#### LEGISLATIVE COUNCIL BRIEF

# <u>Air Pollution Control (Vehicle Design Standards)</u> (Emission) (Amendment) Regulation 1999 (Cap. 311, sub. leg. J)

#### INTRODUCTION

The Secretary for Planning, Environment and Lands has made the Air Pollution Control (Vehicle Design Standards) (Emission) (Amendment) Regulation 1999, at Annex, under section 43 of the Air Pollution Control Ordinance (Chapter 311) to give effect to the following:

- (a) to tighten the emission standards for certain newly registered motor vehicles up to 3.5 tonnes, to match the latest requirements of the European Union and Japan, and a minor updating to an emission standard for newly registered petrol vehicles more than 3.5 tonnes;
- (b) to add an emission standard for newly registered petrol vehicles to control the emissions from their fuel tanks due to evaporative loss;
- (c) to introduce a set of emission standards for newly registered motor cycles and motor tricycles.

#### **BACKGROUND**

2. Motor vehicles are a major source of air pollution in Hong Kong. As part of the vehicle emission control strategy, it is the policy to adopt the most stringent requirements for emission of newly registered motor vehicles and for the quality of motor fuels as soon as compliant vehicles or fuels can be made available in Hong Kong. We have tightened the emission standards for newly registered large diesel vehicles to match the latest Euro II standards on 1 April 1997. In line with the practice of the European Union, we are tightening the emission standards of all newly registered light duty diesel vehicles in two stages. The first stage took effect on 1 October 1998. The second stage is proposed to be implemented from 1 July 1999.

- 3. The proposed amendment will affect at least 67 models of newly registered diesel light goods vehicles and diesel light buses, as well as a small number of light duty petrol vehicles. Light duty vehicles meeting the latest European Union and Japanese standards emit 55% less particulates and 38% less hydrocarbons and nitrogen oxides than models complying with the preceding standards. While measures are now being prepared for all diesel taxis to run on Liquefied Petroleum Gas (LPG) in future, it is not anticipated that it can be made mandatory for new taxis to use LPG until the end of 2000. To ensure that any new taxis purchased before that comply with the best available emission standards, it is proposed that this amendment should also apply to taxis. We are also taking the opportunity to conduct a minor updating of an emission standard for newly registered petrol vehicles of weighting more than 3.5 tonnes.
- 4. Many countries have specified standards to control emissions due to evaporative loss from the fuel tank of a petrol vehicle. The control can help reduce the formation of photochemical smog. These new standards are practical and vehicles meeting these new standards are commercially available. It is proposed to introduce this as one of the standards for newly registered petrol vehicles in Hong Kong.
- 5. Motor cycles constitute about 5% of the motor vehicle fleet. They are not subject to any emission standards and are a major source of hydrocarbon emissions, contributing to about 25% of those from vehicle sources. Hydrocarbons can help form photochemical smog, which has become more visible in recent years. Many countries are establishing emission standards for newly registered motor cycle and tricycles <sup>1</sup>. Japan started introducing emission standards for motor cycles last October. The European Union will tighten up their emission standards for motor cycles and motor tricycles later this year. Motor cycles and motor tricycles meeting these standards emit 50% less hydrocarbons than old models. Introducing emission standards of equivalent stringency for newly registered motor cycles and motor tricycles will bring Hong Kong in line with international practice, prevent Hong Kong from becoming the dumping ground of those of inferior design, and help control air pollution.

<sup>&</sup>lt;sup>1</sup> Motor tricycles are not common in Hong Kong. In 1998, no motor tricycles were licensed with the Transport Department.

#### THE PROPOSED AMENDMENT REGULATION

- 6. The Air Pollution Control (Vehicle Design Standards) (Emission) Regulations (Cap. 311, sub. leg. J) lays down the requirement that every motor vehicle seeking first registration has to comply with a set of emission standards. It is proposed from 1 July 1999 to further tighten the emission standards for those light duty vehicles up to 3.5 tonnes, with reference weight exceeding 1.25 tonnes, including diesel taxis, to the latest European Union and Japanese levels. A minor updating to an emission standard for vehicles more than 3.5 tonnes equipped with a positive-ignition engine is also proposed. In addition, a set of emission standards governing the evaporative loss from a fuel tank is proposed to be added to the requirements for petrol vehicles.
- 7. Under the same Regulations, it is also proposed to require every motor cycle and motor tricycle first-registered on or after 1 October 1999 to comply with a set of emission standards of the stringency equivalent to the standards of Japan, European Union or USA.

#### IMPLEMENTATION TIMETABLE

8. Subject to the approval by the Legislative Council, the proposal for tightening the emission standards for diesel taxis and certain motor vehicles up to 3.5 tonnes, and introducing evaporative emission standard will commence on 1 July 1999, and the introduction of emission standards for motor cycles and motor tricycles will commence on 1 October 1999.

Financial and Staff

#### FINANCIAL AND STAFFING IMPLICATIONS

9. The Amendment Regulation will be implemented through the existing type approval arrangements for vehicles seeking first registration. Extending the emission standard control to motor cycles and motor tricycles will increase the workload equivalent to 0.5 technical staff, which will be absorbed by implementing efficiency enhancement measures. Additional staff is thus not required.

#### **ECONOMIC IMPLICATIONS**

10. Motor vehicles and motor cycles meeting the new emission standards are available and their prices may be 5% higher than the existing models. Such price increase is consistent with the polluter pays principal.

#### **ENVIRONMENTAL IMPLICATIONS**

11. The vehicles complying with the more stringent emission requirements in the proposal will emit significantly less than their preceding models. The implementation of the proposed Amendment Regulation will thus help reduce the air pollution from vehicles when in-use vehicles are phased out by less polluting ones.

