Chapter 1

Diesel vehicle emission controls

The Audit Commission (Audit) carried out a review to examine whether there was room for further reducing the concentration of respirable suspended particulates (RSPs) and nitrogen dioxide at roadside level. The review focused on the following areas:

- diesel vehicle inspection and maintenance programme;
- smoky vehicle control programme; and
- use of liquefied petroleum gas (LPG).

2. Apart from holding a public hearing on 9 May 2005 to receive evidence on the findings and observations of the Director of Audit's Report (the Audit Report), the Committee also paid a visit to the vehicle examination centre (VEC) of the Transport Department (TD) and the designated vehicle emission testing centre (DVETC) of the Environmental Protection Department (EPD) at Kowloon Bay on 17 May 2005 to observe the smoke test procedures.

Government programme to reduce diesel vehicle emissions

3. According to paragraph 1.8 of the Audit Report, in his 1999 Policy Address, the Chief Executive announced that the Government would allocate $1.4 billion to implement a comprehensive programme to reduce, by 2005, RSP emissions from vehicles by 80% and nitrogen oxides emissions from vehicles by 30%. However, Figure 1 in paragraph 1.9 revealed that the annual averages of RSPs and nitrogen dioxide at roadside level still exceeded the maximum safe levels as laid down in the Air Quality Objectives (AQOs), by 45% and 26% respectively in 2004, and the figures were increasing between 2002 and 2004.

4. The Committee further noted from the Secretary for the Environment, Transport and Works' letter of 30 April 2005, in ***Appendix 5***, that between 1999 and 2004, the roadside levels of RSPs had decreased only by 9%, and those of nitrogen dioxide had remained at levels similar to that in 1999. The Committee queried:

- why the air quality in Hong Kong had not improved despite the large amount of public funds spent on reducing vehicle emissions; and
- whether the Administration considered the programme to reduce vehicle emissions successful.

Diesel vehicle emission controls

5. **Dr Hon Sarah LIAO Sau-tung, Secretary for the Environment, Transport and Works**, responded that:

- the targets of the comprehensive programme as stated in the 1999 Policy Address were to reduce the total emissions of respirable particulates emitted from vehicles by 60% by the end of 2003, and 80% by the end of 2005, by which time nitrogen oxide emissions should also be reduced by 30%;

- emission reduction could be achieved by controls at source. For instance, to reduce emissions from local vehicles, the Administration had introduced ultra low sulphur diesel and required diesel vehicle owners to retrofit their vehicles with devices that reduced RSPs. With continuous implementation of these and other emission reduction measures, the emission reduction target for RSPs set for end-2003 had been achieved. In fact, by end-2003, the vehicle emissions of RSPs in the urban area had been reduced by 72%. As at end-2004, the vehicle emissions of RSPs and nitrogen oxide in the urban area had been further reduced to 76% and 39% respectively. The Administration expected that the reduction targets would be accomplished by end-2005;

- however, emission levels were not equal to measured air pollution levels reported as Air Pollution Index. Diesel vehicles were only one of the sources of air pollution. Other major sources of pollution came from pollutants generated by industrial and commercial operations and power plants in Hong Kong and in the region; and

- in short, the Administration had been successful in achieving the target to reduce vehicle emissions. If the various measures under the programme had not been launched, there would have been more pollutants and the level of air pollution in Hong Kong would have been even worse. The Administration had not been successful in achieving the AQOs or in improving the general air quality because the increase in pollutants had exceeded the Administration's expectation.

6. Noting the Secretary for the Environment, Transport and Works' reply that the Administration had succeeded in achieving the emission reduction targets, the Committee asked:

- for detailed justifications for the Secretary's view; and

- about the reason for the continued deterioration in roadside air quality despite the reduction in vehicle emissions.

