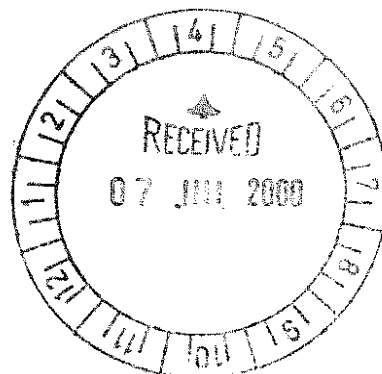


# NATIONAL FUEL QUALITY STANDARDS

A Submission by

THE AUSTRALIAN INSTITUTE OF PETROLEUM

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## EXECUTIVE SUMMARY

- The establishment of national mandatory standards for petrol and diesel are important, both for environmental reasons and for consumer protection.
- These standards should cover the full fuel specification, rather than just a limited number of components of environmental significance.
- These standards must apply to all Australian refined and imported products, and to products blended downstream of the refineries. There needs to be sufficient resources put in place by Commonwealth and State Government to ensure compliance.
- There is an urgent need for the early establishment of national mandatory fuel standards. These should focus on vehicle operability, for consumer protection reasons. AIP recommends these initial standards be set broadly in line with Euro 2 (with some exceptions), and suggests that these be instituted as soon as possible, with a start date of 1 January 2001.
- These should only ever be one standard. As more stringent specifications come into effect, they should take the place of any earlier mandatory specification.
- With the broader focus of the standards, there needs to be full and on-going industry consultation to ensure an industry as well as environmental perspective. AIP proposes that:
  - the new standards and legislation be managed jointly by Environment Australia and the Department of Industry Science and Resources (DISR).
  - a new industry consultative body be established, comprising AIP, the Australian Automobile Association, and the Federal Chamber of Automotive Industries and DISR, under the auspices of DISR
- There are differences of views between AIP member companies on the level and timing of the introduction of certain specifications. Details of specification recommendations are provided in Chapters 4 and 5.
- Most AIP companies argue that the new specifications designed to harmonise with Euro 3 and 4 should come into effect on the timetable outlined in *Measures for a Better Environment*. These companies argue that it is not cost-effective, and may be technically impossible, to bring timings for Euro 3 and 4 specifications forward, whether for environmental reasons or to assist the earlier introduction of models. These companies stress that many of the specification improvements are linked to reduction in sulphur levels in fuels, and cannot be easily advanced in isolation. These companies also warn that alternative supplies of imported cleaner fuels may not be easily available in the timeframe suggested.
- One company suggests supports the bringing forward of certain Euro 3 specifications identified by Environment Australia to 2002, and the introduction of Euro 4 petrol standards in 2005.

- Most companies suggest that financial incentives for petrol, similar to the excise differential already established for diesel, should be considered if Government wishes to advance timings of the introduction of the new cleaner fuel specifications. One company warns that such incentives must have clear environmental benefits and have financial benefits that could advantage all participants.

## CHAPTER 1: INTRODUCTION

The Australian Institute of Petroleum (AIP) was established in 1976 as a non-profit making industry association. AIP's mission is to promote and assist in the development of a sustainable, internationally competitive petroleum products industry, operating efficiently, economically and safely, and in harmony with the environment and community standards.

This submission is in response to the Discussion Papers issued by Environment Australia in May 2000 on national fuel quality standards.

AIP and its member companies support the development of national fuel quality standards, and is pleased to make this submission on behalf of the following member companies:

BP Australia Ltd  
Caltex Australia Ltd  
Liberty Oil Pty Ltd  
Mobil Oil Australia Pty Ltd  
The Shell Company of Australia Ltd

Chapter 2 outlines the views of AIP in relation to the principles that should underlie the establishment of national fuel standards. In Chapter 3, AIP proposes a broad strategy for the establishment of the standards, and Chapters 4 and 5 contain AIP's detailed recommendations in regard to individual fuel specifications.

## CHAPTER 2: THE PRINCIPLES FOR NATIONAL FUEL STANDARDS

A set of general principles to underlie the establishment of fuel standards in Australia is set out in Discussion Paper 2, on pages 7 and 8.

In general, AIP supports these principles, with one important exception and some other extensions or issues of detail. Given their importance, the principles are outlined below (in italics), together with AIP's comments on particular points.

### 2.1 Environmental and Operability Standards

*Fuel standards are intended to manage those fuel qualities/parameters that are known to have the potential to impact adversely on the environment.*

The Discussion Paper notes that there are advantages in having all standards that relate to fuel quality addressed in a single instrument, and that to a large extent 'environmental' and 'operability' fuel parameters are synonymous, as proper engine function is fundamental to maintaining vehicle emission standards. Stakeholder views on this point are sought.

AIP believes that fuel standards should address more than strict environmental standards. There is now widespread community and industry interest in the establishment of a national fuel standard that addresses operability parameters as much as environmental parameters. There are several important factors that need to be considered in this regard:

- fuel substitution, to avoid fuel excise, has been a major problem for both motorists and industry participants for many years. The recent incidence of duty unpaid toluene substitution into petrol has highlighted the issue. However, there are a number of other substitution practices that pose a threat, in regard to operability and safety of vehicles unwittingly using these fuel blends, and to the security of the tax base, and to industry participants paying the appropriate excise on their products.
- restructuring of the refining industry may lead to an increase in imports of petroleum products.

These changes make it all the more important for national fuel standards that cover operability of vehicles to be in place. Such standards would assist the industry and authorities in ensuring that vehicle users have consistent and reliable access to quality fuels.

If fuel standards are restricted to environmental parameters, only the following parameters would need to be addressed:

<u>Petrol</u>	<u>Diesel</u>
Sulphur	Sulphur
Aromatics	Polycyclic Aromatic Hydrocarbons
Benzene	
Olefins	
Reid Vapour Pressure	
Lead	

While important fuel parameters, these would not be sufficient for an operability fuel standard. Given AIP's firm belief that there is a need for national fuel standard covering operability as well as environmental parameters, the question then is which avenue is the most appropriate for the development of these standards.

Ideally, operability standards would be developed separately to an instrument that is focused on environmental objectives. While there is some linkage between environmental and operability parameters, the drivers for operability fuel standards strictly lie outside the scope of environmental legislation. The key determinants of these standards should rather be set by the engine manufacturers, the oil industry, and motoring associations. They should be adaptable, and not conflict with mandatory environmental standards.

It would be possible for the oil industry, the engine manufacturers industry and motoring associations to develop these standards as self-regulation. Another avenue is the Standards Australia petrol and diesel standards. This would satisfy the need for the industry involvement and adaptability.

However, it is most important that these operability standards are national and mandatory. Moreover, there is a link between operability and environmental factors. Finally, over time, the operability standards will need to correspond to the environmental standards. Therefore, for pragmatic reasons, AIP supports the development of a national mandatory fuel standard that incorporates both operability and environmental factors. These additional (to the environmental factors outlined above) operability factors are:

Petrol

Octane  
Distillation

Diesel

Cetane  
Lubricity  
Density  
Distillation  
Ash Content  
Viscosity  
Cloud Point, and Cold Filter Plugging Point

The standard should be in place as soon as possible, rather than at a time related to harmonisation with Euro standards. The standard would incorporate the future specifications resulting from the current review of environmental standards, at the appropriate times.

