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## **LIST OF ABBREVIATIONS USED**

ALL	-	Ashok Leyland Limited
ARAI	-	Automotive Research Association of India
BEST	-	Brihan-Mumbai Electric Supply & Transport Undertaking
BMC	-	Brihan-Mumbai Municipal Corporation
CNG	-	Compressed Natural Gas
CO	-	Carbon - monoxide
DTC	-	Delhi Transport Corporation
ETBE	-	Ethyl Tertiary Butyl Ether
HC	-	Hydro Carbon
HSU	-	Hartridge Smoke Unit
LPG	-	Liquified Petroleum Gas
MTBE	-	Methyl Tertiary Butyl Ether
MCGM	-	Municipal Corporation of Greater Mumbai
MGL	-	Mahanagar Gas Limited
MMR	-	Mumbai Metropolitan Region
MMRDA	-	Mumbai Metropolitan Region Development Authority
NO <sub>x</sub>	-	Nitrogen Oxide
PM	-	Particulate Matter
RSPM	-	Respirable Suspended Particulate Matter
SIAM	-	Society of Indian Automobile Manufacturers
SO <sub>2</sub>	-	Sulphur Dioxide
SPM	-	Suspended Particulate Matter
TELCO	-	Tata Engineering & Locomotive Company
TAME	-	Tertiary Amyl Methyl Ether

## CHAPTER I

### INTRODUCTION

#### A. Constitution and Terms of Reference of the Committee

- 1.1 This Committee was constituted under an order dated 15<sup>th</sup> December 1999 passed by a Division Bench of the Hon'ble Bombay High Court comprising of the Hon'ble Chief Justice Y.S. Sabharwal and Justice Smt. Ranjana Desai , in *Writ Petition No. 1762 of 1999 (Smoke Affected Residents Forum vs Municipal Corporation of Greater Bombay & Ors)*.
- 1.2 The Hon'ble Court observed in this order that in view of the deteriorating quality of ambient air in the city, it was necessary to immediately pass certain directions with respect to fining and suspension of registration of polluting vehicles, action regarding illegal replacement of four-cylinder engines with three cylinder engines or petrol with diesel engines , constitution of flying squads, action in respect of adulteration of fuel, etc. The Hon'ble Division Bench has stated in its Order, "It would be necessary to have environment friendly vehicles/engines, environment friendly oils and above all, environment friendly approach."

**1.3 The Hon'ble court also observed that it was necessary to constitute an expert Committee so that the entire matter could be examined and, on consideration of the Committee's report, further directions in the matter could be issued.**

**1.4 A Committee consisting of the following persons was therefore constituted by the order:**

- (a) Mr V. M. Lal, Transport Commissioner – Chairman and Convenor**
- (b) A representative of the Maharashtra Pollution Control Board**
- (c) A Representative of the Bombay Environmental Action Group**
- (d) Dr P.S Pasricha , former Joint Commissioner of Police (Mumbai).**
- (e) A Representative of the Ministry of Environment and Forests , Government of India , not below the rank of Joint Secretary.**
- (f) A representative of C.L.E.A.N Air , Mrs Khajotia.**

**1.5 The terms of reference of the Committee were to examine, consider and recommend measures to reduce vehicular pollution in Greater Mumbai, including but not limited to the following issues:**

- (a) Improvement in quality of fuel with particular reference to reduction of sulphur content of diesel and benzene content of petrol to acceptable limits.**
- (b) Use of alternative fuels such as CNG/reformulated gasoline, etc. Administrative and Regulatory measures that would be required for setting up additional pumps for dispensing CNG.**
- (c) Desirability and feasibility of converting the existing buses/taxis to CNG.**
- (d) Assessment of whether the existing emission norms required to be revised for Mumbai city and, if so, at what levels they should be fixed.**
- (e) Applicability of Euro 1 and Euro 2 norms to commercial non-private vehicles).**
- (f) Desirability and feasibility of phasing out of vehicles (private cars, trucks, buses, taxis, auto-rickshaws and two wheelers) over a certain age limit.**
- (g) Measures for improvement of emission levels of in-use vehicles correspondingly.**

- (h) Financial incentives that can be made available for replacement of old taxis and auto-rickshaws with new vehicles running on clean fuel.**
- (i) Action required to be taken in respect of two wheelers and three wheelers utilising two-stroke engines.**
- (j) Measures to prevent fuel adulteration.**
- (k) Effects of the use of unleaded petrol without catalytic converters.**
- (l) Incentives for conversion to cleaner technologies including, in particular, reduction of import duties and other levies on CNG kits and catalytic converters.**
- (m) Desirability and feasibility of ensuring premixed oil (petrol and 2T) and banning supply of loose 2T oil.**
- (n) Proper management and regulation of traffic with a view to reducing vehicular pollution.**
- (o) Effective methods of monitoring and improving prescribed emission norms.**

**The Committee was also directed to indicate appropriate time frames within which compliance with the recommendations should be required.**

**B. Constitution and sittings of the Committee.**

**1.6 Accordingly, the Committee comprised of the following persons:**

- (a) Mr V. M. Lal, Transport Commissioner, Maharashtra State – Chairman and Convenor**
- (b) Mr Vijai Sharma, Joint Secretary, Ministry of Environment and Forests, Government of India.**
- (c) Dr P.S Pasricha, Additional Director General of Police.**
- (d) Mr A M Deshpande, Air Pollution Abatement Engineer, Maharashtra Pollution Control Board.**
- (e) Mr Debi Goenka, representative of the Bombay Environmental Action Group.**
- (f) Mrs Zinnia Khajotia of C.L.E.A.N Air.**

**1.7 The Committee had seven official meetings during which various issues were discussed in detail and the material submitted and presentations made before the Committee were exhaustively examined and considered. Most of the meetings were attended and participated in by representatives of the oil industries, the traffic police, the taximen's and transporters unions, the automobile industry, environmental**

organisations, the BEST, the Bombay Municipal Corporation, Mahanagar Gas Limited, Society of Indian Automobile Manufacturers (SIAM), and others. The Committee has followed a broad policy of keeping the meetings open to participation by those affected by or connected with the issues under consideration. The Committee has followed the procedure of having open and free discussions with these persons in order to obtain their views and to arrive at a proper understanding of the various facets of the problem. Some of these parties have also submitted their views in writing and made presentations before the Committee. The minutes of the seven meetings of the Committee are appended to this report.

### Annexure I

- 1.8 In addition to considering the points of view and submissions made by the various parties who participated in the sittings of the Committee and/or submitted written submissions, the Committee also carefully examined and took into account a large amount of technical and other material including various reports and books by experts in the field which, in the opinion of the Committee, was of use in the present context. For instance, the Committee took note of the recommendations made in the Reports of the Environmental Pollution Control Authority in New Delhi, (commonly known as "the Bhure Lal Committee") on the issue of air pollution, on the basis of which the Hon'ble Supreme Court has already passed a number of extensive directions. Whilst the Committee is aware that the Delhi experience could not be simply replicated in Mumbai, the Committee held the view that the action taken in Delhi on the basis of the recommendations of the Bhure Lal Committee and the orders of the Supreme Court forms a valuable precedent. The Committee has also taken particular note of the Draft Action Plan for Mumbai of the Central Pollution Control

**Board, Ministry of Environment & Forests, New Delhi, in which various measures have been stipulated and time frames laid down for their implementation. We feel that implementation of the various recommendations in the Draft Action Plan would form a first step in the massive task of restoring the ambient air quality of this city. The Committee therefore is of the view that the actions recommended by the CPCB in their Draft Action Plan need to be implemented on a priority basis.**

**1.9 In addition to the above, and in order to acquaint themselves with the technology available to check vehicular pollution, the Committee visited the Automotive Research Association of India (ARAI) in Pune, as well as the R&D Centre of TELCO, also in Pune.**

**1.10 The Committee has also had the benefit of presentations and demonstrations made to it by Morton/Rohm and Haas UK Ltd. as well as Biocodes/SGS Ltd. Both these groups are in the field of “Marker Technologies” to detect adulteration of petroleum products.**

**1.11 The Committee has also had a number of informal meetings to finalise the Report.**

**C. Ambient air quality in Mumbai**

**1.12 In the light of detailed discussions and material presented to our Committee, the Committee is of the view that the ambient air quality at traffic junctions in Mumbai has degenerated sharply over the last few years and has reached intolerable and critical levels. Apart from our practical experience, the appalling quality of Mumbai's air at traffic junctions and its effects on its residents have been highlighted in a large number of reports and studies, many of which have been referred to in the Writ Petitions presently under consideration of this Hon'ble Court.**

**1.13 The official readings of concentrations of air pollutants at traffic junctions in the city, which have been monitored pursuant to the orders of this Hon'ble Court, also disclose an alarming position. Many countries have adopted or adhered to the ambient air norms which have been laid down by the World Health Organisation ("WHO"). Levels of pollutants such as SO<sub>2</sub>, NO<sub>2</sub>, SPM and CO in excess of these norms or limits have been found to be hazardous to human health. In India, the norms holding the field are the "National Ambient Air Quality Standards" ("NAAQ") framed under the provisions of the Environment Protection Act, 1986, which set out maximum permissible limits for pollutants in "industrial areas", "residential, rural & other areas", and "sensitive areas". After discussions, the Committee was of the view that the NAAQS need to be reviewed, particularly keeping in mind the fact that even short term exposure to high levels of pollutants can have adverse impact on human health.**

**1.14** Given that the NAAQ standards are themselves lax and require to be revised downwards, concentrations of pollutants in excess of these standards obviously pose a very serious health hazard and simply should not be allowed to occur. The Committee is, however, extremely distressed to note, and considers it a matter of the gravest possible concern, that current ambient air readings at traffic junctions in Mumbai city reveal concentrations of pollutants which are often not just marginally in excess of the standards, but regularly exceed them by as much as 600% to 800%.

**1.15** The Committee has come to the conclusion that the levels of pollution of ambient air at traffic junctions in Mumbai have reached unprecedented levels which are not acceptable by any rational standards. The quality of air at traffic junctions in Mumbai poses an extremely serious health hazard which is taking a daily toll on the health of every man, woman and child living in the city. It is also imposing a huge cost on society, in terms of loss of man-hours, and on individuals, in terms of medical expenses. What is more, the severity of the problem, rather than decreasing, is steadily increasing and will soon assume unmanageable proportions.

**1.16 The Committee strongly feels that in this scenario, strict and immediate action must be taken to remedy the situation and arrest further deterioration in air quality. The Committee therefore requests that the recommendations in this report be considered in the context of the urgent environmental crisis that we face today. It is no exaggeration to say that the air of this city, at present, poses the most severe health risk. The Committee also feels that the recommendations made in the report, on implementation, would result in a substantial improvement in the ambient air quality of the city, and in the quality of life.**

**1.17 As directed by the Hon'ble High Court, the Committee has framed its recommendations in the form of an objective plan for implementation with specific time frames wherever required. Though the Terms of Reference of the Committee were confined to Mumbai by the Hon'ble High Court, the Committee has felt necessary to extend some of its recommendations to the Mumbai Metropolitan Region while some others to the entire State of Maharashtra, wherever it has been felt that this would be essential from the point of view of effective implementation and/or enforcement. The succeeding part of this Report has been drawn accordingly.**

## **CHAPTER II :**

### **RECOMMENDATIONS**

This Chapter lists out all the recommendations made by the Committee. These recommendations have been arranged under each term of reference given by the Hon'ble High Court. A separate chapter (from Chapter III to Chapter XVII) deals with each term of reference and gives the reasoning and background behind the recommendations made. Chapter XVIII deals with the general recommendations made in addition to the specific terms of reference given by the Hon'ble High Court. Some of the material which has been taken into consideration for arriving at the recommendations has been annexed as Part II of the Report at the end.

The recommendations made have been serially numbered. They also have a distinctive number with relation to the term of reference. For example, the recommendations that Mahanagar Gas Limited should open atleast 5 Compressed Natural Gas (CNG) outlets in South Mumbai by 30th September 2000 is recommendation No.8 or recommendation No. B (iv).

A) **Improvement in quality of fuel with particular reference to reduction of sulphur content of diesel and Benzene content of petrol to acceptable limits** -

- 1) i) The sulphur content in all the diesel to be supplied in Mumbai city at all the petrol pumps should be reduced to 0.05% by 1st October, 2000. This should be extended to the entire State of Maharashtra by 1st January 2001.

- 2) i) The Benzene content in all the petrol supplied in Mumbai city at all the petrol pumps should be reduced from the present level of 3% to less than 1% by 1st October 2000. This should be extended to the entire State of Maharashtra by 1st January, 2001.
- 3) iii) Only reformulated petrol should be supplied at all petrol pumps in Mumbai city with effect from 1st October 2000 and in Mumbai Metropolitan Region by 1st January 2001.
- 4) iv) The sulphur content in diesel to be supplied in Mumbai city should be further reduced to 0.035% by 1st April, 2003 and to 0.005% by 1st April, 2005. The corresponding dates for supplying diesel with the above levels of sulphur content for the entire State of Maharashtra should be 1st October, 2003 and 1st October, 2005 respectively.
- 5) v) The sulphur content in diesel supplied all over the country should be reduced to 0.05% by 1st October, 2001.

**B) Use of alternative fuel such as CNG / reformulated gasoline etc. -  
Administrative and regulatory measures that would be required for  
setting additional pumps for dispensing CNG.**

- 6) vi) The Development Control Regulations, 1991 of the Municipal Corporation of Greater Mumbai should be amended in order to enable setting up of CNG outlets at some of the existing petrol pumps which are located in residential areas.
- 7) iii) The Brihan Mumbai Municipal Corporation should create a suitable mechanism of single window clearance to expeditiously clear the proposals of Mahanagar Gas Limited for opening new CNG outlets.

