

7 July 2005

File Ref

A224:08

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Ministry of Economic Development
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Dear Sir

Discussion Paper: Review of Permitted Sulphur Levels Beyond 2006 Under The Petroleum Products Specifications Regulations

This submission is from the:

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Thank you for the opportunity to provide comment on the Discussion Paper regarding the proposed further sulphur reductions for petrol and diesel.

With motor vehicles producing between 60-80% of the air pollution in the Auckland Region, the Auckland Regional Council (ARC) is very supportive of any initiatives to improve the vehicle fleet performance. The adverse health impacts of vehicle emissions are considerable, resulting in an estimated 250 premature deaths per year in Auckland and 400 nationwide¹, with a wide range of sub-lethal health problems. The environmental costs associated with motor vehicle use in New Zealand have recently been estimated at \$442 million per annum for local air quality impacts alone².

The ARC recommends with urgency that sulphur levels in fuels be reduced to near-zero levels as soon as practicable to allow the cleanest technology vehicles to enter the fleet, improve performance of existing vehicles, and enable the best retrofitting options for heavy duty diesel vehicles. We are requesting that the Ministry of Economic Development delivers 10ppm S diesel and 50ppm S petrol no later than January 2007, with a commitment to introduce 10ppm S petrol no later than January 2010.

¹ Fisher *et al.* 2002. Health Effects Due to Motor Vehicle Air Pollution in New Zealand, Report to the Ministry of Transport. NIWA. March 2002. Available at <http://www.transport.govt.nz/publications/niwa-report/index.php>

² Booz Allen Hamilton 2005. Surface Transport Costs and Charges Study, Report to the Ministry of Transport. March 2005. Available at <http://www.transport.govt.nz/business/land/land-transport/surface-transport-costs-and-charges.php>

General Comments

Impact of Motor Vehicle Pollution in Auckland

Motor vehicle pollution is a serious health issue in the Auckland Region. The Ministry of Transport's own research in 2002 estimated that fine particulate less than 10µm (PM₁₀) emitted by motor vehicles in Auckland alone causes around 250 premature deaths every year³. Since then the epidemiological evidence demonstrating significant health effects due to particulate matter (PM) emissions has exploded worldwide.

Recently, both the United States Environmental Protection Agency (USEPA)⁴ and the United Kingdom Department of Environment, Food and Rural Affairs (DEFRA)⁵ have released substantive reports showing the true public health significance of PM emissions. The key findings are:

- Particulate from traffic and coal combustion sources have the greatest impacts on mortality
- Several biological mechanisms have been proposed for how PM causes health effects
- PM has a sustained impact on health rather than just affecting those for whom death is imminent.

In Auckland, diesel vehicles are estimated to be responsible for 91% of the PM₁₀ emitted from all motor vehicles, despite making up only 17% of the fleet based on mileage. Approximately half of this contribution comes from heavy-duty trucks and buses. Consequently, we believe that initiatives designed to target these vehicles in particular will yield the best improvement for Auckland's air quality and minimise the associated health costs.

The growing strength of evidence and severity of fine particulate matter (PM₁₀) health impacts now include arteriosclerosis, strokes, carcinogenicity, stunted lung growth and implications in Sudden Infant Death Syndrome⁶. These more recent findings are in addition to the thousands of studies confirming cardio-respiratory effects such as heart attacks, angina, asthma and premature death. The health evidence shows that chronic health effects associated with PM₁₀ exposure are 10 times more significant than acute health effects^{7,8}.

Compared to European cities, motor vehicle emissions have also led to very high concentrations of carbon monoxide and nitrogen dioxide in Auckland. Carbon monoxide (CO) interferes with the blood's ability to absorb and circulate oxygen. High levels of CO can affect people with heart conditions such as angina and can impair co-ordination and attention. Nitrogen dioxide (NO₂) can irritate the lungs, increase the susceptibility and severity of asthma and lower resistance to infections such as the flu.

Motor vehicles are also responsible for 47% of the carbon dioxide (CO₂) emissions in the Auckland region.

