
Issues Paper

June 2015

The review process will incorporate a number of consultation activities, allowing individuals and organisations interested in fuel quality to contribute information and participate in shaping the future direction of fuel quality management in Australia.

The purpose of this Issues Paper is to provide information to interested parties, and to assist them in preparing initial submissions to contribute to the review. These submissions will assist in the identification of strengths and weaknesses in the current legislative framework and guide the development of options for improving fuel quality management in Australia.

In later stages of the review, interested parties will have further opportunities to provide feedback and comments on draft options and participate in the process of refining final recommendations to the Australian Government. Interested parties are invited to make public or confidential submissions. If you want to make a submission please click here or use the following link: www.marsdenjacob.com.au.

For information on how to make a submission please refer to Section 5.

1. A review of the Fuel Quality Standards Act 2000 has been commissioned

Marsden Jacob Associates, with Pacific Environment, have been contracted by the Department of the Environment, on behalf of the Australian Government to undertake an independent review of the Fuel Quality Standards Act 2000 (the Act). The Act provides the legislative basis for national fuel quality and fuel quality information standards in Australia. The current objectives of the Act are to:

(a) regulate the quality of fuel supplied in Australia in order to:
   (i) reduce the level of pollutants and emissions arising from the use of fuel that may cause environmental and health problems; and
   (ii) facilitate the adoption of better engine and emission control technology; and
   (iii) allow the more effective operation of engines; and
(b) ensure that, where appropriate, information about fuel is provided to consumers when the fuel is supplied.

In 2000, when the Act was enacted:

- the primary policy objective\(^1\) of the legislation was “...to reduce the adverse effects of motor vehicle emissions on urban air quality, human health, and enhanced greenhouse effect”; and
- the secondary objectives were “the harmonisation of Australian vehicle emission standards with international standards” and “the national availability of petrol and diesel of appropriate quality to allow the effective adoption of new vehicle engine and emission control technologies”.

The Explanatory Memorandum\(^2\) also indicates that nationally consistent fuel standards would encourage competition, and that fuel specifications should apply and be enforced equally to imported and domestically produced fuels.

---


\(^2\) Review of the Fuel Quality Standards Act 2000
Box 1: Review terms of reference

The terms of reference require that the independent review examine, advise and report on:

1. The appropriateness and relevance of the objects of the Fuel Quality Standards Act including consideration of:
   a. the interrelationships between fuel quality, vehicle emission standards and other standards, government policies and initiatives, e.g. automotive design and technology, fuel and transport industries, deregulation, productivity, or economic matters;
   b. the extent to which the Act has been able to meet its objectives; and
   c. the role, if any, of fuel quality standards in meeting the aims of the Plan for a Cleaner Environment and in the development of the National Clean Air Agreement.

2. Options, including a preferred option, to meet the objectives recommended in response to point 1, that:
   a. are efficient and effective;
   b. allocate roles and responsibilities to those best placed to deliver outcomes, e.g. government, industry, community; and
   c. identify appropriate sustainable funding models.

3. Any implementation issues that will need to be addressed to ensure a smooth transition to any future model.

4. Any other relevant matters including environmental, health, technical and regulatory issues.

5. The review’s full terms of reference are at Attachment A.

2. Focus and scope of the review.

This independent review is focused on the Act, the Fuel Quality Standards Regulations 2001 and Determinations made under the Legislative Instruments Act 2003. Specific fuel quality parameters and technical standards are outside the scope of this review.

This review adopts the definition of regulation in the Australian Government Guide to Regulation (2014)³:

“Any rule endorsed by government where there is an expectation of compliance” (page 6).

The Act and Fuel Quality Standards Regulations 2001 provide a legislative framework for setting national fuel quality and fuel quality information standards for Australia. The Act, Regulations and Determinations place an obligation on the fuel industry, including fuel suppliers, to supply fuel that meets strict environmental requirements.

Motor Vehicle Standards Act 1989

As shown in Figure 1, vehicles and fuel work together to reduce vehicle emissions that impact on air quality. Without fuel of appropriate quality, vehicle emissions reduction systems will not be as effective. Likewise, without appropriate vehicle technologies, improving fuel quality will not be as effective in reducing vehicle emissions as it would otherwise be.

---

Figure 1: Vehicles and fuel work together to reduce vehicle emissions

Vehicle emissions standards are regulated as Australian Design Rules (ADRs) under the Motor Vehicle Standards Act 1989. On 16 January 2014 the Assistant Minister for Infrastructure and Regional Development, the Hon Jamie Briggs MP, approved the terms of reference for a comprehensive review of the Motor Vehicle Standards Act 1989 with a view to reducing regulatory costs to business and individuals, and improving the safety and environmental performance of road motor vehicles.

