1 INTRODUCTION

The Environment Protection Authority Victoria (‘EPA’) is an independent statutory authority established by the Environment Protection Act 1970 (‘Act’). Its function is to administer the Act and Regulations made under the Act. The Act and its Regulations create a legislative framework to protect the environment through preventing and controlling pollution to air (including noise), water and land.

Key to this framework are the Environment Protection (Vehicle Emissions) Regulations 2003 (‘Regulations’). The Regulations aim to minimise the impact of motor vehicle air emissions, noise and fuel quality on Victorians and the Victorian environment. They do this through:

- specifying vehicle emission and noise standards, and test procedures for in-service vehicles (that is, vehicles in use)
- setting fuel standards for vapour pressure and fuel reporting requirements
- setting exhaust and emission control system construction requirements
- setting emission and noise control maintenance requirements
- prohibiting unlawful modifications to emission and noise control systems
- specifying labelling requirements for petrol pumps and motor vehicles.

The Regulations also set out offences and penalties for failing to comply with the Regulations.

The Regulations are due to sunset (expire) on 29 January 2013. Consistent with Subordinate Legislation Act 1994 requirements, EPA and the Department of Sustainability and Environment are undertaking a review of the Regulations (‘Review’). The objective of the Review is to determine whether the Regulations should be remade and, if so, how they can most effectively regulate motor vehicle emissions, noise and fuel.

The scope of the Review

To understand the scope of the Review, it is important to appreciate some aspects of the regulatory landscape in which the Regulations operate.
Australian Design Rules (ADR)s
ADR}s govern the design and construction of new vehicles, and include national emissions and noise standards for new vehicles.

National Heavy Vehicle Regulator and National Heavy Vehicle Law
The regulator and law should be in place by January 2013. It will regulate all heavy vehicles (over 4.5 tonnes), including regulation of air emissions and noise.

Environment Protection (Vehicle Emissions) Regulations
Objectives: To minimise the impact of motor vehicle air emissions, noise and fuel quality on Victorians and the Victorian environment.

Australian Vehicle Standards Rules (AVSR}s)
Objective: To ensure the ADR}s continue to be applied ‘in service’.
The national ‘model’ AVSR}s are available for implementation by each state and territory. The EP (Vehicles Emissions) Regulations adopt relevant AVSR}s into state legislation.

National Environment Protection (Diesel Vehicle Emissions) Measure
Objective: To ‘reduce exhaust emissions from diesel vehicles, by facilitating compliance with in-service emissions standards for diesel vehicles’. EPA Victoria is responsible for implementing the diesel NEPM in Victoria. Part of the implementation of the diesel NEPM is enacted through the EP (Vehicle Emissions) Regulations.

Fuel Quality Standards (FOS) Act
The Department of Sustainability, Environment, Water, Population and Communities manages the FOS Act, which allows fuel standards to be made. Standards exist for petrol, diesel, LPG and biodiesel. The Act defines offences for persons supplying or altering fuel that does not comply with the standard.

Key
- Commonwealth instrument

Relationship between the Regulations and Commonwealth instruments
The discussion paper

The release of this discussion paper is a key first step in the Review and its main objectives are to:

- outline how the current Regulations regulate motor vehicle emissions, noise and fuel
- seek input about the operation of the Regulations and how they may be improved
- seek feedback on the importance of regulating vehicle emissions, noise and fuel
- highlight potential areas of change within the Regulations and seek feedback on these potential changes (note: the potential changes are included to stimulate discussion and do not represent the Government's position on reforms)
- seek further options in tackling issues associated with motor vehicle air emissions, noise and fuel.

Details on how to have your say on the Review are outlined in section 5 of this discussion paper (‘How to have your say’). A number of questions are provided throughout the paper (in text boxes) to prompt thoughts on the topics in scope of the regulations. These questions are a guide and do not have to be answered in submissions, nor do the submissions need to be limited to these questions.

The closing date for submissions is Monday, 12 December 2011.

2 STATE OF THE ENVIRONMENT

Background

Motor vehicles are an important part of modern life. They provide a high degree of personal mobility and are critical to the movement of goods. However, these benefits come at a cost. The motor vehicle is a significant source of emissions of air pollution (including greenhouse gases) and noise. Pollution and noise are costs of using motor vehicles that the user does not pay for. This means society bears the cost of this pollution and noise, rather than the vehicle owner or operator. This situation is considered a ‘market failure’, whereby the market does not deliver the best outcomes for society.