³ Fisher GW *et al* (2002). Health Effects of Motor Vehicle Air Pollution in New Zealand. Report to the Ministry of Transport, January 2002. Available at <http://www.transport.govt.nz>

⁴ USEPA (2004). The EPA Particulate Matter Research Program: What Have We Learned About PM Since 1997? Report EPA 600/S-04/057, July 2004. Available at <http://www.epa.gov/pmresearch>

⁵ DEFRA (2004). Particulate Matter in the United Kingdom. Draft report for comment prepared by the Air Quality Expert Group for DEFRA, August 2004. Available at <http://www.defra.gov.uk/corporate/consult/particulate-matter>

⁶ Clean Air Task Force 2005. Diesel and Health in America: The Lingering Threat. February 2005. Available at <http://www.catf.us/publications/view/83>

⁷ United States Environmental Protection Agency 2004. Particulate Matter Research Program: Five Years of Progress. October 2004. Available at http://www.epa.gov/pmresearch/pm_research_accomplishments/

⁸ Department for Environment, Food and Rural Affairs 2004. Expert Group Report on Particulate Matter in the UK. August 2004. Available at <http://www.defra.gov.uk/corporate/consult/particulate-matter/index.htm>

The Impact of Sulphur on Vehicle Emissions

Sulphur is a naturally occurring component of crude oil and is found in both petrol and diesel. Sulphur fouls conventional and advanced technologies to control vehicle emissions, including carbon monoxide (CO), particulate matter (PM), nitrogen oxides (NO_x) and hydrocarbons (HC).

Reduced sulphur fuels (~150ppm) make existing vehicles cleaner. Reduced sulphur fuel decreases emissions of CO, HC, and NO_x from catalyst-equipped petrol vehicles and PM emissions from diesels, with and without oxidation catalysts. These benefits increase as vehicles are designed to meet higher emissions standards and sulphur levels are reduced further. **Currently, NZ has reduced sulphur premium grade petrol only.**

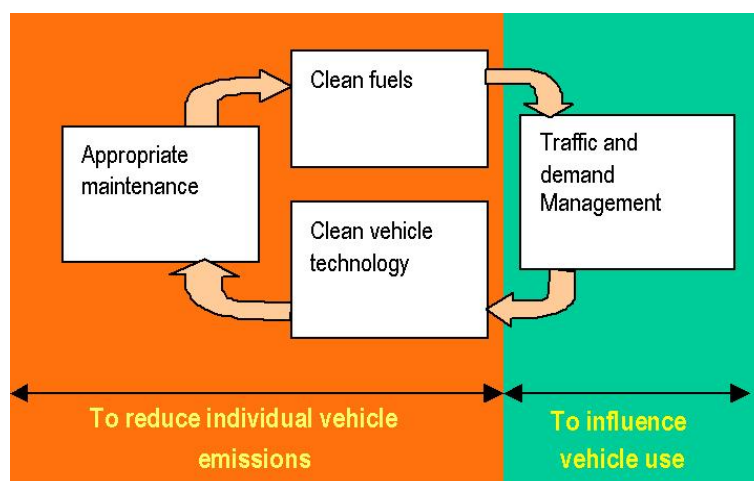
Low sulphur fuels (~50ppm) allow for further benefit of advanced control technologies for diesel vehicles. Diesel particulate filters can be used with low sulphur fuel but only achieve approximately 50% control efficiency. Selective catalytic reduction can be used for over 80% control of NO_x emissions. **By January 2006, NZ will have low sulphur diesel and reduced sulphur regular and premium grade petrol. The ARC would like to see low sulphur petrol (both grades) made available no later than January 2007.**

Ultra-low (“zero”) sulphur fuels (~10ppm) allow for the use of NO_x absorbers, increasing NO_x control to over 90% in both diesel and petrol vehicles. This enables more fuel-efficient engine designs, designs that are incompatible with current emissions control systems. Particulate filters achieve the maximum efficiency with ultra-low sulphur fuels, approaching 100% control of PM. **The ARC would like to see ultra-low sulphur diesel made available no later than January 2007, with a commitment to introduce ultra-low sulphur petrol (both grades) no later than January 2010.**

Sulphur levels in fuel have a range of direct and indirect impacts on greenhouse gas emissions. Sulphur prevents the efficient functioning of certain types of catalysts, which in turn translates to higher methane emissions from oxidation catalysts, and higher carbon dioxide (CO₂) emissions from more advanced technologies. **Sulphur is a major obstacle for technologies to both reduce and eliminate greenhouse gas emissions.**

Reducing Vehicle Emissions in New Zealand

Considerable overseas experience has shown that a number of areas need to be targeted to effectively reduce vehicle emissions, as indicated:



Although the Ministry of Transport (MoT) released a national strategy for reducing impacts from the road transport sector in 1998⁹, many of the key recommendations have been disappointingly slow to come to fruition – especially those related to improving the vehicle fleet performance.

