3 of the Regulation) is replaced, the replacement emission unit becomes subject to Group 6 emission standards.

These requirements reflect DEC's expectation that new proposals and equipment should meet contemporary emission standards. However in circumstances where it is not practicable to apply contemporary emission standards, the Regulation provides for DEC to approve alternative limits to Group 6 standards, where it can be demonstrated by the licensee that doing so will not result in any adverse environmental or human health impacts. The alternative standards cannot be less stringent than the standards that applied to the equipment prior to its replacement or alteration.

These requirements do not change the standards applicable to items of equipment on the premises that are not altered or replaced.

4.2 What is the difference between 'replacement' and 'alteration' of emission units?

'Replacement' of an emission unit occurs when one item of equipment is replaced with another that performs a similar function. For scheduled premises within the GMA, some examples of replacement would be:

- replacing an old broken-down boiler with a new boiler
- replacing an electrostatic precipitator with a fabric filter.

'Alteration' of an emission unit is when an item of equipment (at scheduled premises anywhere in NSW) is significantly modified, resulting in an increase in the quantity or change in the nature or intensity of air impurities emitted which requires a change to the development consent or licence for the plant. Some examples of an alteration where these criteria are met would be:

- changing the fuel in a boiler from natural gas to fuel oil or coal
- increasing the capacity of an electricity generating unit by increasing the amount of fuel it can burn
- co-firing fuel burning equipment with fuel(s) that result in the emission of additional pollutants.

Routine maintenance of equipment, such as replacing refractory tiles in a furnace, is not considered an alteration or replacement. However, significantly changing the operation of an item of equipment (for example extending the operating hours of a plant or increasing the inlet vapour loading on an afterburner) is regarded as an alteration, even if there is no physical change to the equipment, provided it requires a change to the development consent or licence for the premises.

5. Review of Group 1 and Group 2 emission standards

5.1 Summary

The Regulation establishes a framework for a review of activities and equipment on scheduled premises that are subject to the two oldest emission standard groups, i.e. Group 1 and Group 2.

All Group 1 and 2 activities and plant will be required to meet Group 5 standards by 1 January 2012. This will involve an interim step for Group 1 activities and plant which will be required to meet Group 2 standards by 2008, as set out in the table below:

Existing standard	Transition date	New standard to apply
Group 1: pre Jan 1972	1 January 2008	Group 2 standards
Groups 1 and 2: pre Jan 1972 and 1 Jan 1972 - 30 June 1979	1 January 2012	Group 5* standards

* Groups 2, 3 and 4 represent periods between Regulation amendments. These amendments were minor and so these groups have almost identical emission standards, hence the move to Group 5 standards. Equipment subject to Group 3 or 4 standards is not subject to the review.

For many operators of affected equipment, the requirements should only involve demonstrating that their equipment already meets the Group 5 standards. For others there may be a need to plan equipment upgrades, although much of the equipment affected is likely to be near the end of its economic life cycle and due for major maintenance or replacement anyway.

To ensure that industry is not required to upgrade unnecessarily, the Regulation allows an operator of equipment currently subject to Group 1 or Group 2 to apply for a licence variation allowing existing standards to continue or for approval of alternative site-specific limits, where it can be demonstrated that this will not result in any adverse impacts on the environment or human health. Any alternative site-specific limits approved cannot be less stringent than the existing applicable group of standards but may be less stringent than the target group of standards. An application to DEC for a licence variation must be accompanied by a report covering the items listed in clause 25 of the Regulation, including details of the concentration or rate that air impurities are emitted and the results of an air impact assessment.

In determining whether to vary the conditions of a licence, clause 26 of the Regulation requires DEC to consider the impact of a licence variation on local and regional air quality and amenity, with regard to existing pollution reduction programs, control equipment, any load reduction agreements, the principles of ecologically sustainable development (including economic factors) and any other relevant matters. Subject to re-assessment, variations may be extended for a subsequent five-year period.

