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Advisor: Vehicle Emissions
Environment Group
Ministry of Transport
PO Box 3175
Wellington

Dear Sir / Madam

Discussion Document: New Zealand Vehicle Emissions Screening Programme

This submission is from the:

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Thank you for the opportunity to provide comment on the Discussion Document regarding the proposed framework for the New Zealand vehicle emissions screening programme.

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. However, it should be noted that it is difficult for ARC to comprehensively comment on the ramifications of the proposed programme at this time without access to the final reports for both the Pilot Emissions Testing Programme and the Social Impact Assessment (which are not due to be released until early 2005). Consequently, we would appreciate the opportunity to provide further comments prior to the release of the draft rule once these documents are made available.

Introduction

Although the Ministry of Transport (MoT) released a national strategy for reducing impacts from the road transport sector in 1998¹, many of the key recommendations have been disappointingly slow to come to fruition – especially those related to improving the vehicle fleet performance. However, ARC has been heartened by the progress seen in the past three years with improvements to fuel and vehicle emissions standards.

Historically, the quality of New Zealand petroleum fuels has lagged behind the rest of the world – 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. The release of the revised Petroleum Products Specifications Regulations 2002² 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 a further reduction to 50ppm scheduled for January 2005.

New Zealand has also lagged behind the rest of the world with regards to vehicle emissions standards. Despite going to fully unleaded fuels in 1996, New Zealand has had no legislation supporting vehicle emission standards and control technology until relatively recently. Vehicles assembled in New Zealand were not required to meet any mandatory emissions standards and, although those imported from overseas were generally built to emissions standards in their countries of origin, there were no requirements for imported used vehicles to be checked to validate whether their control equipment was still present and functional.

ARC acknowledges that the adoption of the 10 Second Rule for Excessive Smoke (2001) and the development of 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. ARC considers that more significant and more rapid gains in air quality can be achieved from developing and implementing an effective vehicle emissions screening programme.

Motor vehicle pollution is a serious health issue in the Auckland Region. MoT'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

¹ MoT (1998). Final Report Vehicle Fleet Emissions Control Strategy: Discussion Document. Prepared with assistance from Fuels & Energy Management Group, November 1998. Available from www.transport.govt.nz

² MED (2002). Petroleum Products Specifications Regulations 2002. Available from www.med.govt.nz/ers/oil_pet/fuelquality/regs/index.html

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 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 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 www.defra.gov.uk/corporate/consult/particulate-matter

- 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.

Comments on the Proposal

The following comments relate to the specific questions raised in the Discussion Document, with additional feedback provided where appropriate. As mentioned in the preamble, it is difficult for ARC to comprehensively comment on the ramifications of the proposed programme at this time without access to the final reports for both the Pilot Emissions Testing Programme and the Social Impact Assessment (which are currently outstanding). We eagerly await the findings from those studies due in early 2005 and the subsequent opportunity to provide further comments prior to the release of the draft rule in mid 2006.

Questions about the screening programme:

1. Do you have any comments about how emissions screening might affect vehicle owners?

Environmentally, emissions screening will raise awareness with the driving public about the importance of maintenance and repair of their vehicles and ultimately lead to fewer emissions from vehicles, reduced health costs and an improved quality of life for all. However prior to the screening programme commencing, many owners will have no means of knowing whether or not their vehicles comply (most owners in the case of invisible emissions).

As a result, a poorly managed introduction could see many of owners unexpectedly unable to use their vehicles for some time (due to industry capacity constraints etc). There may be significant consequential economic costs if owners decide they cannot afford to wait for repair and buy another vehicle instead. These problems would result in a considerable loss of goodwill (not to mention negative publicity) but are avoidable with a well thought out implementation plan.

The full social and economic costs associated with introducing emissions screening cannot be determined until the Pilot Emissions Testing Programme and the Social Impact Assessment studies, currently underway, are completed. As mentioned above, ARC look forward to the opportunity to provide further comments prior to the release of the draft rule in mid 2006 when the final reports are available.

Regardless, it is likely that emissions screening will result in some increase in the cost of gaining a WoF or CoF just to cover the additional equipment and industry training required.

2. Do you have any comments about how emissions screening might affect the vehicle inspection and repair industries?

As with the drivers, emissions screening will raise awareness with the vehicle inspection and repair industries of the impacts of vehicle emissions and encourage better environmental practice.