Diesel vehicle emission controls

7. In her letters of 30 April 2005 and 27 May 2005 (in ***Appendix 6***), the **Secretary for the Environment, Transport and Works** stated that:

- analyses done by the EPD had confirmed that vehicle emissions had been on a declining trend. Diesel vehicles were a major source of elemental carbon in the atmosphere. The measured roadside levels of elemental carbon had decreased by 46% compared with four years ago. The measured roadside levels of nitrogen oxide emissions had also decreased by 24% between 1999 and 2004;

- while the emissions from motor vehicles were being substantially reduced, the air quality of Hong Kong was being increasingly affected by the regional air pollution. Data collected at the general monitoring stations showed an increase of RSPs by 15% and ozone by 26% between 1999 and 2004. RSPs were major constituents of smog. Ozone oxidised nitric oxide to nitrogen dioxide and caused photochemical reactions among different air pollutants to form RSPs. Hence, between 1999 and 2004, the roadside levels of RSPs had decreased only by 9% and those of nitrogen dioxide had remained at levels similar to that in 1999, despite the substantial reduction in vehicle emissions. The annual averages still exceeded the AQOs; and

- while the Administration would keep up its momentum to further reduce the emissions from motor vehicles, it was also making efforts to work with Guangdong to improve the regional air quality through implementing a Regional Air Quality Management Plan.

8. The Committee further asked how the levels of vehicle emission reduction mentioned above were arrived at. **Mr Keith KWOK Ka-keung, Director of Environmental Protection**, and **Mr TSE Chin-wan, Assistant Director of Environmental Protection (Air Policy)**, replied that the 46% and 24% reduction for elemental carbon and nitrogen oxide emissions respectively compared to 1999 were based on the data collected by the EPD's three roadside air quality monitoring stations.

9. The Committee enquired:

- whether the Administration would consider setting up more roadside air quality monitoring stations to ensure that the data they collected were representative of the air quality throughout the territory; and

- how the Administration measured the impact of regional air quality on Hong Kong.

Diesel vehicle emission controls

10. The **Secretary for the Environment, Transport and Works** responded that:

- Hong Kong had taken the lead among world cities in operating roadside stations for monitoring air quality. The three roadside stations were located at Causeway Bay, Central and Mong Kok, which were the busiest urban area in the territory and where air pollution was most serious. The data on air quality collected by them represented the worst-case scenario. Compared to most cities in the world which only operated general stations located high above the ground, Hong Kong had adopted a stringent standard. The number of roadside stations was already adequate; and

- to monitor the air quality in the Pearl River Delta (PRD) Region, the EPD and the Environmental Protection Bureau of the Guangdong Provincial Government had started operating a regional monitoring network covering the entire PRD Region with 16 monitoring stations. Hopefully, the data collected by these stations would be published for public information shortly.

11. The Committee noted that the Chief Executive stated, in his 1999 Policy Address, that when the targets of emission reduction were met, Hong Kong's air quality would compare favorably with that of major cities in developed countries such as New York and London, and the respiratory health of Hong Kong citizens would substantially improve. The Committee wondered whether, when seeking funding approvals from the Legislative Council (LegCo), the Administration had informed the LegCo that reduction in vehicle emissions might not be able to bring about improvement to the air quality. It therefore asked:

- whether, when the Chief Executive undertook in 1999 to spend $1.4 billion on reducing vehicle emissions, the Administration had assessed the impact of regional air pollution on the air quality of Hong Kong as the Mainland economy continued to grow; and

- about the spending position of the $1.4 billion so far.

12. In her letter of 27 May 2005, the **Secretary for the Environment, Transport and Works** informed the Committee that:

- in the 1999 Policy Address, the then Chief Executive stressed that "Hong Kong cannot possibly solve all of its environmental problems single-handedly. We need to work closely with the Mainland authorities." In 1999, Hong Kong and Guangdong authorities embarked on a joint study on regional air quality, with a view to formulating long-term preventive measures;

- the joint study, completed in 2002, concluded that if the Hong Kong SAR Government and the Guangdong Provincial Government did not implement additional improvement measures, the regional air quality would continue to deteriorate. Based on the findings of the study, the Hong Kong SAR Government and the Guangdong Provincial Government reached a consensus in April 2002 to reduce, by 2010 and on a best endeavour basis, the regional emissions of four major regional air pollutants by such levels that would not only enable Hong Kong to meet its current AQOs, but also significantly improve the air quality of the PRD and relieve the regional smog problem;

