ADVISORY COUNCIL ON THE ENVIRONMENT
ACE
環境問題諮詢委員會

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(for advice)

Proposed legislation for amending the Air Pollution Control (Vehicle Design Standards)(Emission) Regulation

Introduction

The purpose of this paper is to seek Members' advice on amendments to the Air Pollution Control (Vehicle Design Standards) (Emission) Regulations in order to update the current emission standards for vehicles below 2.5 tonnes and to introduce stringent emission standards for vehicles above 2.5 tonnes. The introduction of these stringent emission standards were endorsed in principle by EPCOM on 19 April 1993 (EPCOM Paper ref. 14/93-94).

Background

2. The Air Pollution Control (Vehicle Design Standards) (Emission) Regulations which came into force in January 1992 replaced some outdated emission standards in the Road Traffic (Construction and Maintenance of Vehicles) Regulations. Only certain classes of vehicle including private cars, taxis, light goods vehicles and light buses up to 2.5 tonnes were required to comply with tighter emission standards. For other classes of vehicles, emission standards from the Road Traffic (Construction and Maintenance of Vehicles) Regulations were simply re-provided.

3. In the past two years, there has been substantial improvement in the vehicle emission standards in other parts of the world. These emission standards include:

(i) For light duty vehicles

European Communities standards 93/59/EEC (- an update of 91/441/EEC) which will be fully implemented in 1994/1995, and the enhanced Japanese standards (referred to as Japan 94) which will be implemented in Japan in 1995.

(ii) For large diesel vehicles (more than 3.5 tonnes design weight)

US standards (known as US90) which have been fully implemented, and the equivalent set of European Communities standards (known collectively as Euro 1) which was implemented in 1993.

The Proposal

4. This proposal is to amend the Regulations so as to upgrade the emission standards for vehicles newly registered in Hong Kong as follows:

(i) for private cars, taxis, light goods vehicles and light buses of not more than 2.5 tonnes, to incorporate the new European Communities standards and to update the Japanese standards already in the existing Regulations to be in line with the appropriate Japanese standards;

(ii) for light goods vehicles and light buses between 2.5 tonnes and 3.5 tonnes, to introduce the European Communities standards and the US standards;

(iii) for large vehicles over 3.5 tonnes powered by diesel or petrol engines, to stipulate stringent emission standards (US90 or Euro 1); and

(iv) to require all newly registered diesel vehicles to comply with a new smoke emission standard, of 40 Hartridge Smoke Units (HSU), compared with the current 60 HSU.

5. The draft Regulation is attached in the Appendix for reference. Since the overseas vehicle manufacturers and local dealers require sufficient lead time to arrange for the supply of vehicles meeting the proposed standards, it is proposed that the bulk of the regulations will not become effective until 1st April 1995, with the Japan 94 standards coming into effect on 1 October 1995 to coincide with their implementation date in Japan.

Reason for the Proposal

6. The serious air pollution problem associated with particulate and oxides of nitrogen emissions from vehicles and the ever increasing traffic volume indicates the need to adopt in Hong Kong the most stringent emission standards developed in other countries. Review of current world emission standards and the availability of low sulphur diesel (less than 0.2%) as from April 1995 in Hong Kong means that we can now take advantage of the substantial development in the emission standards as mentioned in paragraph 3.

Consultation

7. The Motor Traders Association had been consulted on the proposed standards and is preparing for newly imported vehicles to comply with the proposed Regulation.

8. However, some dealers representing Japanese manufacturers have expressed concern that the Japan 94 emission standards for diesel vehicles larger than 2.5 tonnes are not included in the proposed amendment. They argued that Japanese vehicles meeting the Japan 94 standards should also be able to meet the stringent US90 standards. However, they failed to provide sufficient evidence to demonstrate such equivalence, with present indications being that the Japanese standards are considerably less stringent than the US90 standards.