- 8) iv) Mahanagar Gas Limited should open atleast 5 CNG outlets in South Mumbai latest by 30th September 2000.
- 9) v) At least one of the existing retail outlets of each of the public sector oil company located in South Mumbai should be converted to supply CNG exclusively by 31st October 2000. Further if any existing petrol pump desires to convert to supplying CNG exclusively, it should be permitted to do so by the oil companies within 2 months of receipt of the application.
- 10) vi) The BEST Undertaking should make space available at all its depots to Mahanagar Gas Limited for setting up CNG filling stations in such a manner that BEST's buses can use the CNG filling stations from within the depot and private vehicles can use it from outside the depot. All such CNG filling stations should become operational by 31st March 2001.
- 11) vii) The Central Government, the State Government, the Municipal Corporation of Greater Mumbai and Mahanagar Gas Limited should ensure that the retail price of CNG is kept at a significantly lower level than the price of the High Speed Diesel.
- 12) viii) Mahanagar Gas Limited should provide sufficient gas pressure and appropriate equipments at all their CNG dispensing outlets so as to ensure that the maximum filling time for buses does not exceed 8 minutes and for other vehicles 4 minutes.
- 13) ix) Mahanagar Gas Limited should draw up a programme of opening around ten new CNG outlets every year for the next 5 years in such a manner that the waiting time for any vehicle for filling up CNG at any such CNG outlet does not exceed 5 minutes. Such outlets should be spread all over the city.
- 14) x) Use of LPG as an automobile fuel must be permitted by the Ministry of Surface Transport by 30th June 2000. The safety standards and the specifications for the equipment must also be laid down before 30th June 2000.

15) xi) The oil industry should come out with its plan for supply of reformulated petrol for all the Metropolitan cities by 1st October 2000.

C) Desirability and feasibility of converting existing buses / taxis to CNG -

16) i) With effect from 1st May 2000, all new buses to be purchased by BEST, should be CNG operated until EURO II compliant engines become available in these new vehicles. BEST may exercise an option either to have CNG operated buses (which should be preferred) or EURO II or higher version diesel engine buses in such a manner that by 1st April 2005, at least 1000 buses are operated on CNG.

17) ii) Engines of all the existing BEST buses which are not even EURO I compliant, must be changed to EURO II compliant engines by 1st October 2002.

18) iii) All Maharashtra State Road Transport Corporation buses operating in and out of Mumbai should have EURO II compliant engines by 1st October 2002.

19) iv) All the private contract buses registered and operating in the Mumbai Metropolitan Region should replace their existing engines by CNG engines or EURO II compliant engines by 1st January 2002.

20) v) With effect from 1st January 2001, all taxis above the age of 15 years must be converted to CNG or any other clean fuel(which means CNG or LPG, as and when allowed, throughout this report) . Further, with effect from 1st January 2002, all diesel taxis above the age of 8 years should be converted to clean fuel.

21) vi) With effect from 1st January 2001, all 3 wheelers above the age of 10 years should be converted on CNG or any other clean fuel.

Further with effect from 1st January 2002, all 3 wheelers above the age of 8 years should run on clean fuel.

D) Assessment of whether the existing emission norms require to be revised for Mumbai city and if so, at what levels should they be fixed -

- 22) i) The present permissible limit of 4.5% carbon monoxide emission in respect of 2 and 3 wheelers should be reduced to 3% with effect from 1st October 2000 for Mumbai city to bring it on par with the carbon monoxide emission levels for 4 wheelers. The Ministry of Surface Transport, Govt. of India should adopt this revised norm of 3% for the entire country by 1st April 2001.
- 23) ii) The present permissible limit of 65 Hartridges Smoke Units for diesel vehicles should be reduced to 45 HSU in Mumbai city with effect from 1st July 2000. The Ministry of Surface Transport, Government of India should take necessary steps for prescribing the above limits for the entire country by 1st July 2001.
- 24) iii) Norms for other vehicular exhaust pollutants like NOx, PM, smoke density of petrol vehicles etc. should be prescribed by Ministry of Surface Transport, Government of India by 31st October 2000 for the Metropolitan cities. Suitable machines to measure and record above pollutants should also be approved by the appropriate agencies under the Motor Vehicles Act.

E) Applicability of EURO I and EURO II norms to commercial (non-private) vehicles -

- 25) i) The Ministry of Surface Transport, Govt. of India should lay down Bharat Stage II mass emission norms (equivalent to EURO II norms) for all categories of vehicles by 30th September 2000. Subsequent mass emission norms

equivalent to Euro III and Euro IV should also be prescribed by Ministry of Surface Transport, Government of India by 1st April 2002 so that Euro IV norms become applicable in India with effect from 1st April 2005 on par with European cities.

- 26) ii) All heavy commercial vehicles as well as light goods vehicles to be registered in the Mumbai Metropolitan Region from 1st April 2001 must be Bharat Stage II compliant.

F) **Desirability and feasibility of phasing out vehicles (private cars, trucks, buses, taxis, autorickshaws and 2 wheelers) over a certain age limit -**

- 27) i) The Ministry of Surface Transport, Govt. of India should take action under Section 59 of Motor Vehicles Act, 1988 to prescribe the maximum age of all types of vehicles plying in the Metropolitan cities as well as in the rest of the country latest by 31st December 2000.
- 28) ii) With effect from 1st January 2001 all 2 wheelers registered in Mumbai Metropolitan Region and which are more than 15 years old shall be scrapped and their registration deemed to have been cancelled.
- 29) iii) With effect from 1st January 2001, all 3 wheelers registered in Mumbai Metropolitan Region and above the age of 10 years shall be scrapped unless converted to clean fuel .
- 30) iv) With effect from 1st January 2001, all transport vehicles except 3 wheelers and BEST buses over the age of 15 years shall be scrapped unless converted to clean fuel.
- 31) v) With effect from 1st January 2001, all private cars older than 20 years shall be scrapped unless converted to clean fuel.
- 32) vi) With effect from 1st January 2002 all transport vehicles over 8 years of age and plying in Mumbai city (except BEST buses) would be scrapped unless converted to clean fuel. The above stipulated

- age of 8 years would be subject to modification, if any, as per the age prescribed by the Ministry of Surface Transport, Government of India under Sec.59 of Motor Vehicles Act, 1988.
- 33) vii) The above age restrictions will not apply to the Vintage and Classic cars registered with the Vintage and Classic Car Club of India.
- 34) viii) With effect from 1st January 2001, all BEST buses older than 20 years shall be scrapped or converted to CNG. Similarly, with effect from 1st January 2002, all BEST buses older than 15 years would be scrapped unless converted to CNG. Further, with effect from 1st January 2002, all BEST buses older than 8 years would be scrapped unless they operate on CNG or have Euro II compliant engine. BEST should have atleast 1000 buses operating on CNG by 1st April 2005.
- 35) ix) No vehicle registered outside the State, will be registered in Mumbai if it does not meet the age stipulations or does not operate on clean fuel. Conversion of vehicles from transport to non-transport category should be strictly regulated.
- 36) x) The Municipal Corporation of Greater Mumbai will set up a scrap yard where old vehicles would be dumped as “scrap” latest by 31st December 2000. Such scrapped and dumped vehicle may be disposed of by Municipal Corporation of Greater Mumbai as per their policy of disposal.
- 37) xi) The vehicle manufacturers should implement a scheme to take back their old vehicles under a “buy back scheme” for scrapping with effect from 1st January 2001.
- G) Measures for improvement of emission levels of in use vehicles correspondingly -

- 38) i) **The Ministry of Surface Transport, Govt. of India should be directed to prescribe by 31st December 2000 norms and standards of roadworthiness for all transport vehicles manufactured in India. The Ministry should also lay down standards for fitment of diesel traps.**
- 39) ii) **The annual fitness certificates for all transport vehicles should be granted by the Motor Vehicles Department on the production of a certificate from an authorised testing station approved under Section 56 of Motor Vehicles Act, 1988 or from an Inspection and Maintenance Centre possessing modern and computerised equipment needed to inspect and certify fitness of such vehicles, duly authorised by the Motor Vehicles Department. This system should be brought in force by the Motor Vehicles Department with effect from the 1st April 2002. The system should be extended to cover private vehicles older than 15 years also with effect from 1st April 2005.**
- 40) iii) **All private vehicles older than 15 years after 1st April 2005 will have to carry a fitness certificate obtained from one of the I & M Centres approved by the Motor Vehicles Department or an authorised testing station under the Motor Vehicles Act, 1988 about the roadworthiness of their vehicles. Such a certificate would be valid for a period of one year.**
- 41) iv) **For all the new vehicles manufactured after 1st April 2001, the vehicle manufacturers will have to give an emission warranty over the life of the vehicle through a scheme of Annual Maintenance Contract which will have to be compulsorily entered into by the vehicle owner if he wants to avail of the emission warranty of the manufacturer. The vehicle manufacturers will also ensure that inspection camps are organised periodically for those vehicles which**

are not covered under the Annual Maintenance Contract. Sale of spurious spare parts should be made a cognisable and non-bailable offence.

- 42) All government, semi-government and local authority owned vehicles in-use in Mumbai should fit catalytic converters or convert their existing vehicles to a clean fuel by 1st July 2001.
- 43) vi) All two stroke two and three wheelers in use vehicles in Mumbai should be fitted with catalytic converters by 1st July 2001.
- 44) vii) All petrol driven vehicles registered in Mumbai prior to 1st April 1995 should fit catalytic converters by 1st July 2001.
- 45) viii) All catalytic converters supplied by the manufacturers for 2 wheelers will carry a warranty of effective working of the catalytic converter over a distance of 30,000 kms.

H) Financial incentives that can be made available for replacement of old taxis and autorickshaws with new vehicles running on clean fuel -

- 46) i) The Government of Maharashtra and Municipal Corporation of Greater Mumbai shall grant the following concessions to the owners of taxis and autorickshaws for replacing their old vehicles with new vehicles and which run on a clean fuel :
- a) the applicable rate of sales tax would be reduced by 4%;
  - b) the applicable octroi would be reduced by 50%;
  - c) the rate of interest would be subsidised by 4% on the loans taken from banks/financial institutions etc.
- 47) ii) The above concessions will be permissible to all such new vehicles purchased as replacements upto 31st October 2001.
- 48) iii) The Municipal Corporation of Greater Mumbai should extend full financial support to the BEST to carry out the engine and vehicle replacement programme.

**I) Action required to be taken in respect of two wheelers and three wheelers utilising two stroke engines -**

- 49) i) With effect from 1st October 2000, only 4 stroke engined two and three wheelers shall be registered in Mumbai Metropolitan Region. Till that date two and three wheelers having two stroke engines, as a transitional measure, should be permitted to be registered provided such vehicles are also fitted with catalytic converters guaranteed for 30,000 kms. by the manufacturers.
- 50) ii) After 1st July 2001 all 3 wheelers would have to be fitted with catalytic converters. The vehicle owner shall carry a proof of having fitted a catalytic converter on his vehicle.
- 51) iii) After 1st July 2001 all two wheelers having two stroke engines registered in Mumbai Metropolitan Region will have to necessarily fit a catalytic converter. The vehicle owner shall carry a proof of having fitted a catalytic converter on his vehicle.
- 52) iv) The retail outlets of the oil companies would sell pre-mixed petrol only to the two wheelers and three wheelers with effect from 1st October 2000. Use of higher percentage of oil than prescribed by the manufacturers ( 2% for 2 wheelers and 3% for 3 wheelers) would make the vehicle owner liable to a fine of Rs.1,000/-.
- 53) v) Any two or three wheeler owner/driver found adding Kerosene or any other unauthorised petrol like product in the fuel tank of the vehicle, would be liable for criminal action under Environment Protection Act, 1986.

- J) Measures to prevent fuel adulteration -**
- 54) i) All oil companies should ensure that their diesel/petrol sold at their retail outlets, owned by the oil company or operated under franchise, is unadulterated.**
- 55) ii) All tankers carrying petrol or diesel must be painted wholly in bright Maroon colour. All tankers engaged in transporting Kerosene, Naphta, NGL, SKO, OCS-93, C-9, Benzene or other solvents should be painted wholly in bright Yellow colour. All tankers carrying petroleum products other than the above should be painted wholly in bright Green colour. Petroleum products should be carried in a tanker of the appropriate colour only. Tankers not carrying petroleum products should not use any of the above 3 colours. This scheme should come into force in Maharashtra State with effect from 1st October 2000. This scheme should be given wide publicity throughout Maharashtra.**
- 56) iii) Sale of Naphta and Benzene, which are used for adulteration should be strictly monitored to ensure sale of these items to actual end-users only. Similarly, retail sales of these products should not be permitted. The total quantity imported in Mumbai and its sale to actual end-users should be strictly monitored by the Controller of Rationing, Mumbai.**
- 57) iv) The Central and the State Govt. should ensure that the price of imported Kerosene is on par with the price of diesel.**
- 58) v) All the refineries in the public and private sector should implement the 'Marker' system for detecting adulteration in fuels and lubricants by 31st December 2000 within Mumbai city and by 31st March 2001 in the rest of Maharashtra.**
- 59) vi) Adulteration of fuel / lubricants should be a cognisable and non-bailable offence punishable under the Environment Protection Act, 1986.**

- 60)       vii) The sale of petroleum products such as Patrex, Rexon, Cixon etc., which are not authorised to be used as vehicle fuels, to vehicle owners for use in the vehicles should be prohibited with immediate effect. The vehicle owner who buys this product and puts it in the fuel tank of vehicle, should be liable for criminal action under Environment Protection Act, 1986.
- 61)       viii) The oil industry must set up one more fullfledged lab in Mumbai by 30th June 2001 for testing the samples of petrol / diesel / lubricants collected from retail outlets. Additional 4 mobile fuel testing vans should be provided by the oil industry by 30th June 2001 for use in Mumbai for periodical testing of fuel quality.
- 62)       ix) The Ministry of Petroleum and Natural Gas, Govt. of India should be directed to rationalise the price structure of different petroleum products so that the monetary incentive for adulteration is eliminated. Similarly, the large gap in the prices of petrol and diesel should be substantially bridged.
- K)       Effect of the use of unleaded petrol without catalytic converters -
- 63)       i) It has separately been recommended that the existing vehicles using unleaded petrol should use catalytic converters with a view to reduce harmful HC and CO emissions from the exhaust.
- L)       Incentive for conversion to cleaner technologies including particular reduction on import duties and other levies on CNG kits and catalytic converters -
- 64)       i) The customs duties, sales tax, excise duty and octroi should be totally waived on both the CNG conversion kits including cylinders as well as on the catalytic converters upto 31st March 2003.

