

LEGISLATIVE COUNCIL BRIEF

Air Pollution Control Ordinance (Cap. 311)

**Air Pollution Control (Petrol Filling Stations) (Vapour Recovery)
(Amendment) Regulation 2004**

INTRODUCTION

The Secretary for the Environment, Transport and Works has made the Air Pollution Control (Petrol Filling Stations) (Vapour Recovery) (Amendment) Regulation 2004 (the Amendment Regulation), at **Annex**, under section 43 of the Air Pollution Control Ordinance (Cap. 311) to require vapour recovery systems to be installed at petrol filling stations for recovering petrol vapour during vehicle refuelling.

JUSTIFICATIONS

2. Petrol contains volatile organic compounds (VOCs) that evaporate inside the fuel tank of a vehicle. When a vehicle fuel tank is refuelled at a petrol filling station, the VOC vapour will be displaced by the incoming petrol. Unless controlled, the VOC vapour will disperse into the atmosphere. The major harmful effects of VOCs are as follows -

- (a) VOCs play a significant role in the formation of ozone and respirable suspended particulates (RSPs) in the atmosphere. Under sunlight, they react with nitrogen oxides (NO_x) to form ozone through a photochemical process. Ground level ozone is an air pollutant that can irritate the eye and the lung, and can cause breathing difficulties. RSPs

can penetrate deeply into the lung and interfere with the functioning of the respiratory system. Apart from long-term health effects, RSPs can also exacerbate smog phenomenon and impair visibility of the region; and

- (b) VOC vapour from petrol increases the potential health risk to the public, since it contains benzene, which is a carcinogen. The smell of VOCs can also be a nuisance to the people in the vicinity of petrol filling stations.

3. Since April 1999, we have required owners of petrol filling stations and petrol delivery vehicles to install effective vapour recovery systems to reduce petrol vapour emissions when unloading petrol from petrol delivery vehicles into the petrol storage tanks at petrol filling stations. To further reduce VOC emissions from petrol filling stations, the petrol vapour emissions during refuelling of petrol vehicles should also be recovered. There are two options for recovering the petrol vapour during the vehicle refuelling process: installation of onboard refuelling vapour recovery (ORVR) systems in petrol vehicles or vapour recovery systems at petrol filling stations.

4. After a joint study undertaken together with the major oil companies operating in Hong Kong, the Government found the installation of vapour recovery systems at petrol filling stations more effective for the following reasons-

- (a) right-hand drive petrol vehicles fitted with an ORVR system will not be widely available in the market in the foreseeable future and, since Hong Kong's motor vehicle market is small, vehicle manufacturers have no plans to set up a special production line to supply vehicles with an ORVR system to Hong Kong; and
- (b) since an ORVR system forms part of the fuel delivery system of a vehicle and cannot be retrofitted on existing vehicles, we could only

require newly registered vehicles to be equipped with an ORVR system. If we go down this route, we would have to rely on the natural retirement and replacement of our existing petrol vehicle fleet and it will take a long time to achieve our intended objective. However, installation of vapour recovery systems at petrol filling stations can be completed within a much shorter time.

THE REGULATION

5. The Amendment Regulation is mainly to require the owner of a petrol filling station to:

- (a) install a vapour recovery system that works on the vacuum-assist principle to recover the petrol vapour displaced from the fuel tank of a vehicle during refuelling and return it to the petrol storage tank in the station;
- (b) arrange for the vapour recovery system to be tested by a competent examiner, who is a professional engineer in relevant disciplines registered under the Engineers Registration Ordinance (Cap.409), before the system is put into use for the first time and thereafter once every 12 months, or after major modifications of the system. In addition, the owner will need to have the system tested by a competent examiner when required by the Authority if the Authority believes that the system is not functioning properly;
- (c) display the latest certificate for the vapour recovery system of his station issued by a competent examiner, who has found the system satisfying the test requirements stipulated in Schedule 2 of the Amendment Regulation; and

(d) stop the refuelling operation when the vapour recovery system of the station is not in operation.

6. The Amendment Regulation also makes it an offence for a competent examiner delivering a certificate of test, which to his knowledge is false or misleading in a material particular.