The main areas of impact are likely to be financial (in terms of purchasing new test equipment) and training (in terms of learning to operate new equipment and better understanding of emissions control technology). Although vehicles have been entering the New Zealand fleet since 1996 with increasingly more sophisticated levels of technology, the corresponding level of skills, experience, and technical understanding in motor industry personnel appears to vary dramatically. Some operators are very familiar with the key issues and are already meeting many of the likely requirements for an emissions screening programme to be effective – in terms of undertaking the testing as well as diagnosing any problems and making suitable repairs. Most are much less aware, with some operators still, unfortunately, propagating “urban myths” such as removal of emissions control equipment.

In addition to these “capability” issues, there is also potential for severe “capacity” constraints as it is not practicable for the industry to gear up for a temporary major peak. Accordingly, the introductory phase must be managed in recognition of this, as discussed in the response to Q.1.

Questions about the performance limits:

3. What sorts of vehicle characteristics should be used to establish vehicle bands for emission performance limits (e.g. vehicle age, engine technology, and weight)?

Emissions performance limits should be set by a combination of the vehicle’s emissions control technology (e.g. Euro 1, US98, etc.), fuel type, vehicle weight and age (or year of manufacture).

Historically there has been a significant disparity in the emissions technology level in a typical New Zealand-new vehicle versus that in a typical Japanese used import vehicle of the same year of manufacture. Japan has had emissions standards in place for passenger vehicles since the late 1980s so vehicles sourced as used imports have been manufactured with emissions control equipment, whereas New Zealand-new vehicles have not had this requirement until January 2004. In recent years, New Zealand-new vehicles have come into line with overseas vehicles but there needs to be a recognition that, with an average vehicle age of 10 years in the fleet and a fleet turnover of only 5%, a significant technology gap between same age vehicles sourced from different countries will remain for many years.

The emissions performance limits adopted should address air pollution effects of concern by an appropriate margin and be defensible from a cost-benefit perspective. Significant public support already exists for the proposed programme and it is important that the limits selected capitalise on the public’s goodwill.

4. Do you think the selection of pollutants for which performance limits are being proposed is appropriate?

The selection of pollutants should focus on those air contaminants causing the most significant health effects. In Auckland, the significant vehicle-derived pollutants are particulate (mainly from diesel vehicles), carbon monoxide (mainly from petrol vehicles) and oxides of nitrogen (NOx). Given this, all of the pollutants proposed are appropriate but NOx is the notable exception.

Measuring NOx usually involves a “loaded” test, which is difficult to incorporate in the “simple” test philosophy proposed. NOx levels may be correlated with levels of the other pollutants mentioned (e.g. carbon monoxide or hydrocarbons) but in the absence of the technical data from the Pilot Testing programme confirming this, we cannot comment fully on this question. ARC would like to reserve its judgment until further data are available for the confirmed test method as to whether NOx should be included or whether one of the other pollutants selected will suffice as a proxy.

5. *Should the performance limits for newly imported used vehicles be more stringent than the limits for vehicles that are in-service?*

As mentioned in the response to Q.3, newly imported used vehicles have generally been manufactured to a higher level of emissions control technology than New Zealand-new vehicles of the same age. Consequently, the performance limits for these vehicles (excluding classic vehicles and those of historic interest) should generally be set higher as they will be based on the vehicle technology rather than the vehicle age.

Newly imported used vehicles should be subjected to rigorous emissions testing before leaving their country of origin to ensure that those vehicles are still achieving the best emissions performance. ARC would like to see these vehicles undergoing a full loaded drive cycle dynamometer test, such as IM240, and issued with an emissions certification from a approved test facility (or the like) before leaving their country of origin. It is far easier to identify dirty vehicles in Japan or overseas and prevent them from ever entering New Zealand than it is to identify and repair these vehicles once in the fleet. Given the proposed legislation, consumers purchasing these newly imported used vehicles would be offered greater protection.