**M) Desirability and feasibility of ensuring pre-mixed oil , petrol and 2 T and banning supply of loose 2 T oil -**

- 65) i) There should be a ban on sale of loose 2 T oil in all petrol pumps in Mumbai Metropolitan Region with effect from 1st October 2000 .
- 66) ii) All the retail outlets in Mumbai Metropolitan Region should sell only pre-mixed petrol through dispensers to two and three wheelers with effect from 1st October 2000. Sealed oil sachets, could be sold at the retail outlets.
- 67) iii) Sale of spurious oil should be a cognisable and non-bailable offence under the Environment Protection Act, 1986.

**N) Proper management and regulation of traffic with a view to reducing vehicular pollution -**

- 68) i) The Municipal Corporation of Greater Mumbai shall set up a central control room latest by 30th June 2000 where citizens could lodge complaints regarding pot-holes, unauthorised and non-conforming speed breakers, unauthorised repairs of vehicles on road, non-use or abandoned vehicles parked along the road side etc. All such complaints should be serially registered and complainant given a specific token number. All such complaints should be attended to within 72 hours (excluding holidays, if any) and corrective action taken. Any failure in this regard should make the concerned ward officer personally responsible.
- 69) ii) The control room of the Traffic Police should also record complaints from citizens about illegal construction of speed breakers, illegal parking of non-use or abandoned vehicles, unauthorised repairs of vehicles on the road and registration

numbers of polluting vehicles latest by 30th June 2000. All such complaints should be attended to within 72 hours (excluding holidays, if any) after receiving the complaint. Any failure in this regard would make the concerned Assistant Commissioner of Police (Traffic) personally responsible.

- 70) iii) A control room should be set up by the Motor Vehicles Department latest by 30th June 2000 for recording complaints from citizens about polluting vehicles and mechanically defective vehicles or any other vehicle offending the provisions of the Motor Vehicles Act. All such complaints must be attended to within 72 hours failing which the concerned Regional Transport Officer would be personally responsible.
- 71) iv) All the 3 control rooms of the Municipal Corporation of Greater Mumbai, Traffic Police and the Motor Vehicles Department should be provided with toll free numbers and should be inter-connected with the help of computers to ensure proper coordination. This must be ensured latest by 31st December 2000.
- 72) v) A High Power Coordination Committee to be chaired by the Municipal Commissioner himself should be set up to coordinate the road digging activity of different utility services such as Mahanagar Telephone Nigam Limited, Mahanagar Gas Ltd., Brihan Mumbai Electric Supply and Transport Undertaking., Bombay Suburban Electric Supply, Road Department of Municipal Corporation of Greater Mumbai , Maharashtra State Road Development Corporation, etc. This Committee should meet at least once a month and should have Addl.Commissioner of Police (Traffic) as one of its Members apart from the Chief Executives of the concerned utility services. This committee should become operational latest by 1st June 2000.

- 73) vi) The road markings with thermo plastic paint should be carried out by the Traffic Police Department including proper painting of the sign boards as per the Indian Road Congress specifications with a view to ensure proper lane discipline and thereby efficient use of the carriageway. With effect from 1st June 2000, a monthly review of the road markings and sign boards should be carried out by the Addl. Commissioner of Police (Traffic). The road markings should also identify the lane for fast moving traffic wherever feasible.
- 74) vii) All the traffic signals in Mumbai should be systematically synchronised. The Traffic Police Department should take a 6 monthly review of signal timings during different traffic phases and update the same on a regular basis. All the traffic signals should function as automatic signals all the times. Any decision to switch over to manual signalling should be taken only by an officer not below the rank of Asstt. Commissioner of Police. The authority permitting such a switch over to manual signalling should maintain a record of the special circumstances which necessitated such a manual switching over and the duration for which it was allowed.
- 75) viii) The Area Traffic Control system prepared for 37 identified traffic signals by the Traffic Police Department should be made operational latest by 1st April 2001. A Committee under the Metropolitan Commissioner, Mumbai Metropolitan Region Development Authority having Additional Commissioner of Police (Traffic) and the Municipal Commissioner, Municipal Corporation of Greater Mumbai as its members would be responsible to ensure implementation of the above scheme by the stipulated date.
- 76) ix) The Metropolitan Commissioner, MMRDA should ensure that the Wadala Truck Terminus becomes fully operational by 31st December 2000.

- 77) x) With effect from 1st January 2001, all tourist buses would terminate at and operate from Wadala Truck Terminus.
- 78) xi) The scheme of providing exclusive BEST bus lanes with synchronised signals giving preference to public transport buses should be enforced by the Traffic Police Department on all major arterial roads in a phased manner by 31st March 2002.
- 79) xii) On all the major roads, as defined in the development plan, parking should be totally banned from 0900 hours to 1200 hours and 1700 hours to 2000 hours in the peak direction of the traffic with effect from 1st June 2000. The Traffic Police Department should give adequate publicity to this and ensure its strict compliance.
- 80) xiii) No morchas should be allowed on any public roads. The marriage processions should also not be permitted on public roads. However, traditional religious processions going on for at least 5 years may alone be permitted. No new religious processions should be allowed on public roads.
- 81) xiv) Speed breakers of the approved design and at approved locations only should be permitted in the entire Mumbai Metropolitan Region with effect from 1st June 2000. All non conforming speed breakers shall be removed before that date by Municipal Corporation of Greater Mumbai and other concerned local authorities. Putting up unauthorised speed breakers should be a cognisable and non-bailable offence.
- 82) xv) A traffic restraint scheme as per the details given below will be brought in force on an experimental basis for a period of 6 months with effect from 1st October 2000 after giving wide publicity. A

**committee under the Principal Secretary (Transport) and having Transport Commissioner, Additional Commissioner of Police (Traffic), Head of Transportation Planning, Mumbai Metropolitan Region Development Authority and Head of Traffic Engineering, Municipal Corporation of Greater Mumbai as members would monitor implementation of the scheme and submit a report to the High Court on the expiry of the pilot project. During the period of implementation of the Pilot project, this Committee will have the powers to make suitable modifications for proper implementation of the scheme, provided all such decisions taken by this committee are reported to the High Court.**

**a) All private vehicles including 2 and 3 wheelers ( non-commercial) having registration numbers ending with digits 1 or 2 shall not be allowed to ply in the limits of island city of Mumbai on Mondays. Similarly, vehicles with registration numbers ending with digits 3 or 4 shall not be allowed to ply on Tuesdays, 5 or 6 on Wednesdays, 7 or 8 on Thursdays and 9 or 0 on Fridays. On Saturdays, Sundays and public holidays all vehicles would be permitted to ply. Vehicles of police, fire brigade, ambulances, cranes and government vehicles entitled to a red or amber dome light would not be subject to restrictions under this scheme. Specially designed vehicles driven by handicapped persons themselves shall also be exempted.**

**b)The island city comprises of area south of Mahim Causeway, Mahim Junction, Mori Road, Senapati Bapat Marg Extension, Mahim Rail Over Bridge, Sant Rohidas Marg, Dharavi Road, Sion Railway Station, Sion Circle and Road No.29 beyond Barkat Ali Road Junction on Wadala Anik Link Road.**

**c) The vehicles will be restricted from plying within the limits of the island city as specified above, from 0900 hrs. to 1600 hrs.**

- d) The scheme should be enforced by Constables and other senior officers of the Traffic Police Department as well as by Asstt. Inspector of Motor Vehicles and senior officers of the Motor Vehicles Department.
- e) Any vehicle violating the scheme will be detained at an appropriate location without obstructing the smooth flow of traffic and would be released only after 1600 hrs. after paying a fine of Rs.1,000/-
- f) Vehicles coming from outside Mumbai, would also be covered under the scheme.
- 83) xvi) A mobile phone service or wireless network on taxis should be set up so that a taxi can be hired by making a telephone call on a specific number.
- 84) xvii) The public transport system should be further strengthened. Brihan Mumbai Electric Supply and Transport Undertaking should introduce atleast 500 Air-conditioned buses by 31st March 2002. In case Brihan Mumbai Electric Supply and Transport Undertaking finds it difficult to do so, private operators with a fleet of 50 or 100 vehicles should be permitted to ply their Air-conditioned buses as stage carriages to supplement Brihan Mumbai Electric and Transport Undertaking's efforts.
- 85) xviii) For upgrading and improving public transport (including railways through MUTP II, introduction of LRT /MRT etc.) and other traffic restraint techniques an expert Committee of traffic and transport experts should be constituted which should give its recommendations to the High Court within a period of 3 months.
- O) Effective methods of monitoring and improving prescribed emission norms -
- 86) i) The Govt. of Maharashtra should provide additional funds needed by the Maharashtra Pollution Control Board for continuous air

quality monitoring at the 5 monitoring stations and for purchase of mobile pollution testing vans.

- 87) ii) These continuous air quality monitoring stations should become operational by 1st January 2001.
- 88) iii) These continuous air quality monitoring stations should be equipped to monitor the levels of CO and Benzene also. Facilities necessary for measuring ground level Ozone concentration should also be provided by the Maharashtra Pollution Control Board by 1st January 2001.
- 89) iv) The Maharashtra Pollution Control Board and the Municipal Corporation of Greater Mumbai should each provide 2 additional mobile pollution testing vans latest by 31st December 2000. These mobile vans should be equipped with a continuous monitoring display system mounted on the roof of the van.
- 90) v) The ambient air quality readings should be publicised by the MPCB as well as by the Municipal Corporation of Greater Mumbai at prominent places including petrol pumps within the limits of the Municipal Corporation of Greater Mumbai.

P) **General Recommendations**

- 91) i) All the petrol pump owners of the city in Mumbai should install new automatic petrol dispensing nozzle with in-built vapour recovery system latest by 31st December 2000.
- 92) ii) No new registration of any taxi / autorickshaw (as replacement) operating on diesel should be permitted in the city of Mumbai after 1st May 2000.
- 93) iii) All private diesel vehicles registered in Mumbai Metropolitan Region after 1st October 2000, should pay an additional one time levy of Rs.20,000/-. All existing private vehicles having authorised diesel engines and which are older than 15 years would have to pay

one time cess of Rs.10,000/- in the office of the respective Regional Transport Officer in case they want to continue to ply their vehicle after 1st October 2000 without converting to a clean fuel.

- 94) iv) The present method of certifying the mass emission standards by the approving agencies, based on a deterioration factor of 1.2, needs to be revised to a higher factor taking into consideration the Indian conditions. The Ministry of Surface Transport, Government of India should issue revised standards about the appropriate deterioration factor for such certifications, for all categories of vehicles, latest by 31st December 2000.
- 95) v) The Department of Environment, Government of Maharashtra should set up an authority to be known as Vehicular Pollution (Prevention and Control) Authority for the Mumbai Metropolitan Region to monitor progress of all agencies involved in reducing vehicular pollution. The Authority should comprise of Government representatives, Non-Government Organisations and appropriate experts etc.

For controlling vehicular pollution, the Authority should take all necessary steps to ensure compliance of specified emission standards by vehicles including proper calibration of the equipment for testing vehicular pollution, ensuring compliance of fuel quality standards, monitoring and coordinating action for traffic planning and management.

The Authority shall have powers to issue directions in respect of complaints relating to the violation of an order by any authority or measure specified pertaining to all aspects of vehicular pollution.

96. vi) In order to facilitate smooth flow of traffic, a separate transportation link should be provided from Haji Ali to Nariman Point area in South Mumbai.

- 97) vii) To facilitate smooth flow of traffic, all encroachments on carriageways and footpaths should be removed by the Municipal Corporation of Greater Mumbai and the Mumbai Police.
- 98) viii) The Central and State Governments should waive all duties on battery operated vehicles including on the battery pack for a period of 3 years.
99. ix) For effective implementation of the provisions of the Motor Vehicles Act 1988 and the directions of the Hon'ble High Court on measures to control pollution, the Motor Vehicle Department should be provided with an efficient and modern wireless network, inter-linked and fully computerised field offices to cover issuance of licence, fitness certificates, vehicle registration, memos for offences, notices for recovery of government dues etc., additional staff and equipment etc.
100. Volunteers accompanying flying squads should be paid an honourarium of Rs.100 per day, or such amount as this Hon'ble Court deems fit, to cover their out of pocket expenses.
101. A unified Urban Transport Authority should be set up by 1st January 2001 to effectively coordinate and implement a proper urban transport system.

## CHAPTER III

- A) Improvement in quality of fuel with particular reference to reduction in sulphur content of diesel and benzene content of petrol to acceptable limits -

### Diesel quality

- 3.1 The present content of sulphur in diesel supplied in Mumbai is 0.25%, which is unacceptably high. It is universally accepted that a high sulphur content in diesel results in high levels of SO<sub>2</sub> and PM in emissions. Recorded levels of SO<sub>2</sub> and PM in Mumbai are already several times higher than WHO norms and are increasing rapidly. It is also beyond dispute that reduction in the sulphur content of diesel would not only result in improved emissions from the existing comparatively inefficient engines, but also from the improved efficient engine of the new models of vehicles now available.
- 3.2 The urgent need for diesel with a sulphur content of 0.05% or less has been emphasised and reiterated in various reports and studies including the Bhure Lal Reports. Submission to this effect has also been made by bodies such as the Automotive Research Association of India, Society of Indian Automobile Manufacturers, the Western India Automobile Association, the Brihan Mumbai Electric Supply and Transport Undertaking, and various Environmental Groups.

**3.3 This Hon'ble High Court has already advanced applicability of India 2000 norms (equivalent of Euro I) with effect from 1st January 2000 and has ordered Euro II (Bharat Stage II) norms for vehicular emissions in their application to non-commercial vehicles registered in the city of Mumbai with effect from 1st January 2001. Euro II norms contemplate diesel with less than 0.05% sulphur content. Infact, EU fuel specifications contemplate a sulphur content of .035% by 2000 and 0.005% by 2005 for Euro III and Euro IV standards.**

**3.4 The Committee has considered the preparednes of the oil**

**ANNEXURE II**

**(page 165)**

**industry in this regard. As per the White Paper prepared by the**

**Ministry of Petroleum and Natural Gas , diesel with sulphur content of 0.05% is proposed to be made available for new private (non-commercial) vehicles in Mumbai city with effect from 1st January 2001. Unfortunately, the Committee regrets to state that it has not received the expected level of cooperation and assistance from the oil industry regarding issues of fuel quality, adulteration, etc. with which it is intimately concerned. The Committee had, therefore, proceeded on the basis of its understanding of the position. The Committee was not informed, for instance, of any proposal to supply low sulphur diesel on an immediate basis in New Delhi. However, it has recently been widely reported in the press than 0.05% sulphur content diesel is being supplied in New Delhi with effect from 1st April 2000 at an increased price. Similarly, The Committee came to know from the press reports only that a desulphurisation plant had recently been commissioned in Mumbai by the refinery of Bharat Petroleum Company in Mumbai.**

**3.5 Reliance Petroleum Limited (RPL) has, both in its affidavit filed**

**ANNEXURE III**

**(page 172)**

**before this Hon'ble High Court and in submissions made before the**

**Committee, stated that it is in a position to supply diesel with sulphur content of less than 0.05% in sufficient quantities to meet the demands of Mumbai city if it is given a lead time of about three to four months. It has, however, indicated that a small upward revision in the retail**

price may be required. The Committee has been told that RPL are being required to export their product rather than use it in the domestic market.