5.2 How does the review of old emission standards affect my Group 1 equipment?

On and from 1 January 2008, any activity or plant on scheduled premises in Group 1 must meet the standards specified for Group 2. Alternatively, a licensee may seek a licence variation to allow a continuation of existing standards for up to five years or approval of alternative site-specific standards. This is subject to the operator demonstrating that air emissions from the relevant activity or plant has no adverse environmental or human health impact, and the other requirements specified in clause 25 of the Regulation.

Applications for licence variation under clause 23 of the Regulation must be received by DEC by 1 January 2007. In any case, all licensees with Group 1 equipment are requested to indicate their preferred course of action to DEC by 1 January 2007. The options available to licensees for each item of Group 1 equipment are to:

- demonstrate that the equipment nominally subject to Group 1 standards is already complying with the Group 2 standards or better (see 5.4)
- outline plans for equipment upgrades to enable Group 2 standards to be met by 1 January 2008
- apply, before 1 January 2007, for a continuation of the existing Group 1 standards for up to five years or for approval of alternative site-specific standards (see 6.1), where it can be demonstrated by the operator that doing so will not result in any adverse environmental or human health impacts.

Note that equipment subject to Group 1 emission standards is also required to meet Group 5 standards by 1 January 2012 (see 5.3). It is anticipated that some operators of equipment subject to Group 1 standards which needs upgrading will choose to move directly to meeting Group 5 standards. A firm commitment to do so, such as a negotiated pollution reduction program is likely to be considered reasonable grounds for a continuation of Group 1 standards beyond 2008.

5.3 How does the review of old emission standards affect my Group 2 equipment?

From 1 January 2012, equipment on scheduled premises in Group 2 (including equipment formerly in Group 1) must meet the standards specified for Group 5. Alternatively, if the operator can demonstrate that air emissions from the relevant equipment will have no adverse impact on the environment or human health, approval may be given for a five-year continuation of existing standards or alternative site-specific standards.

Applications for licence variation under clause 23 of the Regulation must be received by DEC by 1 January 2011. In any case, all licensees with Group 2 equipment are requested to indicate their preferred course of action to DEC by 1 January 2011 or earlier. The options available to licensees for each item of Group 2 equipment are to:

- demonstrate that the equipment nominally subject to Group 2 standards is already complying with Group 5 standards (see 5.4)
- outline plans for equipment upgrades to enable Group 5 standards to be met by 1 January 2012
- apply, before 1 January 2011, for a continuation of the existing Group 2 standards for up to five years or for approval of alternative site-specific standards (see 6.1), where it can be demonstrated by the operator that doing so will not result in any adverse environmental or human health impacts.

5.4 Some of my equipment is nominally subject to Group 1 or Group 2 standards but I have already upgraded it. What do I need to do?

You need to provide DEC with documentation that demonstrates that the Group 5 standards are already being met. This may include providing DEC with:

- monitoring or emission testing results for the equipment that demonstrate the equipment is achieving Group 5 emission standards, or
- evidence that the equipment emission specification achieves Group 5 emission standards and that the equipment is being maintained and operated in accordance with the specification; for example, if an old coal-fired boiler has been converted to gas-fired then it is likely that Group 5 emission standards are being met.

If the upgraded equipment is performing at better than Group 1 or Group 2 standards but not at Group 5 standards, you may apply for the alternative standard to be approved on your licence. You will need to demonstrate that the alternative standard will not result in any adverse environmental or human health impacts (see 6.1). Alternatively, you will need to propose a timetable for upgrading the equipment to meet Group 5 standards.

5.5 What will happen if my application for licence variation to continue existing limits or propose alternative standards is not approved?

An application for licence variation is due one year before the new group of standards takes effect. If DEC is not satisfied that the application complies with the requirements of the Regulation and cannot approve it under the heads of consideration given in clause 26, the reasons for the decline of the application should be discussed with DEC. The licensee will then need to resubmit the application and either:

- propose equipment modifications or upgrades and an implementation timetable to meet the group of standards required by the review set out in the Regulation, or

- propose revised alternative standards that will ensure no adverse effects on the environment or human health.

Once DEC has agreed to the approach, it can formalise the agreement via a pollution reduction program, including a negotiated timetable for implementation.