With regards to encouraging “clean vehicle technology” and ensuring “appropriate maintenance”, New Zealand has lagged behind the rest of the world. Despite going to fully unleaded fuels in 1996, New Zealand has had no legislation supporting vehicle emission standards and control technology until relatively recently. The development of the 10 Second Rule for Excessive Smoke (2001) and the Vehicle Exhaust Emissions Rule (2003) are steps in the right direction. However, we are disappointed that the 10 Second Rule, in particular, has not been actively enforced to date.

The recent announcement of the Associate Minister of Transport in late April 2005 to abandon emissions screening as part of the WoF and CoF process has further limited the number of areas where effective emissions reductions can be gained. This decision has put **more onus on “clean fuels” as a means to deliver the necessary emissions reductions.**

Historically, the quality of New Zealand petroleum fuels has been poor compared to other developed countries – particularly with regards to the levels of sulphur in diesel and of benzene in petrol. Cleaner fuels are essential to improving air quality across New Zealand as they result in reduced emissions for existing vehicles and enable the uptake of lower emitting technologies in new vehicles, especially diesels. **Internationally, it is widely accepted that it is impossible to reduce air pollution from the transportation sector without getting sulphur out of fuels**¹⁰. Sulphur is a pollutant directly, but more importantly, sulphur prevents the adoption of all major pollution control technologies. No significant air pollution reduction strategy can work without reducing sulphur to near-zero (~10ppm) levels.

The release of the revised Petroleum Products Specifications Regulations 2002¹¹ by Ministry of Economic Development (MED) has seen sulphur levels in diesel drop considerably from 3000ppm at the end of August 2002 to 500ppm in August 2004, with the next reduction to 50ppm scheduled for January 2006. The ARC acknowledges the significance of these fuel improvements made by MED but emphasises that, even at the reduced sulphur levels planned for January 2006, there are significant health effects associated with any levels of sulphur in fuels (both petrol and diesel) above 10ppm.

Achieving effective and timely emissions reductions will be crucial to the success of any region in New Zealand meeting the Ministry for the Environment’s new Air Quality National Environmental Standards (AQNES), which are due to come into force on 1 September 2005. The ARC supports the standards but recognises that far-reaching reduction strategies will need to be developed for all air emissions sources, given that the region has exceeded the AQNES on average 30 times per year over the years 1999-2003.

Preliminary analyses undertaken to date indicate that **the Auckland region will have no possibility of meeting the AQNES unless it can achieve at least a 40% reduction in current vehicle emissions.** It is true that vehicles are getting significantly cleaner over time

⁹ MoT (1998). Final Report Vehicle Fleet Emissions Control Strategy: Discussion Document. Prepared with assistance from Fuels & Energy Management Group, November 1998. Available from <http://www.transport.govt.nz>

¹⁰ Blumberg K.O., Walsh M.P., Pera C. (2003). Low Sulphur Gasoline and Diesel: The Key to Lower Vehicle Emissions. Report prepared for the International Council on Clean Transportation, May 2003. Available from <http://www.walshcarlines.com/conventfuekls.html>

¹¹ MED (2002). Petroleum Products Specifications Regulations 2002. Available from http://www.med.govt.nz/ers/oil_pet/fuelquality/regs/index.html

due to improvements in technology. However these gains are already being overwhelmed by the growth in vehicle numbers and distances travelled in the region. Consequently, achieving a reduction of this magnitude is daunting. A failure to achieve the AQNES would require the Auckland Regional Council to decline future resource consents for industries, most of which are already operating with a high degree of environmental responsibility and with the best available control technology. This would have significant economic impacts for the region.

Summary

If the AQNES is to be achieved in the Auckland region, the Government will need to make a serious commitment to work with the region to deliver a credible range of initiatives to deal with vehicle emissions. Real reductions are essential, without delay.

The ARC believes that the greatest reductions in vehicle emissions are likely to arise from:

- ensuring that existing fleet vehicles are properly maintained
- requiring used imported vehicles to meet a minimum acceptable emissions standard prior to importation, and
- accelerating fuel improvements.