#### **PUBLIC CONSULTATION**

- 12. Consultation has been carried out with a number of relevant organisations and trade associations. The Motor Traders Association has supported the proposals related to motor vehicles. The taxi trade has been consulted on the proposed tightening of the emission standards for newly registered diesel taxis. Sixteen taxi associations responded. Eight indicated support of the proposal while three indicated objection. The remaining five indicated no comments. To dispel the concerns of some members of the taxi trade, we have further explained to the trade that the proposal would only affect newly registered diesel taxis and that vehicles meeting these standards are now available in the local taxi market and are in fact being used by the trade. We also pointed out that the proposal to tighten the emission standards of new diesel taxis is only part of our overall exercise to update the standards of all new light duty diesel vehicles.
- 13. The Hong Kong Motorcycle Association supports the introduction of the emission standards for newly registered motorcycles. However, the Hong Kong Motorcycle of Commerce, most of whose members are parallel importers of motorcycles and importers of second-hand motorcycles, objects to the proposed implementation timetable and worry about a potential increase in their operating cost.

- 14. Their first concern is connected with the import of second-hand motorcycles. The proposed implementation schedule matches that of Japan. This will make it difficult for them to source suitable second-hand motorcycles in the first few years of the introduction. They have requested the introduction of the emission requirements for motorcycles to be deferred to 2003. Postponing the implementation of the proposal to 2003 will allow more motorcycles of inferior design to be imported. This is hardly justified. The increase in their operating cost is due to parallel-imported motorcycles lacking documents showing their emission performance. Their motorcycles thus need to undergo an emission test to show their compliance with the proposed emission requirements. The test costs \$4,000 and has to be done currently in the place of export. Alternatively, an importer can seek emission certificates from the manufacturers of the motorcycles.
- 15. The Legislative Council Panel on Environmental Affairs was briefed on the proposed amendment at its meeting of 29 March 1999. The Advisory Council on the Environment endorsed the proposed amendment in May 1999.

#### **PUBLICITY**

16. A press release on the proposed Amendment Regulation will be issued when it is published in the Gazette on 14 May 1999.

#### **ENQUIRY**

17. For any enquiries on this brief, please contact Mr Howard Chan, Principal Assistant Secretary (Environment), Planning, Environment and Lands Bureau, at 2848 2551.

#### Planning, Environment and Lands Bureau May 1999

### AIR POLLUTION CONTROL (VEHICLE DESIGN STANDARDS) (EMISSION) (AMENDMENT) REGULATION 1999

(Made under section 43 of the Air Pollution Control Ordinance (Cap. 311) after consultation with the Advisory Council on the Environment)

#### 1. Commencement

- (1) This Regulation, other than section 3(m), shall come into operation on 1 July 1999.
  - (2) Section 3(m) shall come into operation on 1 October 1999.

#### 2. Interpretation

Regulation 2 of the Air Pollution Control (Vehicle Design Standards) (Emission) Regulations (Cap. 311 sub. leg.) is amended by adding -

""evaporative emission" (蒸發排放物) means hydrocarbons emitted by evaporation from the fuel system of a motor vehicle which is equipped with a positive-ignition engine;".

#### 3. Vehicle design standards for certain motor vehicles

Regulation 7(1) is amended -

- (a) in paragraph (a) -
  - (i) in subparagraph (ii), by repealing "on or after 1 October 1998" and substituting "between 1 October 1998 and 30 June 1999 (both dates inclusive)";
  - (ii) by adding -

- "(iii) if it is registered on or after 1 July 1999, to the standards specified in Part I(a), (b) or (c) of Schedule 7;";
- (b) in paragraph (b) (i), by repealing "Part II(a), (b) or (c) of Schedule 2" and substituting "paragraph (a), (b) or (c) of Schedule 2A";
- (c) in paragraph (c) -
  - (i) in subparagraph (ii), by repealing "on or after 1 October 1998" and substituting "between 1 October 1998 and 30 June 1999 (both dates inclusive)";
  - (ii) by adding -
    - "(iii) if it is registered on or after 1 July 1999, to the standards specified in Part II(a), (b) or (c) of Schedule 7;";
- (d) in paragraph (d) -
  - (i) in subparagraph (ii), by repealing "on or after 1 October 1998" and substituting "between 1 October 1998 and 30 June 1999 (both dates inclusive)";
  - (ii) by adding -
    - "(iii) if it is registered on or after 1 July 1999, to the standards specified in Part III(a), (b) or (c) of Schedule 7;";

- (e) in paragraph (e) -
  - (i) in subparagraph (ii), by repealing "on or after 1 October 1998" and substituting "between 1 October 1998 and 30 June 1999 (both dates inclusive)";
  - (ii) by adding -
    - "(iii) if it is registered on or after 1 July 1999, to the standards specified in Part IV(a), (b) or (c) of Schedule 7;";
- (f) in paragraph (f) -
  - (i) in subparagraph (ii), by repealing "on or after 1 October 1998" and substituting "between 1 October 1998 and 30 June 1999 (both dates inclusive)";
  - (ii) by adding -
    - "(iii) if it is registered on or after 1 July 1999, to the standards specified in Part V(a), (b) or (c) of Schedule 7;";
- (g) in paragraph (g) -
  - (i) in subparagraph (ii), by repealing "on or after 1 October 1998" and substituting "between 1 October 1998 and 30 June 1999 (both dates inclusive)";
  - (ii) by adding -

- "(iii) if it is registered on or after 1 July 1999, to the standards specified in Part VI(a), (b) or (c) of Schedule 7;";
- (h) in paragraph (h) -
  - (i) in subparagraph (ii), by repealing "on or after 1 October 1998" and substituting "between 1 October 1998 and 30 June 1999 (both dates inclusive)";
  - (ii) by adding -
    - "(iii) if it is registered on or after 1 July 1999, to the standards specified in Part VII(a), (b) or (c) of Schedule 7;";
- (i) in paragraph (i) -
  - (i) in subparagraph (ii), by repealing "on or after 1 October 1998" and substituting "between 1 October 1998 and 30 June 1999 (both dates inclusive)";
  - (ii) by adding -
    - "(iii) if it is registered on or after 1 July 1999, to the standards specified in Part VIII(a) or (b) of Schedule 7;";
- (j) in paragraph (j) -
  - (i) in subparagraph (ii), by repealing "on or after 1 October 1998" and substituting

"between 1 October 1998 and 30 June 1999 (both dates inclusive)";

- (ii) by adding -
  - "(iii) if it is registered on or after 1 July 1999, to the standards specified in Part IX(a) or (b) of Schedule 7;";
- (k) in paragraph (k) (ii), by repealing "Part X(a) or (b) of Schedule 5" and substituting "paragraph (a) or (b) of Schedule 6";
- (l) in paragraph (l) (ii), by repealing "Part X(a) or (b) of Schedule 5." and substituting "paragraph (a) or (b) of Schedule 6;";
- (m) by adding -
  - "(m) every motor cycle registered on or after 1 October 1999 shall be so constructed that the emission from that motor cycle conforms to the standards specified in paragraph (a), (b) or (c) of Schedule 8;
  - (n) every motor tricycle registered on or after 1 October 1999 shall be so constructed that the emission from that motor tricycle conforms to the standards specified in Schedule 9.".