That review is being led by the Australian Government Department of Infrastructure and Regional Development, for further information click here.

The Motor Vehicle Standards Act 1989 is out of scope for this review. However, reflecting the relationship between the two legislative instruments the review team will consult closely with the Australian Government Department of Infrastructure and Regional Development over the course of the review.

Coverage of the Fuel Quality Standards Act 2000


The review team are seeking feedback on the following issues:

- What does future success on fuel quality look like?
- Given this, are the current objectives of the Act appropriate?
- Do the Act’s provisions and administrative arrangements enable the most effective alignment with the Motor Vehicle Standards Act 1989?
- What are the key emerging opportunities and challenges to achieving desired objectives?
3. **Why is the review being undertaken?**

There are several reasons that the review is being undertaken, including:

- a number of regulatory and policy requirements and drivers;
- the international regulatory context for the regulation of fuel standards has evolved considerably since the legislation was enacted;
- the business environment for fuels and vehicles has changed considerably since the legislation was enacted; and
- our knowledge of the environmental and health impacts is improving.

**Regulatory and policy drivers for the review**

**Legislative Requirements**

The review is essential to provide clarity and certainty to all stakeholders. Section 72 of the Act requires an independent review to be undertaken at intervals of no longer than five years. It is necessary to ensure certainty around the regulatory framework prior to assessing any changes or updates to individual fuel standards or regulatory functions.

In addition,

there are a number of Determinations made under the Act that will sunset from October 2016. Determinations provide the regulatory framework for fuel quality in Australia to reduce pollutants and emissions from fuel that can contribute to environmental and health problems. Determinations have been made for:

- Fuel Quality Standards Regulations 2001
- Fuel Quality Standards (Register of Prohibited Fuel Additives) Guidelines 2003
- Fuel Quality Information Standard (Ethanol) Determination 2003
- Fuel Quality Information Standard (Ethanol E85) Determination 2012
- Fuel Standard (Ethanol E85) Determination 2012
- Fuel Standard (Autogas) Determination 2012
- Fuel Standard (Diesel) Determination 2003
- Fuel Standard (Biodiesel) Determination 2003
- Fuel Standard (Petrol) Determination 2001

**Australian Government’s deregulation agenda**

The Australian Government is committed to reducing the cost of unnecessary or inefficient regulation imposed on business, individuals and community organisations by a net $1 billion a year. The Government uses a deliberately broad definition of regulation: “any rule endorsed by Government where there is an expectation of compliance”. This includes legislation, regulation and quasi-regulation.¹
Sound environmental standards are necessary as these create certainty for business, confidence within the community and provide for the effective stewardship of natural resources for current and future generations. Poorly designed regulation can place unnecessary burden on the community through duplicative and cumbersome requirements while failing to meet the desired environmental outcomes.\(^4\)

In addition, as part of the deregulation agenda, the Government released its *Industry Innovation and Competitiveness Agenda* on 14 October 2014. A major component of this policy announcement was that the Government will adopt the principle that if a system, service or product has been approved under a trusted international standard or risk assessment, then Australian Government regulators should not impose any additional requirements for approval in Australia, unless it can be demonstrated that there is a good reason to do so.

**Issues with the current legislation**

The Department has identified a number of issues that may be adversely impacting the effectiveness of the current legislation, such as:

1. **Fuel blends**: The Act does not currently allow for fuel quality and fuel quality information standards to be developed for fuel blends.

2. **Uncertainty**: There is uncertainty about the definition of fuels and the status of substances supplied or represented as fuels. For example, under the Act, a fuel must be one of the fuels listed in Regulation 3(2) of the Regulations to allow for a fuel standard to be made in respect of a specified kind of fuel.

3. **Regulation of racing fuels**: Fuels used in motor racing may not comply with existing fuel standards. Racing fuels may contain elevated quantities of a range of substances, including lead, methyl tert-butyl ether (MTBE) and aromatics which are dangerous to human and environmental health.

4. **Emergency provisions**: Industry concerns about the operation of emergency approvals provisions. For example, in an emergency, how would an emergency approval be sought in the event of a supply shortfall?

5. **Cost recovery**: A review of the efficiency and effectiveness of the current fee structure for cost recovery of approvals to vary a fuel standard under the Act is required.

6. **Inadequate penalties** to deter companies from breaches: With the potential profits that can be gained from supplying sub-standard fuel, it is conceivable that companies could simply regard penalties as a business cost.

