

**For Information on
14 November 2000**

**Subcommittee on Fixed Penalty
(Criminal Proceedings)(Amendment)(No.3) Regulation and
Resolution of the Legislative Council (L.N.206 of 2000)
(Commencement Notice) 2000**

Increase of Fixed Penalty in relation to Smoky Vehicles

Purpose

At the meeting of the Subcommittee on 3 November 2000, Members requested the Administration to provide the following information:

- (a) the Hong Kong Productivity Council's survey report on vehicle maintenance services trade in Hong Kong;
- (b) the procedures and time required for testing new models of particulate traps for approval of installation;
- (c) whether there is adequate supply of LPG taxis and the time required for delivery;
- (d) statistics of the Smoke Control Programme on heavy vehicles; and
- (e) whether it is necessary to remove the catalysts installed to vehicles during the annual roadworthiness test.

2. This paper provides the information requested.

**Hong Kong Productivity Council's Survey Report on the Vehicle
Maintenance Services Trade in Hong Kong**

3. The draft report, entitled "Final Report on Survey on Vehicle (LPG, Petrol & Diesel) Maintenance Garages and Mechanics", prepared by the Hong Kong Productivity Council is under the scrutiny of the Working Group on Vehicle Maintenance Services. The draft report and the progress report of the Working Group on Vehicle Maintenance Services are attached for Members' reference.

Procedures and Maximum Time Required for Testing New Models of Particulate Traps for Approval of Installation

4. A vehicle owner who wishes to install a new model of particulate trap on his vehicle does not need to seek approval from the Environmental Protection Department. However, the device has to be installed on a vehicle securely and with sufficient clearance from the road surface to meet the roadworthiness requirement of the Transport Department. The particulate traps provided under the Government's subsidized scheme are pre-approved by the Transport Department. But if a vehicle owner wishes to install a different model of particulate trap on his vehicle, he has to apply to the Transport Department for approval. The time for approval varies from case to case. Typically, the Transport Department expects a decision can be made in two weeks.

Supply of LPG Taxis and the Time Required for Delivery

5. With the commencement of operation of the dedicated LPG filling stations, the supply of LPG taxis will gradually increase. We understand that in the coming 3 to 4 months there would be an average of 1,000 to 1,200 new LPG taxis arriving Hong Kong each month. The suppliers expect that the supply should meet the current demand. They would monitor closely the market demand so that they could increase the supply of new LPG taxis accordingly.

6. As regards the time required for the delivery of a LPG taxi, the suppliers have indicated that it would depend on the stock conditions. If there are readily available new LPG taxis in the stock, the delivery time can be as short as a couple of working days.

Statistics of the Smoke Control Programme on Heavy Vehicles

7. The required statistics are given in the annex.

Necessity of Removing Catalysts Installed to Vehicles during the Annual Roadworthiness Test

8. The Transport Department does not require a vehicle to remove its diesel catalyst during roadworthiness test, so long as it is properly installed.

Environmental and Food Bureau
November 2000

DRAFT

Attachment to LC Paper No. CB(2) 251/00-01(0)



Environmental
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Hong Kong
Productivity Council
香港生產力促進局



**FINAL REPORT ON SURVEY ON VEHICLE (LPG, PETROL &
DIESEL) MAINTENANCE GARAGES AND MECHANICS**

(Project No.: 01013836)

Environmental Management Division
Hong Kong Productivity Council

8th November 2000

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1. BACKGROUND

- 1.1 The recent deterioration of the air quality in Hong Kong has caused a lot of public concerns. The government has been trying hard to formulate both short-term and long-term strategies to tackle the problem hopefully to alleviate the situation quickly. Among the many sources of air pollution, vehicle emissions are the ones that are in general considered to contribute significantly to air pollution.
- 1.2 According to the estimation by the Government¹, in 1997 vehicle emissions accounted for 51.95% particulate matters in the air, 33.12% nitrogen oxides and 7.01% sulphur oxides. Particulate matters, nitrogen dioxide and sulphur dioxide are the three major criteria air pollutants used to gauge the air quality of Hong Kong. It is therefore natural for the Government to target at improving vehicle emissions as one of the priorities.
- 1.3 In the past several years, the Government has been tightening up emission standards for newly imported vehicles, giving tax incentive to introduce ultra-low sulphur fuel, direct subsidy to taxi owners to switch to LPG taxis, direct subsidy to diesel vehicle owners to retrofit particulate traps and catalytic converters to remove particulate matters and nitrogen oxides, etc. All these initiatives should be applauded as this shows the commitment of the Government in tackling air pollution seriously.
- 1.4 In parallel with all these initiatives, there is an opinion in the society that the government should not overlook the importance of proper vehicle maintenance. If the existing hundred thousands of on-road vehicles are not properly maintained, all the Government's initiatives in improving the air quality could easily be rotten away. However, when one turns to look at the vehicle maintenance trade, one could find that the trade is facing a number of difficulties.

Difficulties Faced by the Vehicle Maintenance Trade

Varied quality of mechanics from one to another

¹ Reference: "Clean Air for Hong Kong", published by the then Planning, Environment and Lands Bureau, HKSAR Government.

- 1.5 Except those franchised public transportation companies and Government's fleet operators who have their in-house vehicle maintenance shops to take care of their fleet, all the other on-road vehicles are being maintained by private vehicle maintenance garages. Over the past decades, it is a tradition in the vehicle maintenance trade that vehicle maintenance mechanics do not undergo a formal training, let alone being certified as qualified mechanics. Everybody if he wishes can join the trade to work as a mechanic under the supervision of an experienced mechanic, who himself may not be formally trained either. Normally, this loose apprenticeship training lasts for several years before the apprentice can claim himself as a skilled mechanic.
- 1.6 Without a consistent set of objective criteria to gauge the standard of the trained mechanics, it is only to be expected that the standard varies from one mechanic to another and this directly affects their quality of maintenance work delivered to the customers.

Varied quality of vehicle maintenance garages from one to another

- 1.7 On the other hand, not only mechanics are not required to be registered with the Government, vehicle maintenance garages are not required to be registered either except business registration. As such, there is no regulation on the quality of the garages in delivering vehicle maintenance work and it varies from one garage to another.
- 1.8 At present, more than 80% of the about 1500 vehicle maintenance garages are small ones employing less than 5 workers. These garages are usually opened by mechanics who have been practising in the field for several years. In order to survive, these small garages must either compete on quality or price or both. Unfortunately, many of the low quality garages (they are called the backyard garages in the trade) can only opt to compete on price at the expense of quality.
- 1.9 Without the proper licensing system to regulate the quality services of the garages, the silent majority customers could only choose to accept the poor quality of work by the backyard garages, or else they have to try their luck with another garage.

Lack of knowledge to comply with environmental protection requirements

- 1.10 Under the current informal apprenticeship training of mechanics, there is no

regular training opportunities provided to the mechanics to constantly upgrade their knowledge and skills in vehicle maintenance to comply with the ever-tightened environmental protection requirements. In fact, there are no requirements on the continuous professional development of mechanics in order to keep up with technological advancement in vehicle engineering either.

Unavailability of vehicle maintenance manuals and technical data

1.11 Many small garages advocate that the local agents of vehicle manufactures are withholding the release of vehicle maintenance manuals and technical data and this affect their work in vehicle repair. As claimed by these garages, without the maintenance manual and data, their mechanics could only rely on their experience to repair the vehicles or consult their peers who have experience in repairing the same brand and model of the vehicles. This substantially affects their quality of work. To improve the situation, the small garages strongly advocate that the Government should set up legislation demanding the release of vehicle maintenance manuals and technical data.

Request from the Vehicle Maintenance Trade and the Government's Response

1.12 It is against this background that many of the representative vehicle maintenance trade associations² have been lobbying the Government in the past several years to devote resources in helping the trade to upgrade the trade standards. They specifically request the following:-

- (a) establishing mandatory registration of vehicle maintenance mechanics (and possibly on registration of vehicle maintenance garages as well)
- (b) providing training on vehicle maintenance for the mechanics to upgrade their skills and knowledge in environmental protection.
- (c) setting up legislation to require the release of vehicle maintenance manuals and technical data.

1.13 The Government responded in setting up The Working Group on Vehicle Maintenance Service (WGVMS) comprising representatives from relevant

² These include:

- (a) The Institute of the Motor Industry Hong Kong
- (b) Service Managers Association
- (c) Hong Kong Vehicle Repair Merchants Association Limited
- (d) Environmental Vehicle (Taxi) Repairers Association
- (e) and others

government bureaus/departments and the vehicle maintenance trade in early 2000. The function of the WGVMS is to explore ways to upgrade the standard of the trade in order to meet the tightened environmental and safety requirements on vehicle maintenance. A Special Task Group on Licensing System for Vehicle Maintenance was formed under WGVMS to specifically investigate whether registration/licensing of vehicle maintenance mechanics are recommendable to upgrade the trade standard and if so the options available.

- 1.14 Under the funding support of the Electrical & Mechanical Services Department (EMSD) and the Environment and Conservation Fund (ECF), Hong Kong Productivity Council (HKPC) was commissioned to conduct an overseas survey on the registration/licensing of vehicle maintenance garages and mechanics in order to benchmark the overseas practices in regulating the vehicle maintenance trade. In addition, a local survey was also conducted to solicit the opinion of the trade on registration/licensing of vehicle maintenance mechanics and the training needs as well as facility upgrading needs to cope with the tightened environmental and safety requirements. The findings of the overseas survey are presented to the Special Task Group whereas the findings of the overseas and local survey are presented to the WGVMS for consideration in selecting ways to upgrade the standard of the vehicle maintenance trade.
- 1.15 The overseas survey was started in April 2000 and completed in mid August, while the local survey was started in May and completed also mid August. The draft final report summarizing the findings of the overseas and local surveys was first submitted to the WGVMS on 5th September 2000. Subsequently, the revised draft report was submitted to the WGVMS on 22nd September 2000 to incorporate the comment from the Government representative in the WGVMS. That revised draft report was discussed in the WGVMS on 13th October 2000 with comments raised by the members of the WGVMS. The comments were incorporated in this Final Report.