However it must be stressed that AIP's support for this combined standard is conditional upon a satisfactory process for industry consultation and input on the updating of the standard over time. A suggested process is discussed in more detail below in Chapter 3.

## **2.2 Compatibility with International Standards**

*Fuel standards should be compatible with relevant international or internationally accepted standards in order not to impede competition and trade.*

This is supported by AIP. It is most important that the standards chosen are for fuels readily available internationally.

## **2.3 Fuel Standards to be Mandatory and National**

*Fuel standards are intended to be mandated and implemented on a national basis. In particular, fuel standards that are technology enabling must apply nationally. Local environmental circumstances may, however, dictate variation within the national standard to achieve environmental outcomes. Consideration will be given to State by State establishment of fuel standards that address specific airshed environmental conditions. However in such cases a national standard will be determined as a default.*

AIP supports the establishment of mandatory fuel standards that, in general, are implemented on a national basis.

AIP does not consider, however, that all specific airshed environmental specifications need to be determined nationally as a default. If an environmental specification only has significant impact in certain defined areas, there is no environmental benefit in extending the standard beyond those areas. There may however be a substantial cost to industry from the extension, which may impact on consumers.

A particular example of this is volatility specifications. These are only relevant in certain airsheds, such as Sydney. AIP believes that volatility specifications should only be mandated on an airshed basis, with no national default specification.

## **2.4 Application to Imported Products**

*Fuel standards will apply to, and be enforced equally in respect of, imports as well as domestically produced petroleum fuels. Fuel standards must not impede competition, either between Australian refiners, or with imported refined product.*

This principle is strongly supported by AIP. The same standards must be applied equally to all producers and importers, to ensure a level competitive playing field. As importantly, it will be essential that there is sufficient compliance mechanisms in place to ensure that the standards are being adhered to.

This includes blending done downstream of the refineries, such as ethanol blends, to ensure that the quality of product sold to the consumer meets the mandatory specification.



## **2.5 Standards to Reflect Australian Conditions**

*Fuel standards that directly address environmental or health issues will be determined on the basis of Australian-specific requirements. In such instances, harmonisation with European specifications may neither be necessary or desirable.*

There must be a rigorous cost/benefit analysis made of the proposed environmental fuel standards. Standards should not be imposed where the incremental environmental benefits of standards are small and/or of little relevance to Australian conditions and/or where the costs outweigh the benefits.

In this regard, the new environmental fuel standards should be consistent with the findings of the Fuel Quality Review (FQR). In a number of areas, the FQR demonstrates that some changes in fuel parameters have little or no environmental benefit, and arbitrary changes in these standards should be avoided.

A further point in regard to European standards should be noted. European fuel quality standards assume significant use of MTBE. A number of States have moved to effectively ban the use of MTBE in those States, and in general AIP companies do not advocate the use of the MTBE in fuel in Australia. In addition, care should be taken when comparing European standards including the diluent effect of MTBE on other specifications, with Australian standards without MTBE.

## **2.6 Timetable for the Introduction of New Standards**

*The timetable for the introduction of new fuel standards will be based on Australian requirements. Harmonisation, in terms of timing, will not be based on any European or regional timetable, except where there is a previous policy decision to this effect or the standard is technology enabling and the need for such harmonisation is clearly demonstrated.*

AIP supports this principle, but believes it should be extended.

The timetable must recognise what is technically and logically feasible, to ensure that the cost burdens imposed on industry are at a minimum consistent with the overall achievement of environmental objectives. In this regard, the means by which refiners upgrade equipment to meet new fuel standards should be taken into account when establishing the timetable for standards improvements. Factors include sufficient time for refiners to determine the best technology, gain the necessary approvals, let construction contracts, and construct and commission the hardware.

In this regard, most AIP member companies urge that the new fuel standards should be implemented at the values and timing set out in *Measures for a Better Environment (MBE)*, and that there should be no mandatory interim tightening of standards. One company advocates implementation of certain key specifications in advance of the *MBE* timing, and strongly supports the introduction of Euro 4 petrol specifications in 2005.

However AIP does support voluntary earlier action by individual companies to supply cleaner fuels, where this is technically possible and commercially feasible for the company. In this regard, such early action could be supported by Government through the means of financial incentives, provided they deliver tangible environmental benefits and are effectively available to all suppliers.

AIP does not agree with the suggestion in Discussion Paper 2 (page 13) that the higher standards fuels need to be in place 6 – 12 months ahead of the vehicle ADRs.

- If the concept has been proposed to ensure that the new fuels are in place at the time specified, petroleum product suppliers can be relied upon to meet required deadlines, without the imposition of earlier deadlines.
- If the concept is in place to assist car importers to introduce new models in line with model cycle timings, consideration should be given to allowing flexibility to the ADR timings, as an alternative to advancing petroleum standards. The potential for a few imported vehicles to be on the road prior to ADR implementation dates is not sufficient reason to impose major additional and unnecessary burdens on refiners. The advancement of fuel standards timings is likely to breach, for some AIP member companies, the principles aligning timetables with technically possible and cost effective implementation of refinery investment, and in fact may be impossible to achieve for some refineries. This would mean that some AIP refiners might be unable to construct facilities to meet the new standards in the mandated timeframe.

It should be noted that the production of Cleaner Fuels will increase greenhouse gas and other emissions from the refiners. If this is required ahead of the time of the general introduction of vehicles that will benefit from the new fuels, overall emissions may increase.

## **2.7 Flexibility in Standards**

*Consideration will be given to setting standards that provide, as far as possible, flexibility in terms of compliance. Flexibility provisions must not impede competition or trade; and flexibility provisions must not add significantly to legislative/regulatory complexity or implementation/enforcement costs to Government.*

There are different views between AIP member companies on this issue.

Most refiners support the general principle that the regulatory framework should allow refineries the maximum flexibility to meet overall environmental objectives. Two companies believe that this flexibility could be best achieved through pool averaging of refinery production, and one company stresses that the same flexibility should also be extended to imported product. One company in addition favours an approach that allows refineries to certify fuel against a predictive model.

A fifth company however believes that, for reasons of strict harmonisation and ease of administration, a minimum/maximum approach is preferable.

## CHAPTER 3: A PROPOSED STRATEGY FOR NATIONAL FUEL STANDARDS

In the Chapter 2, AIP reviewed the principles that should apply to the establishment and implementation of the new national mandatory fuel standards. With these in mind, AIP has developed a strategy for establishment and implementation of the new fuel standards, which are consistent with the principles.

The key differences to that proposals advanced by Environment Australia in Discussion Papers 2 and 3 are the early establishment of operability standards, and on timing of the introduction of the environmental standards.