#### 4. Vehicles to which regulation 7 does not apply

Regulation 9(a) is repealed.

#### 5. Schedule 2 amended

Schedule 2 is amended -

- (a) in the heading, by repealing "ON OR AFTER 1 JANUARY 1992" and substituting "BETWEEN 1 JANUARY 1992 AND 30 SEPTEMBER 1998 (BOTH DATES INCLUSIVE)";
- (b) in Part I -
  - (i) by repealing "不得超過" and substituting "物不得超過以下標準";
  - (ii) in paragraph (a) -
    - (A) by repealing "0.26 grams", "0.16 grams" and "0.25 grams" and substituting "0.26 gram", "0.16 gram" and "0.25 gram" respectively;
    - (B) by repealing "按" and substituting "有關標準按":
  - (iii) in paragraph (b) -
    - (A) by repealing "0.25 grams" where it twice appears and substituting "0.25 gram";
    - (B) by repealing "按" and substituting "有關標準按":
  - (iv) in paragraph (c) -
    - (A) in subparagraph (i) -

- (I) by repealing "0.50 grams" and substituting "0.50 gram";
- (II) by repealing "按" and substituting "有關標準按";
- (B) in subparagraph (ii) -
  - (I) by repealing "0.97 grams" and substituting "0.97 gram";
  - (II) by repealing "按" and substituting "有關標準按";

- (c) in Part II -
  - (i) by repealing "不得超過" and substituting "物不得超 過以下標準";
  - (ii) in paragraph (a) -
    - (A) by repealing "0.26 grams", "0.63 grams" and "0.12 grams" and substituting "0.26 gram", "0.63 gram" and "0.12 gram" respectively;
    - (B) by repealing "按" and substituting "有關標準按".
  - (iii) in paragraph (b) -
    - (A) by repealing "0.62 grams", "0.72 grams", "0.84 grams" and "0.34 grams" and substituting "0.62 gram", "0.72

- gram", "0.84 gram" and "0.34 gram" respectively;
- (B) by repealing "按" and substituting "有關標準按":
- (iv) in paragraph (c) -
  - (A) in subparagraph (i) -
    - (I) by repealing "0.97 grams" and "0.14 grams" and substituting "0.97 gram" and "0.14 gram" respectively;
    - (II) by repealing "按" and substituting "有關標準按";
  - B) in subparagraph (ii) -
    - (I) by repealing "0.97 grams", "0.14 grams", "0.19 grams" and "0.25 grams" and substituting "0.97 gram", "0.14 gram", "0.19 gram" and "0.25 gram" respectively;
    - (II) by repealing "接" and substituting "有關標準按";

- (d) in Part III -
  - (i) by repealing "不得超過" and substituting "物不得超過以下標準";
  - (ii) in paragraph (a) -

- (A) by repealing "0.16 grams" and "0.25 grams" and substituting "0.16 gram" and "0.25 gram" respectively;
- (B) by repealing "按" and substituting "有關標準按":
- (iii) in paragraph (b) -
  - (A) by repealing "0.25 grams" where it twice appears and substituting "0.25 gram";
  - (B) by repealing "按" and substituting "有關標準按":
- (iv) in paragraph (c) -
  - (A) by repealing "0.97 grams" and substituting "0.97 gram";
  - (B) by repealing "按" and substituting "有關標準按":
- (e) in Part IV -
  - (i) by repealing "不得超過" and substituting "物不得超過以下標準";
  - (ii) in paragraph (a) -
    - (A) by repealing "0.50 grams", "0.75 grams" and "0.16 grams" and substituting "0.50 gram", "0.75 gram" and "0.16 gram" respectively;

- (B) by repealing "按" and substituting "有關標準按".
- (iii) in paragraph (b) -
  - (A) by repealing "0.62 grams", "0.84 grams" and "0.34 grams" and substituting "0.62 gram", "0.84 gram" and "0.34 gram" respectively;
  - (B) by repealing "按" and substituting "有關標準按":
- (iv) in paragraph (c) -
  - (A) by repealing "0.97 grams", "0.14 grams" and "0.19 grams" and substituting "0.97 gram", "0.14 gram" and "0.19 gram" respectively;
  - (B) by repealing "按" and substituting "有關標準按".
- (f) in Part V -
  - (i) by repealing "不得超過" and substituting "物不得超 過以下標準";
  - (ii) in paragraph (a) -
    - (A) by repealing "0.20 grams" and "0.43 grams" and substituting "0.20 gram" and "0.43 gram" respectively;
    - (B) by repealing "按" and substituting "有關標準按":

- (iii) in paragraph (b) -
  - (A) by repealing "0.70 grams" and substituting "0.70 gram";
  - (B) by repealing "按" and substituting "有關標準按":
- (iv) in paragraph (c) -
  - (A) by repealing "0.97 grams" and substituting "0.97 gram";
  - (B) by repealing "按" and substituting "有關標準按":
- (g) in Part VI -
  - (i) by repealing "不得超過" and substituting "物不得超 過以下標準";
  - (ii) in paragraph (a) -
    - (A) by repealing "0.50 grams" and "0.28 grams" and substituting "0.50 gram" and "0.28 gram" respectively;
    - (B) by repealing "按" and substituting "有關標準按":
  - (iii) in paragraph (b) -
    - (A) by repealing "0.62 grams" and "0.43 grams" and substituting "0.62 gram" and "0.43 gram" respectively;
    - (B) by repealing "按" and substituting "有關標準按":