- the two governments had drawn up a PRD Regional Air Quality Management Plan with a view to meeting the emission reduction targets. The PRD Air Quality Management and Monitoring Special Panel had been set up under the Hong Kong/Guangdong Joint Working Group on Sustainable Development and Environmental Protection to follow up the tasks under the Management Plan. The two governments were now implementing this plan, which included the setting up of a regional air quality monitoring network. The two governments were also developing an Emission Trading Pilot Scheme for the power plants in the PRD Region; and

- the total spending of the $1.4 billion so far was about $1.2 billion. The remainder would be spent on the retrofit programme for long-idling pre-Euro diesel heavy vehicles and LPG light bus programme which would conclude in end-2005. The spending position was as follows:

Programme	Expenditure as at mid-May 2005 ($Million)
LPG taxi	724
Retrofitting pre-Euro diesel light vehicles	31.2
Retrofitting non-long-idling pre-Euro diesel heavy vehicles	345
Retrofitting long-idling pre-Euro diesel heavy vehicles	0
LPG/electric light buses	108
Total	1.2 billion

Diesel vehicle emission controls

13. The Committee also enquired:

- about the overall situation of vehicle emissions of RSPs and nitrogen oxides throughout Hong Kong, not just in the urban area; and

- how the Administration controlled the emissions from cross-boundary vehicles between Hong Kong and the Mainland. These vehicles mainly travelled in the New Territories and might use Mainland diesel and illicit fuel such as marked oil.

14. The **Secretary for the Environment, Transport and Works** advised, in the same letter, that:

- the information on territory-wide vehicle emissions in 2004 was being compiled and would be available later in 2005. In 2003, the corresponding territory-wide vehicle emissions of RSPs and nitrogen oxides had been reduced by 60% and 35% respectively;

- the Dutiable Commodities Regulations enforced by the Customs and Excise Department (C&ED) regulated the amount of duty-exempted Mainland diesel which a cross-boundary truck could bring into Hong Kong, i.e. not exceeding 3/4 of the fuel tank capacities. It was also illegal to transfer the diesel to another vehicle or sell the diesel in Hong Kong;

- the main environmental concern of Mainland diesel was its sulphur content. Until 2001, the sulphur limit of Mainland motor diesel was 0.5% by weight, which was 100 times that of the ultra low sulphur diesel currently mandated in Hong Kong. To improve the diesel quality, the Central Government had reduced the sulphur limit by 60% to 0.2% in 2002. Since 2004, Guangdong had started to introduce diesel with sulphur limit of 0.05% in Shenzhen and Guangzhou. The environmental concern of cross-boundary vehicles using Mainland diesel had thus been much relieved, and the problem would be further contained with the progressive tightening of sulphur limit in the Mainland; and

- the amendments to the Dutiable Commodities Ordinance in 2001 had enhanced the deterrent effect against illegal use of marked oil in vehicles. The number of illicit refilling black spots had dropped drastically from 110 in 1999 to around 27 in 2004. The total amount of motor diesel caught duty unpaid by the C&ED had also dropped by 86% since then.

Diesel vehicle emission controls

Diesel vehicle inspection and maintenance programme

15. The Committee noted that the TD used the free acceleration smoke test (FAT) procedures to test smoke emissions from diesel vehicles. Paragraph 2.7 of the Audit Report indicated that several test procedures required by the United States (US) Environmental Protection Agency were not required by the TD. According to paragraph 2.11, during their visits to the TD VECs, Audit staff found that drivers were involved in the setting up of smoke test equipment without proper supervision. It appeared to the Committee that the TD's test was sloppy. The Committee wondered whether the quality or result of the test could have been compromised.

16. **Mr Robert Footman, Commissioner for Transport**, responded that:

- according to Table 2 in paragraph 2.7 of the Audit Report, there were seven items which were required under the US standards but not required by the TD. However, all the seven items were in fact complied with by the TD one way or another, as mentioned in paragraph 2.8(b). The difference was that the US procedure was set for smoke emission tests in isolation, whereas the TD smoke test was carried out as part of the total process of a vehicle inspection, which was both for smoke and for safety purposes. It was therefore not quite correct to state that the items were "not required" by the TD;

- the TD agreed with Audit that the TD vehicle testers, instead of drivers, should insert the smoke sampling probe into the exhaust pipe. Arrangements had already been made to implement this revised procedure. The TD would also strengthen the supervision on driver action in FAT to make sure that the tests were carried out properly; and

- the TD would make sure that its procedures were set out more clearly so that they would be better understood by the staff and supervisors.