7. For existing petrol filling stations, the Amendment Regulation allows their owners to have 36 months from the date of commencement of the Amendment Regulation to comply with its requirements. These owners have to, however, comply with all the requirements once they have installed the vapour recovery systems within the 36 months grace period.

LEGISLATIVE TIMETABLE

8. We will publish the Amendment Regulation in the Gazette on 24 December 2004 and table it at the Legislative Council for negative vetting on 5 January 2005. Subject to the negative vetting by the Legislative Council, the Amendment Regulation will take effect on 31 March 2005.

BASIC LAW AND HUMAN RIGHTS IMPLICATIONS

9. The proposal is in conformity with the Basic Law, including the provisions concerning human rights.

BINDING EFFECT OF THE LEGISLATION

10. The proposed amendments will not affect the current binding effect of the Air Pollution Control (Petrol Filling Stations) (Vapour Recovery) Regulation.

FINANCIAL AND STAFF IMPLICATIONS

11. The implementation of the proposed amendments will not require any additional financial commitment from the Government. Additional staff will not be required.

ECONOMIC IMPLICATIONS

12. For a typical petrol filling station with four dispensers, the cost of installing a vapour recovery system will be around \$400,000. Its annual maintenance and operating cost will be around \$80,000, and annual certification cost around \$20,000. The installation cost and the annual operating cost of a vapour recovery system will only be about 1.2% and 0.2% of the petrol turnover of a petrol filling station. Hence, the impact of the proposal on petrol price should be minimal. As the petrol vapour captured is reusable as petrol, the actual impact is expected to be even smaller.

13. As a reference, the requirement for recovering the petrol vapour emitted during the unloading of petrol at petrol filling stations, which was implemented in 1999, cost about \$500,000 per petrol filling station for installation and \$100,000 per petrol delivery vehicle. The requirement had caused no noticeable increase in petrol price.

ENVIRONMENTAL IMPLICATIONS

14. The proposal is part of our efforts to attain the emission reduction targets that we have agreed with the Guangdong Provincial Government for improving regional air quality. When fully implemented, it can reduce about 740 tonnes of

VOC emission per year from local petrol filling stations, which will otherwise be released into the environment during the refuelling process. The VOC reduced amounts to about 2% of our VOC emissions. The proposal can also help alleviate nuisance caused by the smell of petrol vapour to nearby residents of petrol filling stations.

CONSULTATION

15. We consulted the Legislative Council Panel on Environmental Affairs on 22 July 2003. Members had no objection to the proposal but requested the Administration to communicate further with the oil companies before introducing the proposal. In subsequent discussions, the oil companies had confirmed their support to the proposal. The Advisory Council on the Environment endorsed the proposals on 14 July 2003.

PUBLICITY

16. A press release will be issued on 24 December 2004. A spokesman will be available for answering media enquiries.

ENQUIRIES

17. For any enquiries, please contact Mr. Joe W. Y. Fong, Senior Environmental Protection Officer at 2594 6251.

Environment, Transport and Works Bureau
December 2004

**AIR POLLUTION CONTROL (PETROL FILLING STATIONS)
(VAPOUR RECOVERY)(AMENDMENT) REGULATION 2004**

CONTENTS

Section	Page
1. Commencement	1
2. Interpretation	1
3. Section substituted	
3. Vapour recovery system to be installed	2
4. Testing and examination	3
5. Section added	
4A. Further tests required by Authority	3
6. Section substituted	
5. Competent examiners and certificates	4
7. Display of certificate	4
8. Section added	
6A. Prohibition of dispensing petrol	5
9. Section substituted	
8. Exemptions	5
10. Section added	
8A. Test requirements	6
11. Offences and penalties	6
12. Static pressure performance test for the vapour recovery system of a regulated vehicle	6
13. Schedule 2 substituted	
Schedule 2 Test requirements for vapour recovery system of petrol filling station	7
14. Effectiveness test for the vapour recovery system of a petrol filling station during unloading of petrol	8

**AIR POLLUTION CONTROL (PETROL FILLING STATIONS)
(VAPOUR RECOVERY)(AMENDMENT) REGULATION 2004**

(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 31 March 2005.