It should be noted that, in some policy areas, there are differences of view between AIP member companies. These differences are pointed out in the relevant areas. Further information and background on these differences are provided in the submissions of the individual AIP companies.

The key components of the strategy proposed by AIP are as outlined below.

### 3.1 Establishment of an Initial Standard

The first component of the strategy is the establishment of an mandatory national fuel standard for petrol and diesel, focused on overall operability.

There are a number of important elements underlying this strategy, as follows:

- a) Recognition that the fuel standards legislation should overtly consider non-environmental factors.

As stated in Chapter 2, AIP believes that fuel standards need to cover more than environmental objectives and parameters. They must also cover consumer requirements in terms of fuel standards that allow vehicle users confidence that the fuels purchased are fit for purpose. At the same time, the standards should help secure the taxation revenue base by inhibiting fuel substitution.

For pragmatic reasons, there should only be one piece of fuel standard legislation, and only one standard for petrol and diesel at any one time.

- b) Agreement that industry should have a full and on-going consultation role in the establishment of fuel standards

Given the wider role of the proposed fuel standard legislation, beyond environmental considerations, it is essential that industry has a full and on-going consultative role in the establishment of fuel standards.

AIP proposes that fuel standards, and the relevant legislation, becomes a subject of joint management by Environment Australia and the Department of Industry, Science and Resources. Changes to the standards would require joint submissions by both Departments.

Furthermore, a formal industry consultative body be established, under the auspices of the Department of Industry, Science and Resources to provide industry advice on fuel standards. Membership would comprise:

- Representatives of the car manufacturers and importers (viz. the Federal Chamber of Automotive Industries)
- Representatives of motorists (viz. the Australian Automobile Association)
- Representatives of the oil industry (AIP)
- Department of Industry, Science and Resources

Given the consumer and taxation interests, consideration could also be given to inclusion on representation from consumer affairs and taxation authorities.

This consultation process would be in addition to the standing process through the Motor Vehicle Environment Committee (MVEC). Due to its focus on environmental issues and the lack of direct industry involvement, MVEC is not considered suitable to be the prime source of consultation on fuel standards.

c) The Immediate Establishment of the Initial Operability Standards

There is an urgent need for the establishment of operability specifications. AIP proposes that these come into force as soon as practicable once the umbrella legislation is in place.

In this regard, AIP proposes that 1 January 2001 be taken as a target date for the implementation of the standards.

To this end, AIP further proposes that the industry consultative body be established as a matter of urgency, and tasked with determining the initial operability standards to apply from 1 January 2001.

The final standards will depend on the outcome of the discussions. However AIP is prepared to indicate that it would accept Euro 2 type standards for these operability specifications for petrol, and for diesel with the exception of sulphur. A slightly later date is suitable for sulphur nationally, given the need for refineries' investment. However should be noted that Euro 2 sulphur levels for diesel are already being mandated by some States.

In addition, a Driveability Index may be incorporated.

d) Merging over time of the environmental and operability specifications

At any time, there should only be one national mandatory fuel standard.

As the environmental standards are implemented according to the established timetable, they would supplant any operability specifications covering the parameter already in place.

### **3.2 Establishment of the Mandatory Environmental Fuel Standards at Timings Consistent with the MBE**

The majority of AIP member companies advocate the introduction of the mandatory fuel standards according to the MBE timetable. With regard to fuel, the key elements of the MBE are 50 ppm sulphur diesel from 1 January 2006, and for petrol octane and 150 ppm sulphur from 2005.

However one AIP company believes that there should be faster moves to harmonise with Euro standards, and in particular recommends the early introduction of Euro 4 petrol standards in 2005.

The key fuel parameter driver is the attainment of 50 ppm sulphur levels. This is the level set for Euro 4 for both petrol and diesel. While one AIP member company has already put in train the investment necessary to produce 50 ppm sulphur for both petrol and diesel, other companies have yet to make the decision.

As outlined in Chapter 2, technical factors are important considerations in establishing the timetable for the introduction of new fuel standards. For most refineries, the most cost-effective route to achieve 50 ppm sulphur petrol is to utilise the existing diesel desulphurisation plant, once it is replaced by a new plant to achieve 50 ppm sulphur in diesel. This infers a lag of at least one year for petrol after the introduction of 50 ppm sulphur diesel- ie 2007. For these refineries, it is not correct to assume, as suggested in Discussion Paper, that 50 ppm sulphur can easily be introduced at the same time.

Mandating a standard in a timeframe that is technically not achievable, or that would be prohibitively cost ineffective, would lead to refinery closures.

Moreover there is no guarantee that, if most Australian refineries are unable to produce 50 ppm sulphur petrol at an early date, the product could be imported. Information from some AIP members is that, on present indications of supply and demand balances in the Asian region, new clean fuels would be in short supply; if they are not produced in sufficient quantities by Australian refineries, the fuels will either be unavailable from refineries elsewhere in the region, or else only available at considerable premiums over standard fuels. However, one company believes that regional availability of clean fuels will be adequate to meet demand from 2005.

Most AIP companies advocate therefore that 50 ppm sulphur in petrol not be mandated until the timing indicated for other Euro 4 petrol specifications – ie 2007/08. One AIP company however suggests an earlier introduction, at 1 January 2005.

### **3.3 Establishment of a Financial Incentive for Refiners to Produce Euro 4 Fuels Ahead of the Mandated Dates.**

As outlined in the previous section, efforts to mandate Euro 4 sulphur levels in petrol in advance of 2007/08 could cause serious problems for some refineries.

Part of the reason for this is the cost penalty incurred for early introduction, out of step with the most cost-effective technical solution. For most refiners, the most cost-effective technical solution to produce petrol with Euro 4 sulphur levels is to reuse equipment currently being used to de-sulphurise diesel. This will not become available until after the new facilities to produce 50 ppm sulphur diesel are operational. To produce 50 ppm sulphur petrol before this time will require incremental investment and make an existing process unit redundant.

If, however, there is a firm desire by Government to encourage an earlier introduction of 50 ppm sulphur petrol, most AIP companies suggest that financial incentives for refiners may help overcome the cost penalty, and encourage refiners to invest in facilities that allow the earlier introduction of the fuel, but at a cost penalty.

These companies note that this approach has already been put in place for diesel.

One AIP company dissents from this view. This company does not support any financial incentive in this context, unless it delivers a real and cost effective environmental outcome, and does not create an unlevel playing field.

### **3.4 Lead Times for the Introduction of Cleaner Fuels**

AIP believes that mandatory fuel standards should not precede the timing for equivalent vehicle emission ADRs. In particular, AIP believes there is no reason to establish some interim Euro 3 level specifications in 2002.

The investments needed to be made by refineries need to follow a logical technical path. This determines when certain key fuel standards can be achieved. Proposals to 'cherry-pick' some elements of Euro 3 specifications may simply be unachievable.

Furthermore, while diesel Euro 4 sulphur standards are effectively mandated for introduction on 1 January 2006, there is no such requirement of 1 January 2005 for petrol. Most AIP member companies believe that a mid-year target would be more realistic.