17. According to paragraph 2.6 of the Audit Report, the World Bank found that the FAT procedures were very sensitive to tester style and that high-emission vehicles could pass the test by unorthodox practices, such as engine tampering or exhaust diluting. However, paragraph 2.9(a) pointed out that visual and audible checks, instead of tachometers, were used to guard against any tampering with engine setting in smoke tests. The Committee asked:

- how the TD addressed the limitations of FAT; and

- whether the TD agreed that visual and audible checks were less reliable than the maximum engine speed check using a tachometer.

18. The **Commissioner for Transport** responded that:

- the TD was very conscious of the limitations of FAT found by the World Bank. For example, the World Bank pointed out that slight differences in the time taken to accelerate the engine from low idle speed to maximum governed engine speed could lead to different smoke opacity readings. To guard against this problem, a TD vehicle tester would stand right by the door of the vehicle to see the speed at which the accelerator was depressed;

- the testers had been properly trained and were very experienced. They could screen out those vehicles, the engine settings of which had been tampered with, by listening to the sound of the engine. They were also required to follow certain procedures in conducting the test. The TD was reasonably satisfied that the test results had not been compromised. Moreover, the TD also carried out dynamometer smoke tests, which were more effective, on a selective basis; and

- the TD had tried to use tachometers to check the maximum engine speed. However, problems such as interference and inaccuracy were noted in the equipment. The TD would continue to search for suitable tachometer for the test.

19. Regarding the smoke test standard, the Committee noted from paragraphs 2.33 and 2.34 of the Audit Report that the smoke opacity standard of 60 Hartridge Smoke Units (HSUs) adopted by the TD was less demanding than the EPD's standard of 50 HSUs. Table 4 in paragraph 2.33 also revealed that Hong Kong's 60-HSU standard was less stringent than those adopted by other Asian countries, such as the 40-HSU in Pakistan and 50-HSU in Indonesia. The Committee asked:

- how, in the Administration's view, the different smoke opacity standards adopted by different countries should be compared to the standard adopted by Hong Kong; and

- whether the TD would tighten its smoke opacity standard.

Diesel vehicle emission controls

20. The **Director of Environmental Protection** stated at the public hearing and the **Secretary for the Environment, Transport and Works** advised, in her letter of 27 May 2005, that:

- the smoke opacity standard was only one aspect of a smoke test. A place adopting a lower number might not be more stringent or advanced than another place adopting a higher number. For example, the European Union's smoke limits for in-use vehicles were equivalent to 66 HSUs for non-turbo-charged engines and 72 HSUs for turbo-charged engines. Conducting loaded vehicle smoke tests with dynamometers had made Hong Kong's vehicle smoke standards among the most stringent of the world; and

- on the question of whether a more stringent standard should be used, it was the Administration's principle to adopt a standard that best suited Hong Kong's circumstances and one that was achievable.

21. Regarding the proposal to tighten the smoke opacity standard, the **Secretary for the Environment, Transport and Works** and the **Commissioner for Transport** added that:

- the Administration had decided to tighten the TD's smoke opacity standard. However, it would need to consult the transport trade on the proposal to harmonising the standard to 50 HSUs. The trade had strong objection to the proposal in the past; and

- although the standard currently adopted by the TD was 60 HSUs, in practice, most vehicles which underwent the FAT met much tighter standard than that. In the past few years, about 90% of the vehicles had been at 40 HSUs or less and 96% had been at 50 HSUs or less. This indicated that more modern vehicles could easily meet the 50-HSU standard. On the other hand, the 60-HSU standard was in place to allow for the older vehicles which still had a working life.

22. In his letter of 25 May 2005, in ***Appendix 7***, the **Commissioner for Transport** supplemented that the EPD and TD planned to consult the trade in the third quarter of 2005 on the common smoke test standard, with an aim to initiate actions on the legislative amendment by the end of 2005.

