

Regulatory Impact Statement

Proposed Protection of the Environment Operations (Clean Air—Motor Vehicles and Motor Vehicle Fuels) Regulation 2002

Please send us your comments

The Environment Protection Authority invites you to make written submissions on this Regulatory Impact Statement on the proposed Protection of the Environment Operations (Clean Air– Motor Vehicles and Motor Vehicle Fuels) Regulation 2002 (the ‘proposed Regulation’).

The EPA also specifically seeks your comments on proposals to:

- remove all elements of duplication with Commonwealth regulatory provisions
- retain and strengthen the provisions relating to smoky vehicles and tampering with anti-pollution devices
- retain the requirement for vertical exhausts on diesel vehicles over 4.5 tonnes, but exempt vehicles that meet the emission standards of Australian Design Rule (ADR) 80/01
- increase the on-the-spot fine for smoky vehicles from \$112 to \$200 for individuals and \$400 for corporations.

Submissions should be made in writing, and sent to:

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Submissions will be accepted up until the close of business on 2 August 2002

This publication is also available on the EPA’s website at www.epa.nsw.gov.au/consult

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Summary

The Clean Air (Motor Vehicles and Motor Vehicle Fuels) Regulation 1997 is the EPA's principal regulatory instrument to control the emission of pollutants into the atmosphere by motor vehicles. It is proposed to make a new Regulation to replace the Clean Air (Motor Vehicles and Motor Vehicle Fuels) Regulation, which expires on 1 September 2002. The proposed Regulation will be called the Protection of the Environment Operations (Clean Air—Motor Vehicles and Motor Vehicle Fuels) Regulation 2002.

This Regulatory Impact Statement (RIS) has been prepared by the EPA in accordance with the *Subordinate Legislation Act 1989* to assess the economic, social and environmental costs and benefits of the proposed Regulation. The EPA will consider submissions from the public before the Regulation is finalised.

The major stimulus for requirements of the first Clean Air Motor Vehicle Regulation was the introduction of unleaded petrol in 1985. NSW was at the forefront of this process, and the Regulation was a key means of implementing this advance. As a result, lead levels in the air have fallen dramatically. Monitored ambient levels are well below health-based national standards, and recent Sydney research shows a decline in lead levels in the blood of children.

Today, air quality continues to be one of the community's top environmental issues in NSW, particularly in urban areas with high concentrations of industry and motor vehicles.

In NSW the number of motor vehicles and the total vehicle kilometres travelled are increasing, placing increasing pressure on air quality. Surveys of community attitudes have found that environmental issues are of major concern to the public, with air pollution a key ongoing concern. The NSW EPA survey 'Who Cares About the Environment', conducted in 2000, indicated that the environment was a high-order issue for State Government attention, following health and education. In 2000, air was regarded as the second most important environmental issue in NSW, following water.

High levels of air pollutants have been shown to result in a wide range of adverse health effects, including respiratory impacts ranging in severity from coughs, chest congestion and asthma, to chronic illness and possible premature death in susceptible people. In 1998 the National Environment Protection Measure on Ambient Air (Air NEPM) was adopted. It established the standards and goals for six principal 'criteria' pollutants against which air quality is measured. Although air quality in NSW urban areas has been gradually improving over the past 50 years, significant reductions in emissions are needed to meet these NEPM standards and goals. The top issues are ozone (photochemical smog) and, to a lesser extent, particles.

Control of motor vehicle emissions is fundamental to reducing the ozone precursor emissions of volatile organic compounds (VOCs) and oxides of nitrogen (NO_x), as well as particles. Motor vehicles are major sources of emissions of NO_x and VOCs in the Sydney region. The *State of the Environment Report 2000* indicated that motor vehicles account for 70% of NO_x emissions and 52% of VOC emissions in the Sydney Region. Motor vehicles are responsible for 31% of particle emissions, with diesel vehicles contributing to 60% of this total.

The current Regulation is one of a number of measures identified in the Air Quality Management Plan *Action for Air*, used to maintain and improve air quality by setting emission limits and other controls for motor vehicles and motor vehicle fuels.

Since the current Regulation came into force in 1997 there have been significant developments at the national level related to control of emissions from motor vehicles. First, the Commonwealth has enacted the *Fuel Quality Standards Act 2000*, and has established environmental standards for petrol and diesel fuels through 'determinations' under this Act. The Commonwealth has also set a timetable for the introduction of progressively stricter emission standards for new diesel and petrol vehicles under new Australian Design Rules. Together, the new fuel and vehicle emission standards are expected to realise a

significant reduction in motor vehicle emissions. These changes have significantly influenced the nature and scope of the revised Regulation.

The proposed Regulation has been developed so as to eliminate duplication with new Commonwealth legislation and to address limitations in the scope of national regulatory provisions relating to pollution from motor vehicles. It is proposed that the remade Regulation will:

- remove all elements of duplication with Commonwealth regulatory provisions – both vehicle emission limits and fuel quality
- retain and strengthen the provisions relating to smoky vehicles and tampering with anti-pollution devices
- retain the requirement for vertical exhausts on diesel vehicles over 4.5 tonnes but exempt vehicles that meet the emission standards of Australian Design Rule (ADR) 80/01
- increase the on-the-spot fine for smoky vehicles from \$112 to \$200 for individuals and \$400 for corporations.

Whereas it is proposed that the vertical exhaust requirement be retained for older vehicles, an exemption is proposed for vehicles that meet the much stricter emission standards of ADR 80/01. Dramatic emission reductions are expected from vehicles meeting this standard when compared with other vehicles. Final consideration of this exemption will draw upon public submissions. The proposed Regulation refines the on-the-spot fine for having the vertical exhaust pipe facing in the wrong direction (from \$300 to \$200) so that it is commensurate with the on-the-spot fine for smoky vehicles. It also introduces a maintenance requirement that vertical exhaust pipes must be free of holes, other than those necessary for the effective operation of the exhaust system.

As with the existing Regulation, the proposed Regulation will involve costs to industry and motorists in complying with the requirements of the excessive air impurities and vertical exhaust provisions. There will also be additional repair costs to motorists associated with compliance with the strengthened anti-tampering provisions. However, these costs are outweighed by the environmental benefits achieved, in particular the avoided health costs and the economic benefits from reduced vehicle emissions. Failure to continue controls on motor vehicles (that is, allowing the Regulation to lapse without replacement) would result in environmental deterioration, with increased emissions of carbon monoxide (CO), VOCs, particles and NO_x.

It is expected that the proposed Regulation will conservatively result in a net benefit of nearly \$64.1 million to the community, and should therefore be implemented.

1 Introduction

1.1 Purpose and content of the Regulatory Impact Statement

In accordance with the *Subordinate Legislation Act 1989*, the EPA prepares a Regulatory Impact Statement (RIS) to assess the economic, social and environmental costs and benefits of a proposed Regulation and its alternatives. The purpose of this RIS is to ensure that the proposed Regulation provides the greatest net benefits or least net cost to the community, compared with the possible alternatives.

The Clean Air (Motor Vehicles and Motor Vehicle Fuels) Regulation 1997 (referred to here as ‘the current Regulation’) is due for automatic repeal on 1 September 2002. It is proposed that the new Regulation will be made under the *Protection of the Environment Operations Act 1997*. The following RIS analyses a proposal to replace the current Regulation with a new Regulation, to be known as the Protection of the Environment Operations (Clean Air—Motor Vehicles and Motor Vehicle Fuels) Regulation 2002 (referred to here as the Motor Vehicles and Motor Vehicle Fuels Regulation). The assessment of economic, social and environmental costs and benefits applies to the five-year period that will follow the repeal of the current Regulation on 1 September 2002.

The current Regulation was originally made under the *Clean Air Act 1961*. With the establishment of an integrated system of environment protection under the *Protection of the Environment Operations Act 1997*, the Clean Air Act was repealed on 1 July 1999. Regulations made under the Clean Air Act remain in force through saving provisions, and therefore did not need to be remade upon repeal of that Act.

Section 1 of this RIS provides the environmental and health context for control of emissions from motor vehicles and fuels as well as the legislative and policy arrangements relating to the management of motor vehicle and motor vehicle fuels in NSW.

Section 2 outlines the objectives of the proposed Regulation and alternative approaches considered for the remake of the Regulation, and a Base Case of no Regulation.

Section 3 considers the specific provisions of the proposed Regulation, and their costs and benefits compared to the base case of no Regulation and other options.

Section 4 summarises the estimated costs and benefits of the preferred option.

1.2 Planned consultation

The draft Regulation and this RIS will be made available for public comment for four weeks. The EPA welcomes written submissions from the public and will carefully consider matters so raised before the Regulation is finalised. A notice calling for submissions from the public will be published in the *NSW Government Gazette*, the *Sydney Morning Herald* and the *Daily Telegraph*. Submissions will be accepted until the close of business on 2 August 2002.

1.3 Introduction to the environmental and health effects of air pollutants

The most common air pollutants from the combustion of fossil fuels by motor vehicles are oxides of nitrogen (NO_x), carbon monoxide (CO), hydrocarbons (HC) (hydrocarbons are often alternatively referred to as volatile organic compounds –VOCs) and particles. Another significant pollutant in major urban areas is ozone (photochemical smog: O₃), a secondary pollutant formed in sunlight by chemical reactions between NO_x and VOCs.

Carbon monoxide (CO)

Carbon monoxide is a colourless, odourless and tasteless gas that interferes with the blood's capacity to carry oxygen. Exposure to sufficiently high concentrations over long periods of time can be poisonous. Exposure at lower levels can have adverse effects on individuals with cardiovascular disease.

Nitrogen dioxide (NO₂)

Nitrogen dioxide is a pungent acidic gas. In the atmosphere it may irritate respiratory systems, exacerbate asthma in susceptible individuals, increase susceptibility to cardiovascular disease symptoms and respiratory infections, and reduce lung function. As a precursor to photochemical smog, it also contributes to the effects associated with ozone.

Ozone (O₃)

Health effects attributed to ozone include irritation of eyes and airways, exacerbation of asthma symptoms in susceptible people, increased susceptibility to infection, and acute respiratory symptoms such as coughing and reduced lung function. Ozone also has adverse effects on vegetation and can oxidise organic and inorganic material.

Fine particles (also referred to as particulate matter or PM)

Respirable particles – those with a diameter of less than 10 microns (µm), commonly referred to as PM₁₀ – are of particular health concern because they are easily inhaled and retained in the lung. Fine particulate matter is emitted by both diesel and spark ignition engines, although diesel sources tend to dominate. The particles may also adsorb potentially health threatening organic 'air toxics' (such as benzene, 1,3-butadiene, acetaldehyde and formaldehyde) found in engine exhaust, making the impact on human health more severe.

For most regulatory purposes, particulate matter of 10 microns and smaller (PM₁₀) is controlled as a noxious emission. However, it is now generally accepted that it is the finest fractions of particles (2.5 microns down to sub-micronic size) that pose the greatest threat to human health. Their combination of extremely small size and chemical composition creates strong concerns about the effects of PM on human health. Their small size increases the likelihood that they will carry irritants and toxic compounds into the deepest and most sensitive areas of the human lungs. This can lead to severe lung problems and increased susceptibility to respiratory infection, such as pneumonia, aggravation of acute and chronic bronchitis, and asthma.

Smoke

Black smoke from vehicle exhausts, particularly from diesel vehicles, is a significant urban amenity issue of concern to the general public. Diesel smoke emissions can be odorous and visibly offensive, contributing to haze levels and being unpleasant for pedestrians, cyclists and other road users. These emissions also include fine (40 microns) and larger particles.

Volatile organic compounds (VOCs)

VOCs represent a group of chemical compounds that share some common characteristics. The organic designation means that the compound is almost always composed of carbon and hydrogen molecules, and volatile means the compound is easily evaporated. Although VOCs occur naturally, the main anthropogenic source of VOC emissions is motor vehicles. Evaporation of gasoline, solvents, oil-based paints, and hydrocarbons from the petrochemical industry is also a significant source.