A licensee may also choose to appeal the refusal of an application for licence variation under section 287 of the POEO Act. Appeals are determined in the Land and Environment Court.

5.6 Why are the Group 2 standards being replaced by Group 5 standards instead of Group 3 or Group 4 standards?

The dates that define the Groups are dates when the Regulation was previously amended. Groups 2, 3 and 4 cover periods between relatively minor Regulation amendments and so these groups have almost identical emission standards, hence the move to Group 5 standards. Equipment subject to Group 3 or Group 4 standards is not subject to the review.

Equipment that is subject to Group 1 is well over 30 years old and equipment subject to Group 2 at least 26 years old. It is likely that such equipment is at the end of its economic life and can be cost-effectively upgraded, if it hasn't been already, in the review time frames.

6. Alternative standards

6.1 Summary

Alternative standards may be proposed by a licensee and approved by DEC in relation to requirements of the Regulation that result in the applicable group of standards changing. This includes alteration of equipment (clause 22(1)) or its replacement (clause 22(2)) or the review of Group 1 and Group 2 standards (clauses 23 and 24). Any alternative standards approved will be specified in the licence.

Alternative standards can never be less stringent than the standards set out in the Regulation. However, if it can be demonstrated that no adverse environmental or human health effects will result (through an air impact assessment – see clause 25), an alternative standard may be less stringent than the standard that the Regulation would otherwise change it to.

6.2 What is the process for developing alternative standards?

An application must be lodged through the nearest DEC regional office for alternative standards of concentration imposed by licence conditions for any activity, plant or emissions unit. As specified in clause 25 of the Regulation, the application must be accompanied by a report which contains:

- details of the concentration or rates at which air impurities are emitted as a result of the carrying out of the activity or operation of the plant based on the results of sampling, analysis and monitoring in accordance with the *Approved methods for the sampling and analysis of air pollutants in NSW*.
- results of an air pollutant impact assessment for the activity, plant or emission unit and any other activity carried on, or plant or emission unit operated at the scheduled premises conducted in accordance with the *Approved methods for the modelling and assessment of air pollutants in NSW* (and including cumulative impacts of nearby sources).
- details of any pollution reduction programs that have been established and any control equipment that has been installed in relation to the activity, plant or emission unit

- any other information that may be relevant to demonstrate the acceptability of the impacts associated with the alternative standards for the activity, plant or emissions unit, such as best practice management and technology for the particular industry.

DEC will review the application and make a decision having regard to:

- impact on local and regional air quality and amenity as a result of the alternative standards
- any pollution reduction programs that have been established, or agreed to be established, in relation to the activity or plant
- any control equipment that has been installed, or agreed to be installed, in relation to the activity or plant
- any load reduction agreement that has been entered into between the EPA and the applicant
- principles of ecologically sustainable development
- any other relevant matters.

Where an application is seeking alternative standards for Type 1 or Type 2 substances (see 10.4) or solid particles, DEC will also require the licensee to demonstrate that emissions of these pollutants have been reduced as far as practicable.

6.3 Will my licence be changed if the application for alternative standards is approved?

Any alternative standards approved by DEC will be reflected in the licence, identifying the source(s) for which the standards are approved, with specific reference to the relevant provisions of the Regulation.

7. Flares, afterburners and vapour recovery units

7.1 Summary

Although the old Regulation applied to flares, afterburners and vapour recovery units at scheduled premises, they were not distinguished from any other plant and equipment.

The relevant standards of concentration for emissions from both new and existing flares, afterburners and vapour recovery units are specified in Schedule 2 of the Regulation.

New performance requirements have been introduced for Group 6 flares, afterburners and vapour recovery units. Clauses 36–41 of the Regulation specify these requirements, including residence time, combustion temperature, destruction efficiency and a requirement for a flame to be present at all times when a flare is treating air impurities.

Although the standards of concentrations and destruction efficiency in the Regulation must be complied with, they are intended as design parameters (to be met at the design stage) and ongoing monitoring for compliance is unlikely to be required. See 7.2 for guidance on documentation to be provided to DEC when installing a new flare, afterburner or vapour recovery unit.