Diesel vehicle emission controls

23. The Committee noted the Administration's reply that Hong Kong's vehicle smoke standards were among the most stringent of the world as dynamometers were used in smoke tests. However, Table 3 in paragraph 2.18 of the Audit Report revealed that, in 2004, only 114 (or 0.4%) smoke tests carried out in the TD's Kowloon Bay VEC used the chassis dynamometer. Moreover, according to Audit's estimates in paragraph 2.20, the dynamometer utilistaion rates between 2002 and 2004 had declined from 55% to 2.4%. The Committee asked whether the low utilisation of the dynamometer indicated a lenient standard and a waste of resources.

24. The **Commissioner for Transport** explained that:

- the use of the chassis dynamometer had dropped significantly over the past few years for several reasons. When the dynamometer became fully operative in 2002, the TD deployed existing resources to carry out dynamometer smoke tests and could fulfill its pledge that 10% of the diesel vehicles presented for the annual roadworthiness test at the Kowloon Bay VEC would undergo the dynamometer smoke test. However, the number of dynamometer smoke tests conducted in the following two years had decreased due to the shortage of staff, as well as the installation of the second dynamometer which had stopped access to the first one; and

- after Audit had drawn this problem to the TD's attention, the TD had prioritised its work in this aspect and could now meet the pledged percentage.

25. The Committee further asked about:

- the actual situation of the staff shortage at the Kowloon Bay VEC in the past several years and how the problem was resolved; and

- the actions that the TD would take to ensure that both the existing and the new chassis dynamometers would be fully utilised.

26. In his letter of 25 May 2005, the **Commissioner for Transport** stated that:

- each chassis dynamometer required one Motor Vehicle Examiner (MVE) and two Vehicle Testers (VTs) to carry out the tests. In the past couple of years, three MVEs had retired from the service, leaving 26 MVEs to deal with the vehicle inspection work, as against 29 MVEs in 2002. The TD had a further 22 MVEs working in other areas. It could redeploy VTs to this task by reorganising its work;

- since the beginning of 2005, the TD had implemented some interim measures to enable more dynamometer smoke tests to be conducted. It had redeployed 1 MVE from another team to carry out the dynamometer smoke test. This was not a satisfactory long-term solution as it would affect other areas of work such as the updating of tester manuals. Thus, the TD was exploring the feasibility of including further work in its management contract for vehicle inspection at New Kowloon Bay VEC when the current contract expired by November 2005. This would help relieve staff to perform the test using the existing as well as the second dynamometer which would be completed in end-2005; and

- the TD would closely monitor the utilisation rates of the dynamometers. Since January 2005, the TD had achieved the target 10% inspection rate on operational days (the dynamometer was suspended from time to time for repairs).

27. According to paragraph 2.26 of the Audit Report, Audit's examination of the dynamometer smoke test records indicated that the TD adopted a lenient standard (i.e. 50% of that specified by the vehicle manufacturer) for the maximum engine power output check. 49% of the 70 vehicles that passed the dynamometer smoke test produced only 60% or less of their maximum engine power output. The Committee asked whether the Administration agreed with Audit's view, mentioned in paragraph 2.27, that the adoption of a lenient standard for maximum engine power output check had created a loophole as a smoky vehicle could easily pass the test by reducing its maximum engine power output beforehand.

28. The **Director of Environmental Protection** and the **Assistant Director of Environmental Protection (Air Policy)**, responded that:

- during the dynamometer smoke tests, some vehicles might fail to produce the maximum engine power output up to the laboratory level due to the ageing of the vehicles. Actually, half of the vehicles tested by the EPD could not pass the test on the first occasion and had to be repaired before they could pass. This reflected that the current standard for the maximum engine output was already sufficiently stringent; and

- given the improvement in the vehicle maintenance standard in recent years, the EPD would, in conjunction with the TD, review the feasibility of tightening the standard with the trade, where necessary.

Diesel vehicle emission controls

Smoky vehicle control programme

29. Paragraph 3.16 of the Audit Report pointed out that, as the EPD smoke test procedures and standard were more stringent than the TD's, smoky vehicle owners would choose to undergo the TD smoke test instead. The current practice of withdrawing emission testing notices (ETNs) if the vehicles concerned had passed the TD smoke test, before the EPD smoke test due date, might have created a loophole in the smoky vehicle control programme. The Committee asked how the Administration would plug such a loophole and whether it would consider designating one department e.g. the TD, for conducting the smoke test.