The ability of VOCs to cause health effects varies greatly depending on several factors, including the specific type of VOC and the amount and the length of time a person is exposed. Exposure to elevated levels of VOCs may cause irritation to the eyes, nose, and throat. Headaches, nausea, and nerve problems

can also occur. Studies of animals have shown that breathing some types of VOCs over a long period of time can increase the risk of cancer. Emissions of VOCs are also principal ozone precursors.

Compliance with National Air Quality Standards and Goals

Air quality is assessed against the standards and goals for the pollutants covered by the National Environment Protection Measure (NEPM) for Ambient Air Quality. These standards are health based and are set so as to protect the most vulnerable groups such as children and the elderly from the adverse impacts of the pollutants. The standards and goal for each pollutant are set out in Appendix 1.

Air quality in Sydney has been steadily improving since the 1980s. For example, there has been dramatic improvement in ambient levels of carbon monoxide and the annual average lead concentration is now down to 10% of the national standard. Ambient carbon monoxide levels have been reduced because of improvements to motor vehicle emission control technology. Ambient lead levels have fallen dramatically because of the removal of lead from petrol. Sulfur dioxide levels are also well below the national standard.

The situation is less favourable for ozone and particles, particularly in the summer months. Whereas there has been no deterioration in ambient levels of ozone, national standards for both one- and four-hour levels are regularly exceeded. There is considerable variability in the frequency of ozone events, and this is largely the result of the variability in annual meteorological conditions. For example, in the 10 years from 1991 to 2000, the number of days on which the one-hour standard was exceeded in Sydney ranged from four in 1991, to 14 in 1997 (extreme heat and bushfires), 6 in 2000, and 21 in 2001 (again a year with extreme heat and bushfires). Achievement of the national goals for the one- and four-hour ozone standards (that is, no more than one exceedence in a year for each by 2008) is a significant challenge. Further reductions in the ozone precursor emissions are necessary.

PM10 concentrations sometimes exceed the 24-hour level of the NEPM standard, particularly when there are large-scale hazard-reduction burns or bushfires.

1.4 Framework for control of air pollution from motor vehicles and motor vehicle fuels

This section outlines the key mechanisms for managing air emissions from motor vehicles in NSW. Since the current Regulation commenced in 1997, there have been significant developments at the national level by the Commonwealth Government, particularly the establishment of the *Fuel Quality Standards Act 2000*, and the development of environmental standards for petrol and diesel as determinations under this Act. The Commonwealth has also set a timetable for the introduction of progressively stricter European-based emission standards for petrol and diesel vehicles.

Motor vehicle emission standards

The Commonwealth has been regulating vehicle emissions limits and design requirements under the Australian Design Rules (ADRs) since 1989. In December 1999, the Commonwealth set a timetable for the adoption of progressively stricter emission standards to apply from 2002 up to 2005 for petrol vehicles and 2006 for diesel vehicles. The new ADRs specify pollution emission limit values for light and heavy vehicles. These cover CO, NO_x, and HCs for petrol vehicles, and in addition, particles for diesel vehicles. Specified emission limit values for these pollutants, as well as for methane and smoke, apply to heavy-duty vehicles. A brief outline of the relevant ADRs is provided in Appendix 2. The ADRs require that vehicles meet these limits before they can be sold in Australia and for a period of five years or 80 000 kilometres.

Fuel quality standards

The Commonwealth Government has set national fuel quality standards under the *Fuel Quality Standards Act 2000* (Cwlth).

The first stage of the standards for diesel and petrol commenced on 1 January 2002. The Commonwealth standards set limits for a wide range of components of these fuels, and aim to cover a broad range of environmental issues related to fuel composition. (A complete listing of the petrol and diesel components covered by the standards is provided in Appendix 3.)

The introduction of the new ADRs and the fuel quality standards is expected to significantly reduce emissions from motor vehicles. For Sydney, and even assuming a 32% increase in vehicle travel, it is estimated that by 2020 (compared with 2000 levels) emissions of CO will have fallen by 75%, NO_x by 71%, VOCs by 26% and particles by 35%.

Memorandum of Understanding (MoU) – Low Volatility Petrol Program

Reducing the volatility of petrol, measured in kilopascals as Reid Vapour Pressure, can significantly reduce petrol evaporation and therefore VOC ozone precursor emissions. Work undertaken in 1996–97 by the NSW EPA and the NSW oil industry established that when compared with a range of other ozone reduction measures, reducing petrol volatility in summer was a relatively cost effective strategy for implementation in the Sydney Greater Metropolitan Region (Sydney, the lower Hunter and the Illawarra). Consequently, since the summer of 1998–99 NSW has managed petrol volatility through a voluntary MoU between the EPA and the oil industry. The MoU was originally negotiated for a three-year period under which MoU signatories were required to meet phased reductions in petrol volatility over the summer months from November 15 to March 15. In the first summer the volatility limit was 70 kPa and there was close to 100% compliance from signatories. Against a baseline level of 76 kPa (which prevailed prior to the MoU), this resulted in an estimated reduction in VOCs of 30 tonnes a day over the summer period. A limit of 67 kPa applied in the second summer. Once again there was close to 100% compliance, with an additional emission reduction of 5 tonnes per day over the summer. However, in the third summer there was a poor level of compliance, with 66.3 kPa achieved over the summer against the 62 kPa target.

In late 2001 the EPA renegotiated with the oil industry to have the MoU for the 2001–2002 summer. Performance over that summer period was better than the previous year's, with an overall RVP of 62.8 kPa against a target of 62 kPa, and with an estimated additional VOC reduction of 8 tonnes a day over the second summer of the MoU.

Agreement has been reached with the oil industry to include limits on petrol volatility for future years in the Motor Vehicle and Motor Vehicle Fuels Regulation. These limits will be included by way of an amendment to the Regulation after it is remade in time for the commencement of the 2002–2003 summer period.

In-service vehicles – Diesel NEPM

In June 2001, the National Environment Protection Council approved a National Environment Protection Measure (NEPM) for In Service Diesel Vehicles (that is, vehicles that are in use). The NEPM requires jurisdictions to assess the impact of diesel vehicle emissions and to implement emission reduction programs where these are determined to be necessary. The NEPM provides guidelines to assist jurisdictions in implementing programs suitable to their circumstances. The NEPM is complemented by emission standards for in-service diesel vehicles, established under National Road Transport Commission (NRTC) legislation. These in-service standards provide the benchmark against which diesel vehicle emission performance can be assessed.

In NSW a program has commenced that will see all State Transit diesel buses undergo emissions testing; where buses do not meet standards, they will be repaired. In addition, an audited maintenance program is

being developed by the RTA for use by private fleet operators to ensure that their vehicles meet in-service standards.

NSW Cleaner Vehicles Action Plan

This plan encourages carmakers to sell and consumers to purchase the most environmentally advanced new cars and light trucks. It does this by recognising and rewarding environmentally friendly purchases and greening the Government's own fleet. Cleaner vehicle initiatives include:

- *Clean Car Benchmarks* – These are environmental performance benchmarks for new light vehicles to identify the cleanest cars available.
- *Stamp duty as an environmental incentive* – The scheme aims to encourage carmakers to supply cleaner new vehicles and consumers to buy them. Changes will apply only to vehicles first registered after the new system starts.
- *Greener NSW Government fleet program* – This requires government agencies to establish fleet improvement plans with targets for reductions in fuel consumption and greenhouse gas emissions.
- *Voluntary clean fleet program* – This program encourages the adoption of environmentally friendly practices by large vehicle fleets and includes voluntary maintenance programs, purchasing cleaner vehicles, and maintaining and operating fleets in an environmentally friendly manner.
- *Consumer Green Guide* – This involves the development of a green vehicle guide for consumers, covering cars and light trucks.

The elements of the package are currently being finalised before public consultation and/or implementation.

Action for Air

As well as reducing emissions from in-service vehicles and changing emission standards for new vehicles and for fuel, the NSW Air Quality Management Plan, 'Action for Air', includes strategies for improved and expanded public transport and land-use planning. These strategies aim to reduce car use, and therefore emissions from motor vehicles.

Protection of the Environment Operations Act 1997 (POEO Act)

The *Protection of the Environment Operations Act 1997* (POEO Act) replaced a number of environment protection statutes, including the *Clean Air Act 1961*, on 1 July 1999. One of the objects of the POEO Act is to prevent and minimise pollution. To further this object, the POEO Act provides a range of powers to control emissions from motor vehicles, including:

- prohibiting the sale of motor vehicles emitting excessive air impurities or not fitted with prescribed anti-pollution devices (sections 155, 156)
- prohibiting the sale of motor vehicles not serviced, maintained or adjusted in a manner specified in the regulations (section 159)
- prohibiting the sale of certain motor vehicles if they do not comply with the road octane requirement when tested (section 164)
- prohibiting tampering with anti-pollution devices fitted to motor vehicles (section 157)
- allowing notices to be issued to owners of motor vehicles emitting excessive air impurities requiring them to service or repair the vehicles (section 161)

- allowing notices to be issued to owners of certain motor vehicles requiring anti-pollution devices to be fitted or maintained (section 161)
- allowing the Minister for the Environment to prohibit the use of certain motor vehicles in order to prevent or minimise harm to the environment or injury to public health (section 162)
- prohibiting the sale of petrol as unleaded petrol unless it contains the required levels of lead, phosphorus and research octane number (section 163)
- allowing the EPA to suspend or prohibit the registration of non-complying vehicles (sections 165, 166)
- allowing motor vehicles to be inspected and/or tested to determine whether they comply with legislated standards (sections 205–208).

Clean Air (Motor Vehicles and Motor Vehicle Fuels) Regulation 1997

The current Regulation gives effect to the powers provided by the POEO Act by:

- prohibiting the use of motor vehicles emitting excessive air impurities (clause 27)
- prescribing the tests to be used to determine whether a motor vehicle emits excessive air impurities (including the 10-second smoke rule, and exhaust and evaporative emission tests for vehicles up to 5 years old or driven up to 80 000 km) (clauses 5 to 8 and Schedule 1)
- prescribing that any diesel vehicle over 4.5 tonnes must be fitted with a vertical exhaust (a prescribed anti-pollution device), and prescribing various exemptions to this requirement (clauses 10 to 12)
- prescribing the road octane test for the purposes of section 164 of the POEO Act (clause 20)
- requiring that, where prescribed anti-pollution devices must be fitted to motor vehicles, then the devices must be correctly fitted and maintained (clause 28)
- prohibiting the use of motor vehicles if they have not been serviced, maintained or adjusted in the required manner (clause 29)
- prohibiting the sale or use of leaded petrol that contains more than a prescribed amount of lead, and providing for exemptions to these requirements (clauses 13 to 15)
- prescribing certain properties of unleaded petrol, petrol filling pipes and petrol pump nozzles (clauses 16 to 18, 22, 24, 25)
- prohibiting the use of leaded petrol in vehicles operating on unleaded petrol and the prescription of related matters (clauses 19, 31).
- requiring notices and labels on fuel tanks and fuel pumps to be displayed indicating that unleaded petrol is to be used in vehicles operating on unleaded petrol (clauses 21, 23)
- specifying various details referred to in the POEO Act and the current Regulation, such as the definition of prescribed anti-pollution device and the form of the notices issued under section 161 of the POEO Act (clauses 9, 33, Schedule 2).

Costs of administering current provisions

The current Regulation is administered by the EPA and enforced with assistance from the RTA, local government and the NSW Police Service. Administration and enforcement mainly involves actions (such as issuing of warning letters, fines and defect notices) taken when emissions from motor vehicles are visible or when equipment to control motor vehicles emissions is either not installed (vertical exhausts) or has been tampered with.