The Regulation also specifies a list of ‘principal toxic air pollutants’ that, if present in material treated in afterburners or vapour recovery units, will trigger a more stringent set of requirements. See section 7.4 for more details.

7.2 If I am installing a flare, afterburner or vapour recovery unit, what information do I need to submit to DEC to support my application for an environment protection licence?

The standards of concentration and destruction efficiency specified in the Regulation are regarded as design parameters. When making an application for an environment protection licence or variation to an existing licence, a licensee needs to provide DEC with documentation that confirms the equipment is capable of complying with the standards of concentration and destruction efficiency in the Regulation. For flares and afterburners, a licensee also needs to provide DEC with documentation that confirms the equipment is capable of complying with the residence time and combustion temperature in the Regulation.

7.3 Do I have to monitor emissions from flares, afterburners and vapour recovery units?

A requirement to monitor emissions of air impurities from flares is not usually practicable and so will not be routinely specified in an environment protection licence. A requirement to monitor emissions of air impurities from afterburners and vapour recovery units would only be specified where specifically warranted.

For flares and afterburners, the licensee must demonstrate that the residence time and combustion temperature in the Regulation are being complied with. Continuous monitoring for residence time and temperature may be specified in the licence. For afterburners, continuous monitoring for carbon monoxide (CO) or volatile organic compounds (VOCs) may be required, depending on the process involved. For vapour recovery units using activated carbon, appropriate monitoring for carbon bed breakthrough would normally be required.

Additional monitoring requirements relating to specific items of equipment may also be specified in the licence, depending on the particular circumstances.

A licensee may choose to undertake monitoring of air impurities beyond what is required by the licence in order to demonstrate that the standards of concentration and destruction efficiency are being met. The monitoring frequency in the licence may be monthly, quarterly, annually, continuous, or some other period of time.

7.4 How do I know if air impurities that I am treating originate from material containing a 'principal toxic air pollutant'?

'Principal toxic air pollutants' are defined in clause 20 of the Regulation. Clause 20 lists a number of elements, compounds and classes of compounds that all comprise principal toxic air pollutants. If air impurities originating from material containing one or more of these pollutants are being treated in a flare, afterburner or vapour recovery unit, more stringent requirements apply to ensure these pollutants are properly destroyed.

Emissions from material containing a principal toxic air pollutant may arise in a number of ways, including:

- a raw material used in the manufacture of chemicals or products
- a by-product formed during the manufacture of chemicals or products
- the combustion of process-related emissions and/or non-standard fuels.

It is the responsibility of the operator to know the composition of any material they are handling, processing or treating. To determine if the material being treated contains a principal toxic air pollutant, the following approaches may be considered:

- develop a detailed inventory of the quantities of raw materials used in the manufacturing process and then estimate the quantity of each principal toxic air pollutant present in the raw materials, either as a raw material or contaminant
- identify the chemical reactions associated with the manufacturing process and then estimate the quantity of each principal toxic air pollutant likely to be formed as a by-product or remain unreacted.

8. Non-standard fuels

8.1 Summary

A dioxin standard has been introduced for any activity or plant using a non-standard fuel that contains precursors to the formation of dioxin. This approach is consistent with the way such proposals have been managed to date through licence negotiations and DEC's 'Guidance note: Assessment of non-standard fuels'.

8.2 How do I know if I'm using a 'non-standard' fuel?

You are using a non-standard fuel if it cannot be classified as an unused and uncontaminated solid, liquid or gaseous fuel that is coal or coal-derived (other than any tar or tar residues), or liquid or gaseous petroleum-derived, or wood or wood-derived, or bagasse.

It is the responsibility of the operator to know the composition of their fuel. DEC may require the operator to undertake testing of a fuel to establish its composition and determine whether it is a standard or non-standard fuel.

8.3 What requirements apply if I am using a non-standard fuel?

The Regulation contains industry-specific and general standards of concentration for non-standard fuels for emissions of the following air impurities: volatile organic compounds, Type 1 and Type 2 substances (see 10.4), cadmium and mercury. The Regulation specifies a standard of 0.1 ng/m³ for dioxin and furans if precursors to dioxin or furan formation are present in a non-standard fuel.