30. The **Secretary for the Environment, Transport and Works**, in her letter of 27 May 2005, stated that:

- to further enhance the effectiveness of controlling smoky vehicles, the Administration had developed and introduced the dynamometer smoke test; and

- the TD and EPD would work together to consult the relevant trades on harmonising the smoke limits. In addition, the TD would, in conjunction with the EPD, consider the feasibility of requiring vehicles with outstanding ETNs to have their smoke emission checked by a dynamometer at their roadworthiness inspection operated under the TD's supervision. Hence, a vehicle issued with an ETN would have to undergo a dynamometer smoke test, irrespective of whether the vehicle was sent to the TD's centres for a roadworthiness inspection or to the EPD's centres for a smoke test.

31. According to paragraphs 3.10 to 3.12 of the Audit Report, of the suspected smoky vehicle cases reported in 2003 and 2004, all the owners were allowed more than 14 days to take their vehicles to the DVETCs for the EPD smoke test. In 3,156 (or 18%) cases, the time allowed was more than 30 days. The owners of 10 vehicles had even been allowed more than 200 days.

32. The Committee asked:

- about the reasons for the long time allowed in the above cases, and whether it was due to negligence of the EPD;

- about the impact on the level of air pollution caused by suspected smoky vehicles that were allowed to remain on the road for more than 14 days, according to the EPD's estimation; and

- how the EPD ensured that the improvement to air quality brought about by emission reduction would not be offset by its allowing suspected smoky vehicles to remain on the road for an unduly long period of time.

33. The **Director of Environmental Protection**, in his letter of 25 May 2005 in ***Appendix 8***, stated that:

- from time to time, there were cases where the ETNs could not reach the owners because they had changed their addresses. To deal with these cases, the EPD asked the TD to add a code to the records of the concerned vehicles. When the owners approached the TD to renew the licences or to change the ownership of these vehicles, they would be served the ETNs. The time needed to get in touch with owners of such cases varied. While more than six months were required for the EPD to get in touch with the 10 vehicle owners, no negligence was involved;

- on average, 8,900 smoky vehicles underwent a smoke test each year. About 80% of them were tested within 14 working days. The rest could not complete the tests within the period for various reasons, such as where the owners could not be served an ETN by registered mail. Making very conservative assumptions that these vehicles took an average of 40 days to pass the smoke test and that a smoky vehicle was six times more polluting, the additional pollution from these vehicles still accounted for less than 1% of the total load from the fleet of 140,000 diesel vehicles; and

- the most effective means to address the problem was to reduce the total number of smoky vehicles on the road. The introduction of dynamometers had been proven to be an effective measure in reducing the number of smoky vehicles by 80% since 1999. To prevent suspected smoky vehicles from being used on the road for an unduly long period of time, the EPD scrutinised every application for extension of the ETN very carefully. No extension would normally be granted unless strong reasons supported by evidence were given to justify the application. The EPD would also pursue the possible reduction of the period allowed for smoky vehicles to pass smoke tests.

Diesel vehicle emission controls

34. On the feasibility of further shortening the 14-working-day period allowed for smoky vehicle owners to have their vehicles passed the EPD smoke test, the **Director of Environmental Protection** stated, in his letter of 25 May 2005, that:

- the transport trades had previously indicated that they would have difficulty in coping with a shorter period for smoky vehicles to pass smoke tests; and

- with general improvements to the standard of vehicle maintenance in recent years, the EPD considered it feasible to shorten the 14-working-day period to, say, 12 working days. The EPD would consult the transport trades in 2005 on introducing this new requirement.

35. The Committee noted that under the smoky vehicle control programme, trained spotters would report smoky vehicles to the EPD. Paragraphs 3.33 and 3.34 of the Audit Report pointed out that the EPD had done little to promote the recruitment of spotters and the number of inactive spotters was increasing. The Committee enquired:

- whether the EPD would implement the three ways for promoting the enthusiasm of spotters suggested in paragraph 3.34 of the Audit Report; and

- how the EPD would make use of its website to publicise the recruitment of spotters and promote spotter enthusiasm.