In addition, newly imported used vehicles (excluding classic vehicles and those of historic interest) should be subject to progressive improvements in age or emissions control technology to ensure as rapid improvement in the fleet average performance as practicable. Ironically, the key legislation to date that has resulted in the greatest emissions reduction for used imported vehicles is the Frontal Impact Rule 2001. This rule effectively prevents vehicles manufactured before 1996 from entering the fleet because they do not meet the minimum crash standards. Given that similar numbers of people are estimated to die from vehicle emissions as in road crashes in Auckland, minimum emissions standards should similarly be mandated. These could be set at one emissions standard level below that for new vehicles (e.g. new vehicles currently have to meet Euro 2 therefore a minimum of Euro 1 could be specified for used imports).

Regardless, the minimum emissions standard or age limit for newly imported used vehicles should be reviewed regularly to guarantee on-going improvements and achieve the desired environmental and health outcomes.

6. *Do you see any practical difficulties in implementing different performance limits for vehicles in different bands? How could these be overcome?*

Implementing different performance limits for vehicles in different bands will present some difficulties in the short term (at the very least) due to the lack of easily accessible technical data on the emissions technology of some vehicles and to the shortage of trained people able to identify emissions control equipment.

Currently, it is very difficult to get adequate information from vehicle manufacturers about the emissions standards applying to New Zealand-new vehicles, even from the head offices of

dealers resident in this country. For newly imported used vehicles this information is even harder to obtain. Japan and other countries have databases with the relevant emissions standards linked to various vehicle models or chassis numbers but sourcing this information is extremely problematic due to language barriers. The Independent Motor Vehicle Dealers' Association (IMVDA) is the lead industry body responsible in New Zealand for these types of vehicles but does not currently keep a database of relevant emissions or fuel consumption data.

As time progresses and minimum emissions standards apply to New Zealand-new (and possibly newly imported used imports), this information should be easier to access and could be recorded on vehicle registration records. In the immediate term, older vehicles may have to be assigned a "best guess" emissions standard (probably set at a lower level than desirable) to make the screening process practicable.

7. What is the best approach to ensure continuing improvements in the performance of the New Zealand fleet?

The best approach to ensuring continued improvements in fleet emissions performance is a "holistic" one, based on fuel and technology improvements, public education, and strategic retrofitting.

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.

Driver and motor trade industry awareness of the impact of vehicle emissions on air quality and the factors leading to poor emissions performance (such as tuning, maintenance, spare parts, driver behaviour etc.) is also critical to realising the potential improvements as quickly as possible.

In some circumstances, particularly heavily urbanised locations, strategic retrofitting programmes should also be considered. Retrofitting has been adopted successfully overseas for achieving rapid improvements in emissions from heavy duty vehicles, especially buses and trucks. Due to the high cost of purchase, these vehicles tend to remain in service for 25-30 years so relying on fleet turnover alone to improve emissions is inadequate. Fitting diesel oxidation catalysts and particle traps (~\$5k-25k) to a bus (~\$250k) is worthwhile and a very cost-effective way to reduce particulate emissions significantly by 30-90%.

8. What is the best longer-term approach for improving the performance of diesel engines, particularly with respect to particulate emissions?

Fortunately, the issues posed by diesel vehicle emissions are ubiquitous and are not unique to New Zealand. Most other countries have already grappled with the problems and New Zealand can learn much from their experiences (both successes and failures). Australia has undertaken substantial work to develop a National Environmental Performance Measure (NEPM) specifically targeting diesel emissions⁶. As in New Zealand, motor vehicles in Australia, particularly those with diesel engines, are significantly disproportionate contributors of fine particle pollution and oxides of nitrogen (NOx).

Analysis of the Australian fleet shows that diesel vehicles are increasing as a proportion of the total. In 1995 diesel vehicles comprised 8.3% of the fleet and this will increase to 15%

⁶ NEPC (2001). National Environmental Performance (Diesel Vehicle Emissions) Measure. Available from www.ephc.gov.au/nepms/diesel/diesel_intro.html

by 2015. Over this time diesel vehicle travel in metropolitan areas is expected to increase by 146%. The age structure of the fleet shows that older vehicles up to 16 years of age continue to significantly contribute to the total distance travelled in metropolitan areas. This implies that vehicles built to older emission standards will continue to play a significant role in fleet emissions.

On 29 June 2001, the National Environment Protection Council (NEPC) released the NEPM for diesel vehicle emissions to provide a framework for the management of emissions from the in-service diesel fleet. It is designed to facilitate compliance with in-service emissions standards developed in conjunction with the National Road Transport Commission. The measure includes strategies for use by jurisdictions to ensure that in-service diesel vehicles are adequately maintained and provides guidance for developing:

- inspection and maintenance programs;
- fleet maintenance programs;
- smoky vehicle programs;
- retrofit programs (eg fitting catalyts to diesel vehicles); and
- engine re-build programs.

