For information

Legislative Council
Panel on Environmental Affairs

Motor Vehicle Emission Standards in Hong Kong

Introduction

In response to Members' comments on the proposal to further tighten the emission standards for newly registered vehicles in Hong Kong and introduce emission standards for newly registered motor cycles/tricycles at the meeting of the Legislative Council Panel on Environmental Affairs (the Panel) on 29 March 1999, this paper provides the following supplementary information for Members' reference:

(a) General principles in setting emission standards;
(b) Specific emission requirements as compared with those of other countries; and
(c) Major development in the tightening of emission standards

(A) General Principles in Setting Emission Requirements

2. At the moment, there are no common emission standards for motor vehicles. Broadly speaking the most stringent emission standards currently in use are those of the European Union, USA and Japan. Since these 3 places are leading in motor vehicle manufacturing technologies, virtually all other countries and cities are setting vehicle emission standards by making reference to standards and testing methods developed by them in one way or another.

3. But not every place is adopting the most stringent standards currently in use in European Union, USA or Japan. For various reasons, such as costs and time required to upgrade their motor vehicle manufacturing technology, many places have set emission standards by making reference to past standards adopted in these 3 places which require technologies less demanding than the currently best available. For example, in Asia, only Hong Kong and Japan have adopted a set of emission standards which generally represents the current best available emission control technologies and are supplying automobile diesel

with sulphur content of 0.05% limit.

4. To control air pollution, the policy is to adopt the most stringent emission standards for newly registered vehicles once they are practical and can be made commercially available. Emission standards for different types of vehicles satisfying this policy are laid down in the schedules of the Air Pollution Control (Vehicle Design Standards) (Emission) Regulations. All motor vehicles have to comply with these standards when seeking their first registration. These standards are also revised from time to time in accordance with developments in European Union, USA and Japan.

5. It is not practicable for Hong Kong to devise its own set of emission standards due to our relatively small market. The local market simply cannot generate sufficient demand to encourage sufficient number of manufacturers to produce vehicle models specifically to fit local emission standards at a competitive price level. It is therefore our intention to continue to adopt the most stringent emission standards from a major market once they are practicable and commercially available to Hong Kong.

(B) Specific Emission Requirements as Compared with Those of Other Countries

6. There are some variations in the level of emission control technologies required for different categories of vehicles among the emission standards of the European Union, USA and Japan. We only adopt the most stringent and practicable standards currently in use at these 3 places.

7. For new small petrol vehicles, although the three places have specified slightly different emission numbers and testing procedures, vehicles meeting any of these standards have to use same best available technology that includes electronic fuel management and 3-way catalytic converters. We therefore consider all 3 sets of emission standards of equivalent stringency and are the most stringent practicable requirements.

8. For new large petrol vehicles, however, the European Union's requirements are less stringent than those of the other two places because only a limit of carbon monoxide during engine idling is defined. We have therefore

excluded the European Union standard for large petrol vehicles.

9. The case for small diesel vehicles (up to 2.5 tonnes) is quite similar to small petrol vehicles. The standards of all three countries, though somewhat different in numeric values and testing methods, require same best available emission control technologies. We thus accept all of them for small diesel vehicles except private cars. For diesel private cars, we have deliberately adopted the USA California emission standards, which are the most stringent standards in the world.

10. For diesel vehicles of larger size, the emission standards of the USA and the European Union, again though different in specifications and testing methods, require the same best available emission control technologies including electronic fuel management, high fuel injection pressure, and turbo- charger with after-cooling. We therefore consider both of them the most stringent practicable requirements. The Japanese standards are less stringent especially in the limit for particulate emission, allowing a vehicle to emit 67% more particulates. They have therefore been excluded from our standards.

11. A list of models of Japanese vehicles which can or cannot meet the emission standards required by the European Union is provided at Annex 1 and 2 respectively for Members' reference.