Implementation

9. Implementation of the amended Regulation will be similar to existing practice. At the first registration of individual vehicles under the Road Traffic Ordinance, the Commissioner for Transport will normally refuse to register a vehicle which does not comply with the vehicle design standards. The usual acceptable proof for compliance is through certification from either the manufacturers' laboratories or other relevant competent facilities. This first registration is handled by the Transport Department with the Environmental Protection Department providing expert advice on the certification as necessary.

Staffing

10. One additional professional officer and one technical officer will be required to cope with the extra workload for inspection of certification documents and advising on associated certification matters. These staff resources will be provided in the present (1994/95) Financial year.

Economic Implication

11. There will be an increase in cost of about 10% for diesel engines larger than 3.5 tonnes which comply with the US90 or Euro 1 standards. This will result in the price of such vehicles increasing by about 3%.

Public Reaction

12. The need for combating air pollution from vehicles has attracted much public attention in recent years. The introduction of these stringent emission standards for motor vehicles will assist in achieving better air quality and should therefore be welcomed by the public.

Advice Sought

13. Members are requested to consider and advise whether the Administration should proceed with amending the regulations as attached.

Planning, Environment and Lands Branch
September 1994

AIR POLLUTION CONTROL (VEHICLE DESIGN STANDARDS) (EMISSION)(AMENDMENT) REGULATION 1994

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AIR POLLUTION CONTROL (VEHICLE DESIGN STANDARDS) (EMISSION)(AMENDMENT) REGULATION 1994

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

1. Commencement

This Regulation shall come into operation on a day to be appointed by the Secretary for Planning, Environment and Lands by notice in the Gazette.

2. Interpretation

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

(a) by repealing the definition of "design weight" and substituting -

""design weight" means, in relation to a particular motor vehicle, the maximum design loaded vehicle weight recommended by its manufacturer for motor vehicles of the same class or description as the particular vehicle;";

(b) in the definition of "registered", by repealing "registered or to be registered" and substituting "first registered";

(c) by adding -

""Council" means the Council of the European Communities (now known as the European Union);".

3. Part heading amended

The heading to Part II is amended by repealing "GENERAL" and substituting "VEHICLE DESIGN STANDARDS".

4. Regulation substituted

Regulation 4 is repealed and the following substituted -

"4. Vehicle design standard relating to smoke for motor vehicles registered on or after 1 April 1995

(1) Subject to regulation 9, every motor vehicle registered on or after 1 April 1995 which is equipped with a compression-ignition engine shall be so constructed that no excessive smoke is emitted from the vehicle.

(2) For the purpose of subregulation (1), smoke shall be deemed excessive if the smoke emitted from the vehicle measured by means of the test procedure specified in the first column of Schedule 1 exceeds the maximum permitted smoke level specified in the second column of that Schedule or the maximum permitted smoke level in absolute units of light absorption specified in the third column of that Schedule.

(3) The provisions of this regulation are in addition to, and not in substitution for, regulation 31 of the Road Traffic (Construction and Maintenance of Vehicles) Regulations (Cap. 374 sub. leg.).".

5. Regulations repealed

Regulations 5 and 6 are repealed.

6. **Part III amended**

Part III is amended by repealing -

"PART III

PRIVATE CAR, TAXI, LIGHT GOODS VEHICLES AND LIGHT BUS".

7. **Vehicle design standards for certain motor vehicles registered on or after 1 January 1992**

(1) Regulation 7(1)(a), (b), (c), (d), (e) and (f) is amended by repealing "(a) or (b)" and substituting "(a), (b) or (c)".

(2) Regulation 7(1)(a) and (b) is amended by repealing "therefrom" and substituting "from that private car or taxi".

(3) Regulation 7(1)(c), (d), (e) and (f) is amended by repealing "therefrom" and substituting "from that light goods vehicle or light bus".