**ANNEXURE IV**

(page 174)

- 3.6 Society of Indian Manufacturers has stated before the Committee that they are in readiness to supply Euro II compliant multi-utility commercial vehicle by 1st October 2000 . Further, they indicated that the requirement of Euro II compliant heavy commercial vehicles for Metro cities could easily be met before 1st October 2001.
- 3.7 The Committee is of the view that the sulphur content of diesel supplied in Mumbai city should not exceed 0.05% after 1st October 2000. Three months thereafter the entire State of Maharashtra should be covered. We are also of the opinion that the oil industry should, looking into the future, take steps to further reduce the sulphur content to levels of 0.035% and 0.005% by the years 2003 and 2005 respectively.
- 3.8 Further the Committee is of the view that the sulphur content in diesel supplied all over the country should be reduced to 0.05% by 1st October 2001 so that pollution from heavy commercial vehicles having Euro II compliant engines by then is satisfactorily lowered.
- 3.9 The unleaded petrol which is being supplied in Mumbai has an extremely high benzene level of 5%. This high level of benzene in the petrol results in correspondingly high benzene levels in auto emissions. Benzene is an aromatic which is added in order to boost the octane levels of petrol. It is a known carcinogen which causes leukemia and other serious diseases. At present, no testing is carried out in Mumbai to record benzene levels in the air. It has been established that even a fractional reduction in the level of benzene in petrol translates into significant reduction in levels of benzene in auto emissions.

**3.10 As in the case of low-sulphur diesel, the urgent need for reduction of benzene content to less than 1% has been emphasized and reiterated in various reports and studies and submissions to this effect have also been made by various parties before the Committee.**

**ANNEXURE II**

**(page 165)**

**3.11 As per the White Paper prepared by the Ministry of Petroleum and Natural Gas, petrol with a maximum benzene content of 3% was proposed to be made available for new private (non-commercial) vehicles in Mumbai city with effect from 1st April 2000. However, the date of its reduction to 1% could not be obtained from the Petroleum and Natural Gas Ministry, Government of India.**

**ANNEXURE III**

**(page 172)**

**3.12 Reliance Petroleum Limited (RPL) has, both in its affidavit filed before this Hon'ble High Court and in submissions made before the Committee, stated that it is in a position to supply petrol with a benzene content of less than 1% in sufficient quantities to meet the entire demand of Mumbai city if it is given a lead time of about three to four months. It has, however, indicated that a small upward revision in the retail price may be required. The Committee has also been informed that petrol with above specifications is already being produced by them and the same is being exported as they are not allowed to sell it in the domestic market.**

**3.13 Accordingly, the Committee feels that only petrol with 1% Benzene should be sold at all the petrol pumps in Mumbai by 1st October 2000. Three months thereafter, the entire State of Maharashtra should be covered.**

**3.14 Reformulated/oxygenated petrol**

**ANNEXURE III**

(page 172)

RPL has, both in its affidavit filed before this Hon'ble High Court and in submissions made before the Committee, stated that it is in a position to supply reformulated (oxygenated) petrol which is superior to ordinarily unleaded petrol as it results in almost eliminating carbon-monoxide emissions. RPL also maintains that it is in a position to supply sufficient quantities of such petrol to meet the entire existing demand in Mumbai city.

**3.15** It is well established that oxygenation of petrol with oxygenates such as MTBE, ETBE and TAME results in drastic reduction of carbon-monoxide in vehicular emissions. The Committee has also taken note of the fact that reformulated petrol is widely used in countries such as the USA and that its use has resulted in significant reductions in emissions levels.

**3.16** The Automotive Research Association of India has submitted that reformulated petrol would result in a reduction of emissions and this issue should be taken up with the refineries so that it can be tried in India.

**ANNEXURE V**

(page 196)

**3.17** The Committee is, therefore, of the view that only reformulated petrol with a benzene content of less than 1% should be supplied in Mumbai city with effect from 1st October 2000 and in Mumbai Metropolitan Region by 1st January 2001. Para 4.18 also deals with the matter of reformulated petrol.

## CHAPTER IV

**B) Use of alternative fuel such as CNG/reformulated gasoline, etc. Administrative and regulatory measures that would be required for setting up additional funds for dispensing CNG and the desirability and feasibility of converting buses/taxis to CNG.**

**4.1 Compressed Natural Gas (CNG) is a clean burning fuel as it does not emit visible smoke or particulate matter. The higher octane number improves the power output and reduces fuel consumption. The lighter density with respect to air and high self ignition temperature (730 degree centigrade) makes natural gas a safe fuel. It is available in Mumbai in commercial quantities.**

**4.2 The use of CNG as an alternative fuel for automobiles has already been permitted.**

**4.3 The Central Pollution Control Board Action Plan for Mumbai recommends that the existing number of retail outlets for CNG be increased and that taxis, three wheelers and all government vehicles should be converted to run on CNG by 31st December 1999.**

**4.4 The URBAIR Report prepared by Asia Environment and Natural Resources Division, experts appointed by the World Bank recommends increased use of CNG in taxis and private cars, provision of more filling stations and increasing awareness about its use. It contemplates replacement of 50% of petrol consumption in passenger cars with CNG.**

**4.5 The Bhure Lal Reports stressed the importance of the use of CNG as a fuel and contained a number of recommendations aimed at increasing and popularising its use. Based on these recommendations,**

**ANNEXURE VI**  
(page 203)

the Hon'ble Supreme Court has, inter alia, directed in its order dated 28th July 1998 that Gas Authority of India Limited should expedite and expand, from 9 to 80, CNG outlets in Delhi by 31st March 2000 .

- 4.6 The Automotive Research Association of India and Society of Indian Automobile Manufacturers have submitted before the Committee that it is desirable to increase the number of vehicles running on CNG. The Automotive Research Association of India has

**ANNEXURE V**  
(page 196)

pointed out that use of CNG can reduce carbon-monoxide and hydrocarbon emissions by upto 50%. It has submitted that sufficient CNG filling stations should be made available.

- 4.7 Dedicated CNG engines have been developed by M/s.Ashok Leyland for city buses. M/s.TELCO have imported dedicated CNG engines for city buses. CNG kits for retro-fitting are available for petrol driven 4 wheelers so that the vehicle can be run either on petrol or on CNG. Recently CNG kits have also been developed for 3 wheeler autorickshaws. However, for 2 wheelers no CNG kits are developed so far. Likewise, for diesel vehicles, there is no CNG retro-fitment kit duly approved as yet. Even for diesel city buses, CNG retro-fitment is considered to be a complicated process and the kit is in the process of being approved by Automotive Research Association of India.
- 4.8 In order to encourage the use of CNG in 3 and 4 wheeler vehicles, it has been submitted by all the concerned agencies including the taxi unions that the number of CNG dispensing stations is required to be increased substantially so that they do not have to travel long distances for getting the CNG filled in. Further the filling in process should be faster so that it does not take more than 4 minutes to fill up the gas. It has also been pointed out to the Committee that no CNG outlets is located South of Mahalaxmi at present. This is one of the reasons why no government vehicle has been converted to CNG so far.

4.9 In the city of Mumbai, Mahanagar Gas Limited have been entrusted with the responsibility of supplying CNG to domestic houses as well as to vehicles. Presently, they are having 17 CNG outlets in various parts of the north and central Mumbai. Mahanagar Gas

**ANNEXURE VII**

(page 205)

Limited has indicated plans to increase the number of such outlets to 35 by 31st March 2001. However, they have indicated that they are facing severe difficulties in opening new outlets in the existing petrol pumps because of various restrictions applicable under the Development Control Regulations 1991 of the Municipal Corporation of Greater Mumbai on petrol pumps located in residential areas which cannot be met by them. For example, they have pointed out that the D.C. Regulations restrict the maximum electric power to 7.5 kw and persons employed to 9 at petrol pumps whereas Mahanagar Gas Limited needed much higher electric power for a CNG station and the man power required was at least 10. Details of the problems faced by them are annexed.

**ANNEXURE VII**

(page 205)

4.10 Besides, they have pointed out that as per notification No.SO 123 (E) dated 14th February 2000, issued by the Ministry of Environment and Forests, Government of India, the maximum permissible noise level in residential areas is 55 decibel during day time and 45 decibel during the night time. However, the compressors at the daughter stations of Mahanagar Gas have a noise level of 75 decibels which would preclude setting up CNG stations at the petrol pumps located in residential areas. It was informed to the Committee by Mahanagar Gas Limited that a BEST bus moving on the road in a residential areas made a noise of more than 75 decibels. As such they felt that noise level of 75 decibels from their compressors fitted on the existing petrol pumps located in the residential areas would not cause any noticeable inconvenience to the residents near such petrol pump, and therefore, they deserve to be exempted from the implementation of the provisions of this notification. The representative of the Ministry of Environment and

Forests, Government of India informed the Committee that this difficulty had arisen due to incorrect interpretation of the notification.

4.11 Mahanagar Gas Limited further pointed out that the regulations formulated by the Chief Controller of Explosives do not make it possible to have a CNG outlet along with the existing petrol pumps in South Mumbai area as the total plot size of these outlets is very small. No vacant plots are available where such CNG dispensing units could be installed. Besides, a very high price would be demanded for any such-plot which would make the CNG outlet unviable. According to Mahanagar Gas Limited, the only two solutions were possible to open more outlets in South Mumbai area ;

a) the BEST made some space available from their existing depots to serve both the BEST buses as well as private vehicles (from outside the depot) and / or

b) some of the existing petrol pumps should be converted to exclusive dispensation of CNG. This would require a decision at the level of the oil companies.

4.12 The Committee felt that the difficulties pointed out by Mahanagar Gas Limited were genuine and the measures suggested by them would have to be adopted to help them in opening more CNG outlets all over the Mumbai city and in particular in South Mumbai. The Committee has accordingly made the recommendations numbers 5,6,9 and 10.

4.13 It was represented before the Committee by the taxi owners that if they convert their vehicles on CNG by retro-fitting CNG kits costing Rs.35,000/-, it was essential for them to have some assurance that the cost of operation on CNG would continue to be lower than the cost of operation on diesel for next 5 years. The Committee felt a lot of merit in this demand from the taxi owners. In the interest of reducing pollution in the city of Mumbai, the Committee accordingly makes the recommendation No.11.

**ANNEXURE VIII**

(page 210)

- 4.14 It was also represented by the BEST that the filling in time of CNG in their buses was over 12 minutes. Even from the fast filling equipment installed by Mahanagar Gas Limited especially for BEST at Anik Depot, the filling in time was 10 minutes. They represented that to have a large bus fleet running on CNG, it was essential that the filling in time of a bus should not exceed 8 minutes.
- 4.15 Likewise, the CNG users complain of long waiting time at the CNG outlet and wanted that they should not be required to wait for more than 5 minutes to get their vehicle filled in. They also wanted that the filling in time of their vehicles (taxis) should be not more than 4 minutes.
- 4.16 The Committee considered all these valid suggestions and decided to make recommendations No.12 and 13.
- 4.17 The LPG also needs to be allowed as an alternative fuel for vehicles. The Committee, therefore, strongly feels that the Ministry of Surface Transport, Government of India must complete all the necessary actions including amendments to Motor Vehicles Act, 1988 within the next 2 - 3 months so that the use of LPG in automobiles is permitted. Necessary safety standards and specifications for the LPG kits should also be laid down by the Ministry of Surface Transport by 30th June 2000.

**4.18 `Petrol added with oxygenates such as MTBE, ETBE and TAME helps in reduction of harmful carbon monoxide emissions from vehicles. Introduction of reformulated oxygenated gasoline (oxygen content of 2% by weight minimum) with a Benzene content of less than 1% will help in bringing down the emissions drastically. In view of the above additions of the reformulated gasoline, as brought out by the Reliance Petroleum Limited, the Committee feels that the oil industry should come out with their plan of supply of such reformulated petrol for all the Metropolitan cities by 1st October 2000 and the same be implemented in Mumbai Metropolitan Region by 1st January 2001 (Paras 3.14 to 3.17 refer).**

**ANNEXURE IX**

**(page 223)**

## CHAPTER V

- C) Desirability and feasibility of converting existing buses , taxis and three wheelers to CNG
- 5.1 At present, the Brihan Mumbai Electric Supply and Transport Undertaking operates a fleet of abot 3500 buses in the city, out of which practically all run on diesel and only 10 run on CNG. As far as taxis are concerned, the total number registered in Mumbai is about 55,000 out of which about 11,000 operate on CNG and about the entire lot of remaining on diesel. The total number of autorickshaws (three wheelers) registered in Mumbai is about a 1 lakh , practically all of which run on petrol.
- 5.2 The need for increased use of CNG as a fuel and conversion of the commercial fleet to run on CNG has repeatedly been emphasised in a number of reports and orders, including those of the Hon'ble Supreme Court.
- 5.3 The Action Plan of the Central Pollution Control Board recommended that taxis, three wheelers and all government vehicles should be converted to run on CNG by 31st December 1999.
- 5.4 The URBAIR Report recommends increased use of CNG in taxis and private cars, provision of more filling stations and increasing awareness about its use. Infact, it contemplates replacement of 50% of petrol consumption in passenger cars with CNG. It points out that use of CNG in cars can effectively reduce PM 10 emissions by upto 90%.
- 5.5 The Bhure Lal Committee noted that it was imperative to have increased use of CNG as a fuel in Delhi and made various

recommendations in this regard which were adopted in the form of directions by the Hon'ble Supreme Court.