7. **Responsibility for fuel contamination incidents**: The objects of the Act do not specifically include consumer protection. However, the department expends considerable resources handling consumer affairs related reports from members of the public in relation to incidents of fuel contamination that appear to be one-off and isolated.

8. **Adequacy of existing inspectors’ powers**: Inspectors are only able to exercise their powers at a premises occupied by a fuel supplier.

---

International regulatory context and harmonisation

The international regulatory context for the regulation of fuel quality standards has evolved considerably since the legislation was introduced. The overarching feature is that emissions standards around the world are becoming more stringent, which generally means higher quality fuel is needed for the emissions standards to be met.

A recent report by Hart Energy (2014) for the Australian Government Department of the Environment collated available information to compare the current Australian fuel quality standards for gasoline, diesel, autogas (LPG), biodiesel and E85 with standards for the same fuels in the European Union (EU), United States (U.S.), Japan and the Republic of Korea (South Korea), and examines points of difference. The analysis found that “there are a number of specifications in Australian gasoline, diesel, biodiesel and E85 that may require changes. The autogas specifications are adequate for now, subject to discussions at the CEN level (e.g., sulfur)” (page 2).

These differences are summarised in Table 1.

Table 1: Key differences and possible approaches to current fuel specifications

<table>
<thead>
<tr>
<th>Table 1: Key differences and possible approaches to current fuel specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gasoline (Petrol)</strong></td>
</tr>
<tr>
<td>Sulfur</td>
</tr>
<tr>
<td>Aromatics</td>
</tr>
<tr>
<td>Phosphorus</td>
</tr>
<tr>
<td>Silver corrosion</td>
</tr>
<tr>
<td><strong>Diesel</strong></td>
</tr>
<tr>
<td>Polyaromatics</td>
</tr>
<tr>
<td>Carbon residue 10%</td>
</tr>
<tr>
<td><strong>Biodiesel</strong></td>
</tr>
<tr>
<td>Acid value</td>
</tr>
<tr>
<td>Phosphorus</td>
</tr>
<tr>
<td>Oxidation stability @ 110°C</td>
</tr>
<tr>
<td>Cold soak filterability / cold flow</td>
</tr>
<tr>
<td><strong>E85</strong></td>
</tr>
<tr>
<td>Sulfur</td>
</tr>
<tr>
<td>Acidity (as acetic)</td>
</tr>
</tbody>
</table>
Review of the Fuel Quality Standards Act 2000

Existent gum (solvent unwashed) If gums are an issue in Australia’s E85, it may be worth considering adding a solvent unwashed existent gum specification of 20 mg/100ml max as required in ASTM D5798

Silver corrosion Consider adopting ASTM D5798’s limit of Class 1 max to protect against reactive sulfur compounds that can corrode or tarnish silver alloy fuel gauge in-tank sender units.

Source: Hart Energy (2014), International Fuel Quality Standards and Their Implications for Australian Standards

Note: No changes were recommended for Autogas.

In addition to more stringent fuel standards, fuel consumption and/or carbon dioxide emission standards are in place in many countries, for example in the United States of America, Europe, Canada, Japan and Korea. This has implications for fuel standards because many of the technologies used to make vehicles more fuel efficient rely on high fuel quality. For example, the decision to adopt a 10 ppm sulfur limit in the European petrol standard was made primarily to support carbon dioxide emissions reductions by assisting improvements in fuel efficiency. While Australia does not currently have mandatory vehicle fuel efficiency standards, in June 2014 the Climate Change Authority released a report suggesting that improving the efficiency of light vehicles is one of the least costly carbon dioxide emissions reduction options available to Australia.

Changing business environment

There is a complex array of influences that will affect the business environment of the fuels sector in coming years. To date, however, the overarchi
ing trends are clear, namely Australia’s population, vehicle numbers and fuel usage have increased significantly over the period 2000-13, see Table 2.