8. **Regulation added**

The following is added -

"**7A. Vehicle design standards for certain motor vehicles registered on or after 1 April 1995**

(1) Subject to regulation 9 -

(a) every goods vehicle or light bus registered on or after 1 April 1995 which is equipped with a positive[-]ignition engine and which has a design weight of more than 2.5 tonnes but not more than 3.5 tonnes shall be or shall have such engine so constructed that the emission from that goods vehicle or light bus conforms to the standards specified in Part I(a), (b) or (c) of Schedule 3;

(b) every goods vehicle or light bus registered on or after 1 April 1995 which is equipped with a compression-ignition engine and which has a design weight of more than 2.5 tonnes but not more than 3.5 tonnes shall be so constructed that the emission from that goods vehicle or light bus conforms to the standards specified in Part II(a) or (b) of Schedule 3;

(c) every goods vehicle, light bus or bus registered on or after 1 April 1995 which is equipped with a positive-ignition engine and which has a design weight of more than 3.5 tonnes shall have such engine so constructed that the emission from that goods vehicle, light bus or bus conforms to the standards specified in Part III(a) or (b) of Schedule 3;

(d) every goods vehicle, light bus or bus registered on or after 1 April 1995 which is equipped with a compression-ignition engine and which has a design weight of more than 3.5 tonnes shall have such engine so constructed that the emission from that goods vehicle, light bus or bus conforms to the standards specified in Part IV(a) or (b) of Schedule 3.

(2) In this regulation, "goods vehicle", "light bus" and "bus" have the meanings assigned to them, respectively, in the Road Traffic Ordinance (Cap. 374).".

9. Regulation substituted

Regulation 8 is repealed and the following substituted -

"**8. Compliance with more stringent standards**

Notwithstanding the provisions of regulations 7 and 7A, if the Authority is of the opinion that the emission from a particular motor vehicle to which regulation 7 or 7A applies conforms to standards as stringent as, or more stringent than, -

(a) in case such vehicle is one to which regulation 7 applies, the standards referred to in that regulation and applicable to it; and

(b) in case such vehicle is one to which regulation 7A applies, the standards referred to in that regulation and applicable to it,

then for the purposes of regulations 7 and 7A, such vehicle shall be taken as conforming to the standards so referred to and so applicable.".

10. Regulation substituted

Regulation 9 is repealed and the following substituted -

"**9. Vehicles to which regulations 7 and 7A do not apply**

Regulations 7 and 7A shall not apply to -

(a) a motor cycle;

(b) a special purpose vehicle; or

(c) any motor vehicle which is incapable by reason of its construction of exceeding a speed of 50 kilometres per hour on level ground under its own power.".

11. Transitional provisions

Regulation 11 is repealed.

12. Schedule 1 substituted

Schedule 1 is repealed and the following substituted -

"SCHEDULE 1 [reg. 4]

VEHICLE DESIGN STANDARD FOR SMOKE EMISSION FROM MOTOR VEHICLES

Test procedure	Maximum permitted smoke level	Maximum permitted smoke level in absolute units of light absorption (m^{-1})
Free acceleration test procedure specified in Council Directive No. 72/306/EEC as amended by Council Directive No. 89/491/EEC, both made by the Council	40 Hartridge Smoke Units	1.20".

13. Vehicle design standards (emission) for certain motor vehicles registered on or after 1 January 1992

Schedule 2 is amended -

(a) in Part I(b), Part III(b) and Part V(b), by repealing "10-mode" and substituting "10.15-mode";

(b) in Part I, by adding -

"(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 kg -

hydrocarbon and oxides of nitrogen combined	0.97 grams per kilometre
carbon monoxide	2.72 grams per kilometre

as measured by the Type I test procedure specified in Council Directive No. 70/220/EEC as amended by Council Directive No. 93/59/EEC, both made by the Council;