2. OBJECTIVES OF THE SURVEY

2.1 The objectives of the overseas survey are:-

- (a) to collect information on those countries that are currently implementing mandatory or voluntary schemes of registration/licensing of vehicle maintenance mechanics;
- (b) to collect information on those countries with licensing of vehicle maintenance garages.

2.2 The objectives of the local survey are:-

- (a) to collect information about the needs of vehicle maintenance garages in facilities upgrading and training of mechanics, and the difficulties encountered when repairing vehicles in order to comply with the tightened environmental and safety requirements;
- (b) to solicit their views on setting up mandatory scheme to register/license vehicle mechanics.

3. METHODOLOGY

Overseas Survey

3.1 HKPC conducted the overseas survey through the following means:-

- (a) We contacted through correspondences and/or email all major countries in the world to collect information about registration/licensing of vehicle maintenance garages and mechanics in these countries. Assistance from the Consulates and/or trade representatives of these countries in Hong Kong was solicited wherever possible.
- (b) At the same time we also conducted extensive search of such information through the internet. This is proved to be the most effective means to collect relevant information especially when the registration/licensing schemes are known to us.
- (c) We also search technical reference in HKPC's technical reference library, on-line connection to the International Information Retrieval System, university libraries in Hong Kong for relevant information. However, no relevant information on registration/licensing schemes was collected.

Local Survey

3.2 The local survey consists of two parts, namely:

- (a) the extensive survey through fax to all vehicle maintenance garages in Hong Kong; and
- (b) the intensive survey by personal interviews to about 10% of the garages selected from the extensive survey database.

Extensive Survey

3.3 HKPC constructed the survey subject database by reference to the White Page and Yellow Page telephone directories of the then Cable & Wireless HKT under the category of Motor Industry, the member lists as supplied by the Services Managers Association (SMA), the company names supplied by Hong Kong Vehicle Repair Merchants association Limited (HKVRMA), and the company names supplied by Environmental Vehicle (Taxi) Repairers Association (EVRA).

After consolidation, a total of 2,684 companies were included in the database among which 1,563 were specifically classified as motor repairing and maintenance companies while the other 1,121 companies were those involved in car sales/retailers, car-parts retailers or car-dismantling, etc. Those 1,563 motor repairing and maintenance companies were the main survey targets.

- 3.4 Standardized questionnaire was prepared for the purpose of the extensive survey. A copy of the extensive survey questionnaire is enclosed in Annex A. The questionnaires was designed to collect the following information:-
- (i) Basic company information including types of vehicle repair offered by the survey subject.
 - (ii) Personnel information of the company including the qualifications, training and experience of the technicians and mechanics.
 - (iii) Opinions on ways to improve the standard of the vehicle maintenance trade including the views on setting up schemes to register/license mechanics.
 - (iv) Difficulties encountered when repairing vehicles in order to comply with tightened environmental and safety requirements.
- 3.5 The questionnaires were prepared in English and Chinese versions and were submitted to the Special Task Group on Licensing System for Vehicle Maintenance for approval before being sent out to the recipients.
- 3.6 Only Chinese version of the questionnaires was sent out by fax to the recipients because all the recipients are Chinese.
- 3.7 HKPC followed up with telephone calls to all the recipients should they not reply within two days or we needed to clarify the information provided in the returned questionnaires. About 80% of the surveyed targets were called up to follow up their responses. During the follow-up telephone calls, HKPC explained further the purpose of the survey and that the registration/licensing scheme as mentioned in the questionnaire was referring to a mandatory scheme operated by the Government. There was no ambiguity expressed by the recipients that the registration/licensing scheme was interpreted the other way. HKPC also clarified that the respondents were asked whether they agreed in principle to the setting up of a mandatory registration scheme for mechanics as a way to improve the trade standard although the details of the registration scheme was not yet

decided. Furthermore, the respondents were also asked about their further comments, if any, on the registration scheme.

- 3.8 The information provided in the feedback from the surveyed subjects were summarized in a database and analyzed subsequently.

Intensive survey

- 3.9 In parallel with the extensive survey, about 10% of the surveyed subjects, i.e. about 260 garages, were selected for the follow-up intensive survey through personal interview. The interviewees were selected in such a way that all the members of SMA (43 garages) were selected, while the remaining were selected randomly from the sources of HKPC's database, HKVRMA's list and EVRA's list as summarized below:-

	HKPC	HKVRMA	EVRA	SMA
Size of database	2,579	260 ⁽ⁱ⁾	490 ⁽ⁱ⁾	43
Involved in maintenance work	1,563	260	490	43
No. of Garages Selected for Interview	143	26	48	43
Sample proportion	9.1%	10%	9.8%	100%

Note: (i) These are the respective numbers of mechanics interviewed in the surveys by HKVRMA and EVRA.

- 3.10 All members of SMA were selected because they represent those large vehicle maintenance garages many of whom are the local distributors of imported vehicles. For the other databases, they mainly represent small and medium garages and are in large number and so they are selected randomly with about 10% sampling proportion from the respective databases. The following table summarizes the population of the surveyed garages in the intensive survey when categorized into small, medium and large garages:-

	Small	Medium	Large	Total
Criteria	Employment size<5	Employment size from 5 to 100 and not member of SMA	SMA member or employment size>100	
Number	154	56	43	253
% of total	60.9%	22.1%	17.0%	100%

- 3.11 The selected garages were interviewed by HKPC's interviewers using a standardized questionnaires to collect further information in the following areas:-
- (i) Basic company information including types of vehicle repair offered by the survey subject.
 - (ii) Personnel information of the company including the qualifications, training and experience of the technicians and mechanics.
 - (iii) Existing facilities in the garages and the facilities upgrading plan in future.
 - (iv) Opinions on ways to improve the standard of the vehicle maintenance trade including the views on setting up schemes to register/license mechanics.
 - (v) Difficulties encountered when repairing vehicles in order to comply with tightened environmental and safety requirements.
 - (vi) Other comments from the interviewees.
- 3.12 The questionnaires, both in English and Chinese, were submitted to the Special Task Group for approval before being used for the survey. A copy of the questionnaire is enclosed in Annex B for reference.
- 3.13 The interviewees were first sent the Chinese version of the questionnaire before HKPC's interviewers visited them. During the interview HKPC's interviewer explained the purpose of the survey and that the registration/licensing scheme as mentioned in the questionnaire was referring to a mandatory scheme operated by the Government. There was no ambiguity expressed by the recipients that the registration/licensing scheme was interpreted the other way. HKPC also clarified that the respondents were asked whether they agreed in principle to the setting up of a mandatory registration scheme for mechanics as a way to improve the trade standard although the details of the registration scheme was not yet decided. Furthermore, the respondents were also asked about their further comments, if any, on the registration scheme.
- 3.14 The information collected in the feedback from the surveyed subjects were summarized in a database and analyzed subsequently.

4. OVERSEAS SURVEY RESULTS

- 4.1 As the overseas survey results have to be presented separately to the Special Task Group on Licensing System for Vehicle Maintenance, they are compiled in a separate report. The title of the report is "Draft Final Report on Overseas Survey of Vehicle (LPG, Petrol & Diesel) Maintenance Garages and Mechanics (Revision 1)" dated 22nd September 2000, which forms an integral part of this report. Readers are referred to that separate report for details of the overseas survey.

5. **LOCAL SURVEY RESULTS**

Responses of the Local Surveys

5.1 The responses of the extensive and intensive surveys are summarized in the following table:-

	Extensive Survey	Intensive Survey
Surveyed Population of Garages	1,563	260
Successfully surveyed and feedback collected	1,183	253 ⁽ⁱ⁾
% of population surveyed	75.7%	97.3%

Note: (i) HKPC tried to contact hundreds of garages hoping to achieve the target of visiting 260 garages but failed because all of them declined our request for survey. So, HKPC could only manage to visit 253 garages.

5.2 In view of the high proportion of the population covered (>75%), the survey results are considered representative.

Survey Results

5.3 Summaries of the extensive and intensive survey results are enclosed in Annex C and Annex D respectively for reference.

5.4 The 1,183 surveyed garages are categorized into small, medium and large garages as below:-

	Small	Medium	Large	Total
Criteria	Employment size<5	Employment size from 5 to 100 and not member of SMA	SMA member or employment size>100	
Number	933	205	45	1,183
% of total	78.9%	17.3%	3.8%	100%

5.5 The table shows that about 80% of the garages are small employing less than 5 employees. They are the ones that have the least resources and are suspected to be the most affected if mandatory registration/licensing of vehicle mechanics are introduced. So, their views and concerns on such registration scheme are the most important.

5.6 The following paragraphs list out the results of the survey in terms of facilities

upgrading needs, personnel qualifications, opinions to upgrade trade standard, views on registration/licensing of mechanics, training needs, and difficulties encountered in vehicle repair to comply with tightened environmental and safety requirements.

Garages premises and business involved

5.7 Out of the 1,183 surveyed garages, 84% are mechanical shops, 57% panel beaters, 54% electrical shops and 29% painters. They represent the majority of vehicle repair shops in Hong Kong.

5.8 Many of the garages are housed in multi-storey industrial buildings (25.5%), open yards (26.6%), ground floors of residential buildings (31.3%), while only 7.7% are housed in purpose-built buildings (i.e. the whole building is used for vehicle repair and related activities). This shows that many of the small and medium garages are operating in the heart of the city and are likely to cause environmental problems especially for those locating in residential areas.