- (iv) in paragraph (c) -
  - (A) by repealing "0.97 grams", "0.14 grams", "0.19 grams" and "0.25 grams" and substituting "0.97 gram", "0.14 gram", "0.19 gram" and "0.25 gram" respectively;
  - (B) by repealing "按" and substituting "有關標準按"

#### 6. Schedule added

The following is added -

#### "SCHEDULE 2A

[reg. 7]

#### VEHICLE DESIGN STANDARDS (EMISSION) FOR PRIVATE CARS EQUIPPED WITH COMPRESSION-IGNITION ENGINES AND REGISTERED BETWEEN 1 JANUARY 1992 AND 31 MARCH 1998 (BOTH DATES INCLUSIVE)

#### Emission shall not exceed -

on sna	Thot exceed				
(a)	hydrocarbons	0.26	gram	per	kilometre
	carbon monoxide	2.10	grams	per	kilometre
	oxides of nitrogen	0.63	gram	per	kilometre
	particulate emissions	0.12	gram p	er ki	lometre
	as measured by the 1975 Federal Test Pro	cedure	e admii	niste	red by the
	Environmental Protection Agency of the United States of America;				
(b)	hydrocarbons	0.62	gram	per	kilometre
	carbon monoxide	2.70	grams	per	kilometre
	oxides of nitrogen				

- with a vehicle 0.72 gram per kilometre weight of not more than 1.265 tonnes

- with a vehicle 0.84 gram per kilometre weight of more than 1.265 tonnes

particulate emissions 0.34 gram per kilometre as measured by the 10.15-mode operation administered by the Ministry of Transport of Japan;

(c) (i) for a vehicle designed to carry no more than 6 passengers including the driver, or the maximum mass of which does not exceed 2 500 kilograms -

hydrocarbons and 0.97 gram per kilometre

oxides of nitrogen

combined

carbon monoxide 2.72 grams per kilometre particulate 0.14 gram per kilometre emissions

as measured by the Type I test procedure specified in Council Directive 70/220/EEC as amended by Council Directive 93/59/EEC, both made by the Council;

(ii) for a vehicle designed to carry more than 6 passengers including the driver, or the maximum mass of which exceeds 2 500 kilograms -

hydrocarbons and oxides of nitrogen combined - with a reference mass of 0.97 gram per kilometre less than or equal to 1 250 kilograms - with a reference mass of 1.4 grams per kilometre more than kilograms but not more than 1 700 kilograms - with a reference mass of 1.7 grams per kilometre more than 1 700 kilograms carbon monoxide - with a reference mass of 2.72 grams per kilometer less than or equal to 1 250 kilograms - with a reference mass of 5.17 grams per kilometer more than 1 kilograms but not more than 1 700 kilograms with a reference 6.9 grams per kilometer mass of more than 1 700 kilograms

particulate emissions

- with a reference 0.14 gram per kilometer

mass of less than

or equal to 1 250

kilograms

- with a reference 0.19 gram per kilometer

mass of more than 1 250 kilograms but not more than 1 700 kilograms

- with a reference 0.25 gram per kilometer

mass of more than 1 700 kilograms

as measured by the Type I test procedure specified in Council Directive 70/220/EEC as amended by Council Directive 93/59/EEC, both made by the Council.".

#### 7. Schedule 3 amended

Schedule 3 is amended -

- (a) in the heading, by repealing "ON OR AFTER 1 APRIL 1995" and substituting "BETWEEN 1 APRIL 1995 AND 30 SEPTEMBER 1998 (BOTH DATES INCLUSIVE)";
- (b) in Part I -

- (i) by repealing "不得超過" and substituting "物不得超過以下標準";
- (ii) in paragraph (a) -
  - (A) by repealing "0.24 grams" and "0.68 grams" and substituting "0.24 gram" and "0.68 gram" respectively;
  - (B) by repealing "按" and substituting "有關標準按".
- (iii) in paragraph (b), by repealing "按" and substituting "有關標準按";
- (iv) in paragraph (c) -
  - (A) by repealing "0.97 grams" and substituting "0.97 gram";
  - (B) by repealing "按" and substituting "有關標準按".
- (c) in Part II -
  - (i) by repealing "不得超過" and substituting "物不得超 過以下標準";
  - (ii) in paragraph (a) -
    - (A) by repealing "0.50 grams" and "0.28 grams" and substituting "0.50 gram" and "0.28 gram" respectively;
    - (B) by repealing "按" and substituting "有關標準按":
  - (iii) in paragraph (b) -

- (A) by repealing "0.97 grams", "0.14 grams", "0.19 grams" and "0.25 grams" and substituting "0.97 gram", "0.14 gram", "0.19 gram" and "0.25 gram" respectively;
- (B) by repealing "按" and substituting "有關標準按".
- (d) in Part III -
  - (i) by repealing "不得超過" and substituting "物不得超過以下標準";
  - (ii) in paragraphs (a) and (b), by repealing "按" and substituting "有關標準按";
- (e) in Part IV -
  - (i) by repealing "不過超過" and substituting "物不得超過以下標準";
  - (ii) in paragraph (a) -
    - (A) by repealing "0.80 grams" and substituting "0.80 gram";
    - (B) by repealing "按" and substituting "有關標準按".
  - (iii) in paragraph (b) -
    - (A) by repealing "0.36 grams" and "0.61 grams" and substituting "0.36 gram" and "0.61 gram" respectively;

- (B) by repealing "按" and substituting "有關標準按":
- (iv) in paragraph (c) -
  - (A) by repealing "0.13 grams" and substituting "0.13 gram";
  - (B) by repealing "按" and substituting "有關標準按".
- (v) in paragraph (d) -
  - (A) by repealing "0.25 grams" and "0.15 grams" and substituting "0.25 gram" and "0.15 gram" respectively;
  - (B) by repealing "按" and substituting "有關標準按"

## 8. Vehicle design standards (emission) for private cars equipped with compression-ignition engines and registered on or after 1 April 1998

Schedule 4 is amended by repealing "0.16 grams", "0.25 grams" and "0.05 grams" and substituting "0.16 gram", "0.25 gram" and "0.05 gram" respectively.