(ii) for vehicle designed to carry more than 6 passengers including the driver, or its maximum mass exceeds 2 500 kg -

hydrocarbon and oxides of nitrogen combined	
- with a vehicle reference mass of less than or equal to 1 250 kg	0.97 grams per kilometre
- with a vehicle reference mass of more than 1 250 kg	1.4 grams per kilometre

but not more than 1 700 kg	
- with a vehicle reference mass of more than 1 700 kg	1.7 grams per kilometre
carbon monoxide	
- with a vehicle reference mass of less than or equal to 1 250 kg	2.72 grams per kilometre
- with a vehicle reference mass of more than 1 250 kg but not more than 1 700 kg	5.17 grams per kilometre
- with a vehicle reference mass of more than 1 700 kg	6.9 grams per kilometre

as measured by the Type I test procedure specified in Council Directive No. 70/220/EEC as amended by Council Directive No. 93/59/EEC, both made by the Council.";

(c) in Part II, by repealing paragraph (b) and substituting -

"(b)

hydrocarbons	0.62 grams per kilometre
carbon monoxide	2.70 grams per kilometre
oxides of nitrogen	

- with a vehicle weight of not more than 1.265 tonnes	0.72 grams per kilometre
- with a vehicle weight of more than 1.265 tonnes	0.84 grams per kilometre
particulate emissions	0.34 grams 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 kg -

hydrocarbon and oxides of nitrogen combined	0.97 grams per kilometre
carbon monoxide	2.72 grams per kilometre
particulate emissions	0.14 grams per kilometre

as measured by the Type I test procedure specified in Council Directive No. 70/220/EEC as amended by Council Directive No. 93/59/EEC, both made by the Council;

(ii) for vehicle designed to carry more than 6 passengers including the driver, or its maximum mass exceeds 2 500 kg -

hydrocarbon and oxides of nitrogen combined	
- with a vehicle reference mass of less than or equal to 1 250 kg	0.97 grams per kilometre
- with a vehicle reference mass of more than 1 250 kg but not more than 1 700 kg	1.4 grams per kilometre
- with a vehicle reference mass of more than 1 700 kg	1.7 grams per kilometre
carbon monoxide	
- with a vehicle reference mass of less than or equal to 1 250 kg	2.72 grams per kilometre
- with a vehicle reference mass of more than 1 250 kg but not more than 1 700 kg	5.17 grams per kilometre

- with a vehicle reference mass of more than 1 700 kg	6.9 grams per kilometre

particulate emissions

- with a vehicle reference mass of less than or equal to 1 250 kg	0.14 grams per kilometre
- with a vehicle reference mass of more than 1 250 kg but not more than 1 700 kg	0.19 grams per kilometre
- with a vehicle reference mass of more than 1 700 kg	0.25 grams per kilometre

as measured by the Type I test procedure specified in Council Directive No. 70/220/EEC as amended by Council Directive No. 93/59/EEC, both made by the Council.";

(d) in Part III, by adding -

"(c) hydrocarbon and oxides of nitrogen combined

- with a vehicle reference mass of less than or equal to 1 250 kg	0.97 grams per kilometre

- with a vehicle reference mass of more than 1 250 kg but not more than 1 700 kg	1.4 grams per kilometre

carbon monoxide

- with a vehicle reference mass of less than or equal to 1 250 kg	2.72 grams per kilometre
- with a vehicle reference mass of more than 1 250 kg but not more than 1 700 kg	5.17 grams per kilometre

as measured by the Type I test procedure specified in Council Directive No. 70/220/EEC as amended by Council Directive No. 93/59/EEC made by the Council.";

(e) in Part IV, by repealing paragraph (b) and substituting -

"(b)

hydrocarbons	0.62 grams per kilometre
carbon monoxide	2.70 grams per kilometre
oxides of nitrogen	0.84 grams per kilometre
particulate emissions	0.34 grams per kilometre