The ARC is currently in discussion with other central government agencies to advance options for improving fleet maintenance and vehicle technology. However, we anticipate a delay of several years before the emissions benefits of any legislative changes made in these areas will be realised in the vehicle fleet.

As a consequence, **the ARC is recommending with urgency that sulphur levels in fuels be reduced to near-zero levels as soon as practicable** to allow the cleanest technology vehicles to enter the fleet, improve performance of existing vehicles, and enable the best retrofitting options for heavy duty diesel vehicles. We are requesting that the Ministry of Economic Development delivers **10ppm S diesel and 50ppm S petrol no later than January 2007, with a commitment to introduce 10ppm S petrol no later than January 2010.**

Specific Comments on the Discussion Paper

The following comments relate to the specific questions raised in the Discussion Paper, with additional feedback provided where appropriate.

Questions about Diesel:

- 1. What would be the costs and benefits of imposing a 15ppm maximum sulphur requirement rather than a 10ppm requirement for diesel?***

10ppm maximum sulphur diesel gives maximum benefit for negligible additional cost.

The ARC recommends a near-zero sulphur content of 10ppm rather than 15ppm maximum. Indications for Europe suggest that the next round of emissions standards – Euro 5 - will be predicated on a 10ppm maximum sulphur content, whilst standards in the United States will be based on a 15ppm maximum sulphur content. In order to ensure that the cleanest vehicles possible can operate in New Zealand, we would like to see a maximum of 10ppm sulphur adopted.

Regarding the associated benefits, any reduction in maximum sulphur content in diesel (no matter how small) will translate to an emissions benefit in terms of:

- reduced PM emissions from existing diesel vehicles, with or without emissions control equipment
- incremental improvements in greenhouse gas emissions through improved fuel efficiency for all vehicles
- enhanced uptake of the latest technology improvements in new vehicles

Regarding the associated costs, MED acknowledges in the discussion paper that refineries in the Asia-Pacific region are upgrading to be able to deliver 10ppm sulphur diesel to a number of significant regional markets (such as Japan and Australia) that are in line with Europe. Given this, it seems unlikely that there would be a significant additional cost to New Zealand associated with opting for 10ppm rather than 15ppm sulphur diesel.

- 2. Should zero sulphur diesel be mandated earlier or later than the proposed 1 January 2009 timeframe? What issues could arise with an earlier or later requirement for zero sulphur diesel?***

Early introduction in 2007 saves 14 lives and 44,000 restricted activity days.

The ARC recommends that near-zero (10ppm) sulphur diesel be introduced as soon as practicable, preferably no later than January 2007 (which we understand would be achievable given a 15 month lead time requirement for the New Zealand Refining Company if they were notified no later than September 2005).

From the modelling already undertaken¹², it has been estimated that early adoption of near-zero sulphur diesel will reduce PM emissions by 1.3% to 3.6% between 2006 and 2009 as

¹² Campbell A. (2004). The Effect of Reducing Diesel Sulphur Content on Diesel Vehicle Emissions – Results from Modelling. Report prepared FOR Auckland Regional Council, 17 May 2004

shown in Table 1. This compares well with a European Commission estimate of an immediate 1-5% drop in PM emissions associated with the introduction of 10ppm diesel¹³.

Table 1. Reduction in NZ Vehicle Emissions due to Early Introduction of 10ppm Sulphur Diesel

Year	Total Diesel Fleet PM using 50ppm S (T/yr)	Total Diesel Fleet PM using 10ppm S (T/yr)	Fuel Related PM Emissions Reductions (%)
2006	10,348	10,210	1.3%
2007	9,797	9,597	2.1%
2008	9,337	9,077	2.8%
2009	8,928	8,609	3.6%

Combining the projected health impacts estimated by the Ministry for the Environment¹⁴ in their proposal for the introduction of the national environmental standards with the estimate from the NIWA report¹⁵ that 40% of particulate pollution is from motor vehicles, the reduction in health effects due to early introduction of 10ppm sulphur diesel can be estimated as shown in Table 2.