5.6 The Hon'ble Supreme Court, on the basis of the

**ANNEXURE VI**

(page 202)

recommendations of the Bhure Lal Committee, has directed in its order dated 28th July 1998 with respect to Delhi :

a) That all pre-1990 autos and taxis be replaced with new vehicles running on clean fuels by 31st March 2000.

b) That financial incentives be made available for replacement of all post -1990 autos and taxis with new vehicles on clean fuels by 31st March 2001.

c) That by 1st April 2000, no 8-year old buses are to ply except on CNG or other clean fuels.

d) That the entire city bus fleet be converted to single fuel mode of CNG by 31st March 2001.

e) That Gas Authority of India Limited expedite and expand from 9 to 80 CNG supply outlets by 31st March 2000.

5.7 The Committee has been informed that many of these directions have been fully or partly complied with as on date. An application by the D.T.C. for an extension of the deadline for compliance with the direction at (c) above was recently rejected by the Hon'ble Supreme Court.

5.8 The Committee is in complete agreement with the conclusions arrived at in these reports and orders that there is an urgent need for conversion/replacement of existing commercial vehicles running on petrol and diesel with those running on CNG. As mentioned earlier, the need for increased use of CNG has also been stressed by various parties before this Committee including Automotive Research Association of India, Society of Indian Manufacturers and the environmental groups.

### Conversion/Retro-fitment of CNG Engines

- 5.9 The feasibility of conversion of existing vehicles to run on CNG depends on the vehicle in question. It is, therefore, necessary to examine each category of vehicle separately.

#### Buses

- 5.10 As far as diesel buses are concerned, one of the two major bus manufacturers, Ashok Leyland Limited, (all the BEST buses have been supplied by M/s.Ashok Leyland Limited), has informed the Committee that it has developed a CNG conversion kit which has been submitted for approval to the Automotive Research Association of India and for which approval is expected. It has been stated that after receiving such approval, it would be in a position to commence supply within 12 to 16 weeks from the date of orders placed upon them.

ANNEXURE X  
(page 227)

- 5.11 The other major bus manufacturer Tata Engineering and Locomotive Company Limited (TELCO) has stated that it may not be desirable to convert existing buses to CNG as it would necessitate adding about a ton of load to the old chassis.

ANNEXURE XI  
(page 230)

- 5.12 The Brihan Mumbai Electric Supply and Transport Undertaking has submitted before the Committee that retro-fitment of 1 Ashok Leyland Bus with a CNG conversion kit would cost Rs.5.5 lakhs (inclusive of the cost of the kit, taxes and labour charges). It has also stated that the job of retrofitment is intricate and laborious and required considerable skill and time. It has stated that due to the high initial expenditure involved in retro-fitment of CNG kits and the uncertainty of their performance, it does not have plans to convert existing buses to run on CNG.

ANNEXURE VIII  
(page 212)

**ANNEXURE XII**  
(page 232)

5.13 Both the BEST and the Association of State Road Transport Undertaking have submitted that while it is possible to convert the existing buses to run on CNG, it is not desirable for the reasons given above.

5.14 However, M/s.Ashok Leyland Limited informed the Committee that they were in a position to supply dedicated CNG engine buses in requisite number to the BEST as per their orders.

5.15 In view of the technical and other difficulties involved in conversion of the existing BEST buses to run on CNG, the Committee feels that it may not be advisable , at this stage , to insist on conversion of all the existing buses to run on CNG. The Committee has also taken note of the fact that the BEST does appear to be running reasonably effective programmes of maintenance and repair and that it has of its own accord, taken steps to ensure that its buses meet the stricter pollution norm of 45 HSU .They also have an award scheme for pointing out a polluting bus. At the same time, the Committee is of the view that the present situation is not acceptable and that some action to improve the emissions from the existing BEST fleet is still necessary.

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5.16 Accordingly, the Committee recommends that all orders of purchase of new buses after 1st May 2000 by BEST should be for dedicated CNG engines. The difficulty pointed out by the BEST about long filling time of CNG needs to be set right by the Mahanagar Gas Limited by supplying CNG at high pressure of 250 bars or more and by Ashok Leyland by making suitable arrangements in the bus tubing to receive CNG at such high pressure.

5.17 The Society of Indian Automobile Manufacturers have informed the Committee that EURO II diesel engine buses would be available across the country from 1st April 2003. While giving this date, they seem to have kept in view the likely date of availability of 0.05% sulphur diesel all over the country. However, they felt that for

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metropolitan cities, they could make Euro II compliant buses available much earlier than the above mentioned date.

5.18 M/s.Telco informed the Committee that Euro II compliant diesel engined buses could be supplied by them within 4 to 6 months' time from placement of orders.

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5.19 M/s.Ashok Leyland Ltd. though generally felt that large scale Euro II compliant diesel engined buses would be supplied by them from 1st April 2003, they indicated that the requirement of BEST for such buses could be met within a period of 4 to 6 months of placement of firm order.

5.20 Taking into consideration the availability of Euro II compliant diesel engine buses, the Committee feels that BEST should exercise an option either to have dedicated CNG operated buses, which naturally should be a preferred option, or have Euro II compliant diesel engine buses as soon as they become available. While having such a mix of dedicated CNG operated buses and Euro II compliant diesel engine buses, the Committee recommends that in order to keep the SPM level low, at least 1,000 buses in the fleet of the BEST should run on CNG by 1st April 2005.

5.21 A large number of buses in the BEST fleet today are having engines which are not even Euro I compliant. All the new chassis being supplied by M/s.Ashok Leyland Ltd. with effect from 1st April 2000 are powered by engines conforming to India 2000 norms. In addition, M/s.Ashok Leyland Ltd. are also supplying 100 new engines complying with India 2000 norms as spare engines for replacement on existing buses. The practice in BEST is for unit replacements. Each BEST bus makes an annual run of over 75,000 kms. Thus, engines need to be overhauled / replaced in about 2 years time. Therefore, it would be possible for BEST to upgrade the existing engines by replacing them with Euro II compliant engines. The Committee, therefore, recommends that by 1st October 2002 the BEST should convert the

engines of all buses which are not running on CNG with Euro II compliant engines.

5.22 Those Maharashtra State Road Transport Corporation buses which operate in and out of Mumbai should also be required to upgrade their engines to Euro II compliant engines by 1st October 2002.

5.23 All the private contract buses which are registered and operating in Mumbai Metropolitan Region should likewise, replace existing engines by CNG engines or Euro II compliant engines by 1st January 2002. Since the number involved for each private contract bus owner is much smaller as compared to BrihanMumbai Electric Supply and Transport Undertaking or Maharashtra State Road Transport Corporation, earlier date of 1st January 2002 is being stipulated for them to convert their existing engines. This recommendation is being extended to cover the entire Mumbai Metropolitan Region with a view to ensure better enforcement.

#### Cars (Taxis)

5.24 The Committee noted that conversion of taxis to CNG is both desirable and feasible. Nearly 11,000 taxis have already been converted to CNG. Keeping in view the nature of taxi trade in which maintenance of taxis is a big casualty, the Committee strongly feels that more and more taxis should convert to petrol-cum-CNG. A large number of taxis which are illegally fitted with 3 cylinder engines would need replacement as per the orders of the Hon'ble High Court, with new petrol-cum-CNG vehicles. Since the 137 D diesel engine fitted on taxis during last 7 years is of a vary poor quality, such taxis also need to be converted. The Committee, therefore, recommends that all diesel taxis above the age of 15 years must convert to petrol-cum-CNG or LPG (if permitted) by 1st April 2001. Further, all taxis over 8 years of age should convert to CNG or any other cleaner fuel by 1st January 2002 failing which it would have to be scrapped as recommended in Chapter VIII. This is in

line with the directions given by the Hon'ble Supreme Court in the context of NCR Delhi.

**Autorickshaws**

- 5.25 CNG kits are now available for 3 wheelers. Therefore, it is possible to convert the existing two stroke 3 wheelers to CNG. This is particularly essential because two stroke engines are highly polluting. In addition various mal-practices are indulged in by many autorickshaw owners/operators which make their vehicles highly polluting. Accordingly, the Committee recommends that all 3 wheelers above the age of 10 years must be converted on CNG or any other cleaner fuel by 1st January 2001. Further, with effect from 1st January 2002, all 3 wheelers over 8 years of age should convert to cleaner fuel failing which they should be scrapped.**

## CHAPTER VI

D) Assessment of whether the existing emission norms required to be revised for Mumbai city and if so, at what levels should they be fixed -

6.1 The Ministry of Surface Transport, Government of India have prescribed under Rule 115 of the Central Motor Vehicles Rules, 1989, the exhaust emission norms for vehicles. These norms are applicable all over India without making any geographical differentiation for metropolitan cities vis-a-vis the rest of India. The maximum permissible limits of carbon monoxide for vehicles running on petrol engines and smoke density for vehicles running on diesel engines have alone been prescribed. The carbon monoxide emission for 4 wheelers has been prescribed at the level of 3% whereas the same for 2 and 3 wheelers has been prescribed at 4.5%. These maximum permissible limits are, no doubt, very lax. Considering the fact that almost all the 2 and 3 wheelers now plying in the Mumbai city are having two stroke engines, there is an urgent need to reduce the emission from these vehicles. The Committee, therefore, recommends that with effect from 1st October 2000 for Mumbai city, the permissible level of carbon monoxide from 2 and 3 wheelers should be reduced to 3% on par with the emission levels permitted for 4 wheelers. The Ministry of Surface Transport, Govt. of India would need to make suitable modifications in the Rule 115 and adopt the above norms for the entire country by 1st April 2001.

- 6.2** The maximum permissible limit of smoke density for vehicles running on diesel has been laid down as 65 Hartridge Smoke Units. It has been established through various medical studies that the harmful effect of Suspended Particulate Matter on the health of human beings particularly children is enormous, especially in cities like Mumbai where vehicles and population densities are very high and people in general have to travel for long periods thereby being exposed to excessive levels of pollution. There is, therefore, an urgent need to have stricter emission norms for diesel vehicles in the city of Mumbai.
- 6.3** These norms were framed in 1989/1991. The problem of vehicular pollution was not even remotely as severe as it is at present, and have not been revised for over ten years. It is significant that a diesel vehicle emitting black smoke may still meet the norms of 65 HSU. In other words, the norm for smoke density (which does not even apply to petrol vehicles) is so lax that a vehicle meeting the norm may still emit black smoke which is a major pollutant primarily of SPM. The norm for carbon monoxide is similarly lax. The Committee noted the fact that the Euro I and II norms which have now been prescribed for new vehicles are much more strict and bear no relation to these old norms. This is obviously an anachronistic situation. Such a situation, where the norms required to be met by new vehicles are strict, but those required to be met by vehicles on the road (including ones which have just been purchased) are extremely lax, is clearly illogical. In any case, the Committee is firmly of the view that a norm which permits visible emissions of smoke is unacceptable. It would be pertinent to state that under the provisions of Air Pollution Control Act, the State Government / State Pollution Control Board is permitted to impose stricter emission norms for industries than those prescribed by the Govt of India / Central Pollution Control Board.

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**6.4 The Committee was informed that by a suitable preventive maintenance programme followed strictly, the BEST were able to keep all their buses emissions below 45 HSU. The Committee was also informed that BEST had a scheme under which a reward of Rs.100/- was given to any one who found a BEST bus emitting visible smoke above the level of 45 HSU. Despite, this scheme being in force for over 3 years, less than 30 cases had been reported under the above scheme. The Committee, also noted that above 45 HSU, the smoke from exhaust is clearly visible in black colour. At the present permissible level of 65 Hartridge Smoke Units, the vehicles clearly belch black smoke which is highly offensive, damaging for the respiratory system, and carcinogenic. The Committee, accordingly, recommends that the maximum permissible limit of smoke in diesel driven vehicles in Mumbai city should be reduced to 45 HSU with effect from 1st July 2000. The Ministry of Surface Transport, Govt of India should take necessary steps for adopting the above limits for the entire country also by 1st July 2001 by issuing a suitable notification.**

**6.5 The Committee noted that under Rule 115 of the Central Motor Vehicles Rules, 1989, limits for other pollutants like Oxides of Nitrogen, Hydrocarbons, Sulphur-dioxide, Benzene etc. have not been prescribed. Smoke density for petrol engines has also not been specified. The present machines for monitoring pollution are only recording the levels of carbon monoxide for petrol vehicles and smoke density for the diesel vehicles. Some of such machines have a capability of recording other pollutants like Sulphur-dioxide, Nox etc. But cannot be used for monitoring these pollutants as no norms have been laid down. It is, therefore, necessary, in view of the Committee, that Ministry of Surface Transport, Govt of India should prescribe norms for other vehicular pollutants applicable to the metropolitan cities only, latest by 31st October 2000. Such new norms should also include smoke intensity in petrol vehicles particularly two and three wheelers. Machines suitable to measure and record all the pollutants so notified would need approval from the appropriate agencies prescribed under the Motor Vehicles Act, 1988. The availability of such machines to monitor the pollution of above notified pollutants would also need to be ensured by 31st October 2000.**

## CHAPTER VII

E) Applicability of Euro I and Euro II norms to commercial non-private vehicles

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7.1 The Ministry of Surface Transport, Govt of India has already laid down India 2000 norms vide their notification No. 493 (E) dated 28th August 1997 applicable for all categories of vehicles all over the country with effect from 1st April 2000. The Ministry of Surface Transport, Government of India has also notified India 2000 norms only for private vehicles below 3500 kgs. However, Bharat Stage II norms for other categories of vehicles are still to be notified by the Ministry of Surface Transport, Government of India. The India 2000 and Bharat Stage II norms are broadly equivalent to the Euro I and Euro II norms applicable in Europe.

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7.2 Through orders of the Supreme Court and Mumbai High Court, the Euro I and Euro II norms have been made applicable in metropolitan cities ( NCR Delhi and Mumbai) even earlier than the dates specified in the notification of Ministry of Surface Transport, Government of India. In NCR Delhi, the India 2000 norms for private vehicles have come in force with effect from 1st June 1999 and Bharat Stage II norms (equivalent to Euro II norms) from 1st April 2000. The Mumbai High Court has made Euro I norms applicable to all vehicles registered in Mumbai city with effect from 1st January 2000 and Euro II norms with effect from 1st January 2001 for private vehicles.