Emissions from in-service motor vehicles significantly contribute to regional and local air pollution. This can contribute to poor health and loss of amenity (for example, odour and poor visibility). Noisy vehicles can cause annoyance, sleep disturbance and other health impacts. These issues are of particular concern, given motor vehicle use in Victoria is increasing as population and economic activity increases. This concern is supported by recent data collected by the Victorian Government through its annual Green Light Report. According to the 2010 Green Light Report, noise pollution (from traffic) and air pollution (from motor vehicles) were the key recognised local pollution sources for Victorians.

Air pollution

Current state of air quality in Victoria

While Victoria’s air quality is generally good, motor vehicles still continue to be a significant source of emissions into the air. Melbourne’s day-to-day air pollution continues to be largely caused by motor vehicle use. This is consistent with concerns expressed by communities about the impact of motor vehicle emissions on their health, particularly among people living near busy roads with high volumes of diesel vehicle traffic. Other sources of air pollution, such as major fires and dust storms, tend to affect large areas of Victoria over shorter time scales (days to weeks) in summer. In winter, domestic heaters (for example, wood heaters) make a significant contribution to air pollution.

Common air pollutants are those that have many sources and are widely spread in the air environment. Health impacts associated with these air pollutants include increased hospital admissions, respiratory and cardiovascular illnesses and mortality (see the Appendix). In relation to common air pollutants in the Port Phillip region (greater metropolitan Melbourne, including Geelong) motor vehicles contribute:

- 72 per cent of carbon monoxide (CO) emissions
- 71 per cent of nitrogen oxides (NOx) emissions
- 16 per cent of particles less than 10 microns in size (PM10)
- 22 per cent of particles less than 2.5 microns in size (PM2.5)
- 28 per cent volatile organic compounds (VOC) emissions.

Air toxics are compounds that are commonly found at low levels in the atmosphere that are of concern

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2 The Green Light report has been produced by the Victorian Government every year since 2008 and provides insight into the environmental attitudes, behaviours and household features of Victorians. The 2010 Green Light Report collected data from 5448 Victorians (via surveys and interviews).
3 ‘Motor vehicles’ includes passenger vehicles, freight-carrying road vehicles (light and heavy), buses and motorcycles.
4 Sourced from EPA’s 2006 Air Emissions Inventory. The latest air emissions inventory prepared by EPA for Victoria and the Port Phillip Control Region is for 2006. The inventory is updated every five years to align with the census as this data is used to provide activity data for many of the emission sources. The next full update will be 2011.
5 From EPA’s 2006 Air Emissions Inventory.
because of their toxicity. In the Port Philip region motor vehicles contribute:

- 65 per cent of benzene emissions
- 50 per cent of toluene emissions
- 48 per cent of xylene emissions
- 43 per cent of formaldehyde emissions.

**Future emission trends**

Over time, the number of vehicles and vehicle kilometres travelled is projected to increase. However, it is likely that by 2030 there will be a reduction in CO, NOx, VOCs, PM2.5 and PM10 emissions from the motor vehicle fleet, notwithstanding a likely increase in diesel passenger vehicle use. This will happen through the progressive replacement of older vehicles with newer vehicles meeting tighter emission standards, and through the greater use of intrinsically low-emission vehicles (electric vehicles and hybrids). This assumes that the age profile of the vehicle fleet remains stable and that emission controls from the fleet do not deteriorate dramatically over time, and also that there are no widespread non-compliance issues (for example through effective Regulations). Thus, while motor vehicle emissions are expected to decrease over time, health research may continue to emerge that links emissions to public health issues (continuing the need to limit the impacts of these emissions).

**Noise**

Road traffic noise and noise from excessively noisy motor vehicles can lead to annoyance and sleep disturbance. The 2010 Green Light Report indicates that one of the key locally recognised pollution issues is noise (specifically from traffic). Noise from traffic was found to be a greater issue in metropolitan than regional areas.

Noisy driving (35 per cent) and dangerous driving (35 per cent) are the two most commonly reported types of social disorder in Victoria. This is ahead of other social disorder issues such as public drunkenness, offensive language and noisy neighbours. Fifty-seven per cent of respondents said noisy driving was a moderate to large issue. (ABS Crime Victimisation 2009/2010).

A survey of 1213 Victorians (a statistically significant sample) by EPA in 2006 indicated that 20 per cent of Victorians had been ‘moderately’ or ‘extremely’ annoyed by road traffic noise in the previous 12 months. This equates to approximately 1 million Victorians. Respondents who were slightly to extremely annoyed by road traffic noise were asked if there was a particular type of road traffic noise that annoyed them (in their home) over the preceding 12 months.