Finally, there is no justification or need to mandate earlier introduction for fuel standards by 6-12 months. Industry can be relied upon to deliver fuels to specified agreed timetables. Requirements to advance the required dates by as much as 12 months will in most instances impose an impossible burden on an already tight time frame.

However, in regard to this last point, the establishment of the financial incentive referred to in Section 3.3 may help to meet the requirements of those importers wishing to introduce vehicles needing cleaner fuels, at an earlier date than required by the ADRs.

### **3.5 Flexibility in Meeting New Fuel Standards is Necessary**

Production of the new higher standard fuels will impose cost penalties on refineries, and justification of the investment necessary will be difficult, given the competitive nature of the refining industry in the Asian region and the poor returns achieved in recent years.

Flexibility in meeting overall environmental objectives will be an important assistance in minimising cost imposts, without cost to the overall environmental objectives.

Discussion Paper 3 examines the merits of three different approaches – maxima/minima, pool averaging, and the use of predictive models such as the USEPA Complex model.

In general, most AIP member companies favour the maximum use possible of pool averaging. Discussion Paper 2 proposes the use of pool averaging for petrol. The companies see reason, and important cost advantages, for the use of pool averaging in diesel as well. One of these AIP companies in addition believes that the use of the predictive model approach has advantages in providing flexibility.

Another AIP company prefers the maxima/minima approach. This is for reasons of simplicity, for minimisations of compliance assurance costs, and for close harmonisation with Euro standards.

### **3.6 Compliance to the New Standards will be Important**

For the new fuel standards to achieve their environmental objectives, there must be general adherence to the standards. As mentioned, previously, fuel substitution has been a major problem in the industry. Regulated fuel standards will help combat fuel substitution, but will not eliminate it whilst some potential blendstocks have no or low excise imposts compared to petrol and diesel. There will need to be strong compliance regimes in place to complement the legislation and the standards.

For legislative purposes, fuel standards should be determined at the terminal gate for fuel suppliers. There will need to be controls for quality control purposes also at the distribution and retail levels, to ensure that product standards are not compromised by blending of low excise alternative fuels into petrol and diesel.

## CHAPTER 4: DIESEL SPECIFICATIONS

### 4.1 Overview

AIP believes that the sulphur level is the key specification for diesel.

Moves to manage sulphur levels influences many of the other diesel specifications. Thus timing of specifications must be synchronised to actions to manage sulphur. Severe hydrogenation is required to remove sulphur. This will directionally:

- improve cetane, once sulphur levels are below 500 ppm
- reduce density and boiling point

As pointed out in the previous section, there are differences in views on some specifications proposals between AIP member companies. These differences are noted where appropriate.

### Sulphur

AIP points out that recent work by Concawe (99/62, *Potential of exhaust after treatment and engine technologies to meet future emission limits*) has shown that sulphur may not be as much of a technology limiting problem as first thought, at least as regards Euro 3 sulphur specifications compared to Euro 2. Thus careful analysis is needed before mandating sulphur specifications that require major and costly refinery investment.

All refineries have to invest in deep hydro-desulphuriser units to achieve the MBE sulphur levels. Two refineries, Kwinana and Bulwer Island, are currently investing in the required hardware.

### Quality Control Specifications

Two States have instituted State standards for sulphur, at 500 ppm. This level is currently being introduced into Western Australia, with full completion by 1 January 2001. Queensland is moving to mandate 500 ppm sulphur by 14 July 2000.

Current average levels of sulphur nationally are around 1300 ppm.

AIP supports the early establishment of Euro 2 specifications for diesel, including sulphur. However to achieve the Euro 2 sulphur levels of 500 ppm will require that refineries have sufficient lead time to achieve this. Refiners have advised that production of 500 ppm can be achieved by the end of 2002, in line with the MBE requirements. The industry has committed already to use best endeavours to produce diesel meeting a 500 ppm sulphur specification before that date.

Most AIP companies suggest therefore that an initial specification be established for sulphur at 1300 ppm by 1 January 2001, in advance of a mandatory specification of 500 ppm at end 2002.

One company advocates the introduction of the mandatory 500 ppm specification as at 1 January 2002.



### Euro 3 Specification

EA Paper 2 seeks comment on the merit of establishing a specification of 350 ppm as an interim measure, prior to the introduction of the 50 ppm specification.

Most AIP companies do not support this, on the grounds that little purpose is served by such a measure. These companies point out that, while 350 ppm sulphur is the Euro 3 specification, it is not a specification that would enable more fuel efficient vehicles technologies to be introduced. Moreover the refineries will be focused on achieving the longer term 50 ppm sulphur specification, and the interim standard could divert their resources from the more important longer term goal.

One company, however, sees that measure has environmental benefits, and would support it.

### Environmental Specifications

EA Paper 2 proposes a 50 ppm specification for sulphur to apply from 2005/6. A date of 1 January 2006 would be in line with the provisions of the Diesel and Alternative Fuel Grants Bill, and with the Euro 4 specifications.

AIP stresses that there is no need for mandating the introduction of the lower sulphur fuel specifications prior to the associated ADRs. This will put unnecessary pressure on an industry which can be relied upon to deliver against set agreed deadlines.

EA Paper 2 has indicated a further lowering of the specification to 30 ppm by 2008, and suggests that this can be achieved by the industry at marginal cost. It is however too early to confirm that the move from 50 ppm to 30 ppm sulphur could be achieved at marginal cost. Moreover, it is Government stated policy to move towards harmonisation with Euro standards. The latest current Euro standard is Euro 4. While sulphur levels of 50 ppm are specified in Euro 4, most other specifications are not yet finalised. AIP is firmly of the belief that it is therefore too premature to consider a further move beyond Euro 4 standards to 30 ppm sulphur, before the costs and benefits are more firmly established.

### Lubricity

As outlined in EA Paper 2, the reduction of sulphur also reduces some of the elements that provide natural lubricity. Accordingly EA has asked for views on whether a standard for lubricity should be developed.

There is no lubricity specification in Euro 4, and there is great debate on the ability of the established tests to estimate the performance of fuels when compared with long duration pump tests. However, the lubricity performance of fuels does have important implications for engine performance. There are problems with certain injection systems at 'low' sulphur levels and lubricity additives are used if there is uncertainty on lubricity. It is most likely that lubricity additives will be required when 50 ppm sulphur diesel is marketed.

AIP considers that there will be important potential benefits in establishing an agreed lubricity specification. AIP suggests that the Consultative Committee proposed by AIP examine the issue and make a recommendation in 2001.