Australia's transport ministers are soon to consider adopting the complementary emissions standards for in-service diesel vehicles, as part of the package. Information is also available on programmes undertaken in other countries but reviewing the Australian experience would be a good place to start.

Given the contribution of heavy duty diesel vehicles to emissions in Auckland, additional strategies that could warrant future consideration include:

- requiring more comprehensive emissions testing for heavy duty vehicles, such as chassis dynamometer testing and constant volume sampling
- including emissions limits for NO_x for heavy duty vehicles
- subsidising or requiring older heavy duty vehicles to be retrofitted with oxidation catalyts or particle traps

Questions about the programme framework:

9. Do you agree that the proposed hybrid framework is the most appropriate for the New Zealand situation?

The proposed hybrid framework is consistent with current practice and seems to offer the best of both worlds.

10. What would be the main issues for testing stations and WoF garages around participating in the proposed in-service emissions screening programme?

The main issues for testing stations and WoF garages will centre on:

- upskilling motor industry personnel to operate new equipment and follow new practices
- purchasing and maintaining/calibrating new test equipment
- undertaking quality assurance audits for all test centres (regardless of location or size of facility) to ensure compliance with agreed test methodology.

The level of sophistication in skills, experience, technical understanding and familiarity with appropriate equipment appears to vary dramatically across the motor trade industry. Some operators are very familiar with the key issues and are already meeting many of the likely requirements for an emissions screening programme to be effective – in terms of undertaking the testing as well as diagnosing any problems and making suitable repairs. Most are much less aware, with some operators still, unfortunately, propagating “urban myths” such as removal of emissions control equipment.

It is critical that consistent practices are followed so that vehicle emissions results are independent of location or time otherwise the screening programme will lose credibility.

Some form of progressive introduction of testing or progressive certification of operators may have to be considered to ensure that the programme does not lose credibility due to skill shortages or inconsistent practice upon start up.

11. What would be the main issues for TSDAs around participating in the proposed entry emissions screening programme?

The main issues facing the TSDAs will depend on whether newly imported used vehicles are subjected to rigorous emissions testing before leaving their country of origin. As mentioned in question 5, ARC would like to see these vehicles undergoing a full loaded drive cycle dynamometer test, such as IM240, and issued with an emissions certification before leaving their country of origin. In that case, TSDAs would only be required to sight the appropriate emissions certification.

If the decision is made to go with emissions screening only at entry, the main issues for TSDAs will be the same as those outlined in the response to Q.10.

12. How much lead-in time would TSDAs and WoF or CoF garages require to be suitably equipped and trained to participate in the emissions screening programme?

As mentioned in the response to Q.10, the level of sophistication in skills, experience, technical understanding and familiarity with appropriate equipment appears to vary dramatically across the motor trade industry.

Consequently, it is likely that lead times will vary widely and some form of progressive introduction of testing or progressive certification of operators may have to be considered to ensure that the programme does not lose credibility due to skill shortages or inconsistent practice upon start up.

13. What difficulties would you anticipate for smaller or geographically isolated garages?

It is possible that the smaller or geographically isolated garages will be disadvantaged through fewer resources and/or reduced access to training but the extent to which this applies will depend on the final test methodology and may not be prohibitive.

14. What would you see as the major issues for garages wishing to outsource the emissions screening test in order to continue providing WoF services?

It is unlikely that garages *per se* will have any issues with outsourcing of emission screening tests. The more likely affected party will be the responsible body (presumably Land

Transport New Zealand, formerly the Land Transport Safety Authority) being able to guarantee consistency with emission testing undertaken by any organisation.

Linking the emissions data to the WoF/CoF checklist should be easily facilitated with current electronic practices.

Questions about the test type:

15. Do you believe the simple tests proposed are the most suitable tests for the New Zealand situation?

ARC would prefer to wait for the results of the final report on the Pilot Emissions Testing Programme in order to make informed comments. It is impossible for us to assess the suitability in the absence of the technical data.

Any “simple” test adopted must be able to demonstrate consistency with emissions trends measured by more sophisticated methods in order for us to have confidence that it adequately and representatively reflects the “real world” emissions encountered in urban environments.