#### 9. Schedule 5 amended

Schedule 5 is amended -

(a) in the heading, by repealing "ON OR AFTER 1 OCTOBER 1998" and substituting "BETWEEN 1 OCTOBER 1998 AND 30 JUNE 1999 (BOTH DATES INCLUSIVE)";

- (b) in Part I -
  - (i) in paragraph (a), by repealing "0.16 grams", "0.25 grams" and "0.05 grams" and substituting "0.16 gram", "0.25 gram" and "0.05 gram" respectively;
  - (ii) in paragraph (b), by repealing "0.25 grams" where it twice appears and substituting "0.25 gram";
  - (iii) in paragraph (c), by repealing "0.5 grams" where it twice appears and substituting "0.5 gram";
- (c) in Part II -
  - (i) in paragraph (a), by repealing "0.26 grams", "0.63 grams" and "0.12 grams" and substituting "0.26 gram", "0.63 gram" and "0.12 gram" respectively;
  - (ii) in paragraph (b), by repealing "0.62 grams", "0.72 grams", "0.84 grams" and "0.34 grams" and substituting "0.62 gram", "0.72 gram", "0.84 gram" and "0.34 gram" respectively;
  - (iii) in paragraph (c) -
    - (A) by repealing "0.97 grams" and "0.14 grams" and substituting "0.97 gram" and "0.14 gram" respectively;
    - (B) by repealing "對於" and substituting "就";
    - (C) by adding "而言" after "公斤的車輛";

- (d) in Part III -
  - (i) in paragraph (a), by repealing "0.16 grams", "0.25 grams" and "0.05 grams" and substituting "0.16 gram", "0.25 gram" and "0.05 gram" respectively;
  - (ii) in paragraph (b), by repealing "0.25 grams" where it twice appears and substituting "0.25 gram";
  - (iii) in paragraph (c), by repealing "0.5 grams" and substituting "0.5 gram";
- (e) in Part IV -
  - (i) in paragraph (a), by repealing "0.16 grams", "0.62 grams" and "0.05 grams" and substituting "0.16 gram", "0.62 gram" and "0.05 gram" respectively;
  - (ii) in paragraph (b), by repealing "0.7 grams", "0.9 grams", "1.0 grams", "0.08 grams", "0.10 grams" and "0.19 grams" and substituting "0.7 gram", "0.9 gram", "1.0 gram", "0.08 gram", "0.10 gram" and "0.19 gram" respectively;
- (f) in Part V -
  - (i) in paragraph (a), by repealing "0.20 grams", "0.43 grams" and "0.06 grams" and substituting "0.20 gram", "0.43 gram" and "0.06 gram" respectively;

- (ii) in paragraph (b), by repealing "0.70 grams" and substituting "0.70 gram";
- (iii) in paragraph (c), by repealing "0.5 grams" and substituting "0.5 gram";
- (g) in Part VI -
  - (i) in paragraph (a), by repealing "0.20 grams", "0.60 grams" and "0.06 grams" and substituting "0.20 gram", "0.60 gram" and "0.06 gram" respectively;
  - (ii) in paragraph (b), by repealing "0.7 grams", "0.9 grams", "1.0 grams", "0.08 grams", "0.10 grams", "0.19 grams" and "0.25 grams" and substituting "0.7 gram", "0.9 gram", "1.0 gram", "0.08 gram", "0.10 gram", "0.19 gram" and "0.25 gram" respectively;
- (h) in Part VII -
  - (i) in paragraph (a), by repealing "0.24 grams", "0.68 grams" and "0.08 grams" and substituting "0.24 gram", "0.68 gram" and "0.08 gram" respectively;
  - (ii) in paragraph (c), by repealing "0.5 grams" and substituting "0.5 gram";
- (i) in Part VIII -
  - (i) in paragraph (a), by repealing "0.24 grams", "0.95 grams" and "0.08 grams" and substituting "0.24 gram", "0.95 gram" and "0.08 gram" respectively;

- (ii) in paragraph (b), by repealing "0.7 grams", "0.9 grams", "1.0 grams", "0.08 grams", "0.10 grams", "0.19 grams" and "0.25 grams" and substituting "0.7 gram", "0.9 gram", "1.0 gram", "0.08 gram", "0.10 gram", "0.19 gram" and "0.25 gram" respectively;
- (j) by repealing Part X.

#### 10. Schedules added

The following are added -

"SCHEDULE 6

[reg. 7]

### VEHICLE DESIGN STANDARDS (EMISSION) FOR CERTAIN MOTOR VEHICLES REGISTERED ON OR AFTER 1 OCTOBER 1998

#### Emission shall not exceed -

(a)	hydrocarbons	1.74 grams per kilowatt-hour		
	carbon monoxide	20.8 grams per kilowatt-hour		
	oxides of nitrogen	5.36 grams per kilowatt-hour		
	particulate emissions	0.13 gram per kilowatt-hour		
	as measured by the Transient Test	s measured by the Transient Test Procedure for heavy duty diesel		
	engines administered by the Environmental Protection Agency of t			
	United States of America;			

(b) hydrocarbons 1.1 grams per kilowatt-hour carbon monoxide 4.0 grams per kilowatt-hour oxides of nitrogen 7.0 grams per kilowatt-hour particulate emissions

- for engines having 0.25 gram per kilowatt-hour

a swept volume per cylinder of less than 700 cubic centimetres and rated power speed of engine higher than 3 000 revolutions per minute

- for engines having
a swept volume per cylinder equal
to or more than 700 cubic
centimetres, or rated power speed of
engine of not more than 3 000
revolutions per minute

0.15 gram per kilowatt-hour

as measured by the test procedure for diesel engines which are for use in vehicles specified in Council Directive 88/77/EEC as amended by Council Directive 91/542/EEC, both made by the Council.

#### SCHEDULE 7

[reg. 7]

### VEHICLE DESIGN STANDARDS (EMISSION) FOR CERTAIN MOTOR VEHICLES REGISTERED ON OR AFTER 1 JULY 1999

#### Part I

(a) Emission shall not exceed non-methane hydrocarbons carbon monoxide

0.16 gram per kilometre

2.10 grams per kilometre

oxides of nitrogen

oxides oxid

(b) Emission shall not exceed -

hydrocarbons

0.25 gram per kilometre
2.10 grams per kilometre
0.25 gram per kilometre
0.25 gram per kilometre
0.25 gram per kilometre
0.25 gram per kilometre
as measured by the 10.15-mode operation administered by the Ministry
of Transport of Japan; and evaporative emission shall not exceed 2.0
grams per test as measured by the Japan Enclosure or Trap Method
administered by the Ministry of Transport of Japan.

