

**Retrofitting Pre-Euro Diesel Heavy Vehicles with Emission Reduction
Devices and Tightening the Specification for Unleaded Petrol**

Purpose

This paper consults Members on the following proposals to further reduce motor vehicle emissions for the purpose of improving air quality -

- (a) retrofit emission reduction devices on pre-Euro diesel heavy vehicles, such as crane lorries, concrete mixer trucks and signal light vehicles (i.e. pre-Euro long idling diesel heavy vehicles), that need to keep their engines running for operational reasons while stationary, and
- (b) tighten the specification for unleaded petrol in the Air Pollution Control (Motor Vehicle Fuel) Regulation with effect from 1 January 2005.

Pre-Euro long idling diesel heavy vehicles

2. Diesel vehicles are a major source of roadside air pollution. Among them, pre-Euro vehicles, which were first-registered before April 1995, are significantly more polluting. Compared with those complying with the prevalent emission standards (i.e. Euro III models), they emit seven times more respirable suspended particulates. To improve the roadside air quality, we have to take practicable measures to reduce their emissions.

3. At the meeting on 9 February 2004 (ACE Paper 5/2004), we reported to Members our progress in retrofitting emission reduction devices on pre-Euro diesel vehicles. About 24 000 pre-Euro diesel light vehicles were retrofitted with devices, each of which could reduce a vehicle's particulate emissions by at least 30%. We have mandated the installation for this category of vehicles since December 2003. Since December 2002, we have also been implementing another programme to retrofit ordinary pre-Euro diesel heavy vehicles with catalysts. The catalyst can reduce a vehicle's particulate emissions by about 35%. Also, it can reduce the vehicle's smoke, carbon monoxide and hydrocarbon emissions by about 40%. Up to the end

of April 2004, almost 85% (about 28 700 in number) of the vehicles had been retrofitted. When this programme is completed around the end of this year, we will mandate the installation for this category of vehicles as we did for the category of pre-Euro diesel light vehicles in 2003.

4. The current programme does not cover pre-Euro long idling diesel heavy vehicles such as crane lorries, concrete mixer trucks and signal light vehicles. It is because the trials that had been carried out up to then had revealed that this type of “long idling vehicles” when retrofitted with certain kinds of catalysts would emit white smoke occasionally. At the meeting on 21 January 2002 (ACE Paper 1/2002), we had undertaken to continue the search for suitable devices for these vehicles. Through further trials in collaboration with the transport trades and the Hong Kong Polytechnic University, we have now found emission reduction devices that can work on long idling vehicles without causing the white smoke problem. The Monitoring Committee for the trial, which comprises representatives of transport trades, academics and other relevant government departments, is satisfied with the trial results and supports the retrofitting of pre-Euro long idling diesel heavy vehicles with suitable emission reduction devices.

5. We propose to implement a retrofit programme to cover this remaining category of pre-Euro diesel vehicles, the number of which has reduced from about 4 000 in 2002 to about 3 500 now. With the agreement of the Monitoring Committee, we are now finalizing a technical specification for the emission reduction devices with the assistance by an international expert panel as what we did for the retrofit programme mentioned in paragraph 3 above. We intend to seek funding approval from the Finance Committee of the Legislative Council within this legislative session for the retrofit programme. The total cost of the programme is estimated to be \$70 million, i.e. about \$20,000 for each vehicle. Subject to the Finance Committee’s approval, we will proceed with competitive tendering in August this year. The international expert panel that has drawn up the functional requirements will be invited to evaluate the compliance of the tender submissions, same as for the retrofit programme for the other pre-Euro diesel heavy vehicles. The retrofit programme is expected to be completed within 2005. Similar to other pre-Euro diesel vehicles, we also plan to make the installation mandatory for this category of vehicles after the completion of the programme.

Unleaded petrol

6. To control the air pollution caused by motor vehicle emissions, we have established a policy to adopt the most stringent requirements for the quality of motor

fuels and the emission of newly registered motor vehicles where practicable. We have made the Euro III unleaded petrol specification the statutory standard and the Euro III motor vehicle emission standard the statutory minimum for newly registered motor vehicles since 2001 in step with the European Union. We have also made the Euro IV motor diesel specification (i.e. the ultra low sulphur diesel specification) the statutory standard since April 2002 in order to achieve a quicker reduction in the particulate and nitrogen oxide emissions from diesel motor vehicles that are the major source of roadside air pollution. We are three years ahead of the European Union in that regard.

7. The European Union will tighten the motor fuel specifications to Euro IV with effect from 1 January 2005 to prepare for implementation of the Euro IV motor vehicle emission standards in January 2006. A petrol motor vehicle meeting the Euro IV emission standards and using petrol meeting the Euro IV specification will emit 46% less nitrogen oxides, 50% less hydrocarbons and 56% less carbon monoxide than a petrol vehicle meeting the Euro III emission standards and using unleaded petrol meeting the Euro III specification. A diesel motor vehicle meeting the Euro IV emission standards and using diesel meeting the Euro IV specification will emit 26% less nitrogen oxides and 76% less particulates than a diesel motor vehicle meeting the Euro III emission standards and using diesel meeting the Euro IV specification. With Members' support, we have already made the Euro IV motor diesel specification the statutory standard. We now propose to make the Euro IV unleaded petrol specification the statutory standard with effect from 1 January 2005 in step with the European Union. Specifically, we will upgrade the sulphur limit in unleaded petrol from 150 ppm to 50 ppm and its aromatics limit from 42% to 35% by amending the Air Pollution Control (Motor Vehicle Fuel) Regulation (Cap 311, sub. leg.).

8. Although the prevailing mandatory unleaded petrol specification is Euro III, the unleaded petrol currently available at petrol filling stations in Hong Kong is already very close to the Euro IV specification. The samples we randomly collected from petrol filling stations in 2003 all complied with the Euro IV sulphur limit. While some individual samples exceeded the Euro IV aromatics limit by about 4% to 16%, the average content of aromatics complied with the Euro IV limit. We have consulted the local oil companies. They have indicated to us that there will not be any major technical difficulty in meeting the Euro IV unleaded petrol specification from 1 January 2005. They will need a period of three months to make the preparations. According to them, the proposed upgrade may increase the product cost but the level of increase cannot be precisely determined. We note, however, that upgrading the specification for unleaded petrol in the past did not result in any

increase of the pump price.

9. Regarding the supply of vehicles meeting the Euro IV emission standards beginning 1 January 2006, we have consulted the Hong Kong Motor Traders Association that comprises representatives of the major motor vehicle supplying agents in Hong Kong. The Association is aware of the European Union's plan to mandate the Euro IV emission standards by phases from January 2006 and our plan to do likewise. In fact, although the prevailing mandatory emission standards for newly registered motor vehicles in Hong Kong are Euro III, about 150 models of petrol vehicles in the local market can already meet the Euro IV emission standards. We will continue our discussion with the Association and will consult Members in due course on the introduction of the Euro IV emission standards for newly registered vehicles.

10. We expect that the public in general will support the proposed upgrade of the unleaded petrol specification, as it will help reduce the emissions from the petrol vehicle fleet further.

Advice sought

11. Members are requested to advise on the proposals set out in para. 1 above.

Environment, Transport and Works Bureau
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