Government costs. Nearly all of the costs of administering the current provisions relate to the EPA's enforcement activities. Total government costs amount to approximately \$624,500.¹ Total revenue from fines levied on vehicle owners (which is passed to NSW consolidated revenue) is estimated to be \$282,000 (FY 2000–01).²

¹ Costs to government of administering the current provisions amounting to \$624,500 are made up of the following: salaries and administrative costs for 7.25 EFT EPA staff (\$604,000); motor vehicle costs (\$15,500); and miscellaneous (\$5000). This does not include costs incurred by other agencies, which are not readily identifiable.

² The breakdown of government revenue received through fines (2001–2002) is as follows: EPA (\$238, 448), councils (\$2912), RTA (\$3,000), and Prosecutions (\$37,487).

2 The proposed Regulation

2.1 Objectives

The general objective of the proposed Regulation is to protect the environment and human health by reducing emissions of air pollutants from motor vehicles. The proposed Regulation aims to achieve this by prohibiting the use of vehicles emitting excessive air impurities and by provisions requiring the installation of and correct operation of motor vehicle emissions control equipment (anti-pollution devices).

2.2 Alternatives considered for regulation of motor vehicles and motor vehicle fuels

Primary reliance on national legislation

Emission standards for new motor vehicles are specified by the Australian Design Rules (ADRs). Emissions from new and recently manufactured light and heavy duty vehicles will be reduced considerably as a result of the ADRs being progressively applied to 2006, and the improved petrol and diesel fuel standards established under the Commonwealth *Fuel Quality Standards Act 2000*.

However, the ADRs provide limited scope to address emissions from in-service vehicles. Specifically, they do not cover vehicles whose emission control systems have been tampered with, nor do they prescribe the fitting of vertical exhausts.

The proposed Regulation addresses these limitations and therefore complements national regulatory provisions on motor vehicle emissions standards. It also gives effect to key provisions of the POEO Act by defining certain offences in the Act, such as what constitutes 'excessive air impurities' and 'prescribed anti-pollution devices'. Without these definitions, certain provisions of the Act could not be enforced.

2.3 Base case

Under the *Subordinate Legislation Act 1989*, the effects of the proposed Regulation and its alternatives must be assessed against a base case. The appropriate base case is the 'no regulation' case that would apply if the current Regulation were not re-made and the provisions were to cease to apply after 1 September 2002.

In the absence of the Regulation there would still be the very broad provisions of the POEO Act and the Australian Design Rules. However, without the proposed Regulation there would be no mechanisms to regulate the performance of in-service vehicles (anti-tampering, excessive air impurities and vertical exhausts).

In the following section each of the substantive provisions of the proposed Regulation are considered against the base case and other options. The costs and benefits of the proposed provisions are also addressed.

3 Provisions of the proposed Regulation

The proposed Regulation is considered the most appropriate to meet the broad objectives of the Regulation, as stated in section 2. A full draft of the proposed Regulation is provided at the end of this RIS.

3.1 Excessive air impurities (current Regulation clauses 5 to 8 and 27, and Schedule 1, proposed Regulation clauses 5, 6)

Objective

Section 154(2) of the POEO refers to the offence whereby vehicles emit excessive air impurities. The proposed Regulation will provide for enforcement where motor vehicles are observed emitting air impurities that are visible for a continuous period of more than 10 seconds.

Background

Currently, clause 27 prohibits the use of motor vehicles emitting excessive air impurities. The meaning of 'excessive air impurities' is given in section 154(2) of the POEO Act and requires certain details to be specified in the Regulations. Currently, clauses 5 to 8 and Schedule 1 specify those details. Visible emission from motor vehicles is an issue that generates strong comment and frequent complaints by members of the public. It can also be an indication of excessive, non-visible exhaust emissions.

The EPA operates a smoky vehicle detection program that issues penalty notices to, or prosecutes, the owners of petrol- or diesel-powered vehicles observed to be continuously emitting visible air impurities for more than 10 seconds. The aim of the Regulation is to reduce emissions from identified smoky vehicles, and to provide a deterrent to others (and thereby reduce smoke emissions from the broader fleet).

Alternatives

Option 1: No Regulation. If excessive air impurities are not prohibited or defined then the EPA would be unable to control smoke emissions from motor vehicles.

Option 2: Existing Regulation to be retained. It is proposed that the current Regulation be retained. An increase in the on-the-spot fine for smoky vehicles from \$112 to \$200 for individuals and \$400 for corporations is proposed. This increase will bring the on-the-spot fine amounts into line with those for commensurate offences, such as littering from a motor vehicle, and will more accurately reflect the seriousness with which the offence is viewed. It is not proposed to change the current maximum penalty for the offence that may be imposed by a court (currently \$22,000 for individuals and \$44,000 for corporations).

Economic impact

Costs. The following costs are anticipated:

- **Government.** The EPA operates a Motor Vehicle Enforcement Unit, which has responsibility for enforcing the excessive air impurities provisions of the Regulation as well as those relating to anti-tampering and vertical exhausts. Other EPA staff also assist in enforcement by lodging observation reports that lead to enforcement action or other appropriate follow-up. EPA Pollution Line staff receive smoky vehicle reports from members of the public by telephone or the internet, which also lead to follow-up activities. EPA staff and on-costs amount to approximately \$604,000 a year (which

provides for the equivalent of 7.25 full-time officers) The net present value of total EPA costs (including salaries, on-costs, vehicle use and other costs is \$2.7 million over five years. (See Appendix 4 for details.)

Part of the EPA costs are for the administrative function of administering penalty notices and defective vehicle notice, and would remain the same as under the current regulation. The EPA estimates that the penalty notices have a net present value over five years of \$187,000, and defective vehicle notices have a net present value over five years of \$22,000. The bulk of the costs relates to observation, recording, inspection and prosecution activities.

- **Industry and motorists.** Under the proposed Regulation the cost of complying with the excessive air impurities provisions would be borne by industry and motorists in the form of increased expenditure on mechanical repairs. Assuming repair costs for diesel vehicles of \$940 and petrol vehicles of \$374, the annual cost of repairing 1400 diesel vehicles and 250 petrol vehicles is estimated to be \$1.3 million and \$0.09 million, giving a net present value of \$5.6 million and \$0.4 million respectively. (Refer to Appendix 4 for a breakdown of these calculations.)

Motorists owning vehicles that emit excessive air impurities would face higher fines than under the current Regulation, since an increase is deemed necessary to bring the penalty more in line with commensurate offences.

Benefits. The following benefits are anticipated:

- **Amenity.** Vehicles emitting excessive smoke impose a significant loss of visual amenity. Smoke emissions soil buildings, damage rubber products (because of the presence of particulates in the smoke), create offensive odour and contribute to ozone. EPA surveys show that visibly clean air is an important goal for the NSW community.

The number of complaints received by the NSW EPA provides a further indication of the high level of public concern about smoky vehicles. In the 2000–2001 financial year the EPA Pollution Line received an average of 680 complaints about smoky vehicles every month. Warning letters to motorists are issued in response to such complaints.

It is estimated that continuation of enforcement of the excessive air impurities provisions will lead to the reduction of approximately 1.3 tonnes of particulate emissions over the life of a vehicle³, with an estimated amenity benefit (net present value) of \$15.2 million over five years. (See Appendix 4 for a breakdown of these calculations.)

- **Health.** Health benefits will arise from the reduction in emissions from petrol and diesel vehicles, attributable to enforcement of the excessive air impurities provisions. These benefits result from reduced emissions of particles, VOCs, NO_x and CO from defective vehicles following their repair. The net present value of these health benefits over five years is estimated at \$60.81 million. (Refer to Appendix 4 for a breakdown of these calculations.)

3.2 Anti-pollution devices (prescription of anti-pollution devices (current Regulation Part 3 and clauses 28 to 30; proposed Regulation Part 3)

Objective

To specify certain devices as anti-pollution devices designed or intended to minimise air pollution caused by motor vehicles, to allow for the enforcement of installation and anti-tampering offences relating to such devices, and to enforce certain maintenance requirements.

³‘Vehicle life’ incorporates estimated averages of combined diesel and petrol fleets (Bureau of Transport and Regional Economics 2002)

Background

Sections 156, 157 and 161 of the POEO Act enable enforcement actions to be taken where prescribed anti-pollution devices are not fitted or maintained in accordance with the Regulations or where they have been tampered with.

Control of emissions from motor vehicles relies on the efficient operation of either discrete devices, such as catalytic converters, or key components of a variety of integrated systems. The proposed Regulation defines a number of systems as anti-pollution devices such that where they have been tampered with or modified the EPA can take actions, such as requiring necessary repairs to be carried out, issuing an on-the-spot fine or prosecution for an offence against the POEO Act or Regulations. The current Regulation makes it an offence to use or allow a vehicle to be used when anti-pollution devices are not in place.

Alternatives

Option 1: No Regulation. Failure to identify key anti-pollution systems and components poses risks to the effectiveness of enforcement efforts. It could potentially lead to misunderstandings on the part of the vehicle owner, who may think of anti-pollution devices as only discrete pieces of equipment, and may cause increased emissions by modifying critical system components when undertaking modifications directed at other, unrelated, vehicle performance characteristics. In such circumstances, the lack of regulatory clarity could lead to unnecessary disputes or inefficient litigation.

Option 2: Current Regulation. An aim of the current Regulation is to ensure that emission control devices that are fitted to a vehicle by a manufacturer remain in place on the vehicle, continue to function correctly, and do not emit excessive impurities into the air. This is achieved through section 157 of the POEO Act, under which it is an offence for a person to tamper with anti-pollution devices, or with the vehicle, so as to cause the emission of excessive air impurities. However, in most cases a breach of section 157 cannot be proved unless someone admits to carrying out the tampering or removal of the device.

Option 3: Modified Regulation. The proposed Regulation makes it an offence for the owner to use or allow the use of a motor vehicle if an anti-pollution device fitted to the vehicle has been removed, or has been adjusted so as to result in the emission of excessive air impurities. This is expected to overcome the need for an admission of tampering under the current Regulation and is consistent with the approach taken with other traffic offences, where the registered owner is deemed liable for offences.

Economic impacts

Costs. The following costs would be anticipated:

- **Government costs.** The EPA has responsibility for enforcing these provisions of the Regulation, and estimates the annual cost of enforcing these provisions has a net present value of \$96,000 over five years. (See Appendix 5 for detailed calculations.)
- **Industry and motorists.** As tampering is already an offence in NSW, measuring the result of less tampering occurring should result in cost savings to the community (that is, tampering is a cost). On the other hand, if it is assumed that tampering has already occurred, then the cost of reversal is estimated as a net present value of \$0.5 million over five years (\$220 per vehicle).

Benefits. The following benefits would be anticipated:

- **Health.** Health benefits associated with reduced vehicle emissions (NO_x, CO and HC) following repair of vehicles will result from enforcement of these provisions. The health benefits are estimated at a net present value over five years of \$969,000, \$790,000, and \$70,000 for hydrocarbons, oxides of nitrogen and carbon monoxide, respectively. The estimated total health benefits have a net present value over five years of \$1.8 million (Refer to Appendix 5 for an analysis of this calculation.)

3.3 Vertical exhaust requirement (current Regulation clauses 10 to 12 and 28; proposed Regulation clauses 8 to 13)

Objective

To improve dispersion of diesel vehicle exhaust high into the air by requiring diesel-powered vehicles over 4.5 tonnes to be fitted with a vertical exhaust and to be maintained in the required manner.

Background

Local impacts from diesel exhaust are intrusive to other road users and the community generally. The impacts include health concerns, odours, visual impacts and soiling. Whereas vertical exhausts aid in dispersing exhaust emissions, the position of the exhaust outlet has no effect on regional air quality, as exhaust location does not change pollutant emission rates.

The current vertical exhaust requirement (which provides exemptions for vehicles used for defined purposes) was introduced in 1976. At that time and up until recently (1996) no emission standards – apart from smoke limits – applied to diesel vehicles. As well, diesel vehicles used fuel with a very high sulfur content, which contributed significantly to high emissions of particles, oxides of nitrogen and smoke. (In 1980 the national average level of sulfur in diesel was over 2500 ppm; in 2000 it was around 1300 ppm.) Under these circumstances the use of vertical exhausts played an important role in improving amenity for pedestrians, cyclists and motorists in urban streets by directing emissions higher into the air.