(c) Emission shall not exceed -

(i) for a vehicle designed to carry no more than 6 passengers including the driver, or the maximum mass of which does not exceed 2 500 kilograms -

hydrocarbons and 0.5 gram per kilometre oxides of

nitrogen combined

carbon monoxide 2.2 grams per kilometre for a vehicle designed to carry more than 6 passengers (ii) including the driver, or the maximum mass of which exceeds 2 500 kilograms and the reference mass of which does not exceed 1 250 kilograms hydrocarbons and 0.5 gram per kilometre oxides of nitrogen combined carbon monoxide 2.2 grams per kilometre (iii) for a vehicle designed to carry more than 6 passengers including the driver, or the maximum mass of which exceeds 2 500 kilograms and the reference mass of which exceeds 1 250 kilograms and does not exceed 1 700 kilograms hydrocarbons and 0.6 gram per kilometre oxides of nitrogen combined carbon monoxide 4.0 grams per kilometre for a vehicle designed to carry more than 6 passengers (iv) including the driver, or the maximum mass of which exceeds 2 500 kilograms and the reference mass of

which exceeds 1 700 kilograms -

hydrocarbons and 0.7 gram per kilometre oxides of

nitrogen combined

carbon monoxide 5.0 grams per kilometre as measured by the Type I test procedure specified in Council Directive 70/220/EEC as amended by Council Directive 96/69/EC, both made by the Council; and evaporative emission shall not exceed 2.0 grams per test as measured by the Type IV test procedure specified in Council Directive 91/441/EEC made by the Council.

#### Part II

(a) Emission shall not exceed non-methane hydrocarbons
carbon monoxide
oxides of nitrogen
particulate emissions

0.16 gram per kilometre
2.10 grams per kilometre
0.62 gram per kilometre
0.05 gram per kilometre

as measured by the 1975 Federal Test Procedure administered by the Environmental Protection Agency of the United States of America.

(b) Emission shall not exceed -

hydrocarbons

carbon monoxide

oxides of nitrogen

particulate emissions

measured by the 10.15-mode operation administered by the Ministry of Transport of Japan.

0.40 gram per kilometre

0.40 gram per kilometre

0.40 gram per kilometre

as measured by the 10.15-mode operation administered by the Ministry

(c) Emission shall not exceed -

(i) for a vehicle designed to carry no more than 6 passengers including the driver, or the maximum mass of which does not exceed 2 500 kilograms -

hydrocarbons and

oxides of nitrogen combined

- for engines 0.7 gram per kilometre other than direct-injection

type

- for engines of 0.9 gram per kilometre direct-injection

type

carbon monoxide 1.0 gram per kilometre

particulate emissions

- for engines 0.08 gram per kilometre

other than direct-injection type

- for engines of 0.10 gram per kilometre

direct-injection

type

(ii) for a vehicle designed to carry more than 6 passengers including the driver, or the maximum mass of which exceeds 2 500 kilograms and the reference mass of which does not exceed 1 250 kilograms -

hydrocarbons and oxides of

nitrogen combined

- for engines 0.7 gram per kilometre

other than

direct-injection

type

- for engines of 0.9 gram per kilometre

direct-injection

type

carbon monoxide 1.0 gram per kilometre

particulate emissions

- for engines 0.08 gram per kilometre

other than

direct-injection

type

- for engines of 0.10 gram per kilometre

direct-injection

type

(iii) for a vehicle designed to carry more than 6 passengers including the driver, or the maximum mass of which exceeds 2 500 kilograms and the reference mass of which exceeds 1 250 kilograms and does not exceed 1 700 kilograms -

hydrocarbons and

oxides of

nitrogen

combined

- for engines 1.0 gram per kilometre

other than direct-injection

type

- for engines of 1.3 grams per kilometre

direct-injection

type

carbon monoxide 1.25 grams per kilometre

particulate

emissions

for engines 0.12 gram per kilometre

other than direct-injection

type

- for engines of 0.14 gram per kilometre direct-injection

type

(iv) for a vehicle designed to carry more than 6 passengers including the driver, or the maximum mass of which exceeds 2 500 kilograms and the reference mass of which exceeds 1 700 kilograms - hydrocarbons and oxides of nitrogen combined

- for engines 1.2 grams per kilometre other than direct-injection type

- for engines of 1.6 grams per kilometre direct-injection type

carbon monoxide 1.5 grams per kilometre particulate emissions

- for engines 0.17 gram per kilometre other than direct-injection type

- for engines of 0.20 gram per kilometre direct-injection type

as measured by the Type I test procedure specified in Council Directive 70/220/EEC as amended by Council Directive 96/69/EC, both made by the Council.

#### Part III

Emission shall not exceed -(a) non-methane hydrocarbons 0.16 gram per kilometre carbon monoxide 2.10 grams per kilometre 0.25 gram per kilometre oxides of nitrogen particulate emissions 0.05 gram per kilometre as measured by the 1975 Federal Test Procedure administered by the Environmental Protection Agency of the United States of America; and evaporative emission shall not exceed 2.5 grams per test as measured by the Sealed Housing for Evaporative Emissions Determination procedure administered by the Environmental Protection Agency of the United States of America.

(b) Emission shall not exceed -

hydrocarbons

0.25 gram per kilometre
2.10 grams per kilometre
0.25 gram per kilometre
0.25 gram per kilometre
0.25 gram per kilometre
0.25 gram per kilometre
as measured by the 10.15-mode operation administered by the Ministry
of Transport of Japan; and evaporative emission shall not exceed 2.0
grams per test as measured by the Japan Enclosure or Trap Method
administered by the Ministry of Transport of Japan.