The following table provides the responses to this question and the percentage of times the noise source was identified as annoying (multiple answers were allowed).

**Table 1: Road traffic noise sources identified from the Community Response to Noise Survey**

<table>
<thead>
<tr>
<th>Noise source</th>
<th>Percentage of responses that identified the noise source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trucks</td>
<td>14.3</td>
</tr>
<tr>
<td>Hotted-up/modified cars</td>
<td>11.2</td>
</tr>
<tr>
<td>Private cars</td>
<td>8.8</td>
</tr>
<tr>
<td>Motor bikes</td>
<td>6.7</td>
</tr>
<tr>
<td>Truck engine brakes or air brakes</td>
<td>4.3</td>
</tr>
<tr>
<td>Car stereos/music from vehicles</td>
<td>3.3</td>
</tr>
<tr>
<td>Garbage trucks</td>
<td>2.8</td>
</tr>
<tr>
<td>Buses</td>
<td>1.7</td>
</tr>
<tr>
<td>Delivery vehicles/vans</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Respondents found noise from modified cars most annoying at night, and noise from motorbikes most annoying during the evening.

**Discussion questions**

**Q1:** Do you think air and/or noise pollution from motor vehicles is a significant environmental issue for Victoria? Please explain why/why not.

**Q2:** How often do you encounter noise disturbance from motor vehicles, and what are the impacts on you (e.g. sleep disturbances)? What type of noise disturbance do you encounter (e.g. fast acceleration, braking, noisy stereos)?

**Q3:** How often do you encounter air pollution from motor vehicles, and what are the impacts on you?
3 REGULATING MOTOR VEHICLE NOISE AND AIR POLLUTION

Problem definition
Lack of vehicle maintenance and/or the modification of in-service motor vehicles contribute to air pollution and noise, which can result in health impacts and/or amenity loss.

Background
The ADRs set national vehicle emission and noise standards for new vehicles and have been effective in reducing emissions from the vehicle fleet. However, the environmental benefits of increasingly stringent standards depend on the rate of fleet turnover. Victoria has a low vehicle fleet turnover rate of 10.4 years (the national average is 10.0 years). This means that there is a significant time lag between the implementation of new standards and the environmental benefits delivered from those new standards (for example, improved air quality). Moreover, the environmental benefits of improved standards diminish over time as vehicles deteriorate. Therefore, it is important that vehicles are well maintained (and not tampered with) to operate in accordance with the standards to which they were built.

The importance of vehicle maintenance was demonstrated in the Department of Sustainability, Environment, Water, Population and Communities’ (formally the Department of the Environment, Water, Heritage and the Arts) second national in-service emissions study (NISE2). NISE2 tested approximately 350 light-duty petrol vehicles manufactured from 1994 to 2007 over a 12-month period. Of the vehicles identified as gross polluting vehicles (outliers, rather than high emitters marginally outside their group peers, i.e. vehicles of the same make and model), 37 per cent were perceived to suffer from lack of, or poor, maintenance. This finding is in line with the first national in-service emissions study (NISE1), undertaken by the Federal Office of Roads Safety between 1994 and 1996, which found that substantial reductions in pollution levels can be achieved through good maintenance practice. NISE1 found that tuning and maintaining vehicles delivered fuel consumption benefits, and that these benefits were greatest for the highest polluters.

Apart from poor maintenance practices, vehicle air and noise pollution arise from illegal vehicle tampering. Vehicle tampering may involve modifying a vehicle’s engine, exhaust or fuel systems, or interfering with a vehicle’s emission control devices or noise-reducing equipment.

The current Regulations address vehicle air and noise pollution by setting emission and noise standards, and setting offences and penalties for:

- using and owning vehicles that do not comply with the Regulations
- failing to keep, maintain and repair a vehicle’s emission and noise control system
- tampering with a vehicle so that it no longer complies with the Regulations.

Both vehicle owners and users may be held liable for not complying with the Regulations.

EPA runs a number of programs to assist in implementing the objectives of the Regulations. The following section outlines and seeks comments on these.

Current EPA measures addressing motor vehicle emissions and noise

Smoky vehicle programs

Public Smoky Vehicle Program
The Regulations set standards relating to visible emissions. They specify that a vehicle must not continuously emit visible smoke for 10 seconds or more (Regulation 7). The public plays a key role in ensuring adherence to this standard through EPA’s Smoky Vehicle Program. This program allows the public to report smoky vehicles to EPA online or over the phone (on a 24-hour line). Reporters’ details remain confidential.