8.4 What if I am using a non-standard fuel and want to lodge an application for alternative standards?

In addition to the procedure outlined in section 6 of this guide, your application must be made in accordance with DEC's 'Guidance note: Assessment of non-standard fuels'.

9. Averaging periods/reference conditions

9.1 Summary

The Regulation specifies default reference conditions and averaging periods to be used when testing for compliance with the emission standards specified in the Regulation. DEC can set equipment-specific reference conditions and averaging periods through a licence.

9.2 What reference conditions and averaging periods apply?

The reference conditions and averaging periods specified in the Regulation apply unless otherwise stated in the licence. If any alternative reference conditions and/or averaging periods are agreed to by DEC, they must be reflected in the licence (see clause 28(2) of the Regulation).

9.3 Can an item of equipment be subject to a different oxygen correction from the one specified in the Regulation?

Yes, provided you can demonstrate that the correction reflects the design of the equipment, and that excess air is not being used to dilute the concentration of emissions to meet the regulatory standards.

10. Further questions

10.1 My licence requires me to continuously monitor opacity. The Regulation specifies either Ringelmann or opacity standards for smoke. Which do I use?

Ringelmann is an estimation of the density of smoke emissions based on visual observation, while opacity is a direct measure of the percentage of light obscured by the smoke emissions. The smoke emission standards in the Regulation are expressed as both a Ringelmann number and a percentage opacity. Either opacity or Ringelmann can be used for demonstrating compliance with the Regulation if the smoke emitted is a shade of grey/black. Only opacity can be used if the smoke is any other colour.

A licence may specify that opacity monitoring is to be used as a process control indicator or it may specify a percentage opacity limit to be met. Such requirements must be complied with independently of the Regulation, although any relevant monitoring required by a licence for any purpose could also be used to demonstrate compliance with the Regulation.

There is a continuing strong trend toward using continuous opacity monitoring instead of Ringelmann for assessing smoke emissions, due to the increasing availability and convenience of continuous monitoring equipment.

10.2 Some of the VOC standards list a carbon monoxide standard as well. Do I have to comply with both?

No. The purpose of the standard is to ensure best-practice destruction of pollutants and the efficiency of combustion equipment. You only need to comply with the VOC standard or the CO standard, not both. This flexibility is intended to allow the use of the most appropriate indicator of best-practice combustion performance for your application.

10.3 How do I calculate n-propane equivalent for determining compliance with the VOC standards in the Regulation?

Appendix I of the *Approved methods for sampling and analysis of air pollutants in NSW* provides the procedure for determining n-propane equivalent. The appendix also contains other useful procedures for converting units of concentration and reference conditions.

10.4 The old Regulation specified 'hazardous substances'. What has changed?

The Regulation no longer refers to 'hazardous substances' because the term is too broad and can potentially be confused with 'hazardous waste', which is a different issue. The Regulation retains the emission standards for Type 1 and Type 2 substances that were called hazardous substances in the previous regulation. These definitions are:

Type 1 substance means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements.

Type 2 substance means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements.

10.5 We duct air emissions from several sources through our main stack. What standards apply for combined emission sources?

The standards for combined sources are calculated from the standards applicable to the individual emission units. The procedure for calculating the standard for combined sources is Test Method 38 (included in Appendix VIII of the *Approved methods for the sampling and analysis of air pollutants in NSW*). See also the case studies in the FAQ for the approved methods at www.dec.nsw.gov.au.

10.6 How do I determine whether equipment is in a 'start-up' or 'shut-down' period?

'Start-up' is a period when equipment is being started from inactivity, before a steady operational state has been reached. A steady operational state may be reached regardless of whether the equipment is operating at full capacity. 'Shut-down' is a period when equipment is being taken from a steady operational state to inactivity.