(c) Emission shall not exceed -

(i) for a vehicle with a reference mass of not more than 1 250 kilograms -

hydrocarbons and

0.5 gram per kilometre

oxides of

nitrogen combined

carbon monoxide 2.2 grams per kilometre

(ii) for a vehicle with a reference mass of more than 1 250 kilograms but not more than 1 700 kilograms -

hydrocarbons and

0.6 gram per kilometre

oxides of

nitrogen combined

carbon monoxide

4.0 grams per kilometre

as measured by the Type I test procedure specified in Council Directive 70/220/EEC as amended by Council Directive 96/69/EC, both made by the Council; and evaporative emission shall not exceed 2.0 grams per test as measured by the Type IV test procedure specified in Council Directive 91/441/EEC made by the Council.

## Part IV

(a) Emission shall not exceed - non-methane

hydrocarbons 0.16 gram per kilometre carbon monoxide 2.10 grams per kilometre oxides of nitrogen 0.62 gram per kilometre particulate emissions 0.05 gram per kilometre

as measured by the 1975 Federal Test Procedure administered by the Environmental Protection Agency of the United States of America.

(b) Emission shall not exceed -

hydrocarbons

carbon monoxide

oxides of nitrogen

particulate emissions

measured by the 10.15-mode operation administered by the Ministry of Transport of Japan.

(c) Emission shall not exceed -

(i) for a vehicle with a reference mass of not more than 1 250 kilograms -

hydrocarbons and

oxides of

nitrogen combined

- for engines 0.7 gram per kilometre

other than direct-injection

type

- for engines of 0.9 gram per kilometre

direct-injection

type

carbon monoxide 1.0 gram per kilometre

particulate emissions

- for engines 0.08 gram per kilometre other than direct-injection type

- for engines of 0.10 gram per kilometre direct-injection type

(ii) for a vehicle with a reference mass of more than 1 250 kilograms but not more than 1 700 kilograms - hydrocarbons and

oxides of nitrogen

combined

- for engines 1.0 gram per kilometre other than direct-injection type

- for engines of 1.3 grams per kilometre

direct-injection type

carbon monoxide 1.25 grams per kilometre

particulate emissions

- for engines 0.12 gram per kilometre

other than

direct-injection

type

 for engines of directinjection type 0.14 gram per kilometre

as measured by the Type I test procedure specified in Council Directive 70/220/EEC as amended by Council Directive 96/69/EC, both made by the Council.

#### Part V

(a) Emission shall not exceed - non-methane

hydrocarbons

carbon monoxide

oxides of nitrogen

particulate emissions

as measured by the 1975 Federal Test Procedure administered by the Environmental Protection Agency of the United States of America; and evaporative emission shall not exceed 2.5 grams per test as measured by the Sealed Housing for Evaporative Emissions Determination procedure administered by the Environmental Protection Agency of the United States of America.

(b) Emission shall not exceed -

hydrocarbons

2.10 grams per kilometre
carbon monoxide

3.0 grams per kilometre
oxides of nitrogen

3.0 grams per kilometre
0.40 gram per kilometre
as measured by the 10.15-mode operation administered by the Ministry
of Transport of Japan; and evaporative emission shall not exceed 2.0
grams

per

test

as

measured

by the Japan Enclosure or Trap Method administered by the Ministry of Transport of Japan.

- (c) Emission shall not exceed -
  - (i) for a vehicle with a reference mass of not more than 1 250 kilograms -

hydrocarbons and

0.5 gram per kilometre

oxides of nitrogen

combined

carbon monoxide 2.2 grams per kilometre

(ii) for a vehicle with a reference mass of more than 1 250 kilograms but not more than 1 700 kilograms -

hydrocarbons and

0.6 gram per kilometre

oxides of nitrogen

combined

carbon monoxide

4.0 grams per kilometre

(iii) for a vehicle with a reference mass of more than 1 700 kilograms -

hydrocarbons and

0.7 gram per kilometre

oxides of nitrogen

combined

carbon monoxide

5.0 grams per kilometre

as measured by the Type I test procedure specified in Council Directive 70/220/EEC as amended by Council Directive 96/69/EC, both made by the Council; and evaporative emission shall not exceed 2.0 grams per

test as measured by the Type IV test procedure specified in Council Directive 91/441/EEC made by the Council.

#### Part VI

(a) Emission shall not exceed - non-methane

hydrocarbons

carbon monoxide

oxides of nitrogen

particulate emissions

measured by the 1975 Federal Test Procedure administered by the Environmental Protection Agency of the United States of America.

(b) Emission shall not exceed -

hydrocarbons

carbon monoxide

oxides of nitrogen

particulate emissions

measured by the 10.15-mode operation administered by the Ministry of Transport of Japan.

- (c) Emission shall not exceed -
  - (i) for a vehicle with a reference mass of not more than 1 250 kilograms -

hydrocarbons and oxides of nitrogen combined

- for engines

0.7 gram per kilometre

other than

direct-injection

type

- for engines of 0.9 gram per kilometre e

direct-injection type

carbon monoxide

1.0 gram per kilometre

particulate

emissions

for engines 0.08 gram per kilometre

other than direct-injection

type

- for engines of 0.10 gram per kilometre

direct-injection

type

(ii) for a vehicle with a reference mass of more than 1 250 kilograms but not more than 1 700 kilograms -

hydrocarbons and

oxides of nitrogen

combined

for engines 1.0 gram per kilometre other than

direct-injection

type

- for engines of 1.3 grams per kilometre direct-injection type carbon monoxide 1.25 grams per kilometre particulate emissions for engines 0.12 gram per kilometre other than direct-injection type - for engines of 0.14 gram per kilometre direct-injection for a vehicle with a reference mass of more than 1 700 (iii) kilograms hydrocarbons and oxides of nitrogen combined - for engines 1.2 grams per kilometre other than direct-injection type - for engines of 1.6 grams per kilometre direct-injection type carbon monoxide 1.5 grams per kilometre

particulate

emissions

- for engines 0.17 gram per kilometre other than direct-injection

type

- for engines of 0.20 gram per kilometre direct-injection type

as measured by the Type I test procedure specified in Council Directive 70/220/EEC as amended by Council Directive 96/69/EC, both made by the Council.