Table 2. Reduction in NZ Health Impacts due to Early Introduction of 10ppm Sulphur Diesel

Year	Premature Deaths	Restricted Activity Days
2006	4	12,082
2007	6	19,082
2008	8	24,973
2009	10	31,982
TOTAL	28	88,119

The MED Discussion Paper proposes to introduce 10ppm sulphur diesel no later than 1 January 2009. **If 10ppm sulphur diesel were introduced two years earlier in January 2007, the benefits accrued from avoided premature mortality alone would be around \$26.32 million¹⁶.**

This estimate is the minimum likely benefit as **other additive benefits** will result from:

- ~44,000 fewer restricted activity days
- reduced greenhouse gas emissions through improved fuel efficiency for all vehicles

The ARC does not believe that early introduction of 10ppm sulphur diesel would result in significant additional costs above those anticipated for the proposed 2009 introduction. We understand from the New Zealand Refining Company that the costs are likely to be around

¹³ European Commission (2001). The Costs and Benefits of Lowering the Sulphur Content of Petrol and Diesel to less than 10ppm. Prepared by the Directorate-General Environment, European Commission, 9 September 2001. Available from <http://europa.eu.int/comm/environment/sulphur/>

¹⁴ MfE (2004). Proposed National Environmental Standards for Air Quality, Resource Management Act Section 32 Analysis of the Costs and Benefits, Ministry for the Environment, May 2004.

¹⁵ Fisher GW *et al* (2002). Health Effects of Motor Vehicle Air Pollution in New Zealand. Report to the Ministry of Transport, January 2002. Available at <http://www.transport.govt.nz>

¹⁶ Op cit. MfE (2004). Proposed National Environmental Standards for Air Quality, Resource Management Act Section 32 Analysis of the Costs and Benefits, Ministry for the Environment, May 2004. The figure quoted assumes \$1.88 million value for premature mortality times 14 premature deaths.

~\$2 million for the refinery upgrade, with additional refinery operating costs at ~\$0.5 million pa in either case. It is likely that there will be a slight increase in CO₂ emissions to produce the 10ppm sulphur diesel but work undertaken by the European Commission¹⁷ has estimated that this increase was more than offset by the lower CO₂ emissions from the vehicle fleet.

Overseas studies show the benefits of sulphur reduction far outweigh the costs, with the United States Environmental Protection Agency finding human health and environmental benefits due to sulphur reductions were ten times higher than the costs¹⁸.

3. Will the proposed approach have any implications on the use of diesel in the marine setting?

Reduced sulphur = fewer emissions and better fuel efficiency from marine engines.

Reducing sulphur content in all diesel (assuming marine diesel is NOT marketed separately) will benefit the marine environment through reduced emissions. Although emissions from marine diesel are dwarfed by those from land-based transport, reductions of the order of 5% for PM alone will still apply. Improved fuel efficiency from marine engines will also result.

As has happened with fuel sulphur reductions in the past, certain types of diesel-fuelled engines may experience operating difficulties, with fuel seals and the like. MED has previously run education campaigns at service stations and fuel depots to notify affected users (usually motorists) of the changes well in advance.

As fuel sulphur levels reduce to 50ppm and below, the likelihood of engine difficulties reduces significantly.

4. Should the exemption for marine diesel be removed?

Removing the marine exemption is essential for protecting environmental gains.

The ARC recommends that the exemption for marine diesel is removed. At the low levels of sulphur proposed, a differential between automotive and marine diesel could result in significant and irreversible deterioration in the emissions performance of a "clean technology" diesel vehicle if accidentally filled up with a higher sulphur content marine grade diesel.

In addition, removing the exemption prevents marine diesel being used as a dumping ground for high sulphur fuels in future and potentially degrading the marine environment.

¹⁷ Op cit. European Commission (2001). The Costs and Benefits of Lowering the Sulphur Content of Petrol and Diesel to less than 10ppm. Prepared by the Directorate-General Environment, European Commission, 9 September 2001. Available from <http://europa.eu.int/comm/environment/sulphur/>

¹⁸ Op cit. Blumberg K.O., Walsh M.P., Pera C. (2003). Low Sulphur Gasoline and Diesel: The Key to Lower Vehicle Emissions. Report prepared for the International Council on Clean Transportation, May 2003. Available from <http://www.walshcarlines.com/conventfuekls.html>

Questions about Petrol:

5. **Should 50ppm maximum sulphur regular and premium grade petrol be required earlier or later than the proposed 2008 timeframe? What issues could arise with earlier requirements for 50ppm sulphur petrol?**

The cleanest petrol cars cannot operate in NZ without 50ppm sulphur petrol.