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

(c) hydrocarbon and oxides of nitrogen combined

- with a vehicle reference mass of less than or equal to 1 250 kg	0.97 grams per kilometre
- with a vehicle reference mass of more than 1 250 kg but not more than 1 700 kg	1.4 grams per kilometre

carbon monoxide

- with a vehicle reference mass of less than or equal to 1 250 kg	2.72 grams per kilometre
- with a vehicle reference mass of more than 1 250 kg but not more than 1 700 kg	5.17 grams per kilometre

particulate emissions

- with a vehicle reference mass of	0.14 grams per kilometre

less than or equal to 1 250 kg	
- with a vehicle reference mass of more than 1 250 kg but not more than 1 700 kg	0.19 grams per kilometre

as measured by the Type I test procedure specified in Council Directive No. 70/220/EEC as amended by Council Directive No. 93/59/EEC, both made by the Council.";

(f) in Part V, by adding -

"(c)

hydrocarbon and oxides of nitrogen combined	
- with a vehicle reference mass of less than or equal to 1 250 kg	0.97 grams per kilometre
- with a vehicle reference mass more than 1 250 kg but not more than 1 700 kg	1.4 grams per kilometre
- with a vehicle reference mass of more than 1 700 kg	1.7 grams per kilometre
carbon monoxide	

- with a vehicle reference mass of less than or equal to 1 250 kg	2.72 grams per kilometre
- with a vehicle reference mass of more than 1 250 kg but not more than 1 700 kg	5.17 grams per kilometre
- with a vehicle reference mass of more than 1 700 kg	6.9 grams per kilometre

as measured by the Type I test procedure specified in Council Directive No. 70/220/EEC as amended by Council Directive No. 93/59/EEC, both made by the Council.";

(g) in Part VI, by repealing paragraph (b) and substituting -

"(b)

hydrocarbon	0.62 grams per kilometre
carbon monoxide	2.70 grams per kilometre
oxides of nitrogen	1.82 grams per kilometre
particulate emissions	0.43 grams per kilometre

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

(c) hydrocarbon and oxides of nitrogen combined

- with a vehicle reference mass of less than or equal to 1 250 kg	0.97 grams per kilometre
- with a vehicle reference mass of more than 1 250 kg but not more than 1 700 kg	1.4 grams per kilometre
- with a vehicle reference mass of more than 1 700 kg	1.7 grams per kilometre
carbon monoxide	
- with a vehicle reference mass of less than or equal to 1 250 kg	2.72 grams per kilometre
- with a vehicle reference mass of more than 1 250 kg but not more than 1 700 kg	5.17 grams per kilometre
- with a vehicle reference mass of more than 1 700 kg	6.9 grams per kilometre
particulate emissions	
- with a vehicle reference mass of	0.14 grams per kilometre

less than or equal to 1 250 kg	
- with a vehicle reference mass of more than 1 250 kg but not more than 1 700 kg	0.19 grams per kilometre
- with a vehicle reference mass of more than 1 700 kg	0.25 grams per kilometre

as measured by the Type I test procedure specified in Council Directive No. 70/220/EEC as amended by Council Directive No. 93/59/EEC, both made by the Council.".

14. Schedule 3 added

The following is added -

"SCHEDULE 3 [reg. 7A]

VEHICLE DESIGN STANDARDS (EMISSION) FOR CERTAIN MOTOR VEHICLES REGISTERED ON OR AFTER 1 APRIL 1995

PART I

Emission shall not exceed -

(a)	hydrocarbon	0.50 grams per kilometre
	carbon monoxide	6.20 grams per kilometre
	oxides of nitrogen	1.10 grams per kilometre

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

(b)	hydrocarbon	7.90 grams per kilowatt-hour

carbon monoxide 136 grams per kilowatt-hour

oxides of nitrogen 7.20 grams per kilowatt-hour

as measured by the 13-mode operation for petrol-powered motor vehicles administered by the Ministry of Transport of Japan;

(c) hydrocarbon and oxides of nitrogen combined

- with reference mass less than or equal to 1 250 kg 0.97 grams per kilometre
- with reference mass more than 1 250 kg but not more than 1 700 kg 1.4 grams per kilometre
- with reference mass more than 1 700 kg 1.7 grams per kilometre

carbon monoxide

- with reference mass less than or equal to 1 250 kg 2.72 grams per kilometre
- with reference mass more than 1 250 kg but not more than 1 700 kg 5.17 grams per kilometre
- with reference mass more than 1 700 kg 6.9 grams per kilometre

as measured by the Type I test procedure specified in Council Directive No. 70/220/EEC as amended by Council Directive No. 93/59/EEC, both made by the Council.