We acknowledge that measuring particulate in vehicle exhaust emissions using a simple test is problematic but reiterate that the majority of health effects are linked to this pollutant so we must have confidence that these emissions are being correctly assessed.

Any vehicle that fails the simple WoF emissions screening test should also be offered the opportunity to undergo a full chassis dynamometer test, the outcome of which would override the simple test result.

16. Are there any other practical implications of implementing simple testing that should be considered (including implications for equipment and facilities)?

See previous comments in the response to Q.10 about training, maintaining/calibrating new equipment and ensuring quality assurance.

Test centres may also have to review the ventilation of their premises if they have increased numbers of vehicles idling or revving up in enclosed spaces. These facilities would have to ensure that they meet the Department of Labour’s Workplace Exposure Standards for relevant pollutants, most notably carbon monoxide, to protect the health of their employees.

Questions about the vehicles to be screened:

17. Do you think that new vehicles should be exempt from the screening programme? If yes, at what age should a new vehicle have its first emissions screening check?

ARC is opposed to any vehicle being exempt from the screening programme because all vehicles require regular maintenance and repair to remain at their optimum environmental performance (taking into consideration an appropriate level of deterioration).

In support, data from our first remote sensing campaign⁷ shows that the worst 20% of 2003 vehicles produce higher emissions than the best 20% of pre-1980 vehicles. This is

⁷ ARC (2003). On-road Remote Sensing of Vehicle Emissions in the Auckland Region. Technical Publication 198 prepared by NIWA for ARC, August 2003. Available from www.arc.govt.nz/arc/environment/air/air-publications.cfm

consistent with experience overseas that the absolute emission differences between well- and badly-maintained vehicles of any age are considerably larger than observable effects of emissions control technology and vehicle age.

18. If new vehicles are exempt from screening tests, what is the best way to ensure new vehicles maintain their emission performance?

As mentioned in the response to Q.17, ARC is opposed to any vehicle being exempt from the screening programme because all vehicles require regular maintenance and repair to remain at their optimum environmental performance (taking into consideration an appropriate level of deterioration).

Any decision to grant temporary (to ease capacity issues in the introductory phase, for example) or permanent exemptions for new vehicles would have to go hand in hand with a strong commitment to actively enforce the 10 Second Rule and undertake on-road testing programs or would risk losing credibility with those members of the public who required to comply with the programme. This decision would also have to be backed up with technical evidence unequivocally demonstrating that the likely health impact of exempting these vehicles would be minimal.

19. Do you think older vehicles should be exempt from the screening programme? If yes, from what age should older vehicles be exempt and why?

As mentioned in the response to Q.17, ARC is opposed to any vehicle being exempt from the screening programme because all vehicles require regular maintenance and repair to remain at their optimum environmental performance (taking into consideration an appropriate level of deterioration).

Older vehicles (including classic vehicles and those of historic interest) should still be required to meet emissions limits. However, in the case of these vehicles, the limits will be less stringent to reflect the lower level, or even the complete absence, of emissions technology. Older vehicles should be tested to show compliance with a reasonable state of tune but there is likely to be a huge variation in performance characteristics, especially for the vehicles more than 25 years old. In these cases, more appropriate tests may be checking the air: fuel ratio or complying with the 10 Second Rule.

The UK currently exempts 25+ year old vehicles from its emissions screening programme as the number in daily use on the road is very small so their contribution is minimal. We would prefer to see these vehicles tested. However, if suitably pragmatic limits cannot be easily established then, it may be easier to follow the UK's lead. Similar exemptions exist for safety requirements (including seatbelts), so such an approach is not without precedent.

As mentioned in the question regarding new cars, any decision to grant permanent exemptions for 25+ year old vehicles would have to go hand in hand with a strong commitment to actively enforce the 10 Second Rule and undertake on-road testing programs or would risk losing credibility with those members of the public who required to comply with the programme. This decision would also have to be backed up with technical evidence unequivocally demonstrating that the likely health impact of exempting these vehicles would be minimal.

20. Should any other vehicle types be exempt from the emissions screening programme and, if so, why?

As mentioned in the response to Q.17, ARC is opposed to any vehicle being exempt from the screening programme because all vehicles require regular maintenance and repair to remain at their optimum environmental performance (taking into consideration an appropriate level of deterioration).