#### AIP Proposals for Sulphur Specifications

##### Quality Control Specifications

- *A maximum sulphur level of 1300 ppm be established by 1 January 2001*
- *A maximum sulphur level of 500 ppm be established in 2002, in conjunction with a mandatory Diesel Euro 2 standard. Most AIP companies recommend that this be instituted at the end of 2002; one company advocates implementation at 1 January 2002.*

##### Environmental Specifications

- *Most AIP companies recommend that there be no interim 350 ppm sulphur specification. One company supports the measure.*
- *Most AIP companies recommend a maximum sulphur level of 50 ppm at 1 January 2006. One company recommends its implementation in 2005.*
- *Consideration of a maximum sulphur level of 30 ppm be deferred until the position on Euro standards in that regard is clearer*
- *The Consultative Committee determine during 2001 an appropriate lubricity specification for 1 January 2006.*

#### Cetane

As noted in EA Paper 2, the cetane and sulphur issues are complementary, as measures to improve sulphur will also impact on cetane. It is most important therefore that the specifications established for cetane are complementary to those for sulphur, and to the action necessary by the refiners to achieve the sulphur specifications.

While a reduction in sulphur levels to 500 ppm will have little effect on cetane, the move to 50 ppm, with the severe hydrogenation required, will have an important effect.

#### Quality Control Specifications

EA has proposed a minimum cetane index of 47 by 1 January 2002. This is higher than either the Euro 2 or the Euro 3 specification (46). While average cetane index production levels by Australian refineries in 1999 exceeded the proposed minimum, actual production batches varied widely, with lows of 45. Thus a specification of a cetane index of 47 would both constrain refinery production before the introduction of the processes to manage sulphur and diesel were in place, and also exceed the relevant European standards.

Most AIP companies therefore regard a minimum specification for cetane index of 47 as unjustified and impractical. However these companies have suggested that a quality control standard equivalent to Euro 2 be introduced as soon as practical. This would suggest a minimum cetane index of 46.

Most AIP companies advise that cetane outturn varies widely, and that therefore cetane is an ideal specification to be managed as an average, as proposed in EA Paper 3 for certain petrol specifications. Most AIP companies, therefore, suggest that an average minimum cetane index of 46 established in 2001, with an absolute floor of 45.

One company does not support an averaging approach to specifications, and support a minimum cetane index in 2001 in line with the levels proposed by EA for 2002.

#### Environmental Specifications

EA has proposed that a minimum cetane index specification of 50 be established for 1 January 2006, with the index being at most 3 points below the cetane number.

As stated above, most AIP companies believe that, as cetane indices vary widely across batches with the crude intake, it is preferable to manage cetane on an averaging basis.

Two AIP companies propose therefore that the 2006 minimum cetane index specification of 50 be set as an average minimum. While the proposed EA specification of 50 cetane index is greater than these AIP companies expect to be able to achieve as an absolute minimum, it should be possible to achieve this as an average. While one of these companies suggests that the absolute floor be kept at 45, another would accept a higher floor.

One company does not advocate an averaging approach, and recommends a minimum cetane index specification in line the index specification ultimately adopted for Euro 4 in 2006.

Another AIP company however believes that there are minimal benefits from increasing the cetane index specification higher than 46, and so is recommending that the cetane index specification not be tightened beyond the Euro 3 best endeavours level.

#### AIP Proposals for Cetane Specifications

##### Quality Control Specifications

- *Most companies recommend a minimum average cetane index specification of 46 be established by 1 January 2001, with an absolute floor of 45. One company advocates a minimum cetane index specification of 47 at this date.*

##### Environmental Specification

- *Two AIP companies recommend a minimum average cetane index specification of 50 be established at 1 January 2006, with an absolute floor of 45 (though one of these companies suggests a higher floor). One company proposes a minimum cetane index specification in line with that to be adopted for Euro 4. Another AIP company recommends that the cetane index specification be set at the Euro 3 level of 46.*
- *Most AIP companies suggest that, if there is a requirement to mandate a maximum differential of 3 between the cetane index and number, refiners be allowed to manage the differential on an average basis*

## Ash Content

EA has proposed that the ash content of diesel and diesel extender be set at 0.01% (100 ppm) by mass by 1 January for 2002. This is equivalent to the Euro 2 specification for diesel.

AIP agrees with this specification. There is no further specification in Euro 3 and Euro 4, and AIP proposes that this specification carries through to the environmental specification.

AIP would like, however, to clarify its position on diesel extenders. In AIP's view, diesel extender should only ever be sold in a blend with diesel, with the overall blend meeting the diesel specification, for ash and all other components. This is to ensure that any consumer purchasing diesel can be assured that the product is diesel in every respect, even if it is a blend of diesel and extender.

It is therefore irrelevant and unnecessary to make specific recommendations for diesel extenders.

### AIP Proposals for Ash Content

#### Quality Control and Environmental Specification

- *A maximum ash content specification of 0.01% by mass be established by 1 January 2001.*

## Viscosity

EA has proposed a viscosity specification range of 2.0 – 5.0 centistokes, slightly wider than Euro 2 specifications.

Most AIP companies agree with this specification. There is no further specification in Euro 3 and Euro 4, and AIP proposes that this specification carries through to the environmental specification.

One AIP company has suggested that the proposed unit of centistokes is not consistent with SI (international) practice, and that the unit of measurement should be mm<sup>2</sup>/s.

### AIP Proposals for Viscosity Specification

#### Quality Control and Environmental Specification

- *Most AIP companies propose a viscosity range specification of 2.0 – 5.0 centistokes at 40°C be established by 1 January 2001*
- *One company recommends that the unit of measurement be mm<sup>2</sup>/s, rather than centistokes.*

## Density

EA has proposed a minimum/maximum range for density of 820-850 kg/m<sup>3</sup> by 1 January 2002, and of 820-845 kg/m<sup>3</sup> by 1 January 2006.

EA notes that the current average is 846 kg/m<sup>3</sup>. There is however a wide spread around this figure, which varies heavily with the crude feedstock. At present, 50 per cent of available crudes would not meet the proposed EA specification.

At present, AIP refiners mostly intend to manage the reduction in density through the hydrogenation route – a further linkage to sulphur reduction. For most companies, this will not be in place until 2006.

The early imposition of Euro 3 or 4 standards in 2002 will mean that refineries will be greatly constrained in crude selection. This would not only have cost effects, it would also constrain the ability to make enough diesel to meet demand and may impact on jet fuel production. A substantial proportion of the diesel requirement would need to be imported.

Most AIP companies strongly urge that the imposition of Euro 3 or 4 density standards be deferred until the logical time in terms of refinery technology – 2006.

One company however advocates that the maximum specification not be lowered from 860 kg/m<sup>3</sup>, and that the diesel density specification should be managed on an averaging basis. Another recommends an earlier implementation, in January 2005.

As with other diesel specifications, a quality control specification equivalent to the Euro 2 specification of 820–860 kg/m<sup>3</sup> should be established in 1 January 2001.

### AIP Proposals for Density Specifications

#### Quality Control Specifications

- *A minimum/maximum range for density of 820-860 kg/m<sup>3</sup> be established by 1 January 2001.*

#### Environmental Specification

- *Two AIP companies recommend a minimum/maximum range for density of 820-845 kg/m<sup>3</sup> be established by 1 January 2006. One company recommends that the maximum specification be set at 860 kg/m<sup>3</sup> at an average minimum rather than 845 kg/m<sup>3</sup>. Another proposes that the minimum/maximum range of 820-845 kg/m<sup>3</sup> be introduced on 1 January 2005.*

## Distillation

EA has proposed a maximum T95 distillation specification of 360°C at 1 January 2002, and of 350°C in 2006. This is equivalent to Euro 3 in 2002, and Euro 4 in 2006.