Garages facilities and upgrading plan

5.9 The garage facilities and upgrading plan was surveyed in the intensive survey because the extensive survey did not allow such detailed information collection. The table below summarizes the essential facilities that are not commonly available in 50% of the garages.

Type of Garages	Essential Facilities not Available in 50% of the Surveyed Garages (% Garages with such facilities)
Body Repair Workshop	<ul style="list-style-type: none">◦ Vehicle transport devices (10.0%)◦ Air extraction system (42.6%)◦ TIG/MIG
Paint Shop	<ul style="list-style-type: none">◦ Spray booth/enclosed area with ventilation only◦ Spray gun cleaning machine
Electrical Repair Workshop	<ul style="list-style-type: none">◦ Belt tension gauge (32.7%)◦ Battery charging area with forced ventilation (23.1%)◦ Oscilloscope (29.9%)
Mechanical Services/Repair Workshop	<ul style="list-style-type: none">◦ Safety stands (33.2%)◦ Smoke meter (38.4%)◦ Four-gas analyzer (31.0%)◦ Wheel alignment tester (32.3%)◦ Wheel balancer (28.8%)◦ Decelerometer (Tepley meter) (10.9%)

	<ul style="list-style-type: none"> ◦ Roller brake tester (14.8%) ◦ Air extraction system (21.4%) ◦ Freon recharging/recycling machine (35.8%)
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5.10 The table above shows clearly that only about one-third of the mechanical repair workshops are equipped with vehicle emissions monitoring equipment, i.e. smoke meters and four-gas analyzers. Without such equipment, it would be difficult for these garages to check whether the repaired vehicles comply with the environmental regulations.

5.11 Regarding the facilities upgrading plans in the next two years, many mechanical repair shops replied and their responses are summarized below:

	Facilities to be Purchased or Upgraded (No. of Garages)
Mechanical Services/Repair Workshop	<ul style="list-style-type: none"> ◦ Smoke meters and/or four-gas analyzers (25) ◦ Vehicle diagnosis computer (19) ◦ Car lift (11) ◦ LPG vehicle repair facilities (10)

5.12 The facilities upgrading plan reflects clearly that the mechanical repair garages are well aware of the needs to equip with vehicle emissions monitoring equipment. Also, the upgrading plan to purchase vehicle diagnosis computers also highlights the problem faced by the mechanics in diagnosing the more sophisticated modern vehicles, which use many electronic control systems.

5.13 Hence, the trade practitioners are preparing to upgrade and better position themselves in meeting the challenge of tightened environmental and safety requirement. However, apart from facilities upgrading, it is also necessary to better prepare the vehicle mechanics for the challenge. In this respect, the extensive and intensive surveys specifically investigate the mechanics' qualification, training and experience to give a snap-short of the current situation in the trade.

Personnel's qualification, training and experiences

5.14 The table below summarizes the qualifications of mechanics (technicians and craftsmen) in the surveyed garages.

		No. of Mechanics (% of Total)
Higher Diploma		24 (0.4%)
Diploma		44 (0.8%)
Higher Certificate		126 (2.3%)
Certificate		69 (1.3%)
Secondary 5		348 (6.4%)
Craft Certificate		1,568 (28.9%)
Secondary 3 and below		1,852 (34.1%)
No qualification but experience only	<5 years	50 (0.9%)
	5 to 10 years	67 (1.2%)
	>10 years	1,286 (23.7%)
Total		5,434 (100%)

5.15 The table shows that about 59.9% of the mechanics (i.e. 3,255 mechanics) are either at secondary 3 level or below or possessing no educational qualifications. Only 33.7% of the mechanics are properly trained in vehicle maintenance by having craft certificate or obtaining Certificate, Higher Certificate level, Diploma or Higher Diploma qualifications.

5.16 The extensive survey also revealed that only 582 mechanics of the surveyed garages have passed the trade test and obtained the trade test certificates issued by Vocational Training Council. This only accounts for less than 20% of the population of those mechanics without educational qualifications. So, if registration/licensing of mechanics is implemented, there will be a very substantial amount of mechanics without educational or trade qualifications who would be affected.

Opinions on ways to improve standard of the trade

5.17 One of the main objectives of the surveys was to solicit the view of the survey recipients to upgrade the standard of the vehicle repair trade. They were asked whether they agree to the following:

- (i) there should be further education and training by the government; and
- (ii) setting up scheme for the registration/licensing of mechanics.

5.18 The results are summarized below:-

	Agree	Disagree	No Comment	Total
Further education/training by government	1,047 (88.5%)	110 (9.3%)	26 (2.2%)	1,183 (100%)
Registration/Licensing of mechanics	928 (78.5%)	231 (19.5%)	24 (2.0%)	1,183 (100%)

5.19 There was overwhelming support on the education/training by government and registration/licensing of mechanics.

5.20 Furthermore, if we analyze the opinion on registration/licensing of mechanics by categorizing the garages into small, medium and large garages, the results are similar as summarized below showing that there is a consensus across the board in the trade that there is a need to implement mandatory registration/licensing of mechanics.

	Registration/Licensing of Mechanics			
	Agree	Disagree	No Comment	Total
Small Garages	715 (76.7%)	197 (21.1%)	21 (2.2%)	933 (100%)
Medium Garages	168 (82.0%)	34 (16.6%)	3 (1.4%)	205 (100%)
Large Garages	45 (100%)	0 (0%)	0 (0%)	45 (100%)
Total	928 (78.5%)	231 (19.5%)	24 (2.0%)	1,183 (100%)

View on setting up mandatory scheme to register/license vehicle mechanics and concerns

5.21 Although there was overwhelming support on setting up mandatory registration/licensing of mechanics as a means to improve the standard of the trade, there was still 19.5% (i.e. 231 garages) against such system. Their views must not be overlooked. Furthermore, those supportive of the registration/licensing schemes raised certain concerns even though they supported the system.

5.22 Among the 231 garages against the mandatory registration/licensing system, 56.3% (i.e. 130 garages) were supportive to set up a voluntary system to register/license mechanics. This showed that they considered there is a need to unify the standard of mechanics in the trade.

5.23 The intensive survey provided us the chance to talk to the surveyed garages why they were against the mandatory registration/licensing system. Of the 253 garages interviewed, 36 garages were against such registration/licensing system among which 16 offered their opinions. The major objection reasons are summarized below:-

- (i) Many of them considered that there was no need to set up any registration/licensing system because they are satisfied with the present operation.
- (ii) Experience is more important than just a registration status.
- (iii) Employer may need to spend extra resources to train up mechanics to the registration standard.

5.24 On the other hand, there are some concerns expressed by those interviewees who are supportive of registration/licensing of mechanics. 73 out of the 214 supportive interviewees expressed their concerns which are summarized below:-

- (a) They consider that educational qualification for registration should be waived if the mechanics possess certain years of working experience. This is understandable in view of the fact that about 60% of the mechanics are at secondary 3 level or below.
- (b) Government should set up technical support centre to help the trade to upgrade the standard and require the release of vehicle maintenance manual and technical data.
- (c) Training institutes, e.g. Vocational Training Council, should provide more updated course on vehicle repair. The current training courses are a bit not up-to-date.
- (d) There should be grace period of say 3 to 5 years to allow practising mechanics to upgrade themselves to the registration level.

Training needs

5.25 As summarized above, 88.5% respondents agree the Government to provide further education and training to mechanics. In the intensive interview, we asked the interviewees about the types of training they needed and the results are summarized below:-

Further Education/Training		% of Respondents
LPG vehicle servicing		94.8%
Diesel engine maintenance		75.4%
Petrol engine maintenance		83.2%
General chassis		50.4%
Transmission		55.6%
Suspension		52.2%
Braking		56.9%
Steering		53.4%
Body repair		50.9%
Body painting		47.8%
Vehicle electrical		62.9%
Vehicle air-conditioner		55.6%
Others	Electronic/computer control	9.5%
	Industrial safety	3.4%
	Good trade practice	3.0%
	Environmental protection knowledge	2.6%

5.26 The table shows that most of the interviewees agree government to provide further training on LPG vehicle servicing, diesel engine maintenance and petrol engine maintenance. This demonstrates the trade practitioners are well aware that they need constant upgrading of their skills in order to meet with the advancement in vehicle engineering to meet the ever tightening environmental and safety requirements. This also indicates that the current training courses are not sufficient to meet their expectation.