2. Interpretation

(1) Section 2 of the Air Pollution Control (Petrol Filling Stations) (Vapour Recovery) Regulation (Cap. 311 sub. leg. S) is amended, in the definition of “certificate” –

- (a) in paragraph (a), by repealing “書；” and substituting “書。”;
- (b) by repealing paragraph (b).

(2) Section 2 is amended by repealing the definition of “existing regulated vehicle”.

(3) Section 2 is amended by repealing the definition of “relevant date” and substituting –

““relevant date” (有關日期) means 31 March 2005;”.

(4) Section 2 is amended by repealing the definition of “vapour recovery system” and substituting –

““vapour recovery system” (汽體回收系統) –

- (a) in relation to a regulated vehicle, means any Phase I vapour recovery system with which the vehicle is installed;
- (b) in relation to a petrol filling station, means –
 - (i) all Phase I vapour recovery systems with which the station is installed; and
 - (ii) all Phase II vapour recovery systems with which the station is installed.”.

(5) Section 2 is amended by adding –

““petrol dispenser” (加油機) means an installation in a petrol filling station –

- (a) used or intended to be used for dispensing petrol into the fuel tank of a motor vehicle (whether or not also for dispensing petrol into any other container);
- (b) designed or constructed for housing a petrol meter and any above ground level petrol and vapour recovery piping; and
- (c) designed or constructed for hanging a petrol pump nozzle;

“Phase I vapour recovery system” (第 I 期汽體回收系統) means a system which is designed or constructed in such a way that petrol vapour displaced from a petrol storage tank in the course of unloading petrol into the tank is recovered by the system in the petrol delivery tank from which petrol is being unloaded;

“Phase II vapour recovery system” (第 II 期汽體回收系統) means a system which is designed or constructed in such a way that by means of a vacuum created by a mechanical pump installed in the system, petrol vapour displaced from the fuel tank of a motor vehicle in the course of dispensing petrol into the tank is recovered via a coaxial dispensing hose installed in the system in the petrol storage tank from which petrol is being dispensed;”.

3. Section substituted

Section 3 is repealed and the following substituted –

“3. Vapour recovery system to be installed

(1) No person shall own a regulated vehicle unless it is installed with a Phase I vapour recovery system.

(2) No person shall own a petrol filling station unless –

- (a) each petrol storage tank of the station is installed with a Phase I vapour recovery system; and
- (b) each petrol dispenser of the station is installed with a Phase II vapour recovery system.”.

4. Testing and examination

(1) Section 4(1) is amended by adding “in accordance with the test requirements specified in section 8A” after “competent examiner”.

(2) Section 4(2) is repealed and the following substituted –

“(2) In subsection (1)(b), “modifications” (改裝) means the replacement or relocation of –

- (a) a petrol storage tank installed with the vapour recovery system; or
- (b) the vapour recovery piping, but excluding the coaxial dispensing hose to which it is connected.”.

5. Section added

The following is added –

“4A. Further tests required by Authority

(1) If the Authority considers that any part of the vapour recovery system of a regulated vehicle or of a petrol filling station is not functioning properly in the course of unloading or dispensing petrol, as may be appropriate, he may serve a notice in writing on the owner of the vehicle or station, as the case may be, requiring the owner to cause further test and examination to be carried out in respect of any part of the system by a competent examiner in accordance with the test requirements specified in section 8A within the period specified in the notice.

(2) The Authority may take into account the following matters in determining whether the vapour recovery system of a regulated vehicle or of a petrol filling station is functioning properly –

- (a) whether the system is in operation in the course of unloading or dispensing petrol, as may be appropriate;
- (b) whether the system has any mechanical damage or defect;
- (c) whether there is any objectionable odour in the station in the course of unloading or dispensing petrol, as may be appropriate;
- (d) whether there is any leakage of petrol from the system in the course of unloading or dispensing petrol, as may be appropriate.

(3) The owner of a regulated vehicle or petrol filling station on whom a notice under subsection (1) is served shall cause further test and examination to be carried out in accordance with the notice.”.