EA reports that the average refinery outturn at present gives a T95 distillation of 352.8°C. There is however a wide variation around this number.

The management avenues open to the refineries are essentially linked to the other processes required to manage sulphur, cetane, and density. As stated before, these will not be in place before 2006. The alternative would be to meet the specification by crude unit cut point changes, but the diesel cut would be narrow, with consequent significant cost implications. It is therefore unreasonable to impose distillation requirements before there is a reasonable prospect of effective management.

Moreover, as with cetane, distillation seems to be a specification which would benefit greatly from management through averaging with an absolute maximum. This would achieve the environmental aims while giving the refineries the required flexibility. Most AIP companies therefore propose that the environmental specification for T95 distillation should be an average of 360°C, to be introduced at 1 January 2006. One company recommends a maximum specification of 350°C.

AIP also suggests that Euro 2 T95 maximum distillation point of 370°C be established for quality control by 1 January 2001.

#### AIP Proposals for Distillation Specifications

##### Quality Control Specifications

- *A maximum distillation limit for T95 of 370°C be established by 1 January 2001*

##### Environmental Specifications

- *Most AIP companies propose an average maximum distillation limit of 360°C be established at 1 January 2006. One company recommends a maximum limit of 350°C*

#### Polyaromatic Hydrocarbons (PAHs)

EA has indicated a maximum specification of 11% m/m for 1 January 2006, in line with the Euro 3 and Euro specifications. However it is noted that there is little data and more research may be required.

AIP agrees with these comments, both regarding the need for more data and the value of a specification.

There is no comparable Euro 2 specification, and AIP suggests that there is therefore no need for a comparable quality control specification in 2001.

#### AIP Proposals for PAH specifications

##### Environmental Specifications

- *A maximum PAH limit of 11% m/m be established at 1 January 2006, if justified following further research.*

### **Cloud Point and Cold Filter Plugging Point**

EA Paper 2 points out that cloud point and the cold filter plugging point are important operating parameters for diesel in different Australian climatic conditions.

AIP agrees with this analysis. The Australian Standard for diesel (AS3570) was primarily established, and updated in 1998, to outline the cloud point requirements across a range of Australian climatic conditions. These standards contained in AS3570 are still appropriate.

Given this, AIP believes that if mandatory standards for cloud point or cold filter plugging point are to be introduced, they should be as per the current Australian standard.

### **Flashpoint**

Flashpoint is more relevant to transport, storage and handling of diesel. Flashpoints for petrol (a flammable liquid) and diesel (a combustible liquid) are defined under Australian Standard AS 1940, and their transport regulations specified under the Australian Code for the Transport of Dangerous Goods.

Given the current regulation of this factor, there seems no purpose in further regulation.

## CHAPTER 5: PETROL SPECIFICATIONS

In *Measures for a Better Environment*, the key drivers outlined for improving petrol quality are the levels of octane and sulphur in the fuel. EA Paper 2 adds the following other petrol parameters as affecting emissions performance: volatility; hydrocarbon content (aromatics, olefins, and benzene); lead content; oxygen content.

Unlike the situation in diesel, in which processes to manage sulphur levels complemented processes to manage other key parameters, the processes necessary to manage the key petrol parameters work against each other to a large extent. This makes the need for allowing refineries the maximum flexibility in meeting overall all the more important. Pool averaging is seen by most AIP companies as critical to allowing refineries to remain cost-effective.

As with diesel, AIP urges that a clear distinction be drawn between mandatory specifications for quality control, and the mandatory specifications for environmental objectives, even though they would all be included in a single fuel standard. For the environmental standards, *Measures for a Better Environment* sets out a timetable for harmonisation with Euro 3 sulphur and octane standards in 2005, though does not specify whether this should be from 1 January 2005 or later in the year. There is no clear timetable for harmonisation with Euro 4.

Refinery technology, particularly with regard to the introduction of processes to reduce sulphur content, must be considered in the establishment of any timetable. Most importantly, for most refineries this will mean that a 50 ppm sulphur petrol would not be introduced until 12 months after the introduction of 50 ppm sulphur diesel.

In spite of both these points, the EA proposals for petrol in many key areas require Euro 3 petrol specifications in 2002 – 3 years before the timing required for Euro 3 sulphur standards in *Measures for a Better Environment* – and Euro 4 specifications in 2005. It will not be possible technically or logically for most refineries to achieve this.

As with diesel, there are differences in view between AIP companies, and these differences are pointed out as appropriate. Most AIP companies urge most strongly that there should not be a piecemeal approach which tries to cherry-pick certain key elements for early introduction.

Two of these companies believe that the new standards should broadly target Euro 3 petrol standards in mid 2005 (adapted for Australian requirements, such as benzene levels), and Euro 4 standards at an indicative 2008, subject to further analysis. Another advocates that the standards be set in line with the 'Scenario 3 Best Endeavours' standards set out in the Fuel Quality Review.

One company however advocates the introduction of Euro 4 standards in 2005.



## Octane

EA has proposed minimum RON levels of 91RON for ULP and 95RON for PULP from 2002.

EA has further proposed that there be a maximum differential between RON and MON of 10.

In AIP's views, the positions of EA and AIP with regard to RON are broadly compatible. AIP suggests that a minimum RON of 91 for ULP and 95 for PULP be established from January 2001, as part of a mandatory quality control specification for petrol.

AIP does not believe that there is a case for mandating a maximum RON/MON differential. Indeed, recent Japanese research has shown that improved engine performance can be achieved with a higher spread. In addition, technically the requirement would mean that LRP could not be produced. Presumably this is not the intention. EA Paper 2 itself states that the principle reason for imposing a maximum spread is to control aromatic and olefin levels. If these are specified separately, there is no pressing reason to mandate a maximum spread. Specifications for minimum RON and MON are sufficient.

One AIP company has proposed minimum MON levels of 81 for ULP and 85 for PULP.

Some AIP companies have raised concerns about possible missfueling of vehicles – ie that vehicles that should be using 95 octane opt to use 91 octane. This could negate some of the environmental benefits of cleaner fuels. AIP believes that further analysis on possible solutions to this is necessary, and that this be taken on by the Consultative Committee.

There have been some discussions regarding 98RON fuels being available for some vehicles. AIP sees no need to mandate 98RON. Some refiners already produce 98RON petrol, and if there is a market for 98RON, a competitive market will see that that demand is met. It should be noted that refineries can only produce limited amounts of 98RON petrol without the use of oxygenates.