PART II

Emission shall not exceed -

(a)	hydrocarbon	0.50 grams per kilometre
	carbon monoxide	6.20 grams per kilometre
	oxides of nitrogen	1.10 grams per kilometre
	particulate emissions	0.28 grams per kilometre

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

(b)	hydrocarbon and oxides of nitrogen combined	
	- with reference mass less than or equal to 1 250 kg	0.97 grams per kilometre
	- with reference mass more than 1 250 kg but not more than 1 700 kg	1.4 grams per kilometre
	- with reference mass more than 1 700 kg	1.7 grams per kilometre
	carbon monoxide	
	- with reference mass less than or equal to 1 250 kg	2.72 grams per kilometre

- with reference mass more than 1 250 kg but not more than 1 700 kg — 5.17 grams per kilometre
- with reference mass more than 1 700 kg — 6.9 grams per kilometre

particulate emissions

- with reference mass less than or equal to 1 250 kg — 0.14 grams per kilometre
- with reference mass more than 1 250 kg but not more than 1 700 kg — 0.19 grams per kilometre
- with reference mass more than 1 700 kg — 0.25 grams per kilometre

as measured by the Type I test procedure specified in Council Directive No. 70/220/EEC as amended by Council Directive No. 93/59/EEC, both made by the Council.

PART III

Emission shall not exceed -

(a) hydrocarbon — 2.55 grams per kilowatt-hour
carbon monoxide — 49.7 grams per kilowatt-hour
oxides of nitrogen — 6.70 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;

(b) hydrocarbon 7.90 grams per kilowatt-hour
carbon monoxide 136 grams per kilowatt-hour
oxides of nitrogen 7.20 grams per kilowatt-hour
as measured by the 13-mode operation for petrol-powered motor vehicles administered by the Ministry of Transport of Japan.

PART IV

Emission shall not exceed -

(a) hydrocarbon 1.74 grams per kilowatt-hour
carbon monoxide 20.8 grams per kilowatt-hour
oxides of nitrogen 8.04 grams per kilowatt-hour
particulate emissions 0.80 grams per kilowatt-hour
as measured by the Transient Test Procedure for heavy duty diesel engines administered by the Environmental Protection Agency of the United States of America;

(b) hydrocarbon 1.1 grams per kilowatt-hour
carbon monoxide 4.5 grams per kilowatt-hour
oxides of nitrogen 8.0 grams per kilowatt-hour
particulate emissions
- for engine power greater than 85 kilowatt 0.36 grams per kilowatt-hour
- for engine power equal to or less than 85 kilowatt 0.61 grams per kilowatt-hour

as measured by the test procedure for diesel engines which are for use in vehicles specified in Council Directive No. 88/77/EEC as amended by Council Directive No. 91/542/EEC, both made by the Council.".

Consequential Amendments

Road Traffic (Construction and Maintenance of Vehicles) Regulations

15. Offences

Regulation 121(1) of the Road Traffic (Construction and Maintenance of Vehicles) Regulations (Cap. 374 sub. leg.) is amended by repealing "and regulations 4 and 5 of the Air Pollution Control (Vehicle Design Standards)(Emission) Regulations 1991 (L.N. 134 of 1991)".

Secretary for Planning,
Environment and Lands.

1994.

Explanatory Note

The principal effects of these amendments are -

(a) to impose a vehicle design standard for smoke emission for vehicles equipped with a compression-

ignition engine and first registered on or after 1 April 1995;

(b) to revise the vehicle design standards for emission of air pollutants applicable to certain vehicles first registered on or after 1 January 1992;

(c) to include new vehicle design standards for emission of air pollutants for certain vehicles first registered on or after 1 April 1995.