If the vehicle description matches VicRoads registration details, EPA sends a letter to the owner advising them their vehicle has been reported as emitting excess smoke and may need repairs. The letter also provides that, if the vehicle is observed emitting smoke by an EPA or police officer, the owner may be fined. From 2004 to 2010, 55,000 public smoky vehicle reports have been actioned by EPA; on average, EPA receives 650 public smoky vehicle reports per month.

There is currently no requirement for the vehicle owner to provide evidence to EPA that the vehicle has been repaired.

Official Smoky Vehicle Program
EPA also runs a parallel Official Smoky Vehicle Program. This system is used by Victoria Police, VicRoads and EPA officers to report smoky vehicles. Under this system, vehicle owners are sent an official caution advising them that their vehicle should be repaired and that a fine may be issued if EPA receives another official smoky vehicle report on their vehicle.
Repeat offenders may also be subject to warnings requiring evidence of compliance, fines, inspection by EPA officers or court prosecution. From 2004 to 2010, over 8000 official cautions were issued.

A different approach is applied to official smoky vehicle reports relating to diesel-engine vehicles that have a gross vehicle mass over 1.5 tonnes and which are registered in the greater metropolitan Melbourne region. Owners of these vehicles must present their vehicle for testing at the diesel test facility in Port Melbourne. The vehicle is tested against nitrogen oxide and particle emission standards set in the Regulations. Where the vehicle meets the standards, a certificate of compliance (CoC) is issued. If the standards are not met, the vehicle’s registration may be suspended and a fine issued. Since the program commenced in 2009, 29 vehicle owners have been required (by notice) to present their vehicle for testing at the diesel test facility.

Discussion questions

Q4: What are your views on the Public Smoky Vehicles Program? Should evidence be required of vehicle repairs by the owner of the vehicle identified through the Public Smoky Vehicle Program?

Q5: What has been your experience as a reporter or from receiving a letter under the Smoky Vehicle Program including:

a. Satisfaction with the reporting process?

b. Experience relating to the time taken and process for you to repair your vehicle?

c. Satisfaction with EPA’s compliance and enforcement approach (eg punitive and remedy measures)?

d. Any other feedback on the programs?

Noisy vehicle program

The Regulations set in-service vehicle noise standards, and prohibit interfering with noise-reducing equipment and owning or using vehicles fitted with a temporary defeat device. Noisy vehicles are currently identified by:

- Victoria Police, VicRoads and EPA officers – if they observe a vehicle they believe is excessively noisy, they will refer that vehicle to EPA’s vehicle compliance team for enforcement

- members of the public who report a noisy vehicle to their local police, who may then refer their observation to EPA for enforcement.

Owners of vehicles assessed as noisy are required by a legal notice to have their vehicle tested against noise limits set out in the Regulations. EPA has a network of approved noise testers across the state that test vehicles on behalf of EPA. Owners must provide EPA with a CoC issued by an approved noise tester, certifying that the vehicle does not exceed the Regulations’ noise limits. There are legal ramifications, including fines and suspension of vehicle registration, for failing to comply with the notice. Between 2004 and 2010, over 31,000 notices were issued; EPA issues approximately 4500 notices each year.

Vehicle tampering program

Vehicles that have been tampered with contribute to noise and air pollution. These vehicles are reported to EPA following roadside inspections by Victoria Police or VicRoads.

Owners of tampered vehicles are issued with a legal notice requiring that the vehicle be taken to an approved vehicle emissions systems tester (AVEST). AVESTs inspect the vehicle to determine what has been illegally tampered with, and owners are required to return the vehicle to its original ‘as manufactured’ configuration before a CoC can be issued. The owner must then submit the CoC to EPA. Between 2004 and 2010, approximately 4500 legal notices relating to tampering were issued.

For repeat offenders or complex issues EPA undertakes inspections at the EPA Vehicle Inspection Station at Macleod.

Roadside operations

EPA officers also conduct roadside operations in conjunction with Victoria Police, VicRoads, Department of Justice Sheriffs, Victoria Taxi Directorate and other enforcement agencies. Vehicles are inspected and tested by EPA for compliance with the Regulations. Owners of non-compliant vehicles usually incur fines, notices prohibiting the use of the vehicle (similar to a Police unroadworthy notice) or legal notices, as described in the tampering program above. From 2004 to 2010, approximately 11,000 vehicles were inspected during these roadside operations. On average there has been a 53 per cent failure rate for vehicles inspected.