Difficulties in vehicle repairs to comply with tightened environmental and safety requirements

5.27 The following table summarizes the difficulties faced by the mechanics in repairing vehicles to comply with tightened environmental and safety requirements:-

Difficulty	No. of Respondents (%)
Vehicle service or maintenance manual not readily available	610 (52%)
Lack of vehicle diagnostic equipment	519 (44%)
Lack of skilled or competent technicians	123 (10%)
Lack of skilled or competent craftsmen	143 (12%)
Lack of vehicle emission testing equipment	432 (37%)
Lack of understanding of environmental legislation related to vehicle emissions	265 (22%)
Others, e.g. not suitable premises for vehicle repair, harsh environmental legislation, etc.	50 (4%)

- 5.28 It is clear from the responses that lack of maintenance manual, diagnostic equipment and vehicle emission testing equipment are the three major difficulties. This is the reason, as discussed before, why the trade association request the Government to set up legislation to require the release of vehicle maintenance manual and technical data. This aspect is currently being considered by the WGVMS and is outside the scope of the current study.
- 5.29 With regard to diagnostic equipment and vehicle emission testing equipment, this agrees well with the facilities upgrading plan discovered in the intensive survey because many garages are planning to purchase such equipment. Obviously, this is a business decision and if there is a market need, garages will purchase the necessary equipment for their work.
- 5.30 Another difficulty as expressed by the respondents was the lack of understanding of environmental legislation related to vehicle emissions. This is also advocated by the trade associations in the WGVMS and so it is a proven common concern in the trade.
- 5.31 On the other hand, a very interesting information was observed. Although 78.5% respondents agreed to the mandatory registration/licensing of mechanics, there were only 10% said they faced the difficulty of lacking skilled/competent technicians (and 12% said there was lack of skilled/competent craftsmen). One would expect that if the trade wants to set up mandatory scheme to register/license mechanics, they must consider that there is not sufficient supply of skilled technical/craftsmen. However, this is exactly the opposite, i.e. the trade did not consider there is any lack of skilled technicians/craftsmen.
- 5.32 This phenomenon can be explained, however, if we analyze the responses by splitting those agreed to the mandatory registration/licensing system from those against it. Such analysis is given in the following table:

	Small Garages	Medium Garages	Large Garages	Total
Agree of Registration/Licensing Scheme	715	168	45	928
Lack of skilled/competent technicians	62 (8.7%)	28 (16.7%)	13 (28.9%)	103 (11.1%)
Lack of skilled/competent craftsmen	75 (10.5%)	27 (16.1%)	14 (31.1%)	116 (12.5%)
Disagree of Registration/Licensing Scheme	197	34	0	231
Lack of skilled/competent technicians	11 (5.6%)	6 (17.6%)	0	17 (7.4%)
Lack of skilled/competent craftsmen	15 (7.6%)	8 (23.5%)	0	23 (10.0%)

5.33 The table shows that there is not much difference between those agreeable to the mandatory registration/licensing scheme and those against it in terms of the opinion on lack of skilled/competent technicians and craftsmen. The same appears in the population of small and medium garages. This analysis reveals that the request of the trade to set up the mandatory registration/licensing of mechanics system is not motivated by the lack of skilled/competent technicians and craftsmen, but by other motives instead. Some of these other motives were revealed when we asked the interviewees to give further comment on the survey as reported in the next paragraph.

Other comments

5.34 The following other comments were expressed by the respondents:-

- (i) Mandatory registration/licensing scheme could cast a professional image of the mechanics to the public, enhance professionalism in the trade, improve mechanics' skills and provide better confidence to the public in respect of repair work quality.
- (ii) Mandatory registration/licensing of mechanics could be used as employment criteria in future.
- (iii) Government support to the trade is not sufficient, especially in helping the trade to comply with environmental legislation.

5.35 From the other comments given by the interviewees, it was noted that some of the surveyed garages viewed mandatory registration/licensing of mechanics as a

means to upgrade the professional image of mechanics, raise their social status, and enhance confidence in the public towards their work. These may be the other reasons why there is overwhelming support by the trade towards mandatory registration/licensing of mechanics.

6. FURTHER DISCUSSION ON THE LOCAL SURVEY AND RECOMMENDATIONS

- 6.1 As discussed in Section 1 of this report, the vehicle maintenance trade is facing the following difficulties:-
- (a) Varied quality of mechanics from one to another
 - (b) Varied quality of vehicle maintenance garages from one to another
 - (c) Lack of knowledge to comply with environmental protection requirements
 - (d) Unavailability of vehicle maintenance manuals and technical data.
- 6.2 The survey found that about 60% of the mechanics are not possessing recognized vehicle repair qualification or certification and are being trained up informally. This non-systematic training of mechanics would result in the varied quality of mechanics from one to another.
- 6.3 Although the survey did not target at vehicle maintenance garages specifically, it is to be expected that the service quality of vehicle maintenance garages would also vary in view of the varied quality of mechanics.
- 6.4 The survey also revealed that 22% of the respondents considered that they lack the understanding of environmental protection requirements and this affects their work in vehicle repair.
- 6.5 Lastly, 52% of the respondent replied that lack of vehicle maintenance manuals is one of the major difficulties in vehicle repair.
- 6.6 Hence, the local survey basically confirms that the four issues mentioned above are the major difficulties faced by the trade.
- 6.7 The issue on vehicle maintenance manual is currently being discussed in the WGVMS and is not covered in this study.
- 6.8 To tackle the other three issues, the trade requests the Government to set up mandatory system to register/license vehicle mechanics and then later on to consider mandatory registration/licensing of vehicle maintenance garages as well.

6.9 This study is aim at investigating whether the silent majority of the trade is agreeable to setting up the mandatory registration/licensing of mechanics scheme and collect information on the facilities upgrading and mechanics' training needs to comply with the tightened environmental and safety requirements. However, the issue on registration/licensing of garages is not covered in this study.

Mandatory Registration/Licensing of Vehicle Mechanics

6.10 As discussed in detail in Section 5, there is overwhelming support from the trade towards setting up a mandatory system to register/license vehicle mechanics. To gauge whether such mandatory system is recommendable, it is necessary to evaluate whether the system can help solve the four major difficulties faced by the trade.

6.11 Once the mandatory registration/licensing system is in operation, every mechanic has to comply with a set of consistent registration/licensing criteria. In addition, under the registration/licensing system, there would be penalty system to penalize mal-practiced mechanics. In this way, there will be greater guarantee of the quality of the work delivered by mechanics in the trade.

6.12 Regarding the varied quality of vehicle maintenance garage, the mandatory registration/licensing of mechanics cannot improve the situation much. The Government must move a little step further to also register/license the garages. The trade has shown indication in the WGVMS that they will support garage registration/licensing in principle.

6.13 It is expected that under the mandatory registration/licensing system, there would be a requirement on continuous professional development. Through attending training courses the registered mechanics can be constantly updated about the trade practices, advancement in skills, as well as environmental protection requirements.

6.14 On the other hand, unless it is an ancillary requirement to release maintenance manual under the registration/licensing scheme, the scheme itself would not solve the problem of unavailability of maintenance manual or technical data.

6.15 In summary, mandatory registration/licensing of mechanics can help solve the

first three difficulties in the trade except the release of maintenance manual and technical data.

- 6.16 Regarding the release of vehicle maintenance manual and technical data, HKPC was informed the following: "On maintenance information of petrol and Euro diesel vehicles, it was found that third-party publications covering different aspects of almost all running models of vehicles, e.g. ignition system, braking system, carburetor and fuel injection systems, electric and air conditioning systems, are readily available in Hong Kong. There is at least a publisher which offers full sets of vehicle maintenance data for all running models. Similar to practice overseas, the public or the vehicle maintenance trade in Hong Kong could purchase such information from the publishers' local office or through the internet." There seems to have a positive outlet to solve the unavailability of vehicle maintenance manual and technical data.

Recommendations

- 6.17 Although the survey revealed overwhelming support of mandatory registration/licensing of mechanics, it remains a policy decision by the Government on whether to set up such system. Among other considerations, resource implication and priority of the needs to set up such system should be considered. But anyway, this survey has confirmed that the silent majority of the trade are supportive of the mandatory registration/licensing system.
- 6.18 Before making decision on whether to set up mandatory schemes to register/license mechanics, members of the WGVMS are suggested to visit overseas countries with mandatory and/or voluntary systems to learn their lessons. As recommended in the Overseas Survey Report, which is separately bounded and attached to this report, members are suggested to visit Australia (NSW and Queensland), USA (Michigan) and New Zealand. NSW operates a mandatory registration/licensing schemes and has set up a dedicated Council to take care of the work, Michigan has been operating stringent control over mechanics and garages with imprisonment penalty, while New Zealand has been operating a voluntary registration/licensing scheme which is run by the New Zealand Qualifications Authority, a government department. The experiences gained in operating the mechanic/garages registration systems in these countries are worth further studying.

- 6.19 Should the Government decide to implement mandatory registration/licensing of mechanics, it should consult the trade thoroughly before finalizing the details of the scheme. In particular, in view of the large proportion of uncertified skilled mechanics (about 60% of the mechanics are without relevant education qualifications or certification in vehicle repair work), the registration/licensing criteria must be set carefully so that these experienced mechanics would not be screened out from the registration/licensing net and lose their jobs.
- 6.20 Besides, the Government should consider providing or arranging to provide further education/training to upgrade mechanics' skills and knowledge in environmental protection requirements, both of which are considered major difficulties faced by the trade. One way to accomplish this is to enrich the training courses currently provided by Vocational Training Council.
- 6.21 Furthermore, the Government should also consider setting up mandatory registration/licensing system for vehicle maintenance garages in order to ensure the quality of vehicle repair. Further research and consultation with the trade on this issue should be conducted in the near future.