#### Part VII

(a) Emission shall not exceed - non-methane

hydrocarbons

0.24 gram per kilometre
3.10 grams per kilometre
0.68 gram per kilometre
0.68 gram per kilometre
0.08 gram per k

(b) Emission shall not exceed -

hydrocarbons 6.20 grams per kilowatt-hour carbon monoxide 102 grams per kilowatt-hour oxides of nitrogen 4.50 grams per kilowatt-hour

as measured by the 13-mode operation for heavy duty petrol-powered motor vehicles administered by the Ministry of Transport of Japan; and evaporative emission shall not exceed 2.0 grams per test as measured by the Japan Enclosure or Trap Method administered by the Ministry of Transport of Japan.

- (c) Emission shall not exceed -
  - (i) for a vehicle with a reference mass of not more than 1 250 kilograms -

hydrocarbons and

0.5 gram per kilometre

oxides of nitrogen

combined

carbon monoxide 2.2 grams per kilometre

(ii) for a vehicle with a reference mass of more than 1 250 kilograms but not more than 1 700 kilograms -

hydrocarbons and

0.6 gram per kilometre

oxides of nitrogen

combined

carbon monoxide

4.0 grams per kilometre

(iii) for a vehicle with a reference mass of more than 1 700 kilograms -

hydrocarbons and oxides of nitrogen combined

0.7 gram per kilometre

carbon monoxide 5.0 grams per kilometre as measured by the Type I test procedure specified in Council Directive 70/220/EEC as amended by Council Directive 96/69/EC, both made by the Council; and evaporative emission shall not exceed 2.0 grams per test as measured by the Type IV test procedure specified in Council Directive 91/441/EEC made by the Council.

### Part VIII

(a) Emission shall not exceed non-methane hydrocarbons 0.24 gram per kilometre
carbon monoxide 3.10 grams per kilometre
oxides of nitrogen 0.95 gram per kilometre
particulate emissions 0.08 gram per kilometre
as measured by the 1975 Federal Test Procedure administered by the
Environmental Protection Agency of the United States of America.

- (b) Emission shall not exceed -
  - (i) for a vehicle with a reference mass of not more than 1 250 kilograms hydrocarbons and oxides of nitrogen combined

- for engines 0.7 gram per kilometre other than direct-injection type - for engines of 0.9 gram per kilometre direct-injection type carbon monoxide 1.0 gram per kilometre particulate emissions - for engines 0.08 gram per kilometre other than direct-injection type - for engines of 0.10 gram per kilometre direct-injection type (ii) for a vehicle with a reference mass of more than 1 250

kilograms but not more than 1 700 kilograms hydrocarbons and
oxides of nitrogen

1.0 gram per kilometre

oxides of nitrogen combined

- for engines other than direct-injection

type

- for engines of 1.3 grams per kilometre direct-injection type carbon monoxide 1.25 grams per kilometre particulate emissions for engines 0.12 gram per kilometre other than direct-injection type - for engines of 0.14 gram per kilometre direct-injection type

(iii) for a vehicle with a reference mass of more than 1 700 kilograms -

hydrocarbons and oxides of nitrogen combined

- for engines 1.2 grams per kilometre other than direct-injection type

- for engines of 1.6 grams per kilometre direct-injection type carbon monoxide 1.5 grams per kilometre

particulate

emissions

- for engines 0.17 gram per kilometre

other than direct-

injection type

- for engines of 0.20 gram per kilometre

direct-

injection type

as measured by the Type I test procedure specified in Council Directive 70/220/EEC as amended by Council Directive 96/69/EC, both made by the Council.

#### Part IX

(a) Emission shall not exceed -

hydrocarbons 2.55 grams per kilowatt-hour carbon monoxide 49.7 grams per kilowatt-hour oxides of nitrogen 5.36 grams per kilowatt-hour

as measured by the Transient Test Procedure for heavy duty Otto cycle engines administered by the Environmental Protection Agency of the United States of America; and evaporative emission shall not exceed 4.0 grams per test as measured by the Sealed Housing for Evaporative Emissions Determination procedure administered by the Environmental Protection Agency of the United States of America.

(b) Emission shall not exceed -

hydrocarbons 6.20 grams per kilowatt-hour carbon monoxide 102 grams per kilowatt-hour oxides of nitrogen 4.50 grams per kilowatt-hour

as measured by the 13-mode operation for heavy duty petrol-powered motor vehicles administered by the Ministry of Transport of Japan; and evaporative emission shall not exceed 2.0 grams per test as measured by the Japan Enclosure or Trap Method administered by the Ministry of Transport of Japan.

#### **SCHEDULE 8**

[reg. 7]

# VEHICLE DESIGN STANDARDS (EMISSION) FOR MOTOR CYCLES REGISTERED ON OR AFTER 1 OCTOBER 1999

#### Emission shall not exceed -

- (a) the emission standards as stated in section 86.410-80 of Title 40 of the Code of Federal Regulations of the United States of America as at the commencement of regulation 7 (1) (m) of these regulations, and measured by the procedures specified in Subpart F of Part 86 of Title 40 of the Code as at that commencement, administered by the Environmental Protection Agency of the United States of America; or
- (b) the emission standards as stated in Article 31 of the Ministry of Transport Ordinance (i.e. the Ministry of Transport Ordinance No. 67 of 1951, as amended) of Japan as at the commencement of regulation 7 (1) (m) of these regulations, and measured by the two-wheeled vehicle

mode operation administered by the Ministry of Transport of Japan; or the emission standards as stated in and measured by the Type I test procedure specified in Council Directive 97/24/EC made by the Council.

# SCHEDULE 9

[reg. 7]

# VEHICLE DESIGN STANDARDS (EMISSION) FOR MOTOR TRICYCLES REGISTERED ON OR AFTER 1 OCTOBER 1999

Emission shall not exceed the emission standards as stated in and measured by the Type I test procedure specified in Council Directive 97/24/EC made by the Council.".

Acting Secretary for Planning, Environment and Lands

11 May 1999

# **Explanatory Note**

This Regulation amends the Air Pollution Control (Vehicle Design Standards) (Emission) Regulations (Cap. 311 sub. leg.) by -

(a) imposing more stringent vehicle design standards for emission of air pollutants applicable to certain

- private cars, taxis, goods vehicles, light buses and buses first registered on or after 1 July 1999;
- (b) introducing a set of vehicle design standards for emission of air pollutants for motor cycles and motor tricycles first registered on or after 1 October 1999.