Table 2: Australia: population, vehicle and fuel statistics in 2000 and 2013

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2013</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>People</strong>[^7]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population</td>
<td>19 million</td>
<td>23 million</td>
<td>22%</td>
</tr>
<tr>
<td>Population in capital cities</td>
<td>12 million</td>
<td>15 million</td>
<td>24%</td>
</tr>
<tr>
<td><strong>Vehicles</strong>[^8]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of light vehicles</td>
<td>11.4 million</td>
<td>15.3 million</td>
<td>34%</td>
</tr>
<tr>
<td>Number of heavy vehicles</td>
<td>0.48 million</td>
<td>0.63 million</td>
<td>31%</td>
</tr>
<tr>
<td><strong>Petrol and diesel</strong>[^9] (used on-road and off-road, e.g. mining)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australian refinery produced petrol</td>
<td>17 000 ML</td>
<td>15 600 ML</td>
<td>-8%</td>
</tr>
<tr>
<td>Imported petrol</td>
<td>1 200 ML</td>
<td>3 700 ML</td>
<td>207%</td>
</tr>
<tr>
<td>Australian refinery produced diesel</td>
<td>11 800 ML</td>
<td>12 900 ML</td>
<td>9%</td>
</tr>
<tr>
<td>Imported diesel</td>
<td>1 100 ML</td>
<td>12 500 ML</td>
<td>1010%</td>
</tr>
<tr>
<td>Percentage imported (total petrol and diesel)</td>
<td>7%</td>
<td>36%</td>
<td></td>
</tr>
</tbody>
</table>


The increasing demand for petrol and particularly diesel are being met through imported fuels, with only four remaining refineries in Australia: BP’s Kwinana refinery in Western Australia, Viva Energy’s Geelong refinery in Victoria, Caltex’s Lytton refinery in Queensland and Exxon-Mobil’s Altona refinery in Victoria. There has been a recent media report that plans are being considered for a new refinery at Gladstone in Queensland.

Figure 2: Refineries and major fuel import terminals

Note the Kurnell refinery ceased refining operations in 2014, with the site being converted to a fuel import terminal. The Bulwer Island refinery is scheduled for closure in mid 2015.

Source: AIP, Downstream Petroleum 2013

In 2009, CSIRO was commissioned by the Australian Government Department of the Environment to conduct economic modelling of potential future energy scenarios in the Australian road transport sector for the period 2010 to 2050\(^\text{10}\). The reference scenario for this modelling assumed the continuation of then-current transport policy settings and assumed future oil prices consistent with the International Energy Agency 2009 World Energy Outlook\(^\text{11}\) reference price trajectory.

This modelling found that road transport demand will expand from around 226 billion kilometres travelled in 2010 to around 388 billion kilometres travelled in 2050, as shown in Figure 3.

Additional modelling undertaken by CSIRO for the Department of Resources Energy and Tourism’s Alternative Transport Fuels Strategy\(^\text{12}\) found that market uptake of alternative transport fuels (including advanced biofuels and electricity) would be limited to 2020 but that substantial growth in

---


alternative fuel consumption in the 2020s would be underpinned by factors including rising oil prices and continued technological development (page iii).

**Figure 3: Future transport demand by mode and vehicle type**

![Graph showing future transport demand by mode and vehicle type](image)

**Source:** CSIRO, *Transport Energy Roadmap: Final Report, 2010*

**Note:** In this figure, PAS refers to passenger vehicles, LCV to light commercial vehicles and HV to heavy vehicles.

**Knowledge of the environmental and health impacts is improving**

Pollution from vehicles affects the environment and human health. According to the OECD\(^\text{13}\) “the cost of the health impact of outdoor air pollution in OECD countries, both deaths and illness, was about USD 1.7 trillion in 2010”. This study also suggests that the number of deaths due to air pollution in Australia, while small in comparison to other countries, has risen between 2005 and 2010.

In October 2013, the International Agency for Research on Cancer (IARC) announced that it has for the first time classified outdoor air pollution as carcinogenic to humans\(^\text{14}\). Particulate matter was evaluated separately and was also classified as carcinogenic. The IARC listed the predominant sources of air pollution as transportation, stationary generation, industrial and agricultural emissions and residential heating and cooking. In 2012 the IARC also classified diesel exhaust as carcinogenic\(^\text{15}\).

**The review team are seeking feedback on the following issues:**

- What are the key emerging domestic opportunities and challenges in relation to fuel quality?
- What are the key emerging international opportunities and challenges in relation to fuel

---


quality?

- Given the objectives of the Act, and emerging opportunities and challenges for the Act, what are the strengths and weaknesses of the current Act and regulatory structure?
- What has been achieved through the Act? What have been its costs and benefits?
- How could the Act be improved to reduce regulatory burden?
- How could the Act be improved in other ways?
- Are fuel quality standards still needed? If yes:
  - To what extent are fuel quality information standards required?
  - Are there opportunities for international harmonisation of fuel quality standards? Is this likely to increase the stringency of the standards?
  - Are standards needed for other fuels?