11 A fee, set by EPA, is payable by the vehicle owner to the approved tester for the test. In 2011, this fee is $40.30.

12 Owners incur a fee of $80.70 payable to the AVES for an inspection and test of the vehicle.
Penalties

Infringement notices and official warnings13 are predominantly issued for noise and tampering offences detected during roadside operations. Registration suspension generally occurs when a vehicle owner fails to comply with a legal notice after a reminder to comply has been issued. Over 5200 vehicle owners had their vehicle registrations suspended14 between 2004 and 2010. The availability of a range of enforcement tools to deal with offences under the Regulations allows officers to apply a risk-based approach to determine the appropriate level of enforcement in the circumstances. This approach is consistent with EPA’s recently released Compliance and Enforcement Policy (available on EPA’s website).

Discussion questions

Q6: Do you have any suggestions for improvements to the Noisy Vehicle or Tampering Programs?
Q7: Do you think a fine deters people from reinstating modifications to their vehicles?
Q8: What options could be used to address fitters who install illegal modifications?
Q9: Are you aware of EPA’s Modified Vehicle Guidelines?
Q10: What information would you like to see made available on legally modifying your vehicle?
Q11: Would you be more likely to report noisy vehicles if you could directly make a report to EPA, as with to the Public Smoky Vehicle Program?
Q12: If you were not required by notice to fix your smoky vehicle would you?
Q13: Do the Regulations impact on what modifications you make to your vehicle?
Q14: If the Regulations did not exist, would you modify your vehicle to make it more noisy?

New options for regulating vehicle emissions and noise

The following section presents some new options that could be developed further through the Review to address lack of vehicle maintenance and the modification of in-service motor vehicles. They are not intended to comprehensively address options. EPA would like to hear from you on any other ideas that you have for addressing vehicle emissions and noise through the Regulations.

Vehicle maintenance

As noted earlier, vehicle maintenance is important in minimising the environmental impacts associated with motor vehicle use. While the current Regulations set rules and requirements related to smoky, noisy and tampered vehicles, they do not directly require vehicle maintenance to be undertaken.

One option that could be explored through the Regulation review is the introduction of a vehicle inspection and maintenance program (such as the one in California) whereby certain vehicles are required to undergo a regular maintenance program. A vehicle inspection and maintenance program could be directed towards:

- all vehicles
- vehicles in predefined groupings, such as those based on vehicle age, distance travelled or vehicle model
- vehicles that have been detected through roadside remote sensing monitoring or a roadside test.

Owners of targeted vehicles could be requested to provide evidence of recent vehicle maintenance or be required to present the vehicle for an inspection and test (with the possibility that further maintenance will be required). The breadth of any inspection and maintenance program will need to be tested as part of a cost–benefit analysis, as the cost of mandatory vehicle inspections may outweigh the benefits.

Discussion questions

Q15: What are your views on the offences and penalties set out in the Regulations?
Q16: Do you think vehicle suspension of registration is effective in changing behaviour?
Q17: Do you think that monetary penalties currently set in the Act would deter people from illegally modifying their vehicle?
Q18: What are your views on the offences and penalties set out in the Regulations?
Q19: Do you think vehicle suspension of registration is effective in changing behaviour?
Q20: Do you think that monetary penalties currently set in the Act would deter people from illegally modifying their vehicle?
Q21: What are your views on the offences and penalties set out in the Regulations?
Q22: Do you think vehicle suspension of registration is effective in changing behaviour?
Q23: Do you think that monetary penalties currently set in the Act would deter people from illegally modifying their vehicle?
Q24: What are your views on the offences and penalties set out in the Regulations?
Q25: Do you think vehicle suspension of registration is effective in changing behaviour?
Q26: Do you think that monetary penalties currently set in the Act would deter people from illegally modifying their vehicle?
Q27: What are your views on the offences and penalties set out in the Regulations?
Q28: Do you think vehicle suspension of registration is effective in changing behaviour?
Q29: Do you think that monetary penalties currently set in the Act would deter people from illegally modifying their vehicle?
Q30: What are your views on the offences and penalties set out in the Regulations?
Q31: Do you think vehicle suspension of registration is effective in changing behaviour?
Q32: Do you think that monetary penalties currently set in the Act would deter people from illegally modifying their vehicle?
Q33: What are your views on the offences and penalties set out in the Regulations?
Q34: Do you think vehicle suspension of registration is effective in changing behaviour?
Q35: Do you think that monetary penalties currently set in the Act would deter people from illegally modifying their vehicle?
Q36: What are your views on the offences and penalties set out in the Regulations?
Q37: Do you think vehicle suspension of registration is effective in changing behaviour?
Q38: Do you think that monetary penalties currently set in the Act would deter people from illegally modifying their vehicle?
Q39: What are your views on the offences and penalties set out in the Regulations?
Q40: Do you think vehicle suspension of registration is effective in changing behaviour?
Q41: Do you think that monetary penalties currently set in the Act would deter people from illegally modifying their vehicle?
Q42: What are your views on the offences and penalties set out in the Regulations?
Q43: Do you think vehicle suspension of registration is effective in changing behaviour?
Q44: Do you think that monetary penalties currently set in the Act would deter people from illegally modifying their vehicle?
Q45: What are your views on the offences and penalties set out in the Regulations?
Q46: Do you think vehicle suspension of registration is effective in changing behaviour?
Q47: Do you think that monetary penalties currently set in the Act would deter people from illegally modifying their vehicle?
Q48: What are your views on the offences and penalties set out in the Regulations?
Q49: Do you think vehicle suspension of registration is effective in changing behaviour?
Q50: Do you think that monetary penalties currently set in the Act would deter people from illegally modifying their vehicle?
Labelling of after-market motor vehicle equipment
In some cases of illegal tampering, the vehicle owner may be unaware that fitting a certain component to their vehicle will mean that their vehicle no longer complies with the Regulations. It has been suggested that providing an indelible or permanently fixed warning label on relevant after-market motor vehicle components may be a way to educate consumers. The label could advise that if the equipment is fitted to certain motor vehicles it may mean the vehicle will no longer comply with the Regulations.