Any vehicle travelling on public roads at any time, such as tractors and combine harvesters, should be required to meet emissions limits.

Questions about the screening frequency:

21. Do you think emissions screening should be required at every WoF?

All vehicles require regular maintenance and repair to remain at their optimum environmental performance (taking into consideration an appropriate level of deterioration).

In terms of frequency for light duty vehicles requiring a WoF, emissions screening should be undertaken annually and checked as per all of the other parameters in the checklist. Although older vehicles are on a six monthly frequency, we do not believe that the additional expense of six-monthly emissions screening would be justified as these vehicles are often on annual servicing regimes based on typical annual mileages of between 10,000 to 15,000km.

More frequent emissions screening may be justified for higher mileage light duty vehicles, such as taxis and courier vehicles, as they travel significantly more distance but there are likely to be difficulties associated with running a separate system for these vehicles.

In all cases, active enforcement of the 10 Second Rule and any other on-road testing program, such as remote sensing, will be essential for identifying and remedying any gross emitters that may deteriorate in the interim.

22. Do you think emissions screening should be required at every CoF?

All vehicles require regular maintenance and repair to remain at their optimum environmental performance (taking into consideration an appropriate level of deterioration).

In terms of frequency for heavy duty vehicles requiring a CoF, emissions screening should be undertaken six-monthly and checked as per all of the other parameters in the checklist. This higher frequency is justified for two reasons. Firstly, heavy duty vehicles (particularly buses and trucks) tend to do much higher mileages than typical light duty vehicles. Secondly, heavy duty vehicles contribute disproportionately more emissions of the contaminants of concern (especially of fine particulate, PM₁₀) per kilometre travelled so controlling these vehicles will result in a better environmental and health outcome.

Again, active enforcement of the 10 Second Rule and any other on-road testing program, such as remote sensing, will be essential for identifying and remedying any gross emitters that may deteriorate in the interim.

23. Do you agree that newer vehicles should have less frequent emissions screening checks than older vehicles? If yes, at what age should screening start and at what age should it become more frequent?

In the case of light duty vehicles, ARC considers that the frequency of emissions screening for all (new or old) should be annual with screening incorporated into the normal WoF checklist. Consideration should be given to increasing the frequency to six-monthly for higher mileage light duty vehicles, such as taxis and courier vehicles. In the case of heavy duty vehicles, we consider that the frequency of emission screening for all (new or old) should be six-monthly incorporated into the normal CoF checklist.

We recognise that there may be compelling reasons for temporary exemptions (e.g. as part of a progressive introduction to allow industry to cope with short term capacity issues) or permanent exemptions (e.g. if determining suitable performance limits of 25+ year old vehicles proves too difficult). However, ARC has a number of concerns about extending out the frequency of screening vehicles. From our remote sensing work already undertaken, we know that new vehicles can still be gross emitters (see response to Q.17). In addition, we are aware that some sectors of the driving public still believe that catalytic converters significantly reduce their engine power and as a consequence may be removing these from their vehicles.

Any decision to opt for less frequent screening of any vehicle would have to go hand in hand with a strong commitment to actively enforce the 10 Second Rule and undertake on-road testing programs or would risk losing credibility with those members of the public who are required to comply with the programme. This decision would also have to be backed up with technical evidence unequivocally demonstrating that the likely health impact of reducing the screening frequency for these vehicles would be minimal.

Even more importantly, the issue of public perception should be considered very carefully before any emissions screening exemptions are granted. As far as ARC is aware, exemptions are not made for rust or any other parameter in the WoF/CoF checklists. If the frequency and requirements for emissions screening are not seen to be treated in a similar way then the programme could lose significant credibility because the public may mistakenly feel that the Ministry of Transport does not take the environment and people's health as seriously as other issues such as safety.

Questions about on-road enforcement:

24. Do you think any changes should be made to regulation 28 of the Traffic Regulations 1976, if this section is transferred into the Land Transport Rule?

In the Auckland Region to date, very few infringement notices have been issued by the NZ Police as a result of the 10 Second Rule for Excessive Smoke coming into effect in 2001, due to resourcing conflicts and priorities. ARC would like to see the existing rule actively enforced, starting as soon as possible.