All diesel engines (and most diesel vehicles) marketed in Australia are imported. In the major world markets over the last decade, particularly in Europe, North America and Japan, heightened awareness and concern for air pollution have led to considerable tightening of regulated design standards for emissions from new diesel vehicles. In December 1999, the Commonwealth set a timetable for the adoption of progressively stricter emission (European) standards to apply to diesel vehicles from 2002 and from 2006. The new ADRs (80/00 and 80/01) specify pollution emission limit values for light and heavy vehicles. For heavy-duty vehicles (above 3.5 tonnes) these include particles, carbon monoxide, NO_x, hydrocarbons, methane and smoke.

By 2006 all new model diesel vehicles, and by 2007 all new diesel vehicles of continuing models, will need to comply with the emission standards (ADR 80/01), which are significantly stricter than the standards currently applied to the great majority of the NSW diesel fleet (Table 1). It is proposed that vehicles that comply with ADR 80/01 would be exempt from the vertical exhaust requirement under the new Regulation.

Table 1. Comparison of diesel emission standards

ADR & Euro Standards (exhaust emission standards)	NO _x		PM	
	Limits	% Reduction over ADR70/00	Limits	% Reduction over ADR70/00
Heavy Duty Diesel (vehicles with a gross vehicle mass greater than 3.5 tonnes)	g/kWh		g/kWh	
ADR 70/00 (Euro 1) – applies to new models from 1995 and all vehicles from 1996	8	–	0.36	–
ADR80/00 (Euro 3) – applies to new models from 2002 and all vehicles from 2003	5	38%	0.1	72%
ADR80/01 (Euro 4) – applies to new models from 2006 and all vehicles from 2007	3.5	56%	0.02	94%

Diesel Vehicle Emissions Impact Statement for the Draft National Environment Protection (Diesel Vehicle Emissions) Measure (February 2001), National Environment Protection Council

Corresponding with improvements to diesel vehicle emission standards, the Commonwealth has also announced significant improvements to diesel fuel quality. From December 2002, the sulfur content of road transport diesel fuel is to be no more than 500 ppm; by 2006 the maximum limit will be reduced to 50 ppm. These reductions in sulfur content enable the effective operation of the improved exhaust emission technologies required to meet the more stringent emission standards. They also contribute directly to reducing emissions of both sulfur oxides and particulate matter and indirectly to reducing emissions of oxides of nitrogen, carbon monoxide and hydrocarbons.

In combination, the introduction of ADR 80/01 emission standards and ultra-low (50 ppm) sulfur diesel fuel is expected to lead to dramatically lower emissions from heavy-duty diesel vehicles compared to previous requirements.

Notwithstanding the significant emission reductions expected from ADR 80/00 compliant vehicles, the need to exercise caution in moving away from a vertical exhaust requirement for diesel vehicles above 4.5 tonnes has meant that exemptions are being proposed only for ADR 80/01 compliant vehicles. This is because of:

- **the significant emission reductions expected from ADR 80/01.** Whereas both ADR80/01 and ADR 80/00 represent a much greater improvement in terms of allowable emissions when compared with standards under previous ADRs, ADR 80/01 is much more stringent. Heavy-duty vehicles complying with ADR 80/00 are required to meet a particle standard (the principal diesel pollutant), which represents a 72% reduction in the particle emissions relative to similar vehicles complying with ADR 70/00 (1995/96) standards. For 80/01 the reduction is 94%.
- **greater confidence that emission reductions for ADR 80/01 will be realised.** Achievement of the full benefit of the more stringent diesel vehicle emission standards is dependent on the availability of diesel fuel of an appropriate quality. In particular, diesel with low levels of sulfur is necessary, as high sulfur levels interfere with the efficient operation of emission control technology.

Diesel fuel with 350 ppm of sulfur is specified for vehicles complying with ADR 80/00. However, in Australia only diesel fuel with 500 ppm of sulfur will be available when these vehicles commence entry to the market in 2002–03. Whereas it is not clear that 500 ppm sulfur diesel will compromise the emissions performance of ADR 80/00 vehicles, a more favourable situation exists for ADR80/01 vehicles whereby the specified 50 ppm-sulfur diesel will be available on their entry to the market in 2006–07. There is a need for a high degree of confidence that the forecast emission reductions upon which an exemption is based will be achieved. The availability of 50 ppm-diesel fuel from the time these vehicles enter the Australian fleet means that circumstances are optimal for realisation of these benefits.

The vertical exhaust requirement will continue to apply for all other diesel vehicles over 4.5 tonnes. This is important, as the NSW heavy-duty diesel fleet includes old vehicles that are expected to remain in service for many years, with emissions continuing to be much higher than those from ADR 80/01 compliant vehicles. Around 72% of the heavy diesel vehicles currently in the fleet were built before 1996 and 49% were built in or before 1989, when national vehicle emissions limits and design requirements were initiated under Australian Design Rules (Table 2).

ADR 80/01 compliant vehicles exempt from vertical exhaust requirements will remain subject to anti-tampering and excessive air impurities requirements under the proposed Regulation.

Installation of vertical exhaust (current Regulation clauses 10, 28; proposed Regulation clauses 8, 12 and Schedule 2). The proposed Regulation retains the current NSW requirement for compulsory fitting of vertical exhausts for most diesel vehicles having a gross vehicle mass 4.5 tonnes or greater. There is a \$300 on-the-spot fine prescribed where the owner has used or allowed the use of a vehicle that has not been fitted with the required vertical exhaust in the prescribed manner.

Direction of vertical exhaust (current Regulation clauses 10, 28; proposed Regulation clauses 8, 12 and Schedule 2). At present a \$300 on-the-spot fine may apply where a vertical exhaust has been installed but is facing in the wrong direction. It is considered more appropriate if the fine for this offence is commensurate with the on-the-spot fine for smoky vehicles. As such, the on-the-spot fine for using or allowing a vehicle to be used when the vertical exhaust is not pointing away from the kerb will be set at \$200 in the proposed Regulation.

Table 2. Number of heavy diesel vehicles (over 4.5 tonnes GVM) registered in NSW (as at 31 December 2001)

Year of manufacture	Diesel vehicles registered	Year of manufacture	Diesel vehicles registered	Year of manufacture	Diesel vehicles registered
Unknown	543	1987	2927	1995	3986
Before 1981	12 405	1988	4238	1996	3602
1981	3119	1989	4786	1997	3939
1982	2624	1990	4163	1998	5205
1983	2136	1991	2576	1999	4649
1984	3696	1992	3329	2000	4427
1985	5361	1993	3239	2001	3202
1986	3694	1994	4433	Total	92 279

Road User Research Section, Roads and Traffic Authority of NSW

Condition of vertical exhaust (current Regulation clause 29; proposed Regulation clauses 11, 13). At present, there is a \$600 on-the-spot fine for an owner to use or to allow the use of a motor vehicle (clause 29), or for a person to sell a motor vehicle (POEO Act section 159), that has not been maintained in a specified manner. However, the current Regulations do not specify any such manner. It is now proposed to specify that vertical exhausts must be maintained so that they are free of holes (other than holes necessary for effective operation of the exhaust system).

Alternatives

Option 1: No Regulation. Without the Regulation there would be no enforceable requirements for the fitting of vertical exhausts to diesel vehicles. This would mean increased amounts of diesel exhaust would be emitted at ground level. The design of vertical exhausts is included in ADRs, but their use is optional. Furthermore, NRTC Regulations mean that where there is no pre-existing State Regulation then there will be no compulsory requirement to fit a vertical exhaust.

Option 2: Current Regulation. The current Regulation includes the requirement for compulsory fitting of vertical exhausts for most diesel vehicles having a gross vehicle mass 4.5 tonnes or greater. It specifies the height of the vertical exhaust above the vehicle and that it be pointed away from the nearside of the vehicle. The Regulation exempts vehicles used for certain specified purposes, but it makes no provision for vehicles complying with ADR 80/01.

Option 3: Modified Regulation. The proposed Regulation retains the requirement for compulsory fitting of vertical exhausts but extends an exemption to vehicles complying with ADR 80/01. The proposed Regulation aligns the amount for the on-the-spot fine for having the vertical exhaust pipe facing in the wrong direction to that for excessive smoke and introduces a maintenance requirement that vertical exhaust pipes must be free of holes.

Economic impacts

Costs. The following costs would be anticipated:

- **Government.** The EPA has responsibility for enforcing these provisions, and estimates the costs of this enforcement activity has a net present value of \$57,000 over five years.
- **Industry.** As with the current Regulation, there are costs associated with complying with this requirement that would be borne by vehicle manufacturers in fitting vehicles with vertical exhausts, and ultimately by vehicle buyers. The net present value of compliance is estimated to amount to \$4.4 million. However, it is important to note that from 2007 all new diesel vehicles over 4.5 tonnes will comply with ADR 80/01, and so there will be no compliance costs for new vehicles from that time.

Compliance costs (Table 3) are based on the following assumptions:

- The average cost of fitting a vertical exhaust is estimated at \$500 per vehicle.
- About 3500 new diesel vehicles over 4.5 tonnes enter the NSW vehicle fleet each year.
- Approximately 20% of these vehicles manufactured are already fitted with vertical exhausts. Therefore, 80% or 2800 vehicles require vertical exhausts to be fitted each year.
- In 2005, 20% of new vehicles are expected to comply with ADR 80/01 (as the equivalent European standard applies from 2005 and many vehicles imported from Europe in that year are likely to be manufactured to that standard).
- In 2006, 50% of new vehicles will comply with ADR 80/01 (new model vehicles).
- In 2006, 100% of new vehicles will comply with ADR 80/01.

Table 3. Industry compliance costs under the proposed Regulation

Year	Number of new or imported vehicles requiring vertical exhaust	Cost (\$m) (net present value)
2003	2800	\$1.4
2004	2800	\$1.3
2005	2240	\$1.0
2006	1400	\$0.7
2007 ^a	0	\$0
Total		\$4.4

^a From 2007 all new heavy duty vehicles will meet the required standard and will not require a vertical exhaust

Benefits. The following benefits would be anticipated:

- **Amenity.** The primary benefits of the proposed Regulation are improved dispersion of diesel exhaust emissions. The economic benefits of improved dispersion are not readily quantifiable.

Although the choice of exhaust location does not affect overall pollutant emissions, it can significantly affect local concentrations of pollutants. Use of a vertical exhaust reduces the concentration of exhaust pollutants at breathing level, reducing human exposure to high local concentrations. In addition, there are significant amenity benefits in ensuring that diesel exhaust fumes and smoke from dirty vehicles operating on high-sulfur fuels are directed above and away from pedestrians, cyclists and motorists in urban streets.

Colucci and Barnes (1986) investigated the effects of vertical and horizontal exhausts on pollutant concentrations in a bus-stop situation and found that the pollutant concentration in the 'breathing zone' near a bus stop averaged about eight times higher with a horizontal than with a vertical exhaust.

In order to estimate the effects of exhaust geometry on pollutant concentrations in other situations, Weaver and others (1986) conducted field observations of plume dispersion behind a number of smoky trucks and buses. Based on these 'eyeball' measurements and simple geometric assumptions, rough estimates of the relative pollutant concentrations behind vehicles of each type moving on a crowded roadway were made. The calculated reduction in exposure to high local concentrations of pollutants attributable to the use of vertical exhausts ranged from 65% to 87%.

- **Enforceability and fairness.** The proposed Regulation increases the fairness and general enforceability of the requirement to have a vertical exhaust pointing away from the kerb.

3.4 Transfer of petrol into fuel tanks of motor vehicles (current Regulation clause 25; proposed Regulation clause 15)

Objective

To ensure safety and minimise the escape of organic compounds into the atmosphere when refuelling motor vehicles by requiring overfill protection devices to be fitted to petrol delivery hoses.