4. Review methodology and options under consideration

The independent review is being undertaken in a manner that addresses the requirements in The Australian Government Guide to Regulation, including the ten Principles for Australian Government Policy Makers and seven regulatory impact statement (RIS) questions, see Box 2\(^\text{16}\).

Box 2: Australian Government Guide to Regulation, Ten Principles and Seven RIS Questions

**Ten Principles:**

1. Regulation should not be the default option for policy makers: the policy option offering the greatest net benefit should always be the recommended option.
2. Regulation should be imposed only when it can be shown to offer an overall net benefit.
3. The cost burden of new regulation must be fully offset by reductions in existing regulatory burden.
4. Every substantive regulatory policy change must be the subject of a Regulation Impact Statement.
5. Policy makers should consult in a genuine and timely way with affected businesses, community organisations and individuals.
6. Policy makers must consult with each other to avoid creating cumulative or overlapping regulatory burdens.
7. The information upon which policy makers base their decisions must be published at the earliest opportunity.
8. Regulators must implement regulation with common sense, empathy and respect.
9. All regulation must be periodically reviewed to test its continuing relevance.
10. Policy makers must work closely with their portfolio Deregulation Units throughout the policy making process.

**Seven RIS Questions:**

1. What is the problem you are trying to solve?
2. Why is government action needed?
3. What policy options are you considering?
4. What is the likely net benefit of each option?
5. Who will you consult about these options and how will you consult them?
6. What is the best option from those you have considered?
7. How will you implement and evaluate your chosen option?

Review Methodology

The methodology for the review involves (in summary):

**Establishing whether there is a case for regulation of fuel quality.** When seeking to establish the case for action on fuel quality we will be evaluating:

- the interplay between fuel quality, vehicle emissions standards, vehicle design and other drivers of emissions (see Box 3); and
- assessing the implications of different regulatory models for the level of pollutants and emissions arising from the use of fuel that may cause environmental and health problems.

It should also be noted that the analysis will be both backward and forward looking, that is to say we are going to evaluate both historical results and forward looking costs and benefits.

**Identifying and assessing feasible regulatory options.** This independent review will consider the full spectrum of regulatory options, including: status quo, self-regulatory, co-regulatory and non-regulatory approaches and the practical implications of the different approaches for the level of pollutants and emissions arising from the use of fuel – over the short term and long term. The options will be assessed using cost-benefit analysis informed by air quality and health impact modelling.

**Competition and industry impacts.** The competition and industry impacts of the different options will need to be carefully considered and assessed. As part of the assessment of industry impacts, regulatory burden assessment will be undertaken in accordance with the Australian Government’s Regulatory Burden Measurement Framework.

**Stakeholder consultation and feedback.** Comprehensive and effective consultation is critical to ensure that available information and the full range of views on technical and policy issues is captured. Stakeholder feedback on the options and analysis will be requested at two key stages in the project:

- Public release of the Issues Paper (this paper); and

---

**Box 3: Interplay between fuel quality and other factors driving emissions**

The interplay between fuel quality and technologies and the role of international trade factors on vehicle and fuel standards within Australia are among the many factors that will need to be considered in determining the impacts of changes in fuel quality on emissions. Other factors that also influence emissions and their impacts include the rate of uptake of fuels from renewable sources, changes in fleet composition, the retro-fitting of control technologies to older vehicles (particularly heavy vehicles) and changes in traffic characteristics in major cities. Where necessary, we will consider these aspects as a direct consequence of addressing the identified fuel quality scenario.

Methodology: Options

As discussed above, all regulatory options are on the table. There are four broad categories of regulatory options that are discussed below and summarised in Figure 4.

Figure 4: Potential Options

Source: Marsden Jacob and Pacific Environment, 2015

It should be noted that Marsden Jacob and Pacific Environment will only be assessing up to 5 options in the cost-benefit analysis. Decisions are yet to be taken which options will be assessed, so we are seeking feedback on the options to inform this decision.

Government Regulation

- **Option 1**: Australian Government retains regulatory responsibility under the existing regulatory framework, with minor efficiency improvements.
- **Option 2**: Australian Government retains regulatory responsibility under the existing regulatory framework, with significant changes. Significant changes could involve:

Where appropriate, the options analysis will include consideration of the implications of improved alignment of Australian and international standards.
- (1) shifting the onus of proof of compliance from the Australian Government to fuel suppliers; or
- (2) shifting compliance assessment to the bulk supply point (i.e. import terminals and refinery terminals).
- (3) shifting enforcement activities to states and territories.