6. Section substituted

Section 5 is repealed and the following substituted –

“5. Competent examiners and certificates

(1) If, after having carried out the test and examination required under section 4 or 4A, a competent examiner is satisfied that the vapour recovery system of a regulated vehicle or of a petrol filling station complies with the test requirements specified in section 8A, he may issue a certificate in a form specified by the Authority to the owner of the vehicle or station, as the case may be.

(2) A competent examiner shall not issue a certificate containing any statement or information which he knows or reasonably ought to know to be false or misleading in a material particular.”.

7. Display of certificate

(1) Section 6(1) is amended by adding “or 4A” after “4”.

(2) Section 6(2) is amended by adding “in accordance with subsection (1)” after “in respect of the vehicle and the station”.

(3) Section 6 is amended by adding –

“(3) The owner of a petrol filling station shall not dispense, or cause or permit petrol to be dispensed with any petrol dispenser of the station into the fuel tank of a motor vehicle or any other container unless there is the latest certificate displayed in respect of the station in accordance with subsection (1).”.

8. Section added

The following is added –

“6A. Prohibition of dispensing petrol

The owner of a petrol filling station shall not dispense, or cause or permit petrol to be dispensed with any petrol dispenser of the station into the fuel tank of a motor vehicle or any other container if he knows or reasonably ought to know that any Phase II vapour recovery system with which the dispenser is installed is not in operation in the course of dispensing petrol.”.

9. Section substituted

Section 8 is repealed and the following substituted –

“8. Exemptions

Paragraph (b)(ii) of the definition of “vapour recovery system” in section 2, sections 3(2)(b) and 6A and section 2.1 of Part 1 of Schedule 2 and Part 2 of that Schedule shall not apply in relation to all existing petrol filling stations until the expiry of 36 months immediately following the relevant date, with the exception of any existing petrol filling station which has each of its petrol dispenser installed with a Phase II vapour recovery system within 36 months immediately following the relevant date.”.

10. Section added

The following is added –

“8A. Test requirements

The test requirements specified for the purposes of sections 4, 4A and 5 are –

- (a) in the case of the vapour recovery system of a regulated vehicle, the test requirements specified in Schedule 1;
- (b) in the case of the vapour recovery system of a petrol filling station, the test requirements specified in Schedule 2.”.

11. Offences and penalties

(1) Section 9(1) is amended by adding “or 4A(3)” after “section 4(1)”.

(2) Section 9(2) is amended by repealing “or 6(2)” and substituting “, 4A(3), 6(2) or (3) or 6A”.

(3) Section 9 is amended by adding –

“(2A) A competent examiner who contravenes section 5(2) commits an offence and is liable –

- (a) on a first conviction, to a fine at level 5;
- (b) on a second or subsequent conviction, to a fine at level 5 and to imprisonment for 3 months.”.

12. Static pressure performance test for the vapour recovery system of a regulated vehicle

Schedule 1 is amended by repealing “[ss. 3 & 4]” and substituting “[s. 8A]”.

13. Schedule 2 substituted

Schedule 2 is repealed and the following substituted –

TEST REQUIREMENTS FOR VAPOUR RECOVERY SYSTEM OF
PETROL FILLING STATION

PART 1

VAPOUR TIGHTNESS TEST FOR VAPOUR RECOVERY SYSTEM
OF PETROL FILLING STATION

1. **General**

1.1 This procedure applies to the determination of the vapour tightness of the vapour recovery system of a petrol filling station.

1.2 In this Part, “pressure/vacuum valve” (調壓排氣閥) means a dual purpose valve which allows relatively small pressure increases or decreases to occur within a petrol storage tank or pipe to which it is connected without allowing vapour venting to the atmosphere or air in-breathing into the tank or pipe.

2. **Determination of compliance**

2.1 The outlet of any vent pipe serving the vapour recovery system of a petrol filling station shall be fitted with a pressure/vacuum valve with the following pressure settings –

- (a) positive pressure within the range from 0.872 kPa (88.9 mm water column, gauge) to 0.622 kPa (63.5 mm water column, gauge); and
- (b) negative pressure within the range from -2.49 kPa (254.0 mm water column, gauge) to -1.49 kPa (152.4 mm water column, gauge).