7.3 The Committee, on the basis of position brought out above, recommends that the Ministry of Surface Transport, Govt of India should lay down Bharat Stage II mass emission norms (equivalent to Euro II norms) for all categories of vehicles, which are still not covered

**in Government of India notification dated 31st January 2000, latest by 30th September 2000.**

**7.4 India has lagged behind the European countries in adopting their emission norms by several years. There is urgent need to catch up with them atleast by 2005 when Euro IV norms come in force there. Accordingly, the Ministry of Surface Transport, Government of India should notify the Euro III and Euro IV equivalent norms by 1st April 2002. Further Euro IV equivalent norms should come in force in India with effect from 1st April 2005.**

**7.5 In view of the preparedness of the manufacturers of heavy goods vehicles to supply Euro II compliant engines within 6 months of placement of orders and the submission made by the Society of Indian Automobile Manufacturers that Euro II compliant engines in the Multi utility vehicles would be available from 1st October 2000 and the fact that 0.05% sulphur diesel would be available in the city of Mumbai by 1st October 2000, the Committee recommends that all heavy vehicles as well as light goods vehicles registered in the Mumbai Metropolitan Region from 1st April 2001 must be Bharat Stage II compliant (equivalent to Euro II).**

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## CHAPTER VIII

### Desirability and feasibility of phasing out all vehicles (private cars, trucks, buses, taxis, autorickshaws, two wheelers) over a certain age limit

- 8.1 There are 3,10,943 private cars, 36,530 trucks (including tankers lorries and four wheeler delivery vans), 8,426 buses, 49,341 taxis, 1,06,114 three wheelers (including passenger vehicles and delivery van), 3,79,441 two wheelers registered in the city of Mumbai as on 31st March 1999.
- 8.2 Out of these, about 46,432 private cars are more than 20 years old, 19,054 trucks (including tankers, lorries and four wheeler delivery vans) are more than 15 years old, 2,458 buses are more than 15 years old, 14,907 taxis are more than 15 years old, 64,866 three wheelers are more than 10 years old and 60,506 two wheelers are more than 15 years old. Further, 2,10,520 motor cars using petrol have been registered upto 31st March 1995.
- 8.3 Section 59 of the Motor Vehicles Act, 1988 empowers the Central Government to specify the life of a motor vehicle having regard to the public safety, convenience and objects of this Act. After the expiry of said age, the vehicle is deemed to not comply with the requirements of this Act and the Rules made thereunder. The Central Government has also been empowered under this Section to specify different ages for different classes or different types of motor vehicles. However, Ministry of Surface Transport, Govt of India has not taken appropriate action under the above Section to prescribe age of different types of vehicles.
- 8.4 For all India tourist taxis, a maximum age of 9 years has been prescribed under Rule 82 of Central Motor Vehicles Rules, 1989.

- 8.5** It is an accepted fact that as the vehicle gets older, the level of pollution from it increases because of wear and tear of its parts. The roadworthiness of an older vehicle needs to be checked more frequently and accordingly, it is provided that for private vehicles after 15 years from the date of registration, the vehicle is required to be certified for roadworthiness every year.
- 8.6** For transport vehicles, an annual fitness certificate for roadworthiness has been provided under Section 56 of Motor Vehicles Act, 1988.
- 8.7** Taking into consideration the position brought out above, the Committee is of the firm view that the Ministry of Surface Transport, Government of India must take action under Section 59 of Motor Vehicles Act, 1988 and prescribe the maximum age of all types of vehicles latest by 31st December 2000. While doing so, the various judicial pronouncements made could be kept in view. Further in the opinion of the Committee, the maximum age prescribed for different types of vehicles could vary for the metropolitan cities vis-a-vis rest of the country because of stricter requirement of anti pollution measures in metropolitan cities in comparison with the rest of the country.
- 8.8** The Bhure Lal Report contained various recommendations regarding phasing out of old vehicles which were adopted in the form of directions by the Hon'ble Supreme Court. In its order dated 28th July 1998, the Hon'ble Court, interalia, directed,
- A)** restriction on plying of commercial vehicles including taxis, which were more than 15 years old by 2nd October 1998.
  - B)** Replacment of all pre 1990 (i.e. 8 years old) autorickshaws and taxis with new vehicles running on clean fuel by 31st March 2000.
  - C)** A ban after 1st April 2000 on all buses over the age of 8 years unles fitted with CNG or other clean fuels
  - D)** The conversion of the entire DTC and private bus fleet to single fuel mode on CNG by 31st March 2001

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- 8.9 The time frame for the phasing out of commercial vehicles over 15 years was modified slightly by a subsequent order dated 22nd September 1998.
- 8.10 The Hon'ble Supreme Court has thus laid down the need to phase out old inefficient vehicles.
- 8.11 The Automotive Research Association of India has submitted before this Committee that it is desirable to phase out old vehicles and has noted that this process has been started in the NCR , Delhi. It has stated that this would result in a more effective reduction of pollution and that all vehicles may be included in this scheme. It has pointed out that taxis, commercial vehicles and autorickshaws need more frequent replacement because of a higher usage factor.
- 8.12 Society of Indian Automobile Manufacturers has also submitted that older vehicles should be phased out and has suggested that a programme along the lines of action taken in Delhi should be considered for Mumbai to begin with. It has also submitted that in the long turn, it would be better to phase out vehicles which are over 10 years old. As far as two wheelers are concerned, it has suggested a phase out of those over 12 years old on a continuous basis.
- 8.13 The Committee has taken into consideration the diverse views on this issue expressed by the taxi transporters union and the WIAA. The Taximen and Transporters Unions have oposed a phase out on the basis that it is not justified or necessary and will cause hardship. The Committee however is of the view that a phase out of older vehicles is absolutely necessary and is in fact, overdue. This is particularly so in the case of taxis, autorickshaws and the rest of the commercial fleet, which see much more intense use and lower levels of maintenance. The older taxis and autorickshaws in particular, are major contributors to the pollution load, often emitting dense clouds of smoke. The Committee is of the view that there is a need for phasing out non commercial vehcles over a certain age. While it is true that maintenance

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and repair of private vehicles are, in general, superior to that of the commercial vehicles, the fact remains that the engine of a vehicle which is 15 to 20 years old, even if it is well maintained, is extremely inefficient in comparison to newer models and contributes a much heavier pollution load in the form of emissions.

- 8.14 For Mumbai city also there is an urgent need to have a similar programme of phasing out old commercial vehicles. In fact, the Committee is of the opinion that even the private vehicles should be covered under such programme of phasing out vehicles. This is primarily based on the consideration that the quality of engines of in-use vehicles is not very good since emission norms were not formulated in the country till 1991. Even thereafter the enforcement has been very tardy. The country has been lagging behind the European countries in implementing mass emission norms by a period of around 6 to 8 years. Due to increased awareness about the ill-effects of pollution on health, particularly of children, attempts are now being made to catch up with the European countries by the year 2005 when Euro IV norms would be implemented there.
- 8.15 The two wheelers have all along used two stroke engines which are considered to be technologically inferior to four stroke engines.
- 8.16 Engines in 4 wheeler private old cars are not even Euro I compliant. It is only from 1st January 2000 that all vehicles being registered in Mumbai are required to have India 2000 norms - compliant engines (equivalent to Euro I) as per the directions of the Hon'ble High Court.
- 8.17 In view of the position brought out above, the Committee recommends that all two wheelers over the age of 15 years should be scrapped and their registration deemed to have been cancelled with effect from 1st January 2001. There are no CNG kits for 2 wheelers .

- 8.18** Likewise, all private cars older than 20 years shall be scrapped with effect from 1st January 2001 unless they are converted to clean fuel by then. The Committee would have liked to prescribe scrapping of all private vehicles after the age of 15 years but considering the mind set of the Indian car users where they get sentimentally attached to the vehicle and treat it as a life long companion, the Committee has suggested a more lenient age of 20 years. Even then option has been given to the owner to ply it beyond 20 years provided the vehicle was converted on a clean fuel.
- 8.19** For 3 wheelers which are also operating on two stroke engines and are considered to be highly polluting vehicles (also because of various mal-practices indulged), the Committee feels that a stricter age restriction needs to be laid down. Accordingly, in the first phase the Committee recommends that all 3 wheelers over the age of 10 years shall be scrapped with effect from 1st January 2001 unless they are converted to clean fuel.
- 8.20** The Committee took into consideration the views expressed by the taxi and goods vehicles operators who are not in agreement with compulsorily phasing out old vehicles. The Maharashtra Rajya Truck Tempo Tanker Bus Vehatuk Mahasangh was of the view that they have their own replacement scheule of key parts of their vehicles and that engines were overhauled from time to time to control pollution. The Mahasangh also claims that even a vehicle with more than 10 years old chassis with properly overhauled engine performs well. Mahasangh has also submitted that whenever it is found necessary or when the goods vehicle is found to emit excess smoke, fuel filter elements, fuel injection pipes and/or fuel injectors are replaced. They have also given a replacement schedule. It has also been stated by them that they periodically carry out exhaust checking of vehicles of their members at various camps. It is submitted by them that due to financial constraints and replacement incapacibilities of the operators, it is not possible to

replace the present vehicles since it is an economically unviable option. As per their assessment the average cost of a new vehicle is Rs. 5 lakhs. The operator would be required to incur an expenditure of Rs.36000 per month to cover interest, depreciation, maintenance and his own remuneration. As the vehicle runs for approximately 22 days of the month and the operator can earn a maximum of Rs.1000 per day, he will not be able to replace his vehicle with new one.

8.21 The views of the Mahasangh were taken into consideration by the Committee. It has been observed that despite of the statements of Mahasangh about maintenance of the vehicles, the fact is that the vehicles invariably are not found to be maintained properly. It is also true that as the vehicle gets older, the original configuration undergoes a total change with replacement of parts taking place at random intervals, as and when break-downs occur. Since these replacements are invariably carried out on the roadside, the genuineness of the parts can never be guaranteed. Also the spurious parts are available for sale at much lower prices. This results in the original parts being gradually replaced by spurious spares. This leads to uneven wear and tear of parts, affecting engine performance adversely, thus giving rise to increased levels of pollution. The statement regarding financial non-viability of vehicle replacement was also discussed by the committee. The Committee was of the view that the financial position of the vehicle owner cannot be a material factor, particularly since pollution results in the health of the common man being affected adversely.

8.22 The Committee also noted that a properly maintained and tuned goods vehicle not only is environmental friendly but also results in 15% saving in diesel consumption for the owner.

8.23 The Committee, therefore, recommends that all transport vehicles except BEST buses and three wheelers over the age of 15 years shall be scrapped unless converted to a clean fuel by 1st January 2001.

**8.24** In phase II to come into effect from 1st January 2002, all transport vehicles over 8 years of age plying in Mumbai city should be scrapped unless converted to cleaner fuel. This restriction would not cover BEST buses since the preventive maintenance of BEST buses is of a very high order. Brihan Mumbai Electric Supply and Transport Undertaking replaces the entire engines as a unit, as a part of their repair practice. The age of 8 years has been adopted on the basis of the Supreme Court's directions implemented in the NCR Delhi. However, this age of 8 years could be reconsidered if the Ministry of Surface Transport, Government of India decided to notify a different age under Section 59 of the Motor Vehicles Act, 1988. As already mentioned the concept of age has already been provided in the Act for all India tourist permit taxis wherein a vehicle cannot be older than 9 years.

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The Maharashtra Government also have issued a notification laying down the age of 9 years for all commercial vehicles. But this notification is yet to be finalised.

**8.25** Vintage and Classic cars which are registered with the Vintage and Classic Car Club of India are proposed to be excluded from the above age restrictions since such vehicles are used very sparingly and have special vintage value for the country.

**8.26** For BEST buses a separate consideration has been taken into account considering the fact that their buses are well maintained and they are replacing the engines as a whole unit at the time of any repair or maintenance. The Committee also noted that BEST on its own had decided to maintain a stricter emission standard of 45 HSU, as against the permissible 65 HSU, for their buses. The Committee also noted that BEST had a scheme under which they gave an award of Rs.100/- to any one who pointed out any BEST bus emitting black smoke and less than 30 cases were reported under the scheme during the last 3 years.

- 8.27** In view of the above, the Committee recommends that all BEST buses older than 20 years would be scrapped by 1st January 2001 unless they were converted to CNG or any other clean fuel. Further, by 1st January 2002 all BEST buses over 15 years would be scrapped unless converted to clean fuel. Likewise, with effect from 1st January 2002 all BEST buses older than 8 years should either be scrapped or converted to a clean fuel or fitted with Euro II compliant engine or any superior version engines. BEST should add more CNG buses in their fleet and should ensure that atleast 1000 buses run on CNG or any other clean fuel by 1st April 2005.
- 8.28** Since it is possible to bring the vehicle from outside the State of Maharashtra for registration in Maharashtra, the Committee decided that no such vehicle coming from outside the State would be registered in Mumbai if it did not meet the age stipulation laid down above.
- 8.29** The Committee also recommends that conversion of transport vehicles to non- transport category would not be allowed when it is felt that the same is being done exclusively with the objective of avoiding the restriction of compulsorily scrapping of the vehicle.
- 8.30** The Committee noted that so far the concept of scrapping vehicles has not been popular with the car owners and accordingly, the Municipal Corporation of Greater Mumbai had also not set up any scrap-yard where old vehicles could be dumped. In view of the recommendations above for compulsory scrapping of vehicles within specified time frames, it has become necessary that the MCGM should provide a scrap-yard in Mumbai, latest by 31st December 2000. All vehicles sent to such scrap-yard could be disposed off by the MCGM as per their policy for disposal of seized / unclaimed articles.