**Option 3:** State and territory governments take on the regulation of fuel quality by enacting their own legislation.

**Co-Regulation**

- **Option 4:** A recognised industry body makes and amends and oversees compliance and enforcement on fuel quality standards. The Australian Government provides a legislative ‘safety net’ which mandates fuel supplier compliance with the standards.

- **Option 5:** Standards are set by a recognised body and the Australian Government sets mandatory standards for a limited set of parameters that have the most significant impact on the environment and human health (e.g. lead, sulfur, benzene, aromatics, dienes, ethers). The Australian Government oversees compliance and enforcement relating to the mandatory standards.

  Note the European Union, Japan and United States use a combination of voluntary and mandatory standards.

**Industry-led Standards**

- **Option 6:** A recognised industry body is responsible for setting and enforcing fuel quality standards. An agreement between the fuel industry, motor vehicle industry and government could be instituted. Parties would agree to cooperate in the development of fuel standards and the fuel industry would agree to comply with the standards. The Act is repealed.

**No Regulation**

- **Option 7:** Existing voluntary standards for petrol and diesel, managed by Standards Australia, remain in force, however these standards relate to operational rather than environmental factors. The Act is repealed.

All Australian Government regulatory options include options for international harmonisation.

---

**The review team are seeking input on the following issues:**

- Should other regulatory structures (options) be considered? If so, which one(s)?
- What are the strengths and weaknesses of alternative regulatory structures?
- What are the costs and benefits of alternative regulatory structures?
- How will different stakeholders be impacted by alternative structures?
- What can be learnt from other jurisdictions about the desirability of alternative structures?

---

**Methodology:** Air Quality Modelling and Health Risk Assessment

**Air quality modelling**

To evaluate the changes in emissions, ambient air quality and exposure associated with historic and potential changes to the Australian fuel quality standards, a relatively detailed approach that uses a combination of best-practice modelling methods for emissions and their dispersion and transformation will be used in this review.
The process we are going to use is an impact assessment pathway which is the preferred approach internationally for regulatory changes. It enables a quantitative link between changes in emissions and changes in ambient air quality. This in turn enables the quantification of public health benefits across a population.

Under this approach the modelling evaluates the effects of changing emissions associated with various fuel quality (and related) scenarios, then models the atmospheric fate and transport of those emissions in key urban airsheds to yield estimates of ground-level concentrations that can be used to assess population exposure and health risks.

Using this approach, modelling will be conducted to assess the effectiveness of the current fuel quality regulations in achieving benefits in air pollution over the period 2001 to 2015. The base year will be 2003 and further modelling to assess the effectiveness will be done for 2014.

In addition scenarios will be modelled to identify the costs and benefits (air pollution and greenhouse gases) of any changes to fuel quality standards that may be implemented between 2015 and 2030. Two years will be modelled: 2020 and 2030.

**Health risk assessment**

Based on the outcomes of the air quality modelling a health risk assessment will be undertaken for the Melbourne and Sydney populations to assess the health benefits from:

- changes in air quality as a result of the implementation of the current fuel quality regulations (Years 2003 and 2014), and
- changes in air quality predicted from potential changes to the fuel quality standards and the introduction of Euro 6 vehicle standards.

The health risk assessment will quantify for PM2.5 and nitrogen oxide (in particular, NO2) the daily and annual increases in mortality, hospital admissions and emergency department attendances associated with exposure to these pollutants for each of the assessment years. For other pollutants (nominally benzene and formaldehyde) the increased risk in cancer will be calculated. For formaldehyde the increased risk in acute health effects such as respiratory irritation will also be considered. Population statistics and baseline health statistics for each study population will be obtained from ABS and the relevant health departments.

The health risk assessment will be conducted in accordance with the national environmental health guidelines for human health risk assessment and the guidance developed by the National Health and Medical Research Council (NHMRC) and the former National Environment Protection Council (NEPC) specifically related to the health risks associated with air pollution.

The review team are seeking input on the following issues:

- Do you have any suggestions regarding the approach to the emissions and air quality modelling?
- Do you have any suggestions regarding the health risk assessment?

---

19 Sydney and Melbourne have been chosen because they are large population centres and data is available and highly reliable.
21 Particulate matter with diameter 2.5 micrometres or less
5. **How can you contribute to the review?**

This review will assist the Australian Government consider future options for the regulation of fuel quality standards.

Stakeholders have opportunities to participate in this independent review by making a submission on the Issues Paper (this document) and Draft Report (inclusive of the specific options and detailed cost benefit analysis), which will present preliminary results of the review including submissions on the Issues Paper. Stakeholders will have an opportunity to provide feedback on the Draft Report, which will inform the development of a Final Report and recommendations to the Australian Government.