The ARC recommends that 50ppm sulphur petrol be introduced as soon as practicable, preferably no later than January 2007. We understand that this would be reasonably achievable given a 15-month lead-time requirement for the New Zealand Refining Company, provided they were notified no later than September 2005.

From 1 January 2006, the maximum sulphur content in both grades of petrol will be 150ppm, which facilitates the introduction of Euro 3 petrol vehicles. Ironically, with the current planned fuel changes, **New Zealand will be able to support clean Euro 4 diesel vehicles well in advance of clean Euro 4 petrol vehicles.** Table 3 highlights the emissions improvements that apply for light duty passenger vehicles moving from Euro 3 to Euro 4 technology.

Table 3. Comparison of Emissions Standards for Light Duty Passenger Vehicles

Emissions in g/km	Diesel			Petrol		
	PM	NOx	CO	HC	NOx	CO
Euro 3 (2000)	0.050	0.50	0.64	0.20	0.15	2.30
Euro 4 (2005)	0.025	0.25	0.50	0.10	0.08	1.00
Emissions Improvement (%)	50.0%	50.0%	21.9%	50.0%	46.7%	56.5%

Come January 2006, New Zealand will be able to import new diesel vehicles that are cleaner by 22-50%. **Delaying the introduction of 50ppm sulphur petrol prevents the significant emissions reductions (47-57%) shown in Table 3 from being able to be realised** in the fleet.

As mentioned previously, sulphur reduces the conversion efficiency for CO, HC and NOx in petrol vehicles fitted with three-way catalysts, causes accelerated catalyst aging and reduces fuel efficiency. Reducing the maximum sulphur content in petrol as soon as practicable will translate to an immediate emissions benefit, in terms of:

- reduced CO, NOx, and HC emissions from existing petrol vehicles
- incremental improvements in greenhouse gas emissions through improved fuel efficiency for all vehicles
- enhanced uptake of the latest technology improvements in new vehicles (Euro 4 petrols)

Regarding the associated costs, MED acknowledges in the discussion paper that many Asian Pacific nations are moving toward 50ppm sulphur petrol well before 2008. Although Australia has only signalled a reduction for premium grade petrol in 2008, their vehicle fleet does not receive used imports from Japan. It is conceivable that, **without the accelerated introduction of 50ppm petrol, a clean used import could arrive in New Zealand and**

have its excellent emissions performance irreversibly degraded by poor quality petrol. In addition, the refinery has the existing capability to refine crude to produce a sulphur content of below 50ppm. With the intense pressure on all Regional Councils to reduce all air emissions in order to meet the AQNES, it seems foolhardy not to take early advantage of the emissions benefits of 50ppm sulphur petrol.

6. Accounting for security of supply as well as vehicle requirements what would be an appropriate timeframe for the introduction of 10ppm maximum sulphur petrol? What issues could arise with earlier, or with later, requirements for 10ppm sulphur petrol?

10ppm sulphur petrol should be introduced as soon as practicable.

The ARC considers that New Zealand should introduce 10ppm sulphur petrol no later than 2010 (at this stage, in line with Australia) but that MED should review the introduction date annually.

Europe is due to review their requirements for Euro 5 light duty passenger vehicles towards the end of 2005. In anticipation, the European Union will make 10ppm sulphur petrol mandatory from 2009 and Australia is considering introducing 10ppm sulphur petrol (for premium only) in 2010. Tax incentive schemes operating in other countries have seen 10ppm sulphur fuel already being made available (*viz.* Japan and Europe). Should a significant number of Japanese automakers opt for 10ppm sulphur petrol in their new models, New Zealand may end up in a similar situation with used imports being cleaner than the fuel available here, as already discussed for the early introduction of 50ppm sulphur petrol. There is a strong global trend towards countries opting for voluntary introduction of 10ppm sulphur petrol and other cleaner fuels and refineries are well aware of their need to upgrade quickly.

Security of supply issues for imported fuels should not over-ride the early upgrading of New Zealand's refinery to lower sulphur fuels. A simple tax incentive scheme could provide cleaner fuel sooner.

7. Are 50ppm maximum and zero sulphur levels necessary for regular grade as well as premium? What issues could arise if there were different maximum sulphur levels, or different introduction times, for premium and regular?