### AIP Proposal for Octane Specifications

#### Quality and Environmental Control Specification

- *A minimum of 91RON for ULP and 95RON for PULP by 1 January 2001*
- *No requirements in regard to the differential between RON and MON, apart from minimum RON and MON*
- *Most companies have proposed minimum MON levels of 81MON for ULP and 85MON for PULP.*
- *The Consultative Committee consider the issue of potential missfuelling of vehicles in regard to octane, and develop recommendations to minimise its incidence.*

## Volatility

EA has proposed the establishment of national standards for RVP for summer (November to March) for all grades of petrol as follows: 67kPa by 1 January 2002; 62kPa by 1 January 2005; and 58 kPa by 1 January 2008/10 (indicative). These controls would be in addition to State based controls.

In AIP's view there is no requirement for national controls of petrol volatility. The volatility of fuel has no environmental impact apart from ozone, which is only an urban airshed issue. Moreover the significance of the issue will vary between different airsheds, depending on the ambient air quality of each airshed.

AIP therefore believes that this is one area where a State based-approach is preferable and more effective than a national approach. As stated in EA Paper 2, State-based regulations of RVP are based on pool averaging, usually with caps. AIP agrees that this is the appropriate management approach.

AIP also notes the comment by EA that meeting the volatility specification will require 300,000 tpa of high octane butane will need to be used elsewhere. Given a national approach, this is technically correct, and will make the achievement of higher octane requirements for petrol that much more difficult.

### AIP proposal for Volatility Specifications

- *AIP urges strongly that there be no national mandatory specifications for volatility, but that volatility be controlled at a State level, as appropriate for individual urban airsheds*
- *Where volatility is controlled, pool averaging should be used.*

## Distillation

EA has proposed a distillation specification of a maximum FBP of 210°C from 1 January 2005, in line with the Euro 3 specifications for distillation.

This is slightly tighter than that proposed by AIP for 2005. AIP had suggested the 210°C level from 2008. However AIP refiners can accept the tighter EA specification by mid 2005 for the environmental specification.

AIP believes that the quality control standards should contain a specification for distillation FBP. The current refinery exchange specifies a maximum of 228°C, and AIP suggests that this be used.

EA has raised the issue of the incorporation of a driveability index. AIP is supportive of the concept, as much for quality control reasons as environmental reasons. The move to higher octane fuels tends to worsen the driveability index, so more research is needed to establish the index.

## AIP Proposals for Distillation Specifications

### Quality Control Specifications

- *A maximum distillation FBP specification of 228°C be established by January 2001*
- *More research be undertaken into the establishment of a driveability index by the Consultative Committee*

### Environmental Specification

- *A maximum distillation FBP specification of 210°C be established by mid 2005*

## Olefins

EA has proposed the introduction of maximum level for olefins of 18 per cent from 1 January 2002, in line with Euro 3, and for 16 per cent from 1 January 2005.

The main reason advanced by EA is a link between the combustion of olefin compounds of petrol and the formation of the known carcinogen 1,3 butadiene. EA notes that air toxics are a priority policy area, likely to be the subject of an air toxics NEPM, and that 1,3 butadiene is likely to be identified as a priority pollutant.

AIP is firmly of the belief that any policy moves such as this must be based on sound scientific data. EA Paper 2 identifies that 1,3 butadiene levels are projected to fall in capital cities by 16 per cent by 2010, without the restriction on olefins (Scenario 2 of the Fuel Quality Review).

Most AIP companies believe that there is no justification to advance the introduction of Euro 3 specifications for olefins to 2002. These companies propose rather that a maximum specification for olefins of 18 per cent be introduced in mid 2005.

Most AIP companies further recommend that any move below 18 per cent should be the subject of further analysis, pending the outcome of the establishment of the Euro 4 specification. In any event, any introduction of such a specification should be deferred to at least 2008.

EA has suggested that pool averaging may be appropriate for the management of olefin levels. Most AIP companies agree with this, to provide more flexibility without compromising the overall environmental objectives.

One company, however, believes that the petrol specifications should be set at Euro 4 levels as at 1 January 2005.

However it is recognised the Euro has not yet been defined, and is unlikely to be so till next year. Indeed it is not clear the Euro 4 specification will be reduced below the Euro 3 level of 18 per cent.

There is no need for an early quality control specification for olefins

## AIP proposals for Olefins Specifications

### Environmental Specifications

- *Most AIP companies recommend a maximum specification for olefins of 18 per cent be established by mid 2005, based on a pool averaging approach. One company proposes a maximum specification in line with the yet-to-be-defined specification for Euro 4.*

### Aromatics

EA has proposed the introduction of a maximum level for aromatics of 45 per cent from 1 January 2002, of 42 per cent from 1 January 2005 in line with Euro 3 levels, and of an indicative 38 per cent from 2008.

In support of these levels, EA points out the international trend to reduce aromatics, the need to manage benzene levels, and the current refiners' aromatics content of around 31 per cent aromatics.

Most AIP companies believe that these arguments need closer scrutiny.

In their view, with regard to the international trend to reduce aromatics, much of this trend is based on the extensive use of MTBE, which is now being phased out in many countries due to environmental concerns. MTBE acts as a diluent on other petrol components such as aromatics. For example, if the effect of MTBE on the Euro 3 specification for aromatics is excluded, the Euro 3 specification for aromatics is closer to 46 per cent rather than 42 per cent.

These companies also note that levels of benzene in petrol are proposed to be specified separately. They therefore believe that there no need to manage aromatics for the sake of managing benzene levels.

The current refiners' use of aromatics is based on historical data. The introduction of LRP will lead to higher octane requirements.

Most AIP companies suggest therefore that there is no need for an aromatics specification of 45 per cent in 2002. There is however a need for a quality control specification for aromatics as soon as possible. AIP proposes that this be set at 48 per cent. The companies note that, allowing for the effect of MTBE dilution, this specification is in fact not dissimilar to Euro 3 specifications.

These AIP companies believe that, if restrictions are placed on MTBE, the aromatics specification should be adapted to reflect the restriction, and that the use of pool averaging is appropriate to meet this target, for the sake of flexibility at refineries.

Two AIP companies propose that the environmental specification of 42 per cent be established for 2005. These companies moreover argue that further analysis of the costs and benefits of moving below the 42 per cent specification in 2008 needs to be undertaken. Such a move would be very costly if the use of MTBE was restricted.

One AIP company does not support a reduction in the aromatics specification below 48 per cent. Another AIP company supports the establishment of a maximum aromatic specification of 42 per cent in line with Euro 3 as at 1 January 2002, and recommends that the 2005 specification be set in line with the Euro 4 specification of 35 per cent as at 1 January in that year.

#### AIP proposals for Aromatics Specifications

##### Quality Control Specifications

- *Most AIP companies propose a maximum specification for aromatics of 48 per cent be established by 1 January 2001, based on a pool averaging approach.*

##### Environmental Specifications

- *One company recommends a maximum specification for aromatics of 42 per cent be established as at 1 January 2002. This is not supported by other AIP companies.*
- *Two AIP companies recommend a maximum specification for aromatics of 42 per cent be established in 2005. These companies recommend that this be put in place in mid-year, based on a pool averaging approach, and that if restrictions are placed on MTBE, the specification should be adapted upwards to reflect the restriction. One company proposes that a maximum specification of 35 per cent be set as at 1 January 2005, in line with the Euro 4 specification. Another AIP company recommends a maximum aromatic specification of 48 per cent.*
- *Further analysis be done on the merits of reducing the specification further. If there is to be a further reduction, it should not be implemented before 2008.*

#### Benzene

EA has proposed the introduction of maximum level for benzene of 3 per cent from 1 January 2002, and for 2 per cent from 1 January 2005. Euro 3 and 4 specify a 1 per cent benzene level.