The Regulation standards do not apply during periods of start-up and shut-down, although the operator is required at all times to minimise or prevent the emission of air impurities (Part 5.4, Division 1 of the POEO Act). Any relevant licence conditions also continue to apply during start-up and shut-down periods.

Start-up and shut-down periods do not include emergency situations where, for example, an unplanned shut-down results from equipment or process failure.

11. Case studies and examples

11.1 I operate a Group 6 flare for the treatment of landfill gas. What limit, operating and monitoring conditions will be included in my environment protection licence as a minimum requirement?

Typical licence conditions for a new flare used for treating landfill gas are set out below. These include identification of the discharge/monitoring point, limit conditions, operating conditions and monitoring/reporting conditions.

Sample licence conditions – Group 6 flare treating landfill gas: Discharges to air and water and applications to land

Location of monitoring/discharge points and areas

The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

Air

EPA identification no.	Type of monitoring point	Type of discharge point	Description of location
1	Air emissions monitoring	Discharge to air	Landfill gas flare <description of location with reference to map>

Limit conditions

For each monitoring/discharge point or utilisation area specified in the tables below (by point number), the *combustion parameters* must not be lower than the limit specified for that parameter in the table.

Point X

Parameter	Units of measure	Lower limit	Averaging period
Residence time	S	0.6	1 hour rolling
Combustion temperature	°C	760	1 hour rolling

Operating conditions

Operation of flare: A flare installed for the treatment of air impurities must be operated in such a way that a flame is present at all times while air impurities are being emitted.

Landfill gas: The licensee must ensure that as much landfill gas as is practicable is collected and treated or beneficially re-used.

The landfill gas flare must be ground-level, shrouded, provided with automatic combustion air control, automatic shut-off gas valve and automatic restart system.

Monitoring and recording conditions

Requirement to monitor combustion parameters: For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) each parameter specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

Air: Point 1

Parameter	Sampling method	Units of measure	Frequency
Residence time	TM-2 or CEM-6	S	Continuous
Combustion temperature	TM-2	°C	Continuous

11.2 I operate two Group 6 afterburners for the treatment of process emissions. Afterburner X treats emissions containing principal toxic air pollutants, while afterburner Y does not. What limit and monitoring conditions will be included in my environment protection licence as a minimum requirement?

Typical licence conditions for new afterburners used for treating process emissions are set out below. These include identification of the discharge/monitoring point, limit conditions, operating conditions and monitoring/reporting conditions.

Sample licence conditions – Group 6 afterburners treating process emissions:

Discharges to air and water and applications to land

Location of monitoring/discharge points and areas

The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

Air

EPA identification no.	Type of monitoring point	Type of discharge point	Description of location
1	Air emissions monitoring	Discharge to air	Afterburner X <description of location with reference to map>
2	Air emissions monitoring	Discharge to air	Afterburner Y <description of location with reference to map>

Limit conditions

For each monitoring/discharge point or utilisation area specified in the tables below (by point number), the *combustion parameters* must not be lower than the limit specified for that parameter in the table.

Point 1

Parameter	Units of measure	Limit	Averaging period
Residence time	S	2.0	1 hour rolling
Combustion temperature	°C	980	1 hour rolling

Point 2

Parameter	Units of measure	Limit	Averaging period
Residence time	S	0.3	1 hour rolling
Combustion temperature	°C	760	1 hour rolling

Monitoring and recording conditions

Requirement to monitor combustion parameters: For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) each parameter specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

Air: Point 1 and Point 2

Parameter	Sampling method	Units of measure	Frequency
Residence time	TM-2 or CEM-6	S	Continuous
Combustion temperature	TM-2	°C	Continuous

Published by:

Department of Environment and Conservation NSW

59-61 Goulburn Street

PO Box A290

Sydney South 1232

Ph: (02) 9995 5000 (switchboard)

Ph: 131 555 (environment information and publications requests)

Ph: 1300 361 967 (national parks information and publications requests)

Fax: (02) 9995 5999

TTY: (02) 9211 4723

Email: info@environment.nsw.gov.au

Website: www.environment.nsw.gov.au

ISBN 1 920887 36 9

DEC 2006/403

August 2006