36. The **Director of Environmental Protection**, in his letter of 25 May 2005, informed the Committee that:

- the EPD believed that the decline in the number of smoky vehicles detected was due to the reduction of the number of such vehicles on the road rather than a lack of enthusiasm among spotters. Nonetheless, to keep up the enthusiasm of spotters, the EPD would inform spotters of the outcome of their reports from August 2005. It would also issue letters of appreciation to the more active spotters at the end of 2005. Subject to spotters' response, it would organise discussion sessions for spotters; and

- the EPD planned to start publicising the recruitment of spotters on its website from August 2005. Additionally, it was considering the setting up of a forum on the Internet for spotters to share their experience.

Diesel vehicle emission controls

37. The Committee noted that the form for use by spotters to report smoky vehicles was very complicated and might discourage spotters from making reports. The Committee therefore asked whether the EPD would consider simplifying the form.

38. In his letter of 25 May 2005, the **Director of Environmental Protection** replied that:

- in addition to repair costs, a vehicle owner who received an ETN would be required to pay $310 per test to demonstrate that the vehicle had been properly repaired, plus other costs such as the down-time of the vehicle during repair and testing. Hence, it was necessary to ensure accurate reporting under the scheme; and

- the existing form required spotters to fill in some basic information about the vehicle spotted and the date, time and location of the exceedance observed. The information contained in the form enabled the EPD to carry out checks on the registration number, vehicle type and colour against the records of the TD, which was necessary in order to minimise any possibility of mis-reporting. The date and location of spotting would enable further investigation to be made if a vehicle owner raised objections to the report.

Use of liquefied petroleum gas

39. Regarding the measures to reduce the transport risks associated with importing LPG from Shenzhen to Hong Kong, the Committee asked whether the Administration would consider the feasibility of constructing a cross-border pipe for the purpose.

40. In her letter of 27 May 2005, the **Secretary for the Environment, Transport and Works** advised that:

- the Administration was open-minded as to where LPG suppliers sourced their LPG. LPG suppliers might propose any means of transporting LPG into Hong Kong provided that safety requirements under the Gas Safety Ordinance were met; and

- as regards the construction of a cross-border LPG pipe, since LPG was heavier than air, its transportation through long pipelines could be dangerous. Nevertheless, the Administration would consider any safe, practical and reliable means of importing LPG proposed by LPG suppliers.

Diesel vehicle emission controls

41. It was stated in paragraph 4.22(b) and (c) of the Audit Report that the Electrical and Mechanical Services Department (EMSD) would continue to examine the feasibility of building a new LPG terminal on Hong Kong Island, and the Government was making efforts to expand the LPG filling network. The Committee asked about the implementation timetable and whether the Administration would consider providing more LPG filling stations.

42. In the same letter, the **Secretary for the Environment, Transport and Works** stated that:

- the EMSD would continue to examine the feasibility of building a new LPG terminal on Hong Kong Island and was working in conjunction with relevant departments on the time required for conducting a site search exercise; and

- in addition, the Administration would continue to look for suitable sites for LPG filling stations. Up to now, there were 50 LPG filling stations in operation and six new stations with LPG filling service would be in operation in the next two years. The Administration would require all new petrol filling stations to provide LPG filling service through land lease conditions, provided that the safety requirements could be met.

43. The Committee noted Audit's observation in paragraph 4.19 of the Audit Report that further extending the use of LPG would result in the loss of a considerable amount of government diesel duty.

44. On the question of whether a duty should be imposed on vehicular LPG, **Hon Frederick MA Si-hang, Secretary for Financial Services and the Treasury**, informed the Committee that the Administration had no such plan at this stage. The Administration would have to take into account various factors, such as environmental protection, when considering the levying of duty on vehicular LPG.