Annex A

Copy of Extensive Survey Questionnaire

**QUESTIONNAIRE FOR POSTAL SURVEY ON VEHICLE (LPG, PETROL & DIESEL)
MAINTENANCE GARAGES AND MECHANICS' CAPABILITY TO COMPLY WITH
TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

1. COMPANY INFORMATION

Name of establishment: _____

Address: _____

Telephone: _____

Fax: _____

Responsible person and post: _____

Name and post of person interviewed: _____

- Type of premises:
- Purpose-built building
 - Multi-storey industrial building
 - Open yard
 - Others, please specify below
- _____
- _____

Area of premises: _____

No. of employees involved in vehicle repair:

Technologists: _____

Technicians: _____

Craftsmen: _____

Operatives: _____

Unskilled workers: _____

- Type of Service:
- | | | |
|-------------------------------|--------------------------------|--------------------------------|
| Vehicle repairing: | <input type="checkbox"/> Major | <input type="checkbox"/> Minor |
| Trading of vehicle parts: | <input type="checkbox"/> Major | <input type="checkbox"/> Minor |
| Trading of new/used vehicles: | <input type="checkbox"/> Major | <input type="checkbox"/> Minor |
| Others please specify below: | <input type="checkbox"/> Major | <input type="checkbox"/> Minor |
- _____
- _____

- Type of vehicle repair service:
- Body Repair
 - Body Painting
 - Electrical Repair
 - Mechanical Service/Repair
 - Specialty Shop-Air-conditioning repair
 - Specialty Shop-Tyre Repair & Replacement
 - Specialty Shop-Lubrication Services
 - Others, please specify below
- _____
- _____

- Types of vehicles repaired:
- Light diesel vehicles
 - Light petrol vehicles
 - Heavy commercial diesel vehicles
 - Light buses
 - Non-Franchised/Franchised buses
 - Taxis
 - Others, please specify below
- _____
- _____

Interview date: _____

Interview time: _____

Interviewer: _____

**QUESTIONNAIRE FOR POSTAL SURVEY ON VEHICLE (LPG, PETROL & DIESEL)
MAINTENANCE GARAGES AND MECHANICS' CAPABILITY TO COMPLY WITH
TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

2. PERSONNEL

2.1 Qualifications of Existing Vehicle Maintenance Employees

No. of Employees	Qualification							Total
	Higher Diploma	Diploma	Higher Certificate	Certificate	Secondary 5	Craft Certificate	Secondary 3 or below	
Technician Level								
Craftsman Level								
Apprentices (registered under Apprentice Ordinance)	Technician apprentices: _____ Craft apprentices: _____							
Others (no qualification but experience only)	<5 years: _____ 5 to 10 years: _____ >10 years: _____							

2.2 Existing employees who passed the trade tests run by Vocational Training Council

	No. of Existing Employees Passed Trade Tests Run by Vocational Training Council
Technician Level	
Craftsman Level	

2.3 Number of existing employees who completed the LPG vehicle servicing course: _____

3. APPROACHES TO IMPROVE STANDARD OF VEHICLE REPAIR IN ORDER TO COMPLY WITH TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS

3.1 In order to improve the standard of the vehicle repair in order to comply with tightened environmental and safety requirements, do you agree to take the following measures:

	Yes	No
Further education and training by the government	<input type="checkbox"/>	<input type="checkbox"/>
Registration/licensing of vehicle repair technicians/craftsmen	<input type="checkbox"/>	<input type="checkbox"/>
Others, please specify below	<input type="checkbox"/>	<input type="checkbox"/>

3.1 If in Q3.1 you do not agree to register/license vehicle repair technicians/craftsmen, do you agree to set up a vehicle repair council to regulate the vehicle repair industry?

Yes No

**QUESTIONNAIRE FOR POSTAL SURVEY ON VEHICLE (LPG, PETROL & DIESEL)
MAINTENANCE GARAGES AND MECHANICS' CAPABILITY TO COMPLY WITH
TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

**4. DIFFICULTIES FACED BY TECHNICIANS/CRAFTSMEN WHEN REPAIRING VEHICLES
TO COMPLY WITH TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

4.1 Which of the following difficulties do your workforce face when repairing vehicles to comply with tightened environmental and safety requirements? (You can tick more than 1 box)

- Vehicle service or maintenance manual not readily available
- Lack of vehicle diagnostic equipment
- Lack of skilled or competent technicians
- Lack of skilled or competent craftsmen
- Lack of vehicle emissions testing facilities
- Lack of understanding of environmental legislation related to vehicle emissions
- Others, please specify below

***** END OF QUESTIONNAIRE *****

Annex B

Copy of Intensive Survey Questionnaire

**QUESTIONNAIRE FOR POSTAL SURVEY ON VEHICLE (LPG, PETROL & DIESEL)
MAINTENANCE GARAGES AND MECHANICS' CAPABILITY TO COMPLY WITH
TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

1. COMPANY INFORMATION

Name of establishment: _____

Address: _____

Telephone: _____

Fax: _____

Responsible person and post: _____

Name and post of person interviewed: _____

Type of premises: Purpose-built building
 Multi-storey industrial building
 Open yard
 Others, please specify below

Area of premises: _____

No. of employees involved in vehicle repair:

Technologists: _____

Technicians: _____

Craftsmen: _____

Operatives: _____

Unskilled workers: _____

Type of Service: Vehicle repairing: Major Minor
 Trading of vehicle parts: Major Minor
 Trading of new/used vehicles: Major Minor
 Others, please specify below: Major Minor

Type of vehicle repair service: Body Repair
 Body Painting
 Electrical Repair
 Mechanical Service/Repair
 Specialty Shop-Air-conditioning repair
 Specialty Shop-Tyre Repair & Replacement
 Specialty Shop-Lubrication Services
 Others, please specify below

Types of vehicles repaired: Light diesel vehicles
 Light petrol vehicles
 Heavy commercial diesel vehicles
 Light buses
 Non-Franchised/Franchised buses
 Taxis
 Others, please specify below

Interview date: _____

Interview time: _____

Interviewer: _____

**QUESTIONNAIRE FOR POSTAL SURVEY ON VEHICLE (LPG, PETROL & DIESEL)
MAINTENANCE GARAGES AND MECHANICS' CAPABILITY TO COMPLY WITH
TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

2. FACILITIES AT MOTOR VEHICLE REPAIR SHOP

2.1 Does your repair workshop have the following facilities?

(a) Body Repair Workshop

- Car Lift
- Car hydraulic jack
- Engine lifting jib crane/block
- TIG/MIG
- Welding equipment
- Oxygen/acetylene gas welding equipment
- Body Alignment Rig
- Vehicle transport devices
- Air extraction system

(b) Paint Shop

- Spray Booth with heater
- Spray booth/enclosed area with ventilation only
- Paint Mixer
- Heat Lamps
- Ventilation/air extraction system for dust removal & filtering
- Spray gun cleaning machine

(c) Electrical Repair Workshop

- Car Lift
- Discharge meter
- Tachometer
- Belt tension gauge
- Volt/Amp/Ohm meters
- Battery Charging Area with forced ventilation
- Battery chargers
- Oscilloscope

(d) Mechanical Services/Repair Workshop

- Car Lift
- Car Hydraulic Jack
- Safety Stands
- Engine Lift
- Electronic Diagnostic System
- Smoke Meter
- Four-gas Analyzer
- Wheel alignment tester
- Wheel balancer
- Torque wrenches
- Tachometer
- Decelerometer (Tepley Meter)
- Roller brake tester
- Air extraction system
- Chemical waste collection facilities
- Freon recharging/recycling machine

**QUESTIONNAIRE FOR POSTAL SURVEY ON VEHICLE (LPG, PETROL & DIESEL)
MAINTENANCE GARAGES AND MECHANICS' CAPABILITY TO COMPLY WITH
TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

2.2 What equipment are you considering to upgrade or purchase in the next two years?

(a) Body Repair Workshop

(b) Paint Shop

(c) Electrical Repair Workshop

(d) Mechanical Services/Repair Workshop

3. PERSONNEL

3.1 Qualifications of Existing Employees

No. of Employees	Qualification							Total
	Higher Diploma	Diploma	Higher Certificate	Certificate	Secondary 5	Craft Certificate	Secondary 3 or below	
Technician Level								
Craftsman Level								
Vehicle Mechanic								
Vehicle Electrician								
Vehicle Body Repairer								
Vehicle Body Builder								
Vehicle Painter								
Vehicle Air-conditioning Mechanic								
Vehicle Upholsterer								
Machinist								
Industrial Vehicle Mechanic								
Apprentices (registered under Apprentice Ordinance)	Technician apprentices: _____ Craft apprentices: _____							
Others (no qualification but experience only)	<5 years: _____ 5 to 10 years: _____ >10 years: _____							

**QUESTIONNAIRE FOR POSTAL SURVEY ON VEHICLE (LPG, PETROL & DIESEL)
MAINTENANCE GARAGES AND MECHANICS' CAPABILITY TO COMPLY WITH
TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

3.2 Existing employees who obtained the Trade Test Certificate issued by Vocational Training Council

	No. of Existing Employees Obtained the Trade Tests Certificate issued by Vocational Training Council
Technician Level	
Craftsman Level	
Vehicle Mechanic	
Vehicle Electrician	
Vehicle Body Repairer	
Vehicle Body Builder	
Vehicle Painter	
Vehicle Air-conditioning Mechanic	
Vehicle Upholsterer	
Machinist	
Industrial Vehicle Mechanic	

3.3 Number of existing employees who completed the LPG vehicle servicing course:

4. APPROACHES TO IMPROVE STANDARD OF VEHICLE REPAIR IN ORDER TO COMPLY WITH TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS

4.1 How do you acquire the tightened environmental and safety requirements as well as other legislative requirements, e.g. industrial safety and fire?

- From the booklet issued by the Government Departments, e.g. Environmental Protection Department, Labour Department, etc.
- From industrial trade associations
- From government gazette
- From newspaper
- Others, please specify below

4.2 In order to improve the standard of the vehicle repair in order to comply with tightened environmental and safety requirements, do you agree to take the following measures:

	Yes	No
Further education and training by the government		
Registration/licensing of vehicle repair technicians/craftsmen		
Others, please specify below		

**QUESTIONNAIRE FOR POSTAL SURVEY ON VEHICLE (LPG, PETROL & DIESEL)
MAINTENANCE GARAGES AND MECHANICS' CAPABILITY TO COMPLY WITH
TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

4.3 If in Q4.2 you agree to register/license vehicle repair technicians/craftsmen, what level and types of works do you think shall be registered/licensed?

	To be Registered/Licensed (please tick)
Technician Level	
Craftsman Level	
Vehicle Mechanic	
Vehicle Electrician	
Vehicle Body Repairer	
Vehicle Body Builder	
Vehicle Painter	
Vehicle Air-conditioning Mechanic	
Vehicle Upholsterer	
Machinist	
Industrial Vehicle Mechanic	

4.4 If in Q4.2 you **DO NOT** agree to register/license vehicle repair technicians/craftmen, do you agree to set up a vehicle repair council to regulate the vehicle repair industry?