Background

The clause requires the fitting of overfill protection devices to nozzles on all petrol delivery hoses on premises from which petrol is sold to the public. It also includes an offence for failing to ensure that a petrol filling hose is inserted into the vehicle's filling pipe as far as it will go when refuelling.

Alternatives

Option 1: No Regulation. Even if there were no regulation it is likely that overfill protection pipes would still be fitted to most petrol pumps, in the interests of economy and safety to prevent the spillage of petrol on to petrol station forecourts. However, motorists may overfill their vehicles by partly retracting the nozzle after the flow has been stopped automatically.

Option 2: Current Regulation. The current Regulation ensures that all new and existing petrol-dispensing pumps are equipped to prevent accidental spillage of petrol, which could constitute a fire hazard and increase petrol vapour emissions in the immediate vicinity. Deliberate overfilling of a petrol tank in a vehicle can cause contamination by liquid petrol of the activated carbon filter, which is an essential component of the evaporative emission control system.

It is proposed that the existing clause be retained.

Economic impact

The costs directly attributable to this clause are not easily quantifiable but are not likely to be significant, as existing petrol pump nozzle design would probably continue for occupational health and safety reasons. The benefits may generally be classified as savings in after-spillage cleaning costs for petrol station proprietors and vehicle owners and potential savings in the replacement cost of carbon filters that would otherwise be contaminated. To the extent that spills are avoided, this offers protection from run-off to water contamination. In addition, any reduction in evaporative emissions means a potential reduction in ozone formation and the health impacts associated with ozone.

3.5 Existing clauses to be deleted

Requirements for vehicles using leaded and unleaded petrol

On 1 January 2002 the petrol standards set under the Commonwealth *Fuel Quality Standards Act 2000* took effect. These standards have made redundant or superseded a number of provisions in the current Regulation that deal with leaded and unleaded petrol. As such, the current clauses 13, 14, 15, 16, 17, 18, 20 and 31 will not be carried over in the remade Regulation.

Leaded petrol. **Clause 13** prohibits the use of a vehicle when the lead concentration of the petrol in the vehicle exceeds a prescribed limit. **Clause 14** prohibits the sale of petrol with a lead concentration greater than a prescribed amount. **Clause 15** covers exemptions from clauses 13 and 14. **Clause 31** prohibits the use of leaded petrol in vehicles prescribed (under clause 19) as operating on unleaded petrol. These provisions are now redundant as a result of the banning of leaded petrol from 1 January 2002, under the Commonwealth Act.

Unleaded petrol. **Clause 16** prescribes the maximum amount of lead and phosphorous in unleaded petrol. **Clause 17** prescribes the research octane number (RON) range for unleaded petrol. **Clause 18** makes it an offence to sell as unleaded petrol any petrol that has less than the prescribed motor octane number (MON). **Clause 20** prescribes the road octane test for the purposes of section 164 of the POEO Act. Clauses 16 and 17 are now covered by the Commonwealth Government environmental petrol standards and are no longer needed in the NSW Regulation.

Operability standards for petrol are being developed by the Commonwealth for implementation in the second half of 2002 and will include a minimum motor octane number (MON) for each of the three petrol grades, thus replacing Clause 18. With the removal of specifications for unleaded petrol, it is no longer necessary to prescribe the Road Octane test (Clause 20).

Labelling requirements and vehicle and petrol pump dispenser requirements

A number of provisions in the current Regulation (clauses 19, 21, 22, 23 and 24) were designed to guard against misfuelling of post-1986 vehicles with leaded petrol. This was to ensure that leaded petrol was being used only where necessary, and to protect catalytic converters (which treat exhaust before its discharge from the vehicle) in post-1986 vehicles. (Lead in petrol damages them and so interferes with their efficient operation.) Leaded petrol has been banned since 1 January 2002, and lead replacement petrol is available for pre-1986 vehicles.

With the banning of leaded petrol there is no longer the same environmental imperative to protect against misfuelling. For this reason the following provisions will be not be included in the remade Regulation.

Clause 19 prescribes the vehicles that operate on unleaded petrol. **Clause 21** makes it an offence to fail to have wording around the petrol-filling pipes of such vehicles specifying the use of unleaded petrol only. **Clause 22** makes it an offence to fail to comply with specified design requirements for petrol filling pipes for such vehicles, including that petrol must not spill from the pipe if it is dispensed at 30 litres a minute. **Clause 23** prescribes labelling for leaded and unleaded petrol pumps and a requirement that all pumps display signage that indicates only unleaded petrol should be used in vehicles marked as requiring unleaded petrol, and makes it an offence to fail to comply with these requirements. **Clause 24** makes it an offence to fail to comply with specified sizes for petrol pump nozzles for leaded and unleaded petrol.

Notwithstanding the removal of these provisions, it is expected that industry will continue with appropriate signage and labelling sufficient to ensure vehicles are not misfuelled. Further, a stricter national standard (ADR 17) now applies to petrol-filling pipes, requiring that petrol must not spill from the pipe if it is dispensed at 45 litres a minute (as defined by a previous ADR standard). The proposed Regulation therefore removes petrol dispensing rate specifications currently in clause 22.

Excessive air impurities – exhaust and evaporative emissions: spark-ignition (petrol) vehicles (current Regulation clauses 7 and 8 and Schedule 1)

As well as defining excessive air impurities in terms of visible emissions, the current Regulation also defines them in terms of evaporative and exhaust emission standards for certain spark-ignition vehicles. These provisions mirror the product durability requirements of the Commonwealth Government Australian Design Rules (ADRs) for motor vehicle exhaust and evaporative emission standards, which require that vehicles comply with set emission limits for five years, or 80 000 kilometres.

Enforcement programs that target individual vehicle performance and that have the potential to penalise and impose costs on vehicle owners are not considered a fair or appropriate approach for ensuring that vehicles comply with ADR durability requirements. Vehicle manufacturers, rather than vehicle owners, are best placed to ensure the durability of their products – in this case, that the vehicles they produce and/or market in Australia continue to meet specific emission limits for five years or 80 000 kilometres. Requirements on vehicle manufacturers to recall and to undertake emission-testing of vehicles subject to emission durability requirements are in place overseas. A national program which mirrors this overseas practice would seem the appropriate approach to enforcing ADR emission limits.

It is therefore not considered appropriate for the NSW Regulation to replicate the emission durability provisions of the Commonwealth ADRs. Therefore, the current **clauses 7 and 8** are not included in the proposed Regulation.

4 Summary of costs and benefits of the proposed Regulation

4.1 Comparative assessment

Table 4 summarises the estimated qualitative and quantitative costs and benefits of the preferred option.

Table 4. Estimated costs and benefits of the preferred option

Measure	Costs	Benefits
Excessive air impurities – fine increase from \$112 to \$200 for individuals, and \$400 for corporations.	<i>Government</i> Estimated cost of running the Smoky Vehicle Program has a net present value of \$2.7 million over five years.	<i>Amenity</i> Visual amenity benefits of reduced emissions over vehicle lifetimes are estimated at a net present value of \$15.2 million.
	<i>Industry and motorists</i> The estimated cost of repairing diesel and petrol-powered vehicles gives net present values of \$5.6 million and \$0.4 million, respectively.	<i>Health</i> Total emission reductions benefits are estimated at a net present value of \$60.8 million over five years
Anti-tampering	<i>Government</i> The proposed Regulation would incur minor additional government costs. These would also be administered under the Smoky Vehicle Program, costing a net present value of approximately \$0.05 million.	<i>Health</i> Emission reductions benefits for hydrocarbons, nitrogen oxides and carbon monoxide is estimated at a net present value over five years of \$1.80 million.
	<i>Industry and motorists</i> Total cost to industry and motorists is estimated at a net present value of between zero and approximately \$0.5 million (\$0.5 million has been assumed).	
Vertical exhaust requirements – the introduction of ADR80/01 (Euro 4) emission standards will apply to new models from 2006 and all vehicles from 2007.	<i>Costs to industry</i> If it is assumed that the affected vehicles progressively have vertical exhausts fitted over a five-year period, the net present value of the fit-outs is estimated to amount to \$4.4 million.	<i>Amenity</i> It is not possible to quantify the improvements in visual amenity resulting from the proposed Regulation. However, visual amenity and health benefits for pedestrians, cyclists and motorists would be substantial.
Total	\$13.7 million	\$77.8 million

Therefore, the measures are estimated to provide a net benefit to the community of nearly \$64.1 million.

Basis of benefit estimates

The net benefit of \$64.1 million is a conservative estimate, as it does not include:

- indirect health costs not recorded on hospital admissions, such as lost productivity from days off work due to illness

- the effect of illness on parents, spouses or other family members
- the benefits of emission reductions achieved by better vehicle maintenance achieved by the deterrent effect of the Regulation (that is, the analysis only counts benefits of the number of vehicles expected to be caught and corrected).

It is difficult to calculate the full amenity benefits of the Smoky Vehicle Program under the proposed Regulation, owing to the not wholly direct correlation between the visibility of smoke and the level of fine particles. Conservative values have therefore been assumed. Available data on the benefits of vertical exhausts are limited, although the magnitude of amenity benefits is believed to be large and clearly desired by the community.

Appendix 1: National Ambient Air Quality Standards

Table A1.1. Standards and goals for pollutants covered by the National Environment Protection Measure for Ambient Air Quality

Pollutant	Averaging period	Maximum concentration	Goal within 10 years (1998–2008) (maximum allowable exceedences)
Carbon monoxide	8 hours	9.0 ppm	1 day a year
Nitrogen dioxide	1 hour	0.12 ppm	1 day a year
	1 year	0.03 ppm	None
Photochemical oxidant (as ozone)	1 hour	0.10 ppm	1 day a year
	4 hours	0.08 ppm	1 day a year
Sulfur dioxide	1 hour	0.20 ppm	1 day a year
	1 day	0.08 ppm	1 day a year
	1 year	0.02 ppm	None
Lead	1 year	0.05 µg/m ³	None
Particles as PM ₁₀	1 day	50 µg/m ³	5 days a year

Source: NEPC 1998

Appendix 2: New Australian Design Rules for vehicle emissions (introduced in December 1999)

Smoke emission control for diesel vehicles

ADR30/01 – smoke emission control for diesel vehicles – applies to all passenger- and goods-carrying vehicles that operate on diesel fuel. It applies to new models from 1 January 2002 and all vehicles from 2003.

Emission control for light vehicles (less than 3.5 tonnes)

ADR79/00 implements the *EURO 2* exhaust and evaporative emissions standards for all passenger- and goods-carrying vehicles with a gross vehicle mass less than or equal to 3.5 tonnes. For diesel vehicles, it applies to new models from 1 January 2002 and to all vehicles from 2003. For petrol, liquefied petroleum gas or natural gas, it applies to new models from 2003 and to all vehicles from 2004.

ADR79/01 implements the *EURO 3* and *EURO 4* exhaust and evaporative emissions standards for all passenger- and goods-carrying vehicles with a gross vehicle mass less than or equal to 3.5 tonnes. For diesel vehicles the rule will apply to new models from 1 January 2006 and to all vehicles from 2007. For petrol, liquefied petroleum gas or natural gas, it applies to new models from 2005 and to all vehicles from 2006.

Emission control for heavy vehicles (greater than 3.5 tonnes)

ADR 80/00 implements *EURO 3* exhaust emission standards for passenger- and goods-carrying vehicles with a gross vehicle mass greater than 3.5 tonnes. For diesel, liquefied petroleum gas and natural gas the rule will apply for new vehicles from 2002 and all vehicles from 2003. The *US 1996* standards are accepted as an alternative. For petrol vehicles, the rule will apply the *US 1996* standards to new models from 2003 and to all vehicles from 2004.