Discussion questions
Q18: Do you think vehicle maintenance should be mandated through the Regulations?
Q19: Do you have a view on what vehicles should be targeted by any mandated vehicle inspection and maintenance program?
Q20: Do you have any data that you could provide on the proportion of vehicles currently involved in regular vehicle maintenance programs?
Q21: How often do you service your vehicle?

4 REGULATING MOTOR VEHICLE FUEL

Problem definition
Fuel contains toxic compounds that can evaporate into the environment, contributing to air pollution, which can cause health impacts and/or amenity loss.

Background
Fuel quality standards are set nationally through the FQS Act. These standards set parameters for fuel quality to minimise the impact on air quality and to improve vehicle operability. Air quality has improved in the past due to the introduction of unleaded fuel and a reduction of benzene in petrol and sulphur in diesel fuel.

Current EPA measures addressing fuel vapour
Some fuel parameters, such as volatility (or vapour pressure) in petrol, are set at the state level, due to the need to allow for variations in regional conditions. Photochemical smog (of which ozone is a principal component) occurs in summer. Ozone is a secondary pollutant, formed by a reaction between VOCs and NOx in sunlight. The evaporative losses from the volatile components in petrol can be reduced by reducing the volatility (expressed as Reid vapour pressure). Petrol volatility limits have been used around Australia and the world to help limit emissions of VOCs. A number of other states have introduced similar vapour pressure requirements during the summer months; however, the actual limit varies according to the region.

Currently, the Regulations require petrol suppliers (manufacturers and importers) to supply petrol that meets certain vapour pressure limits in the summer months. Petrol suppliers must take samples and report specified information about petrol supplied during the summer months to EPA. The Regulations also provide an exemption process from the summer vapour pressure requirements. This allows consideration of case-by-case applications for exemptions from, or relaxation of, the vapour pressure limits.

Discussion questions
Q22: Are you aware that fitting some after-market equipment to your vehicle is illegal?
Q23: Do you think that labelling of after-market equipment is an effective way of informing consumers?
Q24: Would seeing a warning label on after-market equipment deter you from fitting such equipment on a vehicle (if that made the vehicle non-compliant with Regulations)?
Q25: How effective do you think the current programs have been in reducing air pollution and noise from in-service motor vehicles?
Q26: Are there any other options that should be considered through the Review for reducing air pollution and noise from in-service motor vehicles?
Discussion questions

Q27: What concerns do you have about air pollution from motor vehicle fuel?

Q28: Should the Regulations continue to require petrol suppliers to meet petrol vapour pressure standards during the summer months?

Q29: If so, should the vapour pressure requirements be revised to be more or less stringent?

Q30: What is your level of satisfaction with the current reporting requirements for summer vapour pressure?

Q31: If the Regulations did not exist, would you still make variations to petrol vapour pressure during summer?

New options for addressing fuel vapour

The following section presents some new options that could be developed further through the Review to address toxic evaporative compounds in fuel.