AS noted in EA Paper 2, it is very costly for refineries to move to benzene levels equal to or under 1 per cent benzene. There is also a significant greenhouse gas emission penalty.

Most AIP companies support the EA proposal for a 2 per cent specification for benzene in 2005. Pool averaging will be important to assist refineries in achieving this target.

EA has also suggested a maximum level of 3 per cent from 2002. This is very difficult, if not impossible for many refineries to meet without major investment, which cannot be in place by the deadline. A number of AIP companies have advised that typically, from the time a fuel specification is adopted to the time the refinery is able to introduce the new processes to achieve the specification, a minimum of two to three years is required. This suggests that for at least some refineries the 2002 target is not be achievable.

Most AIP companies suggest therefore that a quality control specification be set at the current maximum levels of 5 per cent, but that refiners undertake to use best endeavours to achieve a maximum of 3 per cent benzene on a pool averaging basis.

One company recommends a mandatory maximum specification of 3 per cent for benzene from 1 January 2002, and a maximum specification of 1 per cent from 1 January 2005, in line with Euro 3 and 4 levels.

#### AIP proposals for Benzene Specifications

##### Quality Control Specifications

- *A maximum specification for benzene of 5 per cent be established by 1 January 200.*

##### Environmental Specifications

- *Most AIP companies support a 'best endeavours' specification for benzene of 3 per cent to be established by mid 2002, based on a pool averaging approach. One company advocates that this maximum level be mandated from 1 January 2002.*
- *Most AIP companies propose a maximum specification for benzene of 2 per cent be established by mid 2005, based on a pool averaging approach. One company recommends that the maximum benzene level be set at 1 per cent from 1 January 2005.*

#### Sulphur

EA has proposed the introduction of a maximum level for sulphur of 150 ppm from 1 January 2002 in line with Euro 3 levels, f 50 ppm from 1 January 2005 in line with Euro 4 levels, and of an indicative 30 ppm from 2008.

Most AIP companies are strongly opposed to these suggestions on the grounds that:

- there is no justification for advancing the Euro 3 and Euro 4 specifications
- it will be technically impossible to meet these specification in the time frame.

Under the ADRs gazetted in 1999, reduced sulphur petrol is required to be in place at the following levels: 500 ppm in 2002; 150 ppm in 2005; and 50 ppm in 2008 (at the earliest). This conflicts with the timing proposed by EA. The EA timing presumably is aimed at allowing a few importers of vehicles to import some Euro 4 compliant vehicles before the date set by the ADRs. Most AIP companies believe that that the correct policy response to this is to let a competitive market produce the required fuels if there is sufficient demand, rather than mandate to suit a few companies.

EA has also assumed that there would be technical synergies through matching the 50 ppm sulphur introductions of petrol and diesel. This is in fact not the case for most refineries. Technological factors at some refineries rather dictates that 50 ppm sulphur petrol needs to be introduced at least 12 months after the introduction of 50 ppm sulphur diesel.

At present several refineries have a diesel hydrotreater which is used to reduce diesel sulphur and improve colour and stability. These units will not be suitable for the production of Euro 4 diesel, and a new hydrotreater for diesel will need to be built. Once the new hydrotreaters are in place, the old hydrotreaters can be used for other duties, in particular the reduction of sulphur in petrol to 50 ppm (through the hydrotreating of cat naphtha.

Mandating 50 ppm sulphur for petrol at the same time as diesel will in fact mean that new process plant will need to be installed for most refineries, rather than use being made of existing plant. This would have a major impact on the viability of the overall investment for clean fuels.

The fact that current pool averages for sulphur are close to the suggested 150 ppm level for 2002 is irrelevant. For most refineries, the processes are not in place to produce 150 ppm sulphur fuels from 2002. Moreover, a move to lower sulphur will in fact also work to reduce the octane.

AIP suggests that a quality control specification equivalent to the Euro 2 specification be introduced from 2001.

Most AIP companies further propose that the Euro 3 specification of 150 ppm on a pool averaging basis be implemented in mid 2005, and 50 ppm sulphur not be mandated until 2007 at the earliest.

One company supports a maximum sulphur level of 150 ppm from 1 January 2002, and that a maximum specification for sulphur of 50 ppm be mandated from 2005.

#### AIP proposals for Sulphur Specifications

##### Quality Control Specifications

- *A maximum specification for sulphur of 500 ppm be established by 1 January 2001.*

##### Environmental Specifications

- *Most AIP companies propose a maximum specification for sulphur of 150 ppm be established by mid 2005, based on a pool averaging approach*
- *Most AIP companies recommend a maximum specification of 50 ppm sulphur not be mandated until 2007 at the earliest. One company advocates that this level of sulphur be mandated from 1 January 2005.*

#### Lead

EA has proposed the introduction of maximum level for lead of 0.013 g/L from 1 January 2002, and for below detectable levels from 1 January 2005.

AIP supports these proposals, with the proviso that there is a clear definition of 'below undetectable' levels as being 0.005 g/L, consistent with the Euro specifications. There is also a case for bringing forward in the early specification as a quality control specification.

#### AIP proposals for Lead Specifications

##### Quality Control and Environmental Specifications

- *A maximum specification for lead of 0.013 g/L be established by mid 2001.*
- *A maximum specification for lead for below detectable limits (taken as being 0.005 g/L) be established by mid 2005.*

## Oxygenates

EA has proposed the introduction of maximum level for oxygenates of 2.7 per cent from 2002 as a maximum limit by volume. This is in line with Euro 3 and 4 levels. In addition, the oxygenates able to be used are to be clearly specified.

AIP believes that a maximum level of oxygenates should be established, to protect consumers and ensure consistent product quality. This should be done following the completion of the EA study into the use of oxygenates.

It is most important that there is ultimately a clear specification of the allowable use of ethanol, and its relation to volatility specifications.

### AIP proposals for Oxygenates Specifications

#### Environmental Specifications

- *A maximum specification for oxygenates be determined following the release of the Octane Extender study.*
- *A clear definition be instituted of the allowable use of ethanol and its relation to volatility restrictions*

## Additives

In Section 5.3 of EA Paper 2, EA notes the increasing use of additives, and it is proposed that additive use will be prohibited unless specifically approved following an agreed testing and verification process.

AIP assumes that this refers to after-market additives. In this case, AIP supports the measure. AIP would oppose however any such approval process for refinery or terminal additives such as detergents. The proposed approval process would have no useful application in this regard.

This point must be clarified.

If this also covers additives added at refinery levels, one company notes that it is opposed to the use of methylcyclopentadienyl manganese tricarbonyl (MMT).