(C) Major Development in the Tightening of Emission Standards

12. Since 1992, we have progressively tightened up our emission standards for both diesel and petrol vehicles. To give an overview, we have required the installation of 3-way catalytic converter for newly registered petrol vehicles for a reduction of up to 90% emissions of carbon monoxide, nitrogen oxides and hydrocarbons from individual vehicles since 1992. New heavy duty diesel vehicles were required to comply with the emission standards equivalent to the Euro I starting from 1995 and Euro II since 1997. Euro I standards were introduced for light duty diesel vehicles in 1995. We are further tightening the standards equivalent to the Euro II standards for light duty vehicles in two phases. The first phase took effect in October 1998 while the second phase is proposed to be implemented in July 1999. Two sets of emission standards for newly registered motor cycles and motor tricycles as well as for governing the

evaporative loss from petrol vehicles are also proposed for implementation within this year. The existing emission standards are set out in Schedule 1 of the Air Pollution Control (Vehicle Design Standards) (Emission) Regulations and Schedules 4 and 5 of the Air Pollution Control (Vehicle Design Standards) (Emission) (Amendment) Regulation 1998. A summary of the major development in the tightening of emission standards for diesel and petrol vehicles as compared to the European Union's requirements since 1992 is set out in Annex 3 and 4 respectively.

13. Hong Kong is one of the Asian cities upholding the most stringent vehicle emission standards comparable to Europe and USA. We will continue to monitor international development in vehicle emission standards and adopt the most stringent ones as soon as compliant vehicles can be made available commercially in Hong Kong. In this respect, we understand the European Union plans to introduce Euro III standards in the next few years and we will closely monitor their implementation date.

Planning, Environment and Lands Bureau
May 1999

Annex 1

Japanese Vehicle Models Comply with New EU Emission Standards (7/99)

MAKER	MODEL	REGISTRATION CLASS	FUEL
MITSUBISHI	L200 K14TJUNSR	LIGHT GOODS VEHICLE	DIESEL
MITSUBISHI	L200 K14TUNSR	LIGHT GOODS VEHICLE	DIESEL
MITSUBISHI	L300 P15VJLNR	LIGHT GOODS VEHICLE	DIESEL
TOYOTA	HIACE 5 SPEED M/T	LIGHT GOODS VEHICLE	DIESEL
TOYOTA	HIACE LH172R-RRMRS 5SPEED M/T	PRIVATE LIGHT BUS	DIESEL
TOYOTA	CROWN COMFORT M/T	TAXI	DIESEL

Annex 2

Japanese Vehicle Models NOT Comply with New EU Emission Standards (7/99)