Yes

No

4.5 If in Q4.2 you agree to "Further education and training supported by the government", please specify what training is needed. (You may tick more than one box)

- LPG vehicle servicing
 - Diesel engine maintenance
 - Petrol engine maintenance
 - General chassis
 - Transmission
 - Suspension
 - Braking
 - Steering
 - Body repair
 - Body painting
 - Vehicle electrical
 - Vehicle air-conditioner
 - Others, please specify below
-

**QUESTIONNAIRE FOR POSTAL SURVEY ON VEHICLE (LPG, PETROL & DIESEL)
MAINTENANCE GARAGES AND MECHANICS' CAPABILITY TO COMPLY WITH
TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

4.6 In order to comply with the tightened environmental and safety requirements, do you consider it appropriate to require technicians/craftsmen to pass a trade test before employment?

	Need to pass Trade Test before employment (Please tick if you agree)
Technician Level	
Craftsman Level	
Vehicle Mechanic	
Vehicle Electrician	
Vehicle Body Repairer	
Vehicle Body Builder	
Vehicle Painter	
Vehicle Air-conditioning Mechanic	
Vehicle Upholsterer	
Machinist	
Industrial Vehicle Mechanic	

5. DIFFICULTIES FACED BY TECHNICIANS/CRAFTSMEN WHEN REPAIRING VEHICLES TO COMPLY WITH TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS

Which of the following difficulties do your workforce face when repairing vehicles to comply with tightened environmental and safety requirements? (You can tick more than 1 box)

- Vehicle service or maintenance manual not readily available
- Lack of vehicle diagnostic equipment
- Lack of skilled or competent technicians
- Lack of skilled or competent craftsmen
- Lack of vehicle emissions testing facilities
- Lack of understanding of environmental legislation related to vehicle emissions
- Others, please specify below

6. OTHER COMMENTS

*** END OF QUESTIONNAIRE ***

Annex C

Summary of Extensive Survey Results

**QUESTIONNAIRE FOR POSTAL SURVEY ON VEHICLE (LPG, PETROL & DIESEL)
MAINTENANCE GARAGES AND MECHANICS' CAPABILITY TO COMPLY WITH
TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

1. COMPANY INFORMATION

Name of establishment: 1183 establishments

Address: _____

Telephone: _____

Fax: _____

Responsible person and post: _____

Name and post of person interviewed: _____

Type of premises:

<input type="checkbox"/>	Purpose-built building	91 (7.7%)
<input type="checkbox"/>	Multi-storey industrial building	302 (25.5%)
<input type="checkbox"/>	Open yard	315 (26.6%)
<input type="checkbox"/>	Others, please specify below	475 (40.2%)

Residential G/F 370 Street Side 32 Residential/Commercial 26

Others Include Commercial Building, Carpark, Covered Workshops,
Industrial/Commercial Buildings, Cottage, Villages & Short-Term Waiver
Land

Area of premises: Average 4430 Sqft

No. of employees involved in vehicle repair:

Technologists: 183 (2.9%)

Technicians: 385 (6.0%)

Craftsmen: 5049 (78.5%)

Operatives: 130 (2.0%)

Unskilled workers: 682 (10.6%)

Type of Service:

Vehicle repairing:	<input type="checkbox"/>	Major	1183	<input type="checkbox"/>	Minor	0
Trading of vehicle parts:	<input type="checkbox"/>	Major	39	<input type="checkbox"/>	Minor	46
Trading of new/used vehicles:	<input type="checkbox"/>	Major	23	<input type="checkbox"/>	Minor	78
Others, please specify below:	<input type="checkbox"/>	Major	17	<input type="checkbox"/>	Minor	

Type of vehicle repair service:

<input type="checkbox"/>	Body Repair	674 (57%)
<input type="checkbox"/>	Body Painting	341 (29%)
<input type="checkbox"/>	Electrical Repair	641 (54%)
<input type="checkbox"/>	Mechanical Service/Repair	995 (84%)
<input type="checkbox"/>	Specialty Shop - Air-conditioning repair	29 (2%)
<input type="checkbox"/>	Specialty Shop - Tyre Repair & Replacement	10 (1%)
<input type="checkbox"/>	Specialty Shop - Lubrication Services	12 (1%)
<input type="checkbox"/>	Others, please specify below	42 (4%)

Types of vehicles repaired:

<input type="checkbox"/>	Light diesel vehicles	583 (50%)
<input type="checkbox"/>	Light petrol vehicles	939 (79%)
<input type="checkbox"/>	Heavy commercial diesel vehicles	198 (17%)
<input type="checkbox"/>	Light buses	189 (16%)
<input type="checkbox"/>	Non-Franchised/Franchised buses	36 (3%)
<input type="checkbox"/>	Taxis	160 (14%)
<input type="checkbox"/>	Others, please specify below	18 (2%)

**QUESTIONNAIRE FOR POSTAL SURVEY ON VEHICLE (LPG, PETROL & DIESEL)
MAINTENANCE GARAGES AND MECHANICS' CAPABILITY TO COMPLY WITH
TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

2. PERSONNEL

2.1 Qualifications of Existing Vehicle Maintenance Employees

No. of Employees	Qualification							Total
	Higher Diploma	Diploma	Higher Certificate	Certificate	Secondary 5	Craft Certificate	Secondary 3 or below	
Technician Level	24	44	126	69	122			385
Craftsman Level					226	1568	1852	3646
Apprentices (registered under Apprentice Ordinance)	Technician apprentices: _____ 53 _____ Craft apprentices: _____ 394 _____							442
Others (no qualification but experience only)	<5 years: _____ 50 _____ 5 to 10 years: _____ 67 _____ >10 years: _____ 1286 _____							1403

2.2 Existing employees who passed the trade tests run by Vocational Training Council

	No. of Existing Employees Passed Trade Tests Run by Vocational Training Council
Technician Level	
Craftsman Level	582

2.3 Number of existing employees who completed the LPG vehicle servicing course: 221

3. APPROACHES TO IMPROVE STANDARD OF VEHICLE REPAIR IN ORDER TO COMPLY WITH TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS

3.1 In order to improve the standard of the vehicle repair in order to comply with tightened environmental and safety requirements, do you agree to take the following measures:

	Yes	No	No Comment
Further education and training by the government	1047 (88.5%)	110 (9.3%)	26 (2.2%)
Registration/licensing of vehicle repair technicians/craftsmen	928 (78.5%)	231 (19.5%)	24 (2.0%)
Others, please specify below			

3.1 If in Q3.1 you do not agree to register/license vehicle repair technicians/craftsmen, do you agree to set up a vehicle repair council to regulate the vehicle repair industry?

Yes 130 (56.3%) No 69 (29.9%) No Comment 32 (13.8%)

**QUESTIONNAIRE FOR POSTAL SURVEY ON VEHICLE (LPG, PETROL & DIESEL)
MAINTENANCE GARAGES AND MECHANICS' CAPABILITY TO COMPLY WITH
TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

**4. DIFFICULTIES FACED BY TECHNICIANS/CRAFTSMEN WHEN REPAIRING VEHICLES
TO COMPLY WITH TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

4.1 Which of the following difficulties do your workforce face when repairing vehicles to comply with tightened environmental and safety requirements? (You can tick more than 1 box)

- | | |
|--|-----------|
| <input type="checkbox"/> Vehicle service or maintenance manual not readily available | 610 (52%) |
| <input type="checkbox"/> Lack of vehicle diagnostic equipment | 519 (44%) |
| <input type="checkbox"/> Lack of skilled or competent technicians | 123 (10%) |
| <input type="checkbox"/> Lack of skilled or competent craftsmen | 143 (12%) |
| <input type="checkbox"/> Lack of vehicle emissions testing facilities | 432 (37%) |
| <input type="checkbox"/> Lack of understanding of environmental legislation related to vehicle emissions | 265 (22%) |
| <input type="checkbox"/> Others, please specify below | 50 (4%) |
-
-

***** END OF QUESTIONNAIRE *****

Annex D

Summary of Intensive Survey Results

**QUESTIONNAIRE FOR POSTAL SURVEY ON VEHICLE (LPG, PETROL & DIESEL)
MAINTENANCE GARAGES AND MECHANICS' CAPABILITY TO COMPLY WITH
TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

1. COMPANY INFORMATION

Name of establishment: 253 establishments

Address: _____

Telephone: _____

Fax: _____

Responsible person and post: _____

Name and post of person interviewed: _____

Type of premises: Purpose-built building 15 (5.9%)

Multi-storey industrial building 83 (32.8%)

Open yard 17 (6.7%)

Others, please specify below 138 (54.6%)

Resident G/F 109 Commercial G/F 22 Godown/Industrial Shop 1

Covered Shop 1 Industrial/Commercial 2 Industrial & Open Area 1

Bus Maintenance Shop 1 Container Truck Carpark 1

Area of premises: 8143.7 Sqft

No. of employees involved in vehicle repair:

Technologists: 163 (4.8%)

Technicians: 245 (7.2%)

Craftsmen: 2298 (67.3%)

Operatives: 112 (3.3%)

Unskilled workers: 599 (17.5%)

Type of Service: Vehicle repairing: Major 252 Minor 1

Trading of vehicle parts: Major 21 Minor 20

Trading of new/used vehicles: Major 11 Minor 33

Others, please specify below: Major 6 Minor 2

Major: Car Inspection 2 Delivery 1 Taxi Charge Meter Repair 1 Paint

Spraying 1

Minor: Audio Equipment 1

Type of vehicle repair service: Body Repair 129 (51%)

Body Painting 60 (24%)

Electrical Repair 147 (58%)

Mechanical Service/Repair 229 (91%)