Stage 1 and stage 2 vapour recovery

Petrol vapour contains toxic VOCs that contribute to localised and region-wide (ground-level ozone) air pollution. Petrol also contains benzene, which has been associated with adverse health effects (see Appendix). Vapour recovery at petrol service stations provides immediate health protection benefits by reducing personal exposure to toxic substances in petrol vapours like benzene. Technology known as Stage 1 Vapour Recovery (VR1) captures the vapour displaced from underground storage tanks as the tanks are filled by road tankers. Stage 2 Vapour Recovery (VR2) controls the emissions from filling vehicle tanks at petrol stations.

In Victoria it is estimated that VOCs from petrol stations account for approximately one-third of the VOCs from motor vehicles (total of tailpipe and evaporative emissions). Historically, VR1 was covered by regulation in Victoria; these regulations no longer exist. EPA understands that all road tankers that operate out of the major distribution terminals have VR1 installed.

VR1 and VR2 will be required in NSW by 2017. The primary drivers for this initiative are to reduce risks to human health and prevent degradation of the environment by reducing VOC emissions from motor vehicles and petrol service stations.

In Sydney, Illawarra, Lower Hunter and the Central Coast of NSW petrol stations that dispense more than 0.5 million litres of petrol per year are required to fit and operate:

- VR1 from July 2010 if they are new or modified
- VR1 by 2014 for existing petrol stations.

In Sydney, Newcastle, Wollongong and the Central Coast of NSW petrol stations are required to fit and operate:

- VR2 from July 2010 if they are new or modified and dispense more than 0.5 million litres of petrol per year
- VR2 by 2014 for existing petrol stations supplying more than 12 million litres of petrol per year.

Existing petrol stations in Sydney with a throughput of more than 3.5 million litres per year will need to fit VR2 by 2017.

NSW estimated the cost of implementing:

- VR1 to be between $2000 and $6000 per underground storage tank (depending on whether installation occurs whilst the petrol station is being refurbished)
- VR2 to be between $20,000 and $450,000 per service station, depending on its size and the timing of refurbishment. Time frames for compliance were extended to allow for the implementation of VR2 to coincide with most major refurbishments.

There is a national environment protection measure (NEPM) that establishes a monitoring investigation level for air toxics including benzene. Ambient 24-hour average monitoring and modelling of benzene by EPA in 2006 has shown levels are below the NEPM monitoring investigation level of 3 ppb (parts per billion).

EPA projections indicate that in 2030 there will be a nine per cent decrease in the amount of petrol sold at petrol stations compared with 2006. The decrease in the amount of petrol use may be due to changes in vehicle technology and fuels and also improvements in vehicle fuel efficiency. It is difficult to determine whether this will translate to a reduction in the number of petrol stations, as the vehicle kilometres...
travelled by petrol vehicles is projected to slightly decrease but the vehicle kilometres travelled by diesel vehicles is projected to increase.

Benzene emissions from individual petrol stations are not predicted to change between 2006 and 2030 unless VR1 and VR2 are installed by 2030. Note that the 2006 EPA emissions inventory is conservative in that it assumes that VR1 does not currently occur.

With the latest technology, VR1 can capture 97 per cent of petrol vapour and VR2 can reduce VOC emissions by 85 per cent. Based on data from EPA’s 2006 emissions inventory, this equates to a reduction of 12,745 tonnes/year (90 per cent) of emissions from service stations; 70 per cent of this improvement would be due to VR1 and 30 per cent due to VR2.

Discussion questions
Q32: Do you have any views about whether VR1 or VR2 should be regulated?
Q33: Would you install VR2 if it was not required but was best practice?
Q34: Do the economic benefits of installing VR2 (such as profits from selling recovered petrol vapours as petrol) provide enough incentive for you to install VR2?
Q35: What concerns do you have (if any) from filling your tank without VR2?
Q36: What concerns do you have from living near a petrol station?
Q37: Are there any other options that should be considered through the Review for reducing emissions from fuel?

5 HOW TO HAVE YOUR SAY

This discussion paper will be released for public comment for four weeks. Submissions are invited on any aspect of the Review and Regulations, and any other matters stakeholders consider relevant. Submissions do not need to respond to the questions set out in this paper.

Stakeholders can lodge submissions as follows:

by post to—
Environment Protection (Vehicle Emissions) Regulations Review
Regulatory Innovation Unit
EPA Victoria
GPO Box 4395
MELBOURNE VIC 3001

by email to—
vereqs@epa.vic.gov.au

via online forum—
www.yoursay.com/vehicleemissions

The closing date for submissions is Monday, 12 December 2011.

Submissions will be treated as public documents and may be published on EPA’s website. Please indicate if the submission is confidential and/or clearly indicate sections that may contain confidential information.