ADR 80/01 implements *EURO 4* exhaust emissions standards for passenger- and goods-carrying vehicles with a gross vehicle mass greater than 3.5 tonnes. For diesel, liquefied petroleum gas and natural gas the rule will apply to new models from 2006 and to all new vehicles from 2007. The *US 2004* standards are accepted as an alternative. For petrol vehicles the rule will apply the *US 1998* standards to new models from 2005 and to all vehicles from 2006.

Appendix 3: Tables of environmental standards for petrol and diesel (set as determinations under the Commonwealth Fuel Quality Standards Act 2000)

Table A3.1. Fuel quality standards: petrol

Parameter	National standard	Grade	Date of effect
Sulfur	500 ppm (max)	ULP/LRP	1 Jan 2002
	150 ppm (max)	PULP	
	150 ppm (max)	All grades	1 Jan 2005
Research octane number (RON)	91 RON (min)	ULP	1 Jan 2002
	95 RON (min)	PULP	
	96 RON (min)	LRP	
Distillation	FBP 210°C (max)	All grades	1 Jan 2005
Olefins	18% pool average over 6 months with a cap of 20% 18% max by vol	All grades	1 Jan 2004
		All grades	1 Jan 2005
Aromatics	45% pool average over 6 months with a cap of 48% 42% pool average over 6 months with a cap of 45%	All grades	1 Jan 2002
			1 Jan 2005
Benzene	1% max by vol	All grades	1 Jan 2006
Lead	0.005g/L (max)	All grades	1 Jan 2002
Oxygen content	2.7% v/v (max)	All grades (no ethanol)	1 Jan 2002
Phosphorus	0.0013 g/L (max)	ULP, PULP	1 Jan 2002
Ethanol	Standard (limit) to be set within 12 months		
MTBE (methyl tertiary-butyl ether)	1% by volume (max)	All grades	1 Jan 2004
DIPE (di-isopropyl ether)	1% by volume (max)	All grades	1 Jan 2002
ETBE (ethyl tertiary-butyl ether)	1% by volume (max)	All grades	1 Jan 2002
TAME (tertiary amyl methyl ether)	1% by volume (max)	All grades	1 Jan 2002
ETAE (ethyl tertiary amyl ether)	1% by volume (max)	All grades	1 Jan 2002
TBA (tertiary butyl alcohol)	0.5% by volume (max)	All grades	1 Jan 2002

Notes: ppm parts per million
 ULP unleaded petrol
 LRP lead replacement petrol
 PULP premium unleaded petrol
 FBP final boiling point
 g/L grams per litre
 % v/v percentage volume per volume

Table A3.2. Fuel quality standards: diesel

Parameter	Proposed standard	Date of effect
Sulfur	500 ppm 50 ppm	31 Dec 2002 1 Jan 2006
Cetane index	46 (min) index	1 Jan 2002
Density	820 to 860 kg/m ³ 820 to 850 kg/m ³	1 Jan 2002 1 Jan 2006
Distillation T95	370°C (max) 360°C (max)	1 Jan 2002 1 Jan 2006
Polyaromatic hydrocarbons (PAHs)	11% m/m (max)	1 Jan 2006
Ash and suspended solids	100 ppm (max)	1 Jan 2002
Viscosity	2.0 to 4.5 cs @ 40°C	1 Jan 2002

Notes: ppm parts per million
kg/m³ kilograms per cubic metre
cs centistokes

Appendix 4: Calculation of costs and emissions savings – excessive air impurities

Cost calculations

Government

Officers of the EPA enforce the excessive air impurities, vertical exhaust and anti-tampering provisions of the Regulation as shown below.

Table A4.1. Costs of operating Smoky Vehicle Program

Government item ^a	Yearly cost	Net present value over five years
EPA staff salaries and On-costs ⁴	\$604,000	\$2.62 m
Motor vehicle use	\$15,500	\$67,000
Miscellaneous (e.g. supply of infringement books to councils and RTA)	\$5,000	\$22,000
Total	\$624,500	\$2.7 million

^a This does not include costs incurred by other agencies, which are not readily identifiable.

Government costs in relation to administering penalty notices and defective vehicle notices would remain the same as under the current Regulation.

Industry and motorists

The average cost of repairing a smoky vehicle has been estimated at \$940⁵ for diesel vehicles (either tuning, filter replacements, new injectors or reconditioned engines) and \$374 for petrol engine vehicles (either re-tuning, servicing, oil changes or reconditioned engines)⁶.

Using these estimates, the annual cost of repairing 1400 diesel vehicles and 250 petrol vehicles is estimated to be \$1.3 million and \$0.09 million, giving a net present value of \$5.6 million and \$0.4 million, respectively.

⁴ Includes other costs to the EPA such as prosecutions and the administration of the EPA website.

⁵ Average diesel vehicle repair costs have been taken from the *In-Service Emissions Testing-Pilot Study (Draft), Fault Identification and Effect of Maintenance*, National Environment Protection Council, April 2001.

⁶ Average vehicle repair costs have been taken from the *Proposed Clean Air (Motor Vehicles and Motor Vehicle Fuels) Regulation Regulatory Impact Statement 1997*, and CPI- adjusted to 2002 dollars.

Benefit calculations

Amenity benefit

A study of the monetary value of loss of visual amenity from air particulates values the benefits of fine particulate discharge reductions at approximately \$7250⁷ per tonne (Joynt 1988). This figure is calculated on the basis of willingness to pay for a 1% change in annual average visual range, ranging from A\$1.80 to A\$2.40 per household (USA Department of Energy and Minerals 1993).

Average lifespan of vehicle fleet – 10.4 years (Bureau of Transport and Regional Economics 2002)

Average fleet utilisation – 15 500 Vkt a year (Bureau of Transport and Regional Economics 2002)

Of all vehicles issued with penalty Notice fines under the Smoky Vehicle Program in 2001, it is assumed 50% (1150) would be repaired. Of all vehicles issued with defective vehicle Notices under the Smoky Vehicle program, it is assumed that 100% (500) are repaired. Although it is possible for the same vehicle to receive both a defective vehicle Notice and a penalty Notice, it is estimated that a total of 1650 vehicles are repaired each year under the proposed Regulation.⁸

The proportion of petrol as against diesel vehicles observed in the Smoky Vehicle Program is approximately 10% to 15% (MVEU 2002). Accordingly, the calculation of amenity benefits is based on estimated particle emissions abated under the proposed regulation for 1400 diesel vehicles.

With the above assumptions, emissions savings from the Smoky Vehicle Program have been calculated using the following steps:

Average distance travelled per vehicle lifetime:	10.4 years × 15 500 km = 161 200 km per vehicle lifetime
Estimated average emissions saving per vehicle travelled (g/km):	2.13 g per diesel vehicle (particulates) (see Table A4.4)
Emissions abatement under the proposed Regulation per vehicle lifetime:	0.34 tonnes per diesel vehicle lifetime
Estimated loss of visual amenity from air particulates:	\$7250 per tonne
Estimated annual amenity benefits for 1400 diesel vehicles over vehicle lifetime:	\$ 3.5 million
Estimated amenity benefits for 1400 diesel vehicles each year per vehicle lifetime over five years (net present value):	\$ 15.2 million

⁷ The average vehicle repair cost figures have been CPI-adjusted to apply to 2002 dollars (ABS CPI Australia, 6401.0, 2002).

⁸ Defective vehicle notices require the owners of the vehicles concerned to undertake the necessary mechanical repairs or else have their registration cancelled, and do not carry any monetary penalty or fine. The number of vehicles fined under the Smoky Vehicle Program significantly exceeds the number of vehicles issued with defective notices, as the administration of fines is simpler and more efficient than the enforcement of vehicle inspections.

Health benefits

Table A4.3 sets out the constituent levels of excessive air pollutants in petrol-powered vehicles.

Table A4.3. Petrol vehicle emission factors (g/km) for 2002

Air pollutant	Average vehicle (g/km)	Defective petrol vehicle (g/km)	Emissions saved under proposed Regulation (g/km)
VOC	1.7	3.4	1.7
NO _x	1.5	3.0	1.5
CO	14.8	29.6	14.8
Total (g/km)			18

NSW EPA 2002, unpublished

Table A4.4 sets out the constituent levels of excessive air pollutants in diesel-powered vehicles.

Table A4.4. Diesel vehicle emission factors (g/km) for 2002

Air pollutant	Average vehicle (g/km)	Grossly polluting vehicle (g/km)	Emissions saved under proposed Regulation (g/km)
PM10	0.43	2.56	2.13

NSW EPA 2002, unpublished

It is estimated that 50% of grossly polluting vehicles would have particulate emissions six times the average (*In-service Emissions Testing – Pilot Study, Fault Identification and Effect of Maintenance*, paper, National Environment Protection Council, April 2001.)

The Diesel NEPM Project 2.2 identified that, of the vehicles identified as smoky vehicles by ‘on road’ observation, only between 24% and 50% of these vehicles also failed the laboratory particle test. This is because the laboratory test measures only the mass of particles emitted and does not necessarily account for how visible the exhaust may be to the naked eye (*Impact Statement for the Draft National Environment Protection (Diesel Vehicle Emissions) Measure*, Public Consultation Paper, February, National Environment Protection Council, Adelaide, 2001.)

The estimated health benefits of the main air pollutants associated with motor vehicles are as follows:⁹

- hydrocarbons \$1601 per tonne
- oxides of nitrogen \$1540 per tonne
- carbon monoxide \$13 per tonne
- particulates \$29,000 per tonne.

As stated previously, it is estimated that 1400 diesel-powered vehicles would be repaired each year under the proposed Regulation. The health benefits achieved by these repairs are calculated in Table A4.5.

⁹ The EPA provided data on health costs of major motor vehicle air pollutants. Original health costs were derived from 1999 EPA data, but figures for this case have been CPI-adjusted to 2002.

Table A4.5. Health benefits of reducing air pollutants under excessive air impurities (smoky vehicles) provisions in the proposed Regulation: diesel vehicles

Air pollutant	Number of tonnes abated (per year)	Total annual avoided health costs (\$m)	Net present value of health costs avoided under proposed legislation (\$m)
PM10	476	\$13.8	\$59.9

It is estimated that 250 petrol-powered vehicles would be repaired each year under the proposed Regulation. Health benefits achieved by the repair of these vehicles are calculated in Table A4.6.

Average distance travelled per vehicle lifetime:	10.4 years × 15 500 km = 161 200 km per vehicle lifetime
Estimated average emissions saving per vehicle travelled (g/km):	60.5 t (Oxides of Nitrogen) 68.5 t (Hydrocarbons) 594 t (Carbon monoxide)

Table A4.6. Health benefits of reducing air pollutants under excessive air impurities (smoky vehicles) provisions in the proposed Regulation: petrol vehicles

Air pollutant	Number of tonnes abated (per year)	Total annual avoided health costs (\$m)	Net present value of health costs avoided under proposed legislation (\$m)
HC	68.5	1601	\$0.48
NO _x	60.5	1540	\$0.40
CO	594	13	\$0.03
Total			\$0.91

From the above calculations, total health benefits are estimated at \$60.81 million, excluding other benefits that are less easily to quantify, such as quality of life and impacts on relatives and carers of affected individuals. This is a conservative estimate, as it could be expected that if there were no enforcement program many additional vehicles would be less well maintained. There would be no additional economic costs under the proposed Regulation compared with the current situation. Although motorists owning or operating vehicles that emit excessive air impurities would face higher fines, these costs represent transfers and are consistent with the OECD polluter-pays principle.

Appendix 5: Calculation of costs and emissions savings under the anti-tampering provisions in the proposed Regulation

Cost calculations

The assumptions used in Appendix 4 to calculate smoky vehicle costs and benefits also apply to the anti-tampering provisions.