In addition, we would like to see regulation 28 amended in the following ways and incorporated into the Land Transport Rule:

- Enforcing officers should only record the vehicle details (rather than pull the vehicle over) then phone in the complaint to a centralised database.
- In the case of a first offence, the vehicle owner should be required to have the vehicle's emissions comprehensively checked, preferably using a "loaded" chassis dynamometer test such as DT80 for diesels or IM240 for petrols. If the vehicle fails the first test, then the owner should be required to have the vehicle serviced and re-

tested until it passes rather than be fined (that way the \$150 fine could go towards the cost of improving the emissions performance of the vehicle).

- In the case of a repeat offence, the vehicle owner should be fined and required to have their vehicle pass a comprehensive emissions test before being allowed back on the road.

This suggested approach maximises the ability for excessively smoky vehicles to be easily identified on the road yet minimises the time spent by Police in punitive enforcement.

25. What would you see as the main advantages and limitations of enforcing the emissions performance limits?

The main advantages of enforcing the emissions limits are greater awareness and responsibility taken by vehicle drivers leading to reduced emissions and better air quality for all. Ultimately this will lead to fewer preventable deaths, fewer restricted activity days suffered by people impacted by vehicle emissions, and reduced health costs to the public health system.

Public perception is critical to the success of this programme. From the highly successful 0800 SMOKEY campaign undertaken in late 2000 and early 2001 by ARC, we are acutely aware that the general public is very concerned about vehicle emissions. Although poorly-tuned and poorly-maintained vehicles may be emitting much of their pollution “invisibly”, visible smoke is something everyone can see and it offends most people. Enforcing the 10 Second Rule ensures that the public feels that everything that can be done is being done.

The key limitation of enforcing the limits is that some vehicles may pass the simple WoF emissions screening test but then fail the 10 Second Rule. This is why ARC has recommended that these vehicles identified as part of the 10 Second Rule undergo comprehensive emissions testing using a chassis dynamometer setup. As mentioned in the responses to earlier questions, any vehicle that fails the simple WoF emissions screening test should also be offered the opportunity to undergo a full chassis dynamometer test, the outcome of which would override the simple test result.

It is difficult for us to comment further on the potential ramifications without reviewing the data in the final report for the Pilot Testing Programme. We understand that this programme aims to address these very issues.

26. Do you have any views or opinions about the use of supplementary on-road enforcement options?

ARC is strongly in favour of remote sensing being used as a supplementary on-road enforcement option. However, we consider any supplementary on-road enforcement to be the responsibility of the Ministry of Transport, not ARC.

In our opinion, remote sensing is equivalent to a “screening blood-alcohol breathalyser”. Any vehicles which “failed” the remote sensing would be required to undergo the equivalent of a “full blood-alcohol test” by undergoing a comprehensive emissions test to prove or disprove their innocence.

In addition to the enforcement role, on-road remote sensing improves driver awareness if linked to a “smart sign” showing an instantaneous readout of the vehicle’s emissions. It also enables a large number of vehicles to be sampled relatively easily under “real-world” conditions to enable analysis of fleet and emissions trends.

Questions about public education:

27. Do you have any further suggestions on how the introduction of the emissions screening programme could be managed to ensure vehicle owners are prepared for the introduction of emissions performance requirements?

ARC considers that it is vital that all Central Government agencies (particularly Ministry of Transport, Ministry for the Environment, and Ministry of Economic Development) and Regional Councils work collaboratively on public communication and education to ensure that we present a consistent and coordinated message to the public regarding vehicle emissions initiatives. The range of messages delivered by the agencies creates a positive story that should be presented holistically as a joint government package towards improving air quality to maximise the impact.

ARC has been regularly meeting with Ministry of Transport (MoT) and Ministry for the Environment since the start of 2004 to maximise efficiencies by coordinating ARC's Big Clean Up campaign in May 2005 with MoT's communications strategy surrounding the draft rule launch. We are keen to explore joint opportunities for sharing resources to gain greater exposure of vehicle emissions issues.

Additional Comments

In addition to the responses to the specific questions raised in the Discussion Document, ARC would like to make the following comments.

Additional In-service Checks

The current Discussion Document does not mention any additional in-service checks that should be undertaken as part of the emissions screening.