Diesel vehicle emission controls

45. **Conclusions and recommendations** The Committee:

- expresses grave dissatisfaction that:

  (a) although about $1.2 billion have been spent so far on implementing the measures to reduce vehicle emissions, outlined in the 1999 Policy Address, the air quality in Hong Kong has not improved; and

  (b) when the Administration sought funding approvals for implementing the above measures, it had not informed the Legislative Council that reduction in vehicle emissions might not be able to bring about improvement to the air quality;

- expresses serious disappointment that the annual averages of respirable suspended particulates (RSPs) and nitrogen dioxide at roadside level still exceeded the maximum safe levels as laid down in the Air Quality Objectives, by 45% and 26% respectively in 2004, and the figures were increasing between 2002 and 2004;

Diesel vehicle inspection and maintenance programme

- expresses concern that:

  (a) the Transport Department (TD) has not used tachometer to carry out the maximum engine speed check during the free acceleration smoke test;

  (b) drivers were involved in the setting up of smoke test equipment without supervision;

  (c) the low utilisation rate of the existing dynamometer may deteriorate after the second dynamometer has been installed; and

  (d) the standard adopted for the maximum engine power output check is lenient;

- expresses great dissatisfaction that the smoke opacity standard of 60 Hartridge Smoke Units (HSUs) adopted by the TD is less demanding than the Environmental Protection Department (EPD)'s standard of 50 HSUs, and is one of the less stringent standards in Asia;

- notes that the TD has agreed to:

  (a) revise and update its free acceleration smoke test procedures;

  (b) find suitable tachometer for carrying out maximum engine speed check;

  (c) strengthen the supervision on driver action in the free acceleration smoke test, and that TD staff, instead of drivers, are now responsible for inserting the smoke sampling probe into the exhaust pipe during the test;

  (d) improve the utilisation of the dynamometer;

  (e) explore with relevant parties the charging of vehicle owners for repeated dynamometer smoke tests; and

  (f) review the standard for maximum engine power output with the trade;

- urges the Commissioner for Transport to:

  (a) tighten the TD's smoke opacity standard, with a view to harmonising the standards adopted by the TD and the EPD; and

  (b) report the progress to the Committee by the end of 2005;

Smoky vehicle control programme

- expresses serious concern that:

  (a) the practice of withdrawing emission testing notices if the vehicles concerned have passed the TD smoke test before the EPD smoke test due date may have created a loophole in the smoky vehicle control programme because the TD smoke test is less stringent than that of the EPD;

  (b) of the suspected smoky vehicle cases reported in 2003 and 2004, all owners were allowed more than 14 days to take their vehicles to the designated vehicle emission testing centres (DVETCs) for the EPD smoke test. In 3,156 (or 18%) cases, the time allowed was more than 30 days; and

  (c) the EPD smoke test procedures were not observed in 25 out of 33 DVETC inspections carried out in 2004;

- notes that the EPD will:

  (a) consult the transport trades in 2005 on the feasibility of shortening the 14-working-day period to 12 working days for smoky vehicle owners to pass the smoke test; and

  (b) consider adopting a different approach which can provide a surprise element for observing the smoke test procedures;

- strongly recommends that the Director of Environmental Protection should ensure that the prescribed period for smoky vehicle owners to pass the smoke test at DVETCs is strictly adhered to;

Use of liquefied petroleum gas

- notes that:

  (a) liquefied petroleum gas (LPG) vehicles emit almost negligible RSPs and 75% to 85% less nitrogen oxides than diesel vehicles. Such comparative advantages of LPG vehicles will persist, albeit at a lesser scale, even after the introduction of more environmental-friendly Euro IV diesel vehicles in 2006 and Euro V diesel vehicles in 2009;

  (b) the existing LPG infrastructure can support additional LPG light vehicles on top of the entire fleet of taxis and public and private light buses;

  (c) importing LPG from Shenzhen and building a new LPG terminal on Hong Kong Island are two risk mitigation measures that are worthy of further exploration; and

  (d) the Administration has agreed to:

    (i) examine the feasibility of building a new LPG terminal on Hong Kong Island; and

    (ii) expand the LPG filling network and, when the LPG infrastructure is ready, consider extending the use of LPG to other vehicle classes; and

Follow-up actions

- wishes to be kept informed of:

  (a) the progress made by the TD in implementing the various remedial actions regarding the diesel vehicle inspection and maintenance programme;

  (b) the progress made, by the end of 2005, in tightening the TD's smoke opacity standard, with a view to harmonising the standards adopted by the TD and the EPD;

  (c) the progress made by the EPD in implementing the various remedial actions regarding the smoky vehicle control programme, including shortening the prescribed period for smoky vehicle owners to pass the smoke test; and

  (d) further developments in extending the use of LPG to other vehicle classes.