**8.31 In this connection the Committee felt that the vehicle manufacturers should also come forward to take back their old vehicles for scrapping. Accordingly, the Committee recommends that with effect from 1st January 2001 the vehicle manufacturers should announce an appropriate 'buy back scheme' to take back the old vehicles for scrapping.**

## CHAPTER IX

**G) Measures for improvement of emission levels of in use vehicles correspondingly**

- 9.1** The Government of India, Ministry of Surface Transport have not laid down any norms or standards of roadworthiness for all the transport vehicles manufactured in India. The Regional Transport Offices of the Motor Vehicles Department do not possess the required equipment for testing the brakes, steering or other aspects of mechanical fitness of the vehicles before certifying physical fitness.
- 9.2** In view of the position mentioned above, the Committee recommends that by 31st December 2000, the Ministry of Surface Transport, Government of India should lay down norms and standards of roadworthiness for all transport vehicles manufactured in India.
- 9.3** The Committee has come across literature from manufacturers of diesel traps/filters claiming substantial reduction in particulate emission. The Committee recommends that the Ministry of Surface Transport, Government of India should lay down standards for the same.
- 9.4** The annual fitness certificates for all transport vehicles which are to be granted by the Motor Vehicles Department , must be based on the certificates produced from an authorised testing station set up in Mumbai with due approval under the Motor Vehicles Act, 1988 or from an Inspection and Maintenance Centre which possesses modern and computerised equipments to inspect and certify mechanical fitness of transport vehicles. Only by this method, the deficiency of Motor Vehicles Department of inadequate manpower and equipment to

genuinely inspect the transport vehicles can be taken care of. The Committee, accordingly recommends that annual certification of transport vehicles with effect from 1st April 2002 should be done only after a certificate from an authorised testing station or an I & M Centre is produced by the owner of the transport vehicles before the Regional Transport Officer. This system would apply only to transport vehicles registered in Mumbai Metropolitan Region. However, with effect from 1st April 2005 such a system should be extended to cover all private vehicles over 15 years also. The certificates given by such centres would be valid for a period of one year. The private vehicles will carry with them such a fitness certificate all the time in the same manner as they are required to carry a valid PUC certificate.

9.5 It was represented to the Committee that the vehicle manufacturers do not take any responsibility about the standards of emission from the in use vehicle. It was also complained that large scale spurious parts available in the market adversely affect the emission levels. The Committee considered all the issues and was of the firm view that the vehicle manufacturers will have to play a more active role in controlling pollution from their vehicles and would need to give an emission warranty over the life of their vehicle. Accordingly, the Committee recommends that , for all new vehicles which are manufactured after 1st April 2001, the vehicle manufacturers will give a emission warranty over the life of the vehicle through a scheme of annual maintenance contract which will have to be compulsorily entered into by the vehicle owner if he wanted to avail of the said emission warranty from the manufacturer. The rates of annual maintenance contract could increase marginally as the age of the vehicle advanced. The vehicle manufacturers would set up a suitable network of their authorised service stations and approved private garages to ensure that all such vehicles with warranty are maintained in good condition and meet the emission standards all the time. Use of only genuine spare parts will

have to be ensured by the vehicle manufacturers through such service stations and approved garages.

- 9.6 The Committee also recommends that for those vehicles which are not covered under the annual maintenance contract, the vehicle manufacturers should hold inspection camps periodically where the vehicles could be checked for their performance on payment of requisite charges.
- 9.7 Since the existing vehicles in use owned by government. Semi-government., and local authorities are registered in Mumbai prior to 1st January 2000, these vehicles do not comply with the India 2000 emission standards. To contain level of pollution from them the Committee recommends that these vehicles should be fitted with a catalytic convertor by 1st July 2001 or they should get converted to a clean fuel by then.
- 9.8 Similarly, all two stroke two and three wheelers which are in use and which have been registered prior to 1st January 2000 in Mumbai, should be fitted with a catalytic converter by 1st July 2001 since they also have engines which do not comply with India 2000 norms.
- 9.9 All private petrol driven vehicles registered prior to 1st April 1995 in Mumbai should also likewise fit catalytic converters on them by 1st July 2001 or get them converted to a clean fuel. All vehicles registered in Mumbai after 1st April 1995 are already fitted with catalytic converters.
- 9.10 The manufacturers of 2 wheelers have already represented to the Committee that they would guarantee the effective working of the catalytic convertor supplied by them as an original fitment over a distance of 30,000 kms. This has been noted by the Committee. The other manufacturers / suppliers of catalytic convertors should also give a similar guarantee for effective working of their catalytic convertors on the pattern of the guarantee being given by the 2 wheeler manufacturers.

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## CHAPTER X

### **H) Financial incentive that can be made available for replacement of old taxis and autorickshaws with new vehicles running on clean fuel**

- 10.1** A large number of old taxis and autorickshaws will need to be replaced as per the recommendations made by the Committee under different term of references. A number of taxis having unauthorised three cylinder engines would also need to be replaced as per the Hon'ble High Court's orders. For such replacements, in a limited time- frame, the owners of such taxis and autorickshaws would need financial assistance to buy new vehicles.
- 10.2** The Bombay Taximen's Union, the Mumbai Taxi Association and other taxi and auto operators unions have submitted before the Committee that they require financial assistance in order to replace these vehicles with taxis which will run on clean fuel. They have submitted that they should be granted loans of as much as 90% of the cost of the vehicle at extremely low rates of interest, an extended period of repayment of the loan, and certain other procedural concessions.
- 10.3** When similar restrictions were imposed by the Hon'ble Supreme Court for NCR Delhi, the Delhi government. had come out with a financial package which comprised of certain rebate in sales tax and certain subsidy in the interest on loans taken from banks.

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A copy of the scheme dated 20th October 1998 by Delhi government is annexed.

- 10.4** In the present situation, the concerned taxi owners would , in the normal course, be required to make their own financial arrangements for raising loans for replacing the existing vehicles. The rate of interest at which they would able to get loans, would be around 15%. They would be required to provide for 25% of the purchase price of the new taxi, expected to cost Rs.2 to 3 lakhs depending on the model as

margin money. In addition, they would have to provide guarantors as per the requirement of the bank. This would also apply to autorickshaws although the cost of a new vehicle would be lesser.

**10.5** As the replacement of such taxis and autorickshaws is being effected in the larger interest of plying mechanically fit and less polluting vehicles, and in view of the financial difficulties faced by the owners of these vehicles, the Committee feels that they should not be left to the mercies of commercial banking institutions. The difficulties faced by taxi and auto men in procurement and repayment of loans should also be taken into consideration. The Committee is, therefore, of the view that financial assistance is required to be provided by State government as recommended hereafter.

**10.6** The Government of Maharashtra should reduce the rate of sales tax applicable by 4%. In addition, the octroi duty should be reduced by 50% on such purchases. Likewise, the rate of interest should be subsidised by 4% on the loans taken from banks / financial institution etc.

**10.7** All the above concessions should be granted for a limited period. Accordingly, the Committee recommends that all new vehicles which are purchased upto 31st October 2001 for replacement of old vehicles only should be eligible for the above mentioned financial benefits.

**10.8** The Committee has made a number of recommendations which would need BEST to make substantial investments in buying new vehicles and new engines . BEST represented before the Committee their financial difficulties in implementing replacement/conversion programme. It is, therefore, essential that the parent body of BEST viz. Municipal Corporation of Greater Mumbai must extend full financial support to BEST. Municipal Corporation of Greater Mumbai has to bear in mind that reduced pollution brings down their expenditure on health services.

## CHAPTER XI

I) Action required to be taken in respect of two wheelers and three wheelers utilising two stroke engines

11.1 This issue was discussed in great detail, particularly since the Committee was of the view that two and three wheelers using outdated technologies were one of the primary contributors of vehicular pollution.

11.2 Two stroke engine technology that requires the addition of oil to petrol is particularly poor from pollution view point since approximately 30-40% of the hydrocarbons remain unburnt and are emitted directly into the atmosphere. The Central Pollution Control Board Action Plan for control of pollution in Mumbai says: “Because of the inherent drawback in design of the two stroke engine, two wheelers emit about 30-40% of the fuel unburnt/partially burnt. The entire population of two wheelers (about 95%) are powered by two stroke engines. The numbers of models of two stroke engines have been progressively increasing. Most experts across the country and the world agree that the two stroke engine, in spite of R& D efforts towards improving their designs, continues to be high emitters of hydrocarbons and carbon monoxide.

“Pollution from three wheelers, There are 57226 nos. of three wheelers in Mumbai. They are petrol driven, powered by two stroke engines and are a source of emission of carbon monoxide and hydrocarbons. In addition, it is commonly believed that kerosene is mixed with petrol which results in emissions of thick black smoke”.

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- 11.3 As per the submissions made by Automotive Research Association of India to this Committee, “2 stroke engined vehicles pollute more than 4 stroke engine vehicles (4-5 times HC emissions)”.**
- 11.4 Addition of excess oil to the petrol tank by two and three wheeler owners, on the mistaken belief that this is beneficial and will improve engine performance, further aggravates the problem.**
- 11.5 Society of Indian Automobile Manufacturers emphasized that two stroke engine with a catalytic converter is not a bad technology viz-a-vis 4 stroke engine. The question whether a two stroke engine is more polluting than a four stroke engine depends on the pollutant under consideration. Four stroke engines tend to emit higher levels of CO and NOx and lower HC compared to two stroke engines.**
- 11.6 However, the Committee noted that in the presentation made by Society of Indian Automobile Manufacturers, the emission levels of four stroke engines were compared with the emissions of two stroke engines fitted with catalytic converters which was not a proper comparison. The Committee also noted that fourstroke engine technology is superior to two stroke from pollution point of view. The Committee felt that it was preferable to go for a better technology engine rather than contain emissions on an inferior engine with the help of a catalytic converter. In view of this, the Committee feels that with effect from 1st October 2000, only four stroke engined 2 and 3 wheelers shall be registered in Mumbai Metropolitan Region.**
- 11.7 Further, in view of what has been stated above, to reduce pollution from the in use 3 wheelers, it would be necessary to insist that they should fit a catalytic converter latest by 1st July 2001. Obviously, this restriction would be applicable only to such 3 wheelers which otherwise, are not required to be scrapped or converted to clean fuel by that date on account of their age.**

- 11.8 In a similar fashion, all two wheelers will have to necessarily fit a catalytic converter latest by 1st July 2001. This restriction would be applicable to all such two wheelers which are registered in the Mumbai Metropolitan Region and which are lower than the age of 15 years, at which age they are required to be scrapped, compulsorily.**
- 11.9 All the vehicle owners of 2 and 3 wheelers will be required to carry a proof of having fitted a catalytic converter on their vehicle in the same manner as they carry a PUC certificate.**
- 11.10 In Delhi the Supreme Court directive of selling only pre-mixed petrol to the 2 and 3 wheelers at all the petrol pumps has been successfully implemented. On similar lines, with effect from 1st October 2000, all the petrol pumps in Mumbai Metropolitan Region will, sell only pre-mixed petrol to the 2 and 3 wheelers plying in Mumbai.**
- 11.11 The tendency of the owners of 2 and 3 wheelers to use higher percentage of oil than that recommended by the manufacturers needs to be curbed. Accordingly, use of higher percentage of oil should make the vehicle owner liable to a fine of Rs.1,000/-.**
- 11.12 The tendency to cut down operating cost by adding kerosene in the petrol by the 2 and 3 wheeler owners/drivers also needs to be curbed. Accordingly, any driver / owner found adding kerosene or any other unauthorised petrol like product (e.g. Patrex, Rexon, Cixon etc.) in the fuel tank of the vehicle, should be liable for criminal action under the Environment Protection Act 1986 as well as the Essential Commodities Act, 1939.**

**ANNEXURE VI**

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## CHAPTER XII

### J) Measures to prevent fuel adulteration

- 12.1. The Committee is distressed to note that fuel adulteration is a major threat to the health of the city and its citizens. It also results in an estimated financial loss of about Rs.10,000/- crores per annum to the nation. The additional loss in terms of illness, premature death and loss of productivity is of a much higher magnitude.
- 12.2. The Committee noted that all the petrol pumps are either owned by the oil companies or are run on basis of a franchise. These petrol pumps, therefore, carry the name of the oil companies. However, the Committee observed that the control of the oil companies on such petrol pumps to ensure that unadulterated fuel was sold, was far too inadequate. The Committee felt that the oil companies neither had the will nor adopted modern techniques to ensure supply of unadulterated fuel from these retail outlets. In the few instances where the oil companies were able to detect adulteration at their petrol pump, the oil companies were reluctant to take any action like cancelling the dealership or giving wide publicity to such detection. The actions taken by the vigilance departments of each of the oil companies also appeared to be far too insufficient to make an impact in checking this rampant menace of fuel adulteration. The Committee accordingly recommends that the responsibility of the oil companies to ensure that fuel sold at their retail outlets is unadulterated, must be discharged with greater effectivity, transparency and responsibility.

- 12.3. Petrol is commonly adulterated with naphtha, benzene, para-xylene, etc. Diesel is adulterated with kerosene, either imported or diverted from the Public Distribution System. Petrol sold to three wheelers is also adulterated with kerosene.**
- 12.4. The problem of adulteration is not confined only to the fuels. Lubricants, which are high value items, also suffer from the same fate. The Committee was informed that the level of sophistication is so high that spurious lubricants are being sold in packaging that is indistinguishable from the original.**
- 12.5. The testing procedures currently being adopted for detecting adulteration are totally inadequate. All the tests that are currently being carried out are unable to detect the mixing of one hydrocarbon with another, provided it is done in the correct proportions. The Committee is of the view that the adulteration mafia has some of the best technical expertise available to enable their adulteration to be undetectable.**
- 12.6. The biggest factor responsible for encouraging adulteration of fuel is the huge price differential in the Indian market for different types of fuels and petroleum products. Basically, the cost of production/manufacture of kerosene and petrol at the refinery level is practically the same. Yet kerosene is available at about Rs.5 per litre, whereas petrol is sold at Rs.29 per litre. Diesel is sold at Rs.16 per litre, and naphtha is sold at Rs.12 per litre. Thus by adding about 30% kerosene to diesel, the retailer can increase his profit margin to 30% (as against his official dealer margin of 0.25%).**
- 12.7. The Committee was informed that the adulteration of fuel is a widespread menace and takes place at practically every link of the chain. The tankers carrying petroleum product from the refinery to the retail outlets are also actively participating in this menace. The Committee also observed that the transportation rates given by the oil companies to these tankers are often much below economically viable**

rates. This, prima facie, gives rise to the suspicion that the tanker owners are operating at these uneconomic rates only because they take away the original product and replace it by a cheaper product during transportation. Since these tankers are not having any specific colour code, it is not possible for an ordinary citizen to make out from the tanker unloading its material at the petrol pump whether it is diesel/petrol or any other adulterant.