Government costs

Officers of the Smoky Vehicle Enforcement Unit also administer the anti-tampering provisions of the Regulation and can be represented as a proportion of the Unit's total cost of operation (as indicated under the Smoky Vehicle Program cost calculation)

Cost to industry and motorists

Average repair costs for vehicles subject to tampering	=	\$220	(1)
<u>Number of vehicles repaired annually</u>	=	<u>500</u>	<u>(2)</u>
Total annual cost to industry and motorists		\$110,000	
Net present value over five years		\$478,000	

Notes:

- 1 The average repair cost of vehicles subject to tampering, \$220, was estimated in the 1997 RIS and has been CPI adjusted.
- 2 It is estimated that 500 vehicles each year would be repaired each year under the anti-tampering provisions in the proposed Regulation (MVEU estimate 2002).

Benefits calculations

Health benefit

Health benefit calculations should be based on the following:

- 98% of vehicles detected as being tampered with are petrol-fuelled (MVEU estimate 2002). As the proportion of diesel vehicles detected by the anti-tampering provisions in the proposed Regulation is very small, the calculation in Table A5.1 assumes that all vehicles are petrol-fuelled.

Proposed changes relating to anti-tampering provisions under the proposed Regulation would be absorbed within the existing operations of the MVEU at an estimated cost of \$13,000 a year, with a net present value of approximately \$57,000. Annual health benefits from emission reductions of the main air pollutants associated with motor vehicles are estimated to be \$0.42 million a year, with a total net present value of \$1.8 million over five years. Accordingly, the proposed anti-tampering provision would have a net (economic and health) benefit for society.

Table A5.1 Health benefits of reducing air pollutants under the anti-tampering provisions of the proposed Regulation

Average distance travelled per vehicle lifetime	10.4 years x 15 500km = 161 200 km per vehicle lifetime
Number of vehicles caught under anti-tampering provisions each year ¹	500
Emission savings for repair of defective vehicles (g/km)*	1.7g (hydrocarbons) 1.5g (nitrogen oxides) 14.8g (carbon monoxide)
Estimated average emissions saving over lifetime of 500 vehicles	139 t (hydrocarbons) 118 t (nitrogen oxides) 1193 t (carbon monoxide)
Total annual avoided health costs (\$000) (HC = \$1601/t, NO _x = \$1540/t and CO = \$13/t)	\$223 (hydrocarbons) \$182 (nitrogen oxides) \$16 (carbon monoxide)
Total value of emissions (health benefits) for 500 petrol vehicles each year per vehicle lifetime	\$0.42 million
Emissions health benefits for 500 petrol vehicles each year per vehicle lifetime over five years (net present value)	\$1.8 million

¹ Emission rates for petrol vehicles (NSW EPA 2002, Atmospheric Science Section, unpublished)

References and further reading

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Legislation

Commonwealth Fuel Quality Standards Act 2000; Fuel Quality Standards Act 2000 Explanatory Memorandum; Fuel Quality Standards Regulations 2001; Fuel Standard (Diesel) Determination 2001; Fuel Standard (Petrol) Determination 2001; available at <http://frli.law.gov.au/cgi-bin/FRLI.cgi> or from Government Info Shop (located in all capital cities and other major centres throughout Australia).

Protection of the Environment Operations (Clean Air—Motor Vehicles and Motor Vehicle Fuels) Regulation 2002

under the

Protection of the Environment Operations Act 1997

Explanatory note

This Regulation replaces the *Clean Air (Motor Vehicles and Motor Vehicle Fuels) Regulation 1997* which is repealed on 1 September 2002 under section 10 (2) of the *Subordinate Legislation Act 1989*.

This Regulation:

- (a) specifies what is to be taken to be the emission of excessive air impurities from a motor vehicle for the purposes of the *Protection of the Environment Operations Act 1997*, and
- (b) makes the owner of a motor vehicle guilty of an offence if the motor vehicle emits excessive air impurities while being used, and
- (c) prescribes certain devices as anti-pollution devices for the purposes of the *Protection of the Environment Operations Act 1997*, and
- (d) requires certain motor vehicles to be fitted with specified anti-pollution devices, and
- (e) requires certain motor vehicles to be maintained in a specified manner, and
- (f) makes the owner of a motor vehicle guilty of an offence if the motor vehicle is used without having fitted any required anti-pollution device, and
- (g) makes the owner of a motor vehicle guilty of an offence if the motor vehicle is used and has not been serviced, maintained or adjusted as required, and

Protection of the Environment Operations (Clean Air - Motor Vehicles and Motor Vehicle Fuels)
Regulation 2002

Explanatory note

- (h) makes the owner of a motor vehicle guilty of an offence if the motor vehicle is used and any anti-pollution device fitted to it has been removed, or adjusted so as to cause excessive air impurities to be emitted, and
- (i) prescribes requirements in relation to the transfer of petrol into a motor vehicle's fuel tank, and
- (j) prescribes the form of labels that may be affixed to defective motor vehicles by authorised officers under the *Protection of the Environment Operations Act 1997*, and
- (k) amends the *Protection of the Environment Operations (Penalty Notices) Regulation 1999* to enable penalty notices to be issued for the offences referred to above.

Reference is made in the Regulation to an *Australian Design Rule*, being a national standard under the *Motor Vehicle Standards Act 1989* of the Commonwealth, and the *Approved Methods Publication*, being the document entitled "Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales" prepared by the EPA and published in the Gazette.

This Regulation is made under the *Protection of the Environment Operations Act 1997*, including section 323 (the general regulation-making power), various other sections referred to in the Regulation and clauses 4, 6A, 6B and 15 of Schedule 2 (as amended by the *Environment Protection Legislation Amendment Act 2002*).

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Protection of the Environment Operations (Clean Air—Motor Vehicles and Motor Vehicle Fuels) Regulation 2002

Protection of the Environment Operations (Clean Air—Motor Vehicles and Motor Vehicle Fuels) Regulation 2002

Part 1 Preliminary

1 Name of Regulation

This Regulation is the *Protection of the Environment Operations (Clean Air—Motor Vehicles and Motor Vehicle Fuels) Regulation 2002*.

2 Commencement

This Regulation commences on 1 September 2002.

Note. This Regulation replaces the *Clean Air (Motor Vehicles and Motor Vehicle Fuels) Regulation 1997* which is repealed on 1 September 2002 under section 10 (2) of the *Subordinate Legislation Act 1989*.

3 Definitions

In this Regulation:

ADR or **Australian Design Rule** means a national standard under the *Motor Vehicle Standards Act 1989* of the Commonwealth as in force from time to time.

Approved Methods Publication means the document entitled “Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales” prepared by the EPA and published in the Gazette, as in force from time to time.

diesel engine means an engine that is designed to operate on automotive diesel fuel.

goods vehicle means a motor vehicle constructed primarily for the carriage of goods, but does not include a special purpose motor vehicle.

manufacturer’s gross vehicle mass, in relation to a vehicle, means the maximum loaded mass of the vehicle:

- (a) specified by the manufacturer, or
- (b) specified by the Roads and Traffic Authority in circumstances in which:
 - (i) the manufacturer is unknown, or
 - (ii) the manufacturer has failed to specify a maximum loaded mass for the vehicle, or
 - (iii) the manufacturer has specified a maximum loaded mass for the vehicle, but the vehicle has been modified to the extent that the manufacturer's specification is no longer appropriate for the vehicle.

motor bus means a passenger vehicle that seats more than 9 adult persons (including the driver).

motor cycle includes a motor tricycle and a motor cycle combination.

passenger vehicle means a motor vehicle constructed primarily for the carriage of persons, but does not include a motor cycle.

petrol has the same meaning as in section 154 (1) of the Act.

registered, in relation to a motor vehicle, means registered under the *Road Transport (Vehicle Registration) Act 1997*.

spark-ignition engine means an engine that is designed to operate on petrol, liquefied petroleum gas or compressed natural gas, being an engine that has its air-fuel mixture ignited by means of an electrical spark.

special purpose motor vehicle means a fork lift truck or motor vehicle constructed principally for off-road agricultural use or for use in road or building site construction work, and includes:

- (a) a tractor, harvester, header, thresher, swather, baler, cuber, loader, digger, bulldozer, excavator, grader, scraper and roller, and
- (b) a mobile crane the engine of which is used for the purpose of both lifting loads and propelling the vehicle,

but does not include any vehicle constructed on a chassis of a type normally used in the construction of a goods vehicle.

Test Method, together with a number, means a test method of that number prescribed by the Approved Methods Publication.

the Act means the *Protection of the Environment Operations Act 1997*.

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Protection of the Environment Operations (Clean Air—Motor Vehicles and Motor Vehicle Fuels) Regulation 2002

4 Notes

Notes included in this Regulation do not form part of this Regulation.

Part 2 Air impurities

5 Definition of excessive air impurities: section 154

- (1) This clause applies to motor vehicles propelled by a spark-ignition or diesel engine.
- (2) A motor vehicle emits excessive air impurities as referred to in section 154 (2) (a) of the Act if, when in operation, it emits air impurities in excess of such a standard of concentration that air impurities are visible for a continuous period of more than 10 seconds when determined in accordance with Test Method 31.
- (3) A motor vehicle emits excessive air impurities as referred to in section 154 (2) (b) of the Act if, when tested in accordance with Test Method 31, it emits air impurities in excess of an amount per test that results in air impurities being visible for a continuous period of more than 10 seconds.

6 Motor vehicles emitting excessive air impurities

- (1) An owner of a motor vehicle is guilty of an offence if the vehicle emits excessive air impurities while being used.
Maximum penalty: 400 penalty units (for an offence committed by a corporation) and 200 penalty units (in any other case).
- (2) It is a defence to a prosecution for an offence under this clause if the owner proves that the motor vehicle was at the time of the commission of the offence a stolen motor vehicle or a motor vehicle illegally taken or used.
- (3) It is a defence to a prosecution for an offence under this clause if the defendant proves that the motor vehicle:
 - (a) was constructed or has been modified solely for use in motor racing or off-road motor sport, and
 - (b) was not registrable under the *Road Transport (Vehicle Registration) Act 1997*.
- (4) For the purposes of this clause, a motor vehicle ***emits excessive air impurities*** if it emits air impurities in the circumstances described in section 154 (2) of the Act.

Part 3 Anti-pollution devices and use and maintenance of motor vehicles

Division 1 Prescribed anti-pollution devices

7 Prescribed anti-pollution devices: section 154

For the purposes of the definition of *prescribed anti-pollution device* in section 154 (1) of the Act, each of the following devices is prescribed as a device that is designed or intended to minimise air pollution caused by motor vehicles:

- (a) an *evaporative emission control system*, that is, a system of devices and equipment that is designed to trap the evaporative emissions from a motor vehicle's fuel tank and fuel supply system and so restrict their release to the atmosphere,
- (b) a *fuel supply system*, that is, a system of devices and equipment that is designed:
 - (i) to convey fuel to a direct injection engine, or
 - (ii) to convey fuel to an engine's air intake system, to mix the fuel with air and to convey the mixture of fuel and air into the engine,
- (c) an *engine ignition system*, that is, a system of devices and equipment that is designed to ignite the fuel, or the mixture of fuel and air, in a motor vehicle's engine,
- (d) an *engine management system*, that is, a system of devices and equipment that is designed to control the operation of a motor vehicle's fuel supply system and engine ignition system,
- (e) a *smoke-limiting throttle control system*, that is, a system of devices and equipment that is designed to limit the maximum rate at which fuel can go into a diesel-engined motor vehicle and so reduce the amount of smoke emitted by the motor vehicle while it is being accelerated,
- (f) an *exhaust gas recirculation system*, that is, a system of devices and equipment that is designed to convey exhaust gases from a spark ignition engine to the engine's air intake system for the purpose of reducing the amount of oxygen in the mixture of air and fuel going into the engine and so reducing

the amount of oxides of nitrogen emitted by the engine,

- (g) a *catalytic converter system*, that is, a system of devices and equipment that is designed to induce a catalytic reaction between the various exhaust gases that are emitted from a motor vehicle's engine and so reduce the emission of air impurities by the motor vehicle,
- (h) a *complying exhaust pipe*, that is, an exhaust pipe that complies with the requirements of clause 8.