After receiving the submissions, EPA will provide responses to each submitter and compile a report of all issues raised. The submissions will be used to inform the development of options for addressing in-service vehicle emissions, noise and fuels. Below is an outline of the proposed timeline for the Review. Note that the outcomes of the Review, in particular the regulatory impact statement (RIS), will determine whether the Regulations will be remade.

Workshops will be held during the submission period to explore issues raised in the discussion paper. To register your interest in attending a workshop (and/or to identify particular issues you would like to see explored at a workshop) please send an email to:
vereqs@epa.vic.gov.au

Details of the workshops will be posted on EPA’s website and provided to those who express interest, in due course. EPA and DSE expect to hold the workshops in November and December 2011.

Timeline for review and implementation

<table>
<thead>
<tr>
<th>Date Range</th>
<th>Event Description</th>
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<tr>
<td>November – December 2011</td>
<td>Stakeholder workshops held</td>
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<tr>
<td>12 December 2011</td>
<td>Submissions on the discussion paper close</td>
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<tr>
<td>December 2011 – June 2012</td>
<td>RIS developed to identify and assess regulatory and non-regulatory options</td>
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<tr>
<td>August – September 2012</td>
<td>RIS and proposed regulations (where appropriate) released for public comment</td>
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<tr>
<td>October – December 2012</td>
<td>Amend proposed regulations (where appropriate)</td>
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<td>January 2013</td>
<td>Proposed regulations made (where appropriate)</td>
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APPENDIX

Health impacts from air pollutants


In summary, the review found the following:

**Carbon monoxide (CO)**

‘Australian and international studies have found associations between CO and increases in hospital admissions, emergency department attendances, and premature death from cardiovascular disease.

‘Associations have also been found with adverse birth outcomes such as low birth weights and reduced foetal growth. These effects can have an impact on childhood development.’

**Nitrogen dioxide (NO₂ — a component of total oxides of nitrogen)**

‘Epidemiological studies worldwide show consistent associations between short-term exposure to nitrogen dioxide and hospital admissions and emergency department attendances, particularly for children with asthma. Studies also show increases in asthma symptoms and medication usage linked to short-term exposures to NO₂. Clinical studies show that people with asthma are more susceptible to exposure to NO₂, and that short-term exposure to NO₂ is associated with airway reactivity and enhanced inflammatory response in people with asthma...

Australian multi-city studies have shown that ambient NO₂ is associated with increases in mortality and hospital admissions for all cause, respiratory and cardiovascular causes. The effects are greater than those observed in Europe and US but are similar to Canada.’

**Ozone**

Ozone is a secondary pollutant, formed by a reaction between VOCs and NOx in sunlight.

‘The health reviews found that short-term (one to four-hour) exposures are linked to increases in mortality, hospital admissions and emergency department attendances, mainly for respiratory causes. The effects are greatest in the warm season and in elderly people. Studies show increases in emergency department attendances for asthma linked to both one-hour and eighth-hour exposures to ozone. Evidence for cardiovascular effects is not as strong as for respiratory effects; the US EPA found evidence for cardiovascular effects to be inconclusive.’

**Particles (PM₁₀ and PM₂.₅)**

The health reviews found that there is substantial new evidence from time series studies and cohort studies on both short-term and long-term effects for particles. PM₁₀ and PM₂.₅ are associated with increases in mortality and morbidity, with much stronger evidence now for cardiovascular outcomes. Studies in Australia show similar effects to overseas studies; however, the effects appear to be similar to Canada but greater than in the US and Europe... Associations have also been found between particles and increases in respiratory symptoms and medication use in children with asthma. These are linked to reduction in lung function and increased lung inflammation.’

**Benzene**

Benzene is an aromatic hydrocarbon found in petrol and vehicle exhausts and is used for a range of industrial purposes. Benzene is classified as a human carcinogen¹⁹. ‘Long-term exposure to benzene has been linked with increased incidence of leukaemia²⁰.

Health impacts from diesel exhaust

The International Agency for Research on Cancer (IARC) is part of the World Health Organization (WHO). Based on the available data, IARC classifies diesel engine exhaust as ‘probably carcinogenic to humans’. The US Environmental Protection Agency (EPA) classifies diesel exhaust as ‘likely to be carcinogenic to humans’.²¹

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²⁰ Better Regulation Statement Expansion of Vapour Recovery at Petrol Service Stations in the NSW Greater Metropolitan Region, prepared by the Department of Environment, Climate Change and Water NSW Nov 2009