The Final Report incorporating feedback and responses will be made publicly available upon the completion of the Review.

**Submissions**

Marsden Jacob invites written submissions from all interested organisations and members of the community responding to the review terms of reference and to this Issues Paper.

Each submission, unless it is explicitly provided in confidence, will be published on the Marsden Jacob website. Copyright of submissions will reside with the author(s) and not with Marsden Jacob.

Where possible, submissions should be lodged electronically, via the email address below.

- **Email:** fuelqualityreview@marsdenjacob.com.au

Alternatively, submissions can be sent to the postal address below.

- **Post:**
  
  Fuel Quality Review  
  c/- Marsden Jacob Associates  
  Level 3, 683 Burke Road  
  Camberwell, Victoria, 3124

Marsden Jacob has established a website for this review. To access the website click [here](#) or use the Marsden Jacob home page: [www.marsdenjacob.com.au](http://www.marsdenjacob.com.au) and follow the links. Links to this website are also available from the Department of the Environment’s website at [www.environment.gov.au](http://www.environment.gov.au).

Following receipt of submissions the review team may seek to undertake further one-on-one consultations with you or your organisation.

Submissions received through the consultation process will inform the Draft Report. Input received throughout the course of the review will be considered in the development of the Final Report to be published at the end of the review process.

**The review team are seeking input on the following issue:**

- After providing a submission, are you or your organisation willing to be contacted for follow-up one-on-one discussions? If so, please provide contact details in your submission.
Timetable
Submissions on this Issues Paper are requested by Friday 24th July 2015.

Privacy Statement
Your views and nominations are being sought by Marsden Jacob for the purpose of providing input on the review of the Fuel Quality Standards Act. Personal information that you provide will be used for the following purposes:

- to seek input in relation to the Review;
- where a submission raises a matter relevant to the portfolio interests of another agency such that it is appropriate to disclose your personal information to that agency;
- personal information included in your submission may also be disclosed in subsequent Departmental publications that are relevant to the portfolio interests of this Department.

Confidentiality Statement
All submissions will be treated as public documents, unless the author of the submission clearly requests otherwise. Public submissions may be published in full on the website, including any personal information of authors and/or other third parties contained in the submission.

If your submission contains personal information about any person who is not an author of the submission, please indicate on the cover sheet if the person or persons have not consented to the publication of the information.

Updates on progress of the review will be posted on the website periodically.

All media enquiries regarding this review are to be addressed to Peter Kinrade, 03 9882 1600.
## Technical Annex: Summary by Jurisdiction

<table>
<thead>
<tr>
<th>Substance</th>
<th>Australia</th>
<th>South Korea</th>
<th>Japan</th>
<th>EU</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Petrol</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aromatics</td>
<td>42% pool average over 6 months with a cap of 45% ¹</td>
<td>24 vol% ²</td>
<td></td>
<td>35 vol% ³</td>
<td>25% ⁴</td>
</tr>
<tr>
<td>Benzene</td>
<td>1 vol% ⁵</td>
<td>0.7 vol% ⁶</td>
<td>1 vol% ⁷</td>
<td>1 vol% ⁸</td>
<td>0.95 vol% ⁹</td>
</tr>
<tr>
<td>Ethanol</td>
<td>10 vol% ¹</td>
<td>3 vol% ²</td>
<td></td>
<td>5 vol% ³</td>
<td></td>
</tr>
<tr>
<td>Lead</td>
<td>0.005 g/L ⁴</td>
<td>0.013 g/L ⁵</td>
<td>Non-detectable ⁶</td>
<td>5 mg/L ⁷</td>
<td>Non-detectable ¹</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.0013 g/L ⁴</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulfur</td>
<td>All grades: 150 ppm (since 1 Jan 2008) ⁸</td>
<td>10 ppm ⁴</td>
<td>10 ppm ⁷</td>
<td>10 ppm ⁸</td>
<td>30 ppm ¹</td>
</tr>
<tr>
<td>MTBE (Methyl Tertiary Butyl Ether)</td>
<td>1 vol% ⁵</td>
<td>7 vol% ⁷</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIPE (Di-isopropyl ether)</td>
<td>1 vol% ⁵</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TBA (Tertiary Butyl Alcohol)</td>
<td>0.5 vol% ⁷</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Diesel</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aromatics</td>
<td>30 wt% ⁹ (automotive)</td>
<td>35 vol% ¹</td>
<td></td>
<td>25 vol% ⁸</td>
<td></td>
</tr>
<tr>
<td>Benzene</td>
<td>1 vol% ¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead</td>
<td>0.005 g/L ¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAHs</td>
<td>11 wt% (since 1 Jan 2006) ⁴</td>
<td>5 wt% ³ (automotive)</td>
<td>8 wt% ²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulfur</td>
<td>10 ppm (since 1 Jan 2009) ⁶</td>
<td>10 ppm ⁴ (automotive)</td>
<td>10 ppm ⁷</td>
<td>10 ppm (highway vehicles)</td>
<td>Highway diesel fuel: 15 ppm (Ultra low sulfur diesel) ¹ Non-road diesel fuel: (Non-road, Locomotive and Marine (NRLM) fuels) 15 ppm ¹</td>
</tr>
<tr>
<td><strong>Jet Fuel</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulfur</td>
<td></td>
<td>0.3 – 0.4 wt% ⁸</td>
<td></td>
<td>0.3 wt% ⁸, US Navy: 0.3 - 0.4 wt% ⁴, US Air Force: 0.1 – 0.3 wt% ⁸</td>
<td></td>
</tr>
<tr>
<td><strong>Marine Fuel</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulfur</td>
<td>10,000 ppm ⁴</td>
<td></td>
<td></td>
<td>Non-road diesel fuel: Low sulfur diesel: 500 ppm, Ultra low sulfur diesel: 15 ppm Cat 3 marine engine fuel: IMO limits: 10,000 ppm ³, EPA limits: 1,000 ppm</td>
<td></td>
</tr>
<tr>
<td>Zinc</td>
<td></td>
<td>15 mg/kg ³</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Technical Annex Sources