8 Fitting of certain anti-pollution devices to be compulsory: sections 156 and 161 and clause 12

A motor vehicle that is propelled by a diesel engine and that has a manufacturer's gross vehicle mass of more than 4.5 tonnes must be fitted with:

- (a) in the case of a motor vehicle for which, as at the date of its manufacture, an Australian Design Rule prescribed requirements with respect to the exhaust pipe to be fitted to it, a vertical exhaust pipe that complies with those requirements, or
- (b) in any other case, an exhaust pipe:
 - (i) that terminates 150 millimetres or more above the highest part of the vehicle's cab, and
 - (ii) whose exhaust vent is directed upwards (within 30 degrees of the vertical) and away from the nearside of the vehicle.

9 Automatic exemption of certain vehicles from clause 8

- (1) Clause 8 does not apply to:
 - (a) any motor vehicle that is registered outside New South Wales, or
 - (b) any motor vehicle that is sold in New South Wales for delivery outside New South Wales.
- (2) Clause 8 does not apply to the following motor vehicles sold or registered in New South Wales:
 - (a) a motor vehicle that was manufactured before 1 January 1976,
 - (b) a motor vehicle that was ordered from the manufacturer before 1 July 1974,

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- (c) a motor bus that was manufactured before 1 January 1977,
- (d) a special purpose motor vehicle,
- (e) a motor vehicle used exclusively for the control of bush fires,
- (f) a motor vehicle fitted with hydraulically operated elevating work platforms,
- (g) a motor vehicle used exclusively to fuel aircraft,
- (h) a motor vehicle having a diesel engine of a type certified in writing by the EPA as not requiring an exhaust pipe of the kind referred to in clause 8,
- (i) a motor vehicle manufactured before 1 January 2007 of a model certified in writing by the EPA as complying with ADR 80/01,
- (j) a motor vehicle manufactured on or after 1 January 2007 in compliance with ADR 80/01.

10 EPA may exempt rural table-top trucks from clause 8

- (1) On application by the owner of a motor vehicle, the EPA may, by instrument in writing, exempt the vehicle from the operation of clause 8 if satisfied that the vehicle:
 - (a) is a rigid table-top truck, and
 - (b) is used predominantly to transport hay or other flammable farm produce, and
 - (c) is usually garaged on a farm.
- (2) An application for such an exemption must be in the approved form and must be accompanied by a fee of \$50.
- (3) An exemption under this clause may be granted unconditionally or subject to conditions.
- (4) An exemption under this clause applies only while the motor vehicle to which it relates is owned by the person in whose name the exemption was granted.
- (5) A person who, in relation to any application under this clause, wilfully makes any statement or furnishes any information that is false or misleading in a material respect is guilty of an offence.

Maximum penalty: 100 penalty units (for an offence committed by a corporation) and 10 penalty units (in any other case).

- (6) Clause 8 does not apply to a vehicle to which an exemption under this clause relates, but only so long as any conditions to which the exemption is subject are complied with.
- (7) On payment of a fee of \$25, the EPA may issue a replacement instrument of exemption if it is satisfied that the instrument it replaces has been lost or destroyed.

Division 2 Use and maintenance of motor vehicles

11 Maintenance of vehicles: section 159 and clause 13

For the purposes of section 159 of the Act and clause 13, a motor vehicle to which clause 8 applies must be maintained so that the exhaust pipe of the vehicle is free of holes (other than holes necessary for the effective operation of the exhaust system).

12 Use of motor vehicle without prescribed anti-pollution device prohibited

- (1) An owner of a motor vehicle who uses the motor vehicle, or causes or allows it to be used, is guilty of an offence if:
 - (a) this Regulation requires motor vehicles of the class to which it belongs to be fitted with a prescribed anti-pollution device, and
 - (b) the vehicle is not fitted in the prescribed manner with such a device.

Maximum penalty: 400 penalty units (for an offence committed by a corporation) and 200 penalty units (in any other case).

- (2) It is a defence to a prosecution for an offence under this clause if the defendant proves that, at the time the offence was committed:
 - (a) the defendant had reasonable grounds to believe, and did believe, that the motor vehicle was fitted with every prescribed anti-pollution device required to be fitted to the motor vehicle by this Regulation, and
 - (b) the defendant took all reasonable steps to ensure that every such device was maintained in accordance with this Regulation.
- (3) It is a defence to a prosecution for an offence under this clause if the defendant proves that the motor vehicle:
 - (a) was constructed or has been modified solely for use in motor

- racing or off-road motor sport, and
- (b) was not registrable under the *Road Transport (Vehicle Registration) Act 1997*.
- (4) In this clause, *prescribed anti-pollution device* has the same meaning as in section 154 of the Act.

13 Maintenance, service and adjustment of motor vehicles

- (1) An owner of a motor vehicle who uses the motor vehicle, or causes or allows it to be used, is guilty of an offence if:
 - (a) this Regulation requires motor vehicles of the class to which it belongs to be serviced, maintained, or adjusted in a specified manner, and
 - (b) the vehicle has not been serviced, maintained or adjusted in that manner.

Maximum penalty: 400 penalty units (for an offence committed by a corporation) and 200 penalty units (in any other case).

- (2) It is a defence to a prosecution for an offence under this clause if the defendant proves that the defendant took all reasonable steps to ensure that the motor vehicle was serviced, maintained or adjusted as required by this Regulation.

14 Removal or adjustment of anti-pollution devices

- (1) The owner of a motor vehicle who uses the motor vehicle, or causes or allows it to be used, is guilty of an offence if:
 - (a) an anti-pollution device had been fitted to the motor vehicle, and
 - (b) at the time of that use the device had been:
 - (i) removed, disconnected or impaired, or
 - (ii) adjusted or modified and the adjustment or modification results in the emission of excessive air impurities by the motor vehicle.

Maximum penalty: 400 penalty units (for an offence committed by a corporation) and 200 penalty units (in any other case).

- (2) It is a defence to a prosecution for an offence under this clause if the defendant proves:
 - (a) that the removal, disconnection, impairment, adjustment or

modification was done:

- (i) in order to service, repair or replace the anti-pollution device or to improve its efficiency with respect to minimising air pollution, or
 - (ii) in order to facilitate the use of a motor vehicle for motor racing or off-road motor sport (being a motor vehicle that immediately before that removal or other action was not registrable under the *Road Transport (Vehicle Registration) Act 1997*) and that the vehicle is to be used in that condition only in the competition itself, or
- (b) that, at the time the offence was committed:
- (i) the defendant had reasonable grounds to believe, and did believe, that any anti-pollution device that had been fitted to the motor vehicle continued to be fitted to the motor vehicle, and
 - (ii) the defendant took all reasonable steps to ensure that the device was properly maintained.
- (3) For the purposes of this clause, a motor vehicle ***emits excessive air impurities*** if it emits air impurities in the circumstances described in section 154 (2) of the Act.
- (4) In this clause, ***anti-pollution device*** means a prescribed anti-pollution device within the meaning of section 154 of the Act or any other device that is designed to minimise air pollution.

Part 4 Petrol

15 Transfer of petrol into fuel tanks of motor vehicles

- (1) This clause applies to all premises from which petrol is sold to the public.
- (2) The occupier of premises to which this clause applies must not, at those premises:
 - (a) transfer any petrol into a motor vehicle's fuel tank, or
 - (b) cause or allow any petrol to be transferred into a motor vehicle's fuel tank,

except by means of a petrol delivery hose whose nozzle is fitted with an automatic over-fill protection device.

Maximum penalty: 40 penalty units.

- (3) A person must not, at premises to which this clause applies, transfer petrol into the fuel tank of a motor vehicle by means of a petrol delivery hose unless the nozzle of the hose is inserted as far as it will go into the fuel tank's fill-pipe.

Maximum penalty: 8 penalty units.

- (4) In this clause, *automatic over-fill protection device* means a device:
 - (a) that immediately cuts off the flow of petrol into the fuel tank when the tip of the nozzle becomes immersed in petrol, and
 - (b) that is properly installed and efficiently maintained.

Protection of the Environment Operations (Clean Air—Motor Vehicles and Motor Vehicle Fuels) Regulation 2002

Part 5 Miscellaneous

16 Notices to repair motor vehicles: section 161

For the purposes of section 161 (5) and (7) of the Act, the prescribed label is a label in or to the effect of Form 1 in Schedule 1.

17 Savings

- (1) Any act, matter or thing that, immediately before the repeal of the *Clean Air (Motor Vehicles and Motor Vehicle Fuels) Regulation 1997*, had effect under that Regulation continues to have effect under this Regulation.
- (2) Without limiting the operation of subclause (1), any exemption or certificate issued under a provision of the *Clean Air (Motor Vehicles and Motor Vehicle Fuels) Regulation 1997* and in force immediately before the repeal of that Regulation is taken to have been issued under the corresponding provision of this Regulation and is subject to the same terms and conditions on which it was issued.

18 Amendment of Protection of the Environment Operations (Penalty Notices) Regulation 1999

The *Protection of the Environment Operations (Penalty Notices) Regulation 1999* is amended as set out in Schedule 2.

Protection of the Environment Operations (Clean Air—Motor Vehicles and Motor Vehicle Fuels) Regulation 2002

Schedule 1 Forms

(Clause 16)

Form 1

[Front of label]

DEFECTIVE VEHICLE

This vehicle is in a defective condition and must not be used after the date shown on the back of this label unless the repairs, reconnections or readjustments shown on the back of the label have been properly effected and the defective vehicle notice given in relation to this vehicle has been cleared.

You must not use this vehicle or allow it to be used while that notice is in force. PENALTY UP TO \$6,600. However, it is not an offence to drive the vehicle to or from a place of repair or inspection.

This label must not be removed or interfered with except by an authorised officer of the Environment Protection Authority or with the authority of such an officer. PENALTY UP TO \$6,600.

Failure to comply with the defective vehicle notice may result in this vehicle's registration under the *Road Transport (Vehicle Registration) Act 1997* being suspended or cancelled.

[Back of label]

Defect Notice No:

Registration/Chassis/Engine No of vehicle:

Date for completion of repairs, reconnections or readjustments:

The following repairs, reconnections or readjustments must be carried out:

.....
.....
.....
.....

After the above repairs, reconnections or readjustments have been carried out, this vehicle must be inspected by an authorised officer of the Environment Protection Authority in order for this label to be removed. Inspection may be arranged by telephoning the following number between 9 am and 4 pm Monday to Friday:

Issued on:

Signature of authorised officer:

Protection of the Environment Operations (Clean Air—Motor Vehicles and Motor Vehicle Fuels) Regulation 2002

Schedule 2 Amendment of Protection of the Environment Operations (Penalty Notices) Regulation 1999

(Clause 18)

Schedule 1 Penalty notice offences

Omit all the matter relating to the *Clean Air (Motor Vehicles and Motor Vehicle Fuels) Regulation 1997*.

Insert instead:

Protection of the Environment Operations (Clean Air—Motor Vehicles and Motor Vehicle Fuels) Regulation 2002

Column 1	Column 2	Column 3	Column 4
Provision of Regulation	Officer	Penalty for individuals (and corporations where no penalty in Column 4)	Penalty for corporations
Clause 6 (1)	2	\$200	\$400
Clause 12 (1): in relation to a failure to have a vertical exhaust pipe fitted so that the exhaust vent is directed away from the nearside of the vehicle	2	\$200	
Clause 12 (1): in any other case	2	\$300	
Clause 13 (1)	2	\$600	
Clause 14 (1)	2	\$300	

draft

Protection of the Environment Operations (Clean Air—Motor Vehicles and Motor Vehicle Fuels) Regulation 2002

Column 1	Column 2	Column 3	Column 4
Provision of Regulation	Officer	Penalty for individuals (and corporations where no penalty in Column 4)	Penalty for corporations
Clause 15 (2)	2	\$300	
Clause 15 (3)	2	\$300	