2.2 The vapour tightness of the vapour recovery system of a petrol filling station shall be tested in accordance with the Vapour Recovery Test Procedure TP-201.3 – Determination of 2 Inch WC Static

Pressure Performance of Vapour Recovery Systems of Dispensing Facilities (“TP-201.3 Procedure”) adopted on 12 April 1996 and amended on 17 March 1999 by the Air Resources Board of the California Environmental Protection Agency.

2.3 The final five-minute pressure performance of the vapour recovery system shall not be lower than the minimum allowable final pressure set out in Table 1B of the TP-201.3 Procedure.

PART 2

AIR TO LIQUID VOLUME RATIO TEST FOR VAPOUR RECOVERY SYSTEM OF PETROL FILLING STATION

1. **General**

This procedure applies to the quantification of the air to liquid volume ratio of the petrol pump nozzle of the vapour recovery system of a petrol filling station.

2. **Determination of compliance**

2.1 The air to liquid volume ratio of the petrol pump nozzle of the vapour recovery system shall be tested in accordance with the Vapour Recovery Test Procedure TP-201.5 – Air to Liquid Volume Ratio Test adopted on 12 April 1996 and amended on 1 February 2001 by the Air Resources Board of the California Environmental Protection Agency.

2.2 The air to liquid volume ratio shall be within the range of 0.8 to 1.2.”.

14. **Effectiveness test for the vapour recovery system of a petrol filling station during unloading of petrol**

Schedule 3 is repealed.

Secretary for the Environment,
Transport and Works

2004

Explanatory Note

The object of this Regulation is to amend the Air Pollution Control (Petrol Filling Stations)(Vapour Recovery) Regulation (Cap. 311 sub. leg. S)(the “principal Regulation”) to require the installation of new vapour recovery systems in petrol filling stations to control the emission of volatile organic compound in the course of dispensing petrol into the fuel tank of a motor vehicle. The Regulation also introduces a few modifications to the existing provisions of the principal Regulation.

2. Section 2, among others, amends the existing definition of “vapour recovery system” and introduces new definitions of “petrol dispenser”, “Phase I vapour recovery system” and “Phase II vapour recovery system”.
3. Section 3 amends section 3 of the principal Regulation to provide that –
 - (a) no person shall own a regulated vehicle unless the vehicle is installed with a Phase I vapour recovery system;
 - (b) no person shall own a petrol filling station unless each petrol storage tank of the station is installed with a Phase I vapour recovery system and each petrol dispenser of the station is installed with a Phase II vapour recovery system.

4. Section 5 adds a new section 4A to the principal Regulation to provide that if the air pollution control authority (“the Authority”) considers that the vapour recovery system of a regulated vehicle or of a petrol filling station is not functioning properly, he may require the owner of the vehicle or station, as the case may be, to cause further test and examination to be carried out by a competent examiner.
5. Section 6 amends section 5 of the principal Regulation to provide that –
 - (a) the competent examiner instead of the Authority is to be responsible for issuing a certificate certifying that the vapour recovery system of a regulated vehicle or of a petrol filling station complies with the specified test requirements; and
 - (b) the competent examiner commits an offence if he issues a certificate which contains any statement or information which is false or misleading in a material particular.
6. Section 8 adds a new section 6A to the principal Regulation to provide that the owner of a petrol filling station shall not dispense petrol into the fuel tank of a motor vehicle or any other container if the Phase II vapour recovery system with which the petrol dispenser of the station is installed is not in operation.
7. Section 9 amends section 8 of the principal Regulation to provide that certain provisions concerning Phase II vapour recovery system shall not apply in relation to all existing petrol filling stations until the expiry of 36 months immediately after the commencement of the Regulation, with the exception of any existing petrol filling station which has each of its petrol dispenser installed with a Phase II vapour recovery system within those 36 months.
8. Section 13 amends Schedule 2 to the principal Regulation to provide for the new test requirements in relation to the vapour recovery system of a petrol filling station.