Terms of Reference

Context

The *Fuel Quality Standards Act 2000* provides the legislative basis for national fuel quality and fuel quality information standards in Australia. The objectives of the Act are to reduce the level of pollutants and emissions arising from the use of fuel that may cause environmental and health problems, facilitate the adoption of better engine and emission control technology, allow the more effective operation of engines, and to ensure that, where appropriate, information about fuel is provided to consumers when fuel is supplied.

Section 72 of the Act requires an independent review to be undertaken at intervals of not longer than 5 years. Additionally, the regulations, guidelines and determinations (fuel standards) under the Act will sunset, beginning from October 2016.

Scope

The independent review will examine, advise and report on:

1. the appropriateness and relevance of the objects of the Fuel Quality Standards Act including consideration of:
   a. the interrelationships between fuel quality, vehicle emission standards and other standards, government policies and initiatives, e.g. automotive design and technology, fuel and transport industries, deregulation, productivity, or economic matters
   b. the extent to which the Act has been able to meet its objectives
   c. the role, if any, of fuel quality standards in meeting the aims of the Plan for a Cleaner Environment and in the development of the National Clean Air Agreement.

2. options, including a preferred option, to meet the objectives recommended in response to point 1, that:
   a. are efficient and effective
   b. allocate roles and responsibilities to those best placed to deliver outcomes, e.g. government, industry, community
   c. identify appropriate sustainable funding models.

3. any implementation issues that will need to be addressed to ensure a smooth transition to any future model.

4. any other relevant matters including environmental, health, technical and regulatory issues.
Governance and Deliverables

The independent review will be undertaken by an independent consultant, contracted by the Department of the Environment, and provide a report to the Minister for the Environment. The consultant will be supported by a secretariat in the Department and assisted by:

- advice obtained from states, territories and industry representatives
- an advisory group of key agencies: the Department of the Environment, the Department of Industry, the Department of Infrastructure and Regional Development, the Department of Defence, the Department of the Prime Minister and Cabinet, the Treasury and the Department of Finance.

Timeframe and Methodology

The independent review will commence in January 2015, and provide a final report to the Minister by November 2015, which will enable any changes to legislation to be made by 30 June 2016.

The independent review will, as relevant, consider:

1. submissions from, and consultations with, business, the community and relevant Commonwealth, state and territory agencies
2. reports from studies relevant to the review, including:
   a. international and domestic experience and trends in fuel quality and standards and the associated industries, e.g. refining, automotive design, engine manufacture
   b. economic value and environmental and human health benefits in reducing emissions from fuel and the role of fuel quality and standards in producing those benefits.

The independent review will meet the requirements of the Australian Government Guide to Regulation, specifically abiding by the ten principles as relevant and answering the seven Regulation Impact Statement questions.

---

23 Released as part of the Australian Government’s deregulation agenda - www.cuttingredtape.gov.au