Specialty Shop - Air-conditioning repair 0

Specialty Shop - Tyre Repair & Replacement 1

Specialty Shop - Lubrication Services 0

Others, please specify below 55 (22%)

Wheel Maintenance/Change 18 Lubricant 26 Vehicle

Inspection 3 Air Conditioner Repair 29 New Car Decoration

5 Car Care 1 Battery 1 Car Modification 1 Upholstery 1

Taxi Charge Meter & Electronic Device Maintenance 1 Brake

Checking 1

Types of vehicles repaired: Light diesel vehicles 133 (53%)

Light petrol vehicles 223 (88%)

Heavy commercial diesel vehicles 37 (15%)

Light buses 30 (12%)

Non-Franchised/Franchised buses 17 (7%)

Taxis 57 (23%)

Others, please specify below 8 (3%)

Special Car (LPG, Shovel, Hanger) 1 LPG Car/Minibus 4

Industrial Car 1 Motor Cycle 1 Airport Truck 1

**QUESTIONNAIRE FOR POSTAL SURVEY ON VEHICLE (LPG, PETROL & DIESEL)
MAINTENANCE GARAGES AND MECHANICS' CAPABILITY TO COMPLY WITH
TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

2. FACILITIES AT MOTOR VEHICLE REPAIR SHOP

2.1 Does your repair workshop have the following facilities?

- | | | |
|--|--|-----|
| (a) <u>Body Repair Workshop</u> | | |
| <input type="checkbox"/> | Car Lift | 68 |
| <input type="checkbox"/> | Car hydraulic jack | 119 |
| <input type="checkbox"/> | Engine lifting jib crane/block | 70 |
| <input type="checkbox"/> | TIG/MIG | 63 |
| <input type="checkbox"/> | Welding equipment | 93 |
| <input type="checkbox"/> | Oxygen/acetylene gas welding equipment | 93 |
| <input type="checkbox"/> | Body Alignment Rig | 69 |
| <input type="checkbox"/> | Vehicle transport devices | 13 |
| <input type="checkbox"/> | Air extraction system | 48 |
| (b) <u>Paint Shop</u> | | |
| <input type="checkbox"/> | Spray Booth with heater | 37 |
| <input type="checkbox"/> | Spray booth/enclosed area with ventilation only | 26 |
| <input type="checkbox"/> | Paint Mixer | 34 |
| <input type="checkbox"/> | Heat Lamps | 42 |
| <input type="checkbox"/> | Ventilation/air extraction system for dust removal & filtering | 37 |
| <input type="checkbox"/> | Spray gun cleaning machine | 27 |
| (c) <u>Electrical Repair Workshop</u> | | |
| <input type="checkbox"/> | Car Lift | 72 |
| <input type="checkbox"/> | Discharge meter | 85 |
| <input type="checkbox"/> | Tachometer | 74 |
| <input type="checkbox"/> | Belt tension gauge | 48 |
| <input type="checkbox"/> | Volt/Amp/Ohm meters | 127 |
| <input type="checkbox"/> | Battery Charging Area with forced ventilation | 34 |
| <input type="checkbox"/> | Battery chargers | 126 |
| <input type="checkbox"/> | Oscilloscope | 44 |
| (d) <u>Mechanical Services/Repair Workshop</u> | | |
| <input type="checkbox"/> | Car Lift | 214 |
| <input type="checkbox"/> | Car Hydraulic Jack | 205 |
| <input type="checkbox"/> | Safety Stands | 76 |
| <input type="checkbox"/> | Engine Lift | 167 |
| <input type="checkbox"/> | Electronic Diagnostic System | 191 |
| <input type="checkbox"/> | Smoke Meter | 88 |
| <input type="checkbox"/> | Four-gas Analyzer | 71 |
| <input type="checkbox"/> | Wheel alignment tester | 74 |
| <input type="checkbox"/> | Wheel balancer | 65 |
| <input type="checkbox"/> | Torque wrenches | 170 |
| <input type="checkbox"/> | Tachometer | 120 |
| <input type="checkbox"/> | Decelerometer (Tepley Meter) | 25 |
| <input type="checkbox"/> | Roller brake tester | 34 |
| <input type="checkbox"/> | Air extraction system | 49 |
| <input type="checkbox"/> | Chemical waste collection facilities | 182 |
| <input type="checkbox"/> | Freon recharging/recycling machine | 82 |

**QUESTIONNAIRE FOR POSTAL SURVEY ON VEHICLE (LPG, PETROL & DIESEL)
MAINTENANCE GARAGES AND MECHANICS' CAPABILITY TO COMPLY WITH
TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

2.2 What equipment are you considering to upgrade or purchase in the next two years?

(a) Body Repair Workshop

Car Lift 1 Low Temperature Welding Machine 1 Body Alignment Rig 4

Body Alignment 1 TIG/MIG 1

(b) Paint Shop

Heated Spray Booth/Oven 2 Spray Booth/Oven 4 Spray Gun Cleaning Machine 1

(c) Electrical Repair Workshop

Heavy Vehicle Battery Charger 1 Battery Charger 1 Discharge Meter 1

Computer Kits for Vehicle Maintenance 2

(d) Mechanical Services/Repair Workshop

Electronic Diagnostic System 18 Hand Held Computer Diagnostic System 1 Four Gas Analyzer 18

Four Gas Analyzer/Smoke Meter 7 Car Lift 11 LPG Vehicle Repair Tools 10 Set Up LPG Repair Workshop 2

Freon Recharging/Recycling Machine 5 Computer Facilities 5 Wheel Balancer 4

Wheel Alignment Tester 4 Brake Tester 3 Engine Lift 3 Tachometer 2

Tyre Changer 2 Safety Stands 1 Power Meter 1 Chassis Testing Tool 1

3. PERSONNEL

3.1 Qualifications of Existing Employees

No. of Employees	Qualification							Total
	Higher Diploma	Diploma	Higher Certificate	Certificate	Secondary 5	Craft Certificate	Secondary 3 or below	
Technician Level	19	38	115	22	51			245
Craftsman Level								
Vehicle Mechanic					101	77	382	1258
Vehicle Electrician					19	109	54	182
Vehicle Body Repairer					18	155	135	308
Vehicle Body Builder					0	2	0	2
Vehicle Painter					12	172	133	317
Vehicle Air-conditioning Mechanic					2	31	16	49
Vehicle Upholsterer					2	2	0	4
Machinist					0	0	0	0
Industrial Vehicle Mechanic					2	1	1	4
Apprentices (registered under Apprentice Ordinance)	Technician apprentices: <u>49</u> Craft apprentices: <u>249</u>							298
Others (no qualification but experience only)	<5 years: <u>11</u> 5 to 10 years: <u>6</u> >10 years: <u>156</u>							173

**QUESTIONNAIRE FOR POSTAL SURVEY ON VEHICLE (LPG, PETROL & DIESEL)
MAINTENANCE GARAGES AND MECHANICS' CAPABILITY TO COMPLY WITH
TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

3.2 Existing employees who obtained the Trade Test Certificate issued by Vocational Training Council

	No. of Existing Employees Obtained the Trade Tests Certificate issued by Vocational Training Council
Technician Level	Nil
Craftsman Level	
Vehicle Mechanic	143
Vehicle Electrician	24
Vehicle Body Repairer	36
Vehicle Body Builder	5
Vehicle Painter	29
Vehicle Air-conditioning Mechanic	3
Vehicle Upholsterer	0
Machinist	0
Industrial Vehicle Mechanic	0

3.3 Number of existing employees who completed the LPG vehicle servicing course: 116

4. APPROACHES TO IMPROVE STANDARD OF VEHICLE REPAIR IN ORDER TO COMPLY WITH TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS

4.1 How do you acquire the tightened environmental and safety requirements as well as other legislative requirements, e.g. industrial safety and fire?

- From the booklet issued by the Government Departments, e.g. Environmental Protection Department, Labour Department, etc. 194 (76.7%)
- From industrial trade associations 59 (23.3%)
- From government gazette 56 (22.1%)
- From newspaper 167 (66.0%)
- Others, please specify below 36 (14.2%)

Radio 13 TV 11 Peers 9 Consultancy Report 5 Government Department Inspection 2
Company Information Collection Group 2 SMA Meeting 1 Company Directive 1
Paint Suppliers' Directive 1 KMB 1

4.2 In order to improve the standard of the vehicle repair in order to comply with tightened environmental and safety requirements, do you agree to take the following measures:

	Yes	No	No Comment
Further education and training by the government	232 (91.7%)	12 (4.7%)	9 (3.6%)
Registration/licensing of vehicle repair technicians/craftsmen	214 (84.6%)	36 (14.2%)	3 (1.2%)
Others, please specify below			
<u>Vehicle Maintenance Garages/Shop/Field Registration 17 (6.7%)</u>			

**QUESTIONNAIRE FOR POSTAL SURVEY ON VEHICLE (LPG, PETROL & DIESEL)
MAINTENANCE GARAGES AND MECHANICS' CAPABILITY TO COMPLY WITH
TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

4.3 If in Q4.2 you agree to register/license vehicle repair technicians/craftsmen, what level and types of works do you think shall be registered/licensed?

	To be Registered/Licensed (please tick)
Technician Level	183
Craftsman Level	
Vehicle Mechanic	197
Vehicle Electrician	183
Vehicle Body Repairer	162
Vehicle Body Builder	131
Vehicle Painter	143
Vehicle Air-conditioning Mechanic	146
Vehicle Upholsterer	98
Machinist	118
Industrial Vehicle Mechanic	115

4.4 If in Q4.2 you **DO NOT** agree to register/license vehicle repair technicians/craftmen, do you agree to set up a vehicle repair council to regulate the vehicle repair industry?