MAKER	MODEL	REGISTRATION CLASS	FUEL
ISUZU	TER54H	LIGHT GOODS VEHICLE	DIESEL
ISUZU	TFR54H M/T	LIGHT GOODS VEHICLE	DIESEL
ISUZU	TFS54H	LIGHT GOODS VEHICLE	DIESEL
ISUZU	UBS69D	LIGHT GOODS VEHICLE	DIESEL
ISUZU	UBS69G	LIGHT GOODS VEHICLE	DIESEL
ISUZU	UBS69G	LIGHT GOODS VEHICLE	DIESEL
MAZDA	E2200 VAN	LIGHT GOODS VEHICLE	DIESEL
MAZDA	E2500 GLASS VAN (SH07)	LIGHT GOODS VEHICLE	DIESEL
MAZDA	E2500 PANEL VAN M/T (SH07)	LIGHT GOODS VEHICLE	DIESEL
MAZDA	E2500 PICK UP (SH14)	LIGHT GOODS VEHICLE	DIESEL
MAZDA	MAZDA E2200	LIGHT GOODS VEHICLE	DIESEL
MAZDA	MAZDA E2200 VAN	LIGHT GOODS VEHICLE	DIESEL
MITSUBISHI	L200 K34TJUNSR	LIGHT GOODS VEHICLE	DIESEL
MITSUBISHI	L200 K34TUNSR	LIGHT GOODS VEHICLE	DIESEL
MITSUBISHI	L300 P15VJLZR	LIGHT GOODS VEHICLE	DIESEL
MITSUBISHI	PAJERO V46WNSFBR1D M/T	LIGHT GOODS VEHICLE	DIESEL
MITSUBISHI	V24WNSFAR1D	LIGHT GOODS VEHICLE	DIESEL
NISSAN	PICK UP DOUBLE	LIGHT GOODS VEHICLE	DIESEL
NISSAN	PICK UP DOUBLE CAB	LIGHT GOODS VEHICLE	DIESEL
NISSAN	PICK UP SINGLE	LIGHT GOODS VEHICLE	DIESEL
NISSAN	PICK UP SINGLE CAB	LIGHT GOODS VEHICLE	DIESEL
NISSAN	URAN E24 4D 5MT HALF PANEL VAN HVP4REFE24N26-A	LIGHT GOODS VEHICLE	DIESEL
NISSAN	URVAN E24	LIGHT GOODS VEHICLE	DIESEL
NISSAN	URVAN E24	LIGHT GOODS VEHICLE	DIESEL
NISSAN	URVAN E24 4D 5MT FULL PANEL VAN HVP4REFE24N26-A	LIGHT GOODS VEHICLE	DIESEL
NISSAN	URVAN E24 4D HALF PANEL VAN HVP4REFE24N26 M/T	LIGHT GOODS VEHICLE	DIESEL
NISSAN	URVAN E24	PRIVATE LIGHT BUS	DIESEL
NISSAN	URVAN E24	PRIVATE LIGHT BUS	DIESEL
NISSAN	URVAN E24 4D 5MT SCHOOL BUS HVP4REFE24N26	PRIVATE LIGHT BUS	DIESEL
TOYOTA	CROWN COMFORT	TAXI	DIESEL

Annex 3

Hong Kong New Diesel Vehicle Exhaust Emission Standards Summary

Implement date / Vehicle type	1 January 1992	1 April 1995	1 April 1997	1 October 1998	1 July 1999
Private Cars	Pre-EU I	EU I	EU I	US California 94 (1 April 1998)	US California 94
Taxis	Pre-EU I	EU I	EU I	EU I	EU II
Goods vehicles and buses up to 2.5 tonne	Pre-EU I	EU I	EU I	EU I/II#	EU II
Goods vehicles and buses between 2.5 and 3.5 tonne	Pre-EU I	EU I	EU I	EU I/II#	EU II
Goods vehicles and buses over 3.5 tonne	Pre-EU I	EU I	EU II	EU II	EU II

For vehicle with reference mass<=1250 kg only

Note: Emission Standards of USA/Japan equivalent to those of EU are also adpoted

Annex 4

Hong Kong New Petrol Vehicle Exhaust Emission Standards Summary

Implement date / Vehicle type	1 January 1992	1 April 1995	1 April 1997	1 October 1998	1 July 1999
Private Cars	Pre-EU I	EU I	EU I	EU I/II#	EU II
Goods vehicles and buses up to 2.5 tonne	Pre-EU I	EU I	EU I	EU I/II#	EU II
Goods veh between 2.5 and 3.5 tonne	Pre-EU I	EU I	EU I	EU I/II#	EU II
Goods vehicles and buses over 3.5 tonne	Pre-EU I	US 91; or Japan 92	US 91; or Japan 92	US 98; or Japan 92	US 98; or Japan 95
Motor cycles and Motor tricycles	no standard	no standard	no standard	no standard	EU, US and Japan **(1 October 1999)**

For vehicle with maximum mass<=2500 kg OR designed to carry not more than 6 occupants including driver AND For vehicle with reference mass<=1250 kg

Note: Emission Standards of USA/Japan equivalent to those of EU are also adpoted