Synchronising changes for both is essential for protecting environmental gains.

The ARC recommends that sulphur level reductions apply to both grades of petrol at the same time.

As in the case of marine diesel, any differential between grades could result in significant and irreversible deterioration in the emissions performance of a "clean technology" petrol vehicle if accidentally filled up with higher sulphur content petrol. With the high number of Japanese imports, many motorists are unaware which grade of petrol is best for their vehicles and often intentionally alternate between the two different octane ratings. In addition, accidental fuel mix-ups still occur between diesel and petrol vehicles despite the best efforts of service stations to colour code and clearly sign-write the different pump and nozzles.

To guarantee and protect the emissions benefits possible with the latest technology, changes to sulphur content should be synchronised for both grades of petrol.

8. *When would New Zealand need to confirm a date for the introduction of 10ppm sulphur petrol?*

July 2007 will give sufficient time to assess trends and gain maximum benefits.

The ARC considers that New Zealand should introduce 10ppm sulphur petrol no later than 2010 but that MED should review the introduction date annually to capitalise on Asia Pacific regional trends towards cleaner fuels. We would suggest that MED sets a tentative date by July 2007, by which stage the European Union will have firmed up on the Euro 5 emissions standards and trends in the voluntary use of 10ppm sulphur petrol in Japan and other countries can be assessed.

The refinery and other oil companies will need some lead-time to order new equipment or establish new suppliers and this will dictate the confirmation date working back from the required introduction date.

Questions about Testing:

9. *Is it necessary to retain either ASTM D5453 or IP 336?*

The ARC considers that there appears to be some value in retaining the existing test method (ASTM D5453) as a reference test to retain some continuity with previous test results. This may only need to be undertaken for a limited period of time to establish correlations between the old and new tests.

10. *Is it necessary to adopt both ASTM D7039-04 and IP 497?*

The ARC considers that the adoption of both new test methods is appropriate and consistent with previous testing.

Conclusion

At present, **inadequate management of motor vehicle emissions remains a barrier to achieving cleaner air and better quality of life for many New Zealanders.** Historically, progress has been disappointingly slow but improving fuel quality offers a prime opportunity for New Zealand to rapidly lift its game towards achieving international best practice.

If the AQNES is to be achieved in the Auckland region, the Government will need to make a serious commitment to work with the region to deliver a credible range of initiatives to deal with vehicle emissions. Real reductions are essential, without delay.

The ARC believes that the greatest reductions in vehicle emissions are likely to arise from:

- ensuring that existing fleet vehicles are properly maintained
- requiring used imported vehicles to meet a minimum acceptable emissions standard prior to importation, and
- accelerating fuel improvements.

The ARC is currently in discussion with other central government agencies to advance options for improving fleet maintenance and vehicle technology. However, we anticipate a delay of several years before the emissions benefits of any legislative changes made in these areas will be realised in the vehicle fleet.

The ARC recommends with urgency that sulphur levels in fuels be reduced to near-zero levels as soon as practicable to allow the cleanest technology vehicles to enter the fleet, improve performance of existing vehicles, and enable the best retrofitting options for heavy duty diesel vehicles. We are requesting that the Ministry of Economic Development delivers **10ppm S diesel and 50ppm S petrol no later than January 2007, with a commitment to introduce 10ppm S petrol no later than January 2010.**

The benefits associated with early introduction of the reduced sulphur fuels include:

- 14 people saved from premature death due to PM emissions alone at a cost saving of \$26.32 million
- 44,000 fewer restricted activity days with the associated improvement in reduced health costs and increased productivity
- reduced health effects due to reduced emissions of NO_x, CO and hydrocarbons
- reduced greenhouse gas emissions and improved fleet fuel efficiency

Overseas studies show the benefits of sulphur reduction far outweigh the costs, with the United States Environmental Protection Agency finding human health and environmental benefits due to sulphur reductions were ten times higher than the costs¹⁹.

Yours faithfully,

Dianne Glenn
Chair, Auckland Regional Council Environment Committee

¹⁹ Op cit. Blumberg K.O., Walsh M.P., Pera C. (2003). Low Sulphur Gasoline and Diesel: The Key to Lower Vehicle Emissions. Report prepared for the International Council on Clean Transportation, May 2003. Available from <http://www.walshcarlines.com/conventfuekls.html>