Yes 22 (61.1%) No 13 (36.1%) No Comment 1 (2.8%)

4.5 If in Q4.2 you agree to "Further education and training supported by the government", please specify what training is needed. (You may tick more than one box)

LPG vehicle servicing 220
 Diesel engine maintenance 175
 Petrol engine maintenance 193
 General chassis 117
 Transmission 129
 Suspension 121
 Braking 132
 Steering 124
 Body repair 118
 Body painting 111
 Vehicle electrical 146
 Vehicle air-conditioner 129
 Others, please specify below 30

Electronic Technology/Control System 12 Computer Software Control 10
Industrial Safety/Safety Knowledge 8 Professional Code of Practice 6 Environmental Protection 6
Electric Car Repair 3 Vehicle Emission Testing 1 Vehicle Maintenance 1
Provide Latest Vehicle Information & Technical Support 1

**QUESTIONNAIRE FOR POSTAL SURVEY ON VEHICLE (LPG, PETROL & DIESEL)
MAINTENANCE GARAGES AND MECHANICS' CAPABILITY TO COMPLY WITH
TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS**

4.6 In order to comply with the tightened environmental and safety requirements, do you consider it appropriate to require technicians/craftsmen to pass a trade test before employment?

	Need to pass Trade Test before employment (Please tick if you agree)
Technician Level	Nil
Craftsman Level	
Vehicle Mechanic	118
Vehicle Electrician	101
Vehicle Body Repairer	88
Vehicle Body Builder	71
Vehicle Painter	79
Vehicle Air-conditioning Mechanic	87
Vehicle Upholsterer	54
Machinist	52
Industrial Vehicle Mechanic	62

5. DIFFICULTIES FACED BY TECHNICIANS/CRAFTSMEN WHEN REPAIRING VEHICLES TO COMPLY WITH TIGHTENED ENVIRONMENTAL AND SAFETY REQUIREMENTS

Which of the following difficulties do your workforce face when repairing vehicles to comply with tightened environmental and safety requirements? (You can tick more than 1 box)

- Vehicle service or maintenance manual not readily available 167 (66.0%)
- Lack of vehicle diagnostic equipment 143 (56.5%)
- Lack of skilled or competent technicians 89 (35.2%)
- Lack of skilled or competent craftsmen 93 (36.8%)
- Lack of vehicle emissions testing facilities 90 (35.6%)
- Lack of understanding of environmental legislation related to vehicle emissions 88 (34.8%)
- Others, please specify below 24 (9.5%)

Lack of Money to Buy Equipment/Company Financial Problem 7

Lack of Data/Service Agents Refused to Provide Information 5

Vehicle Technology Advances Quickly, But Local Techniques Fail to Cope With the Change/Lack of New Technology Support 4

Harsh Environmental Legislation/Non-Uniform Standard, Government Always Changes the Rules & They Could Not Adapt to the Change 3

Lack of Electronic Equipment 2 Limitation of Garage Space 2

Can't Employ Mechanics to Repair Heavy Truck 1

6. OTHER COMMENTS

*** END OF QUESTIONNAIRE ***

HKPC Environmental Management Division can provide the following services:

- Air Quality Assessment and Pollution Control
空氣質素評估及污染控制
- Clean Technology
清潔生產技術
- Energy Management
能源管理
- Environmental Engineering Services
環境工程服務
- Environmental/EMS Auditing
環境審核及環境管理體系審核
- Environmental Management Systems Development and Implementation
環境管理體系建立及實施
- Environmental Impact Assessment
環境影響評估
- Environmental Technology Transfer
環境技術轉移
- Environmental Training
環境管理培訓
- Laboratory and Environmental Monitoring Services
污染物分析化驗及環境監察服務
- Environmental and Industry Survey
環境與工業調查
- Noise Assessment and Pollution Control
噪音評估及污染控制
- Waste Management
廢料管理
- Water Pollution Control
水質控制

Address : 3/F HKPC Building 78 Tat Chee Avenue, Kowloon, Hong Kong

Telephone : 2788 5656 Fax : 2788 5608

**Statistics of Smoke Control Programme on Heavy Vehicles
(January to October 2000)**

Vehicle Type	Number of Emission Testing Notices Issued	Number of Vehicles Passing Smoke Emission Test	Number of Recommendations of Cancellation of Licences Issued
Medium and Heavy Goods Vehicles (above 5.5 tonnes)	9 409	7 924 (<i>Note 1</i>)	192
Franchised Buses	868 (<i>Note 2</i>)	851 (<i>Note 3</i>)	0
Coaches	1 822	1 607 (<i>Note 1</i>)	17

- Note:
1. The passing rate is taken as the number of vehicles that can pass the smoke emission test within the prescribed period of 14 days.
 2. Franchised buses spotted for excessive smoke will be referred to the Transport Department for smoke emission test. The figure represents the number of franchised buses that have undergone the Transport Department's smoke emission test up to 31 October 2000.
 3. The figure represents the number of franchised buses that can pass the smoke emission test at first attempt.

Working Group on Vehicle Maintenance Services Progress Report (January – August 2000)

Introduction

This paper reports on the progress of the work of the Working Group on Vehicle Maintenance Services.

Background

2. In the light of the concerns over excessive vehicle emissions caused by a lack of proper maintenance of vehicles, a Working Group on Vehicle Maintenance Services (“the Working Group”), comprising representatives from Government and the vehicle maintenance trade, was set up in January 2000 to explore ways to raise the standards of the vehicle maintenance trade in Hong Kong with the aim of reducing roadside emissions and promoting vehicle safety. The composition and the terms of reference of the Working Group are at **Annex A**.

Progress of Work of the Working Group

3. The Working Group has met six times between January and August and undertaken the following tasks –

- (a) conduct a survey on the local vehicle maintenance trade to understand the problems and the possible impacts of any proposed improvement measures on the trade;
- (b) recommend practical measures to improve the standard of

vehicle maintenance services in the interim; and

- (c) recommend long-term measures, including exploring the need for regulating vehicle maintenance services.

4. On paragraph 3(a) above, the Working Group commissioned the Hong Kong Productivity Council (HKPC) in March 2000 to carry out a survey on the local vehicle maintenance trade and to conduct a study on practices overseas regarding the regulation of vehicle mechanics. The results will provide useful input to the Working Group in formulating long-term measures to improve the standard of the vehicle maintenance trade.

5. On the interim measures, the Working Group has identified a number of areas for improvement.

Training for vehicle mechanics/technicians

6. The Working Group agreed that there was a need to provide better training programmes to equip vehicle mechanics and technicians with the necessary knowledge and skills to properly service vehicles, particularly pre-Euro diesel vehicles which have been identified as the major source of roadside pollution in Hong Kong. In this connection, the Vocational Training Council (VTC) has since March 2000 introduced new courses on the diagnosis and repair of smoky diesel vehicles, and the use of dynamometer for emission tests. Around 180 mechanics have since successfully completed such courses. In addition, the Environmental Protection Department (EPD) has organised ten seminars and eight discussion sessions on proper engine repair and the dynamometer emission test with good attendance from the vehicle maintenance trade. Appropriate training courses would continue to

be organised having regard to the actual demand of the trade.

Vehicle maintenance data/information

7. As regards the provision of vehicle maintenance information, the Working Group recommended to set up a database on vehicle maintenance information. In this regard, the VTC is planning to establish a "Hong Kong Automotive Engineering Data Centre". The database would contain technical data for both petrol and diesel vehicles and would be used for training purposes as well as for general reference of the trade. In addition, the Motor Traders Association and the Service Managers Association (SMA) provided information on the emission system of pre-Euro diesel vehicles to the Government in July 2000. The information would be sent to the VTC and kept by the proposed Data Centre for easy access by the vehicle maintenance trade.

Education and Publicity

8. To promote good driving habits, and to raise the awareness of vehicle owners on the importance of proper vehicle maintenance, EPD, HKPC and SMA have joined hands to organise six seminars on eco-driving since late 1999. More than 400 drivers had participated in the seminars. To help introduce the dynamometer emission test and explain the relevant regulation on vehicle emission, EPD has from September 1999 to May 2000 stationed staff at the emission testing centres to provide on-the-spot advice and demonstration on proper engine tuning practices. As a further measure, EPD is also conducting a campaign from June 2000 to September 2000 to allow vehicle owners to test the emissions of their vehicles at their own initiatives in designated vehicle examination centres.

9. On long-term measures, the Working Group is examining the need for and the feasibility of establishing a registration/licensing system for

repairers, mechanics/technicians and workshops in Hong Kong (either on a voluntary or mandatory basis). In this regard, a Special Task Group on Licensing System of Vehicle Maintenance (the “Task Group”) was set up in March 2000 to -

- (a) review overseas systems on the licensing/registration of the vehicle maintenance trade (including vehicle repairers, mechanics/technicians, and workshops);
- (b) review local systems on the licensing/registration of the technical services trades such as electrical workers and gas installers; and
- (c) identify possible options on the licensing/registration of the vehicle maintenance trade in Hong Kong.

10. The Task Group would submit its recommendations to the Working Group for consideration in October 2000.

11. The Working Group aims to complete its work and finalise its recommendations to the Government in early 2001.

September 2000

Working Group on Vehicle Maintenance Service

1. Membership List

Environment and Food Bureau (Chairman)
Transport Bureau (Co-Chairman)
Transport Department
Electrical and Mechanical Services Department
Environmental Protection Department
Vocational Training Council
Institute of the Motor Industry Hong Kong
Service Managers Association
Hong Kong Institution of Engineers
Hong Kong Vehicle Repair Merchants Association
Environmental Vehicle (Taxi) Repairers Association

2. Terms of Reference

- (A) To study ways to raise the standard of service of the vehicle maintenance trade
- (B) To recommend practical improvement measures in the interim
- (C) To study the need for regulating the services provided by the vehicle maintenance trade and to recommend ways to develop an appropriate regulatory mechanism