ARC is particularly concerned about the possibility that the practice of removing catalytic converters to purportedly improve engine power is still widespread. Anecdotal evidence gleaned from personal communications with a sample of motor industry representatives suggests that vehicle owners and mechanics still mistakenly believe that vehicles will perform significantly better without the equipment or that the equipment is too difficult to maintain. The Motor Trade Association and others have undertaken significant campaigns to re-educate drivers and mechanics that catalysts are crucial for minimising air emissions and that vehicles are now designed to operate with them so removing them reduces (rather than increases) engine power but the message appears to be slow to penetrate.

Consequently, ARC would like to see an additional check mandated for inclusion in the emissions screening by recommending that all vehicles that were manufactured with emissions control equipment are visually checked to ensure that all equipment (e.g. catalytic converters, oxygen sensors etc.) is still present. We would also like to flag our concern that there are likely to be a number of unsuspecting drivers who will be caught out as they will be unaware that their vehicles have had their emissions control equipment removed by previous owners or mechanics. We understand that confirming the likely extent of this problem is one of the objectives of the current Pilot Testing programme and eagerly await viewing the estimates when the final report is released.

ARC also recommends that the issue of emissions control equipment removal or tampering be specifically highlighted to all vehicle owners as part of the public education campaign mentioned in Q.27. MoT or LTNZ could consider offering free visual checks to concerned motorists well in advance of the legislation coming into effect.

Greenhouse Gas Emissions

Although the vehicle emissions screening programme is largely in response to addressing air quality and human health issues, motor vehicles are also a significant contributor to greenhouse gas concentrations.

As part of requiring particular minimum emissions standards for new and used imported vehicles, Ministry of Transport could take the bold step and set maximum acceptable fuel consumption ratings (possibly graduated by class of vehicle and engine size) to encourage better fuel efficiency in the fleet. This would result in fewer air quality and greenhouse gas emissions.

The European Union is currently investigating transport-related greenhouse gases and is considering limiting maximum fuel consumption of vehicles to 3.0 litres per 100km by 2010⁸.

Monitoring of Effectiveness

The emissions screening programme is part of a package of Central Government initiatives to deliver cleaner air of all New Zealanders through reduced vehicle emissions. In order to assess the effectiveness of the screening programme in terms of delivered reductions, ARC recommends that Ministry of Transport design and undertake a nation wide monitoring programme, ideally using remote sensing at several key locations around New Zealand.

As mentioned in the response to Q.26, on-road remote sensing enables a large number of vehicles to be sampled relatively easily under “real-world” conditions to enable analysis of fleet and emissions trends. It also facilitates improved driver awareness if linked to a “smart sign” showing an instantaneous readout of the vehicle’s emissions. We would recommend that monitoring be undertaken at least a year before emissions screening is introduced then every year for at least three years afterwards to confirm the expected improvements in vehicle emissions.

In addition to demonstrating the effectiveness of the programme, the results would provide vital information to Regional Councils as they grapple with developing appropriate, effective, and equitable air quality management strategies to meet the “straight line path” requirement under the National Environmental Standards.

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, with the wealth of overseas experience now available, this programme offers a prime opportunity for New Zealand to rapidly lift its game towards achieving international best practice.

ARC is very supportive of an emissions screening programme as a means to improve the vehicle fleet performance but would like to particularly highlight the following points:

- Any emissions performance limits adopted should address air pollution effects of concern by an appropriate margin and be defensible from a cost-benefit perspective.

⁸ Walsh (2004). Carlines. February 2004 edition produced by Michael Walsh. Available at www.walshcarlines.com

- The emissions screening programme needs to include introductory arrangements, which recognise the capacity of the motor industry to identify and rectify poorly performing vehicles at a practical rate. Failure to address capacity issues could undermine the good intentions and outcomes of the programme
- The emissions limits should be reviewed regularly to guarantee on-going improvements and achieve the desired environmental and health outcomes. A separate monitoring program needs to be considered to confirm the effectiveness of the emissions screening program.
- Active enforcement of the 10 Second Rule and the use of other on-road testing are essential to ensure that any gross emitting vehicles that are not picked up in the WoF or CoF process are captured. This is critical to fostering goodwill and support from the public who want to see visibly smoky and poorly performing vehicles dealt with.

We look forward to the opportunity to comment further on the specific details of the proposed programme once the final reports are released for the Pilot Emissions Testing Programme and the Social Impact Assessment.

Yours faithfully,

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