12.8. To bring about a greater transparency in the transportation mechanism, the Committee recommends that all the tank lorries transporting petrol and diesel, should be in bright Maroon colour, those engaged in transporting kerosene, naphtha, NGL, SKO, OCS 93, C9, Benzene and solvent should be in bright Yellow colour and all others in transporting any other petroleum product other than those given above, should be painted in bright Green colour. These 3 colours can be used only by tankers carrying petroleum products. The tankers carrying water or any other material including hazardous gases, should not be allowed to use these 3 colours.

12.9. Wide publicity should be given to the above colour coding of the tankers so that ordinary citizens are aware that petrol and diesel is carried only in bright Maroon colour tankers. If one finds a tanker of any colour other than Maroon and notices its contents being off-loaded at any of the petrol pumps, he or she could immediately take notice and report about adulteration being done at that petrol pump.

**ANNEXURE XIX**

12.10. A detailed scheme on this colour coding is annexed.

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12.11. The Committee feels that this scheme is a positive step forward in the direction of containing fuel adulteration and should be adopted by the oil companies and should come in force in Maharashtra State with effect from 1st October 2000.

- 12.12. The Committee noted that naphtha and benzene were being used for adulteration. Since these products have alternate uses and since they could be imported freely under OGL, it has been difficult to keep a track of the quantity brought in and the purpose for which it had been used. Sales were shown in favour of persons who had no direct use of these products who in turn sold these products to some one who could use them. Such sales were also being made on retail basis. With a view to minimise the use of these products for the purpose of adulteration, the Committee recommends that all sales of Naphta and Benzene should strictly be monitored with a view to ensure that these items are sold to an actual end-user only and that too through bulk sales. The Controller of Rationing , Mumbai should monitor the total quantity imported as well as sold from the refineries and keep strict tab on its sale to actual users only.
- 12.13. The Committee noted that there were vast difference in the price of imported kerosene and diesel. In fact, the kerosene diverted from public distribution system was even cheaper than the imported kerosene. This made it highly profitable to adulterate diesel with kerosene. The Committee recommends that Central and State governments should bring the price of imported kerosene on par with the price of diesel so that the incentive to adulterate diesel with kerosene did not remain a monetarily profitable proposition.
- 12.14. Likewise, the misuse of imported kerosene needed to be strictly monitored by the Controller of Rationing in Mumbai city.
- 12.15. The oil companaies are presently adopting the density check system for determining whether the product is adulterated or not. The only other test which they use for detecting adulteration is Octane test. The facilities for testing Octane number are available only in a fullfledged lab which for Mumbai is situated in Bharat Petroleum Corporation Limited refinery. Even the mobile fuel testing vans do not have this facility of checking the Octane number. In fact, this is the only

conclusive test to establish that there is adulteration. However, in foreign countries, the problem of adulteration has been tackled through a system called 'Marker' system. The specialised chemical, whose supply is strictly controlled, is added in the mother tank of the refinery. Thereafter with the help of electronic instruments, the intensity of the colour of the Marker can be verified all along the distribution route. In case any adulterant is added, the colour of the Marker becomes lighter which is detected by the electronic equipment. The UK based companies gave demonstration of their product before the Committee and convinced the Committee that the system was nearly fool-proof. They also informed the Committee that they were in dialogue with the oil industry for enforcing this system in India also. The Committee was convinced that the Marker system would be a substantial improvement over the outdated density measurement system being adopted at present to check adulteration. The cost of the Marker system has been indicated as less than 2 paise per litre. A detailed note and the working of the Marker system is annexed. The Committee, therefore, recommends that the oil industry should introduce the Marker system for effective adulteration in fuels and lubricants, by 31st December 2000 within Mumbai city and by 31st March 2001 in the rest of Maharashtra.

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- 12.16. Considering the large scale adulteration of fuel and lubricants being carried out openly, it has become necessary that offenders should be punished severely by making adulteration a cognisable and non-bailable offence punishable under Environment Protection Act, 1986. It has been established without doubt that adulterated fuel leads to higher pollution and thereby deterioration in the environment.

- 12.17** Similarly, petrol like products which are not authorised to be used as an automobile fuel viz. Patrex, Rexon, Cixon etc. should not be allowed to be sold to vehicle owner for use in their vehicles. Persons selling these products should be under an obligation to ensure that he is selling all these products only to such users who have a bonafide use for this product. Similarly, the vehicle owner who is found buying this product and putting it in fuel tank on his vehicle, should also be liable for criminal action under the Environment Protection Act, 1986.
- 12.18** The Committee noted that the testing facilities of the fuel samples taken from the petrol pumps are inadequate in Mumbai. Only the Bharat Petroleum Corporation Limited refinery was having a full fledged lab for this purpose. The Committee, therefore, recommends that one more full-fledged lab needs to be set up in Mumbai for testing the samples of petrol, diesel and lubricants collected from retail outlets.
- 12.19** The Committee noted that there were only 2 mobile fuel testing vans for the entire State of Maharashtra. The Committee, therefore, recommends that additional 4 mobile fuel testing vans should be provided by the oil industry for use in Mumbai.
- 12.20** The wide difference in the price structure of different petroleum products acts as a strong monetary incentive for adulteration. The Committee recommends that the Ministry of Petroleum and Natural Gas, Government of India should take steps to rationalise the price structure of different petroleum products.

## CHAPTER XIII

### **K) Effect of the use of unleaded petrol without catalytic converters**

**13.1** Lead is added to petrol for boosting the Octane number which increases the anti-knocking properties. Lead also acts as a lubricant of the engine valves, particularly the valve seats. However, it has been observed that the ingestion and accumulation of lead in living beings can affect the cell-division, embryonic growth and production of normal species. It is also a known carcinogenic substance.

**13.2** The Lead in the petrol is emitted back into the atmosphere through vehicular exhaust in the form of small particles of size less than 1 micron (1/1000mm). It is estimated that more than 85% of the airborne lead is from the emissions from petrol driven vehicles.

**13.3** Due to these reasons the lead content in the petrol has been minimised and unleaded petrol (i.e. Petrol with only 0.013 gms/litre maximum lead) is now being supplied throughout the country.

**13.4** It has been submitted by the Automotive Research Association of India to the Committee that when unleaded petrol is used in vehicles without catalytic converters, benzene emission is not controlled. However, with catalytic converters, a significant portion of benzene emissions is controlled.

**13.5** Catalytic converters can function effectively only with unleaded petrol.

**13.6** The Society of Indian Automobile Manufacturers in their submission before the Committee have very clearly brought out that all in use petrol-engine vehicles including passenger cars, taxis and two and three wheelers are capable of running on unleaded petrol, and can be fitted with catalytic converters.

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**13.7** The Central Pollution Control Board has confirmed that there will not be any harm to the vehicle engine if a vehicle using leaded petrol switches over to unleaded petrol. It has also been clarified by the Central Pollution Control Board that it is possible to use unleaded petrol in vehicles which are not fitted with catalytic converters.

**13.8** The Ministry of Environment and Forests, Government of India have also clarified that existing vehicles which are using leaded petrol can safely switch over to use unleaded petrol without any adverse impact on engine. This will also reduce lead in the ambient air.

**13.9** Taking into consideration the position as above, the Committee concludes that using unleaded petrol without catalytic converters does not in any way effect the performance of engine adversely.

**13.10** The Committee also strongly recommends use of catalytic converters in existing vehicles as it reduces harmful hydrocarbons, NOx and carbon monoxide emissions.

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## CHAPTER XIV

**L) Incentives for conversion to cleaner technologies including in particular reduction of import duties and other levies on CNG kits and catalytic converters**

**14.1 CNG has now been established as a suitable alternate automotive fuel, particularly from the point of view of emission control. There is a need to gradually increase the number of such vehicles. At present, the conversion kits for the use of compressed natural gas are imported and the cylinders required can be either imported or made available indigenously. Though the basic rate of customs duty on the typical imported CNG conversion kit is only 5%, the components of surcharge on basic duty, additional customs duty and special additional customs duty added together increase it to 27.27%. This also applies to the imported gas cylinder.**

**14.2 Similarly, the component of octroi and sales tax applicable for an imported typical CNG conversion kit and cylinder comes to 25.34% of the basic price. The total component of excise duty, sales tax and octroi in case of indigenous CNG cylinder comes to 39.09% of the basic price. As the CNG is definitely a clean alternate fuel, in order to popularise its use, the Committee feels that the above levies namely the customs duty, octroi, sales tax and excise duty are required to be completely waived so as to make the conversion kit and cylinders cheaper and easily affordable to the normal vehicle user including taxi operators and autorickshaw operators.**

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- 14.3** The Committee noted that the Transport Commissioner had made proposals for waiver of customs duty, sales tax or octroi to the Chairman, Central Board of Customs and Excise, Ministry of Finance, Government of India, New Delhi and the Princiapl Secretary, Home Department (Transport), Government of Maharashtra with copies to the Municipal Commissioner, Brihanmumbai Municipal Corporation, the Commissioner of Sales Tax, Government of Maharashtra and the Commissioner Excise, Government of Maharashtra on 20th December 1999. However, the same had not met with any major success except that Government of Maharashtra had reduced the sales tax from 13.4% to 4% on CNG conversion kits in their Budget proposals for the year 2000-2001.
- 14.4** A catalytic converter is fitted to the exhaust system of a petrol driven vehicle which catalytically converts the harmful carbon monoxide, hydrocarbons and oxides of nitrogen emitted through the exhaust system to carbon-dioxide , water and nitrogen. It is a proven techno-economically feasible device to effectively control the exhaust emissions from petrol driven vehicles.
- 14.5** The catalytic converters can be imported and are also indigenously available. The basic rate of customs duty on an imported catalytic converter though is 5%, the surcharge on basic duty, additional customs duty and special additional customs duty increases the rate of 27.27%.
- 14.6** Similarly, for the indigenously manufactured catalytic converters, the excise duty applicable is 16%, the sales tax applicable is 15.3% and the octroi applicable is 4%. In order to popularise its use, the Committee feels that the above levies on catalytic converters are required to be completely waived so as to make them cheaper and easily affordable to all vehicle users.

- 14.7** During the meetings held by the Committee, all the members and the invitees were unanimous in making this demand. Some of them obtained thousands of signatures in support of this demand which were forwarded to Ministry of Finance, Government of India.
- 14.8** With increased demands, the indigeneous capacities should develop and with large volumes, the prices should fall. The Committee, therefore, recommends such a waiver for a period of 3 years upto 31st March 2003 so that by that time the use of catalytic converter gets stabilised.

## CHAPTER XV

**M) Desirability and feasibility of ensuring pre-mixed oil (petrol and 2 T) and banning supply of loose 2 T oil**

**15.1** At present, loose lubricating oil is being sold, mainly for the use of 2 and 3 wheelers. Since the excess lubricating oil does not burn fully in the engine, it becomes a constituent of the exhaust in the form of visible smoke. It has been observed that there is a tendency in the 2 and 3 wheeled vehicle owners to put more oil in the engine than that recommended by the manufacturer. There are also large-scale instances of using spurious oil.

**15.2** It has been presented by the Society of Indian Automobile Manufacturers before the Committee that ensuring the use of right quality and quantity of 2 T oils leads to considerable reduction in the visible smoke from the 2 stroke engines used on 2 and 3 wheelers.

**15.3** It has been suggested by SIAM that whilst banning sale of loose 2T oil, in addition to sale of 2T oil through pre-mixed dispensers, sale of 2 T oil in sealed sachets should also be permitted.

**15.4** The Oil Coordination Committee has shown preparedness of the oil industry to start supply of pre-mixed 2T oil with petrol in Mumbai city within a year. Ministry of Petroleum and Natural Gas has notified the new specifications of 2T oil conforming to JASO FC and API TC grade through their notification no GSR-504(E), dated 20th August, 1998.

**5.5** The Supreme Court by its order dated 28th July 1998 directed that only 2T premixed petrol will be supplied at the retail outlets to 2 stroke engine vehicles in Delhi with effect from 31st December 1998. The order has been implemented successfully by the oil companies in National Capital Region of Delhi. A copy of the said notification is annexed.

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**15.6 M/s.Castrol India Limited in a presentation made before the Committee have contended that the oil sold by them in sealed sachets is far superior than the 2T oil to be premixed in petrol manufactured by public sector oil companies and the user should not be deprived of exercising his choice of using Castrol oil. It was also contended by them that since it is sold in sealed sachets there is no fear of any adulteration of the oil. M/s.Castrol requested that sales of only petrol should be allowed and that consumers should be free to buy packaged 2T oil separately.**

**15.7 In this connection, the notification issued by Ministry of Environment and Forests, Government of India dated 20th August 1998 is annexed. According to SIAM, the issue raised by M/s. Castrol was resolved by a suitable interpretation of this notification. For sake of clarity, the point has been covered in recommendation No. 66.**

**15.8 To put a check on sale of spurious lubricants, the Committee recommends that it should be made a cognisable and non-bailable offence under the Environment Protection Act, 1986.**

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## CHAPTER XVI

**N) Proper management and regulation of traffic with a view to reducing vehicular pollution**

**16.1** It is a well accepted that proper management and regulation of traffic will bring down pollution. The Committee noted several impediments which did not permit smooth flow of traffic. The Committee also observed that there were various encroachments on the available carriageway which resulted in congestion of traffic on the roads. The Committee was told that a number of garages were carrying out repairs of vehicles on road. The Committee was also informed that a number of vehicle owners had abandoned their vehicles and parked it along the road side where they remained for months together perhaps due to the reason that there was no scrap-yard provided by the Municipal Corporation of Greater Mumbai. Some of the vehicle owners use the roads for parking their vehicles during prolonged non-use periods. It also came to the notice of the Committee that very large number of unauthorised speed breakers had sprung up in the entire city of Mumbai. The number of unauthorised speed breakers is said to be twice the authorised ones. The Committee was also told that maintenance of the roads was not good. Roads developed pot-holes frequently. Dug up roads were not restored quickly. To take cognisance of all such impediments and unauthorised activities, the Committee recommends setting up of a control room, latest by 30th June 2000 by the Municipal Corporation of Greater Mumbai where citizens could lodge complaints relating to these matters. Such complaints must be serially registered and a token number given to the complainant. The concerned officers of the Municipal Corporation of Greater Mumbai should be under an obligation to take corrective action on each of these

complaints within 72 hours (excluding holidays, if any). Any failure in this regard shall make the Ward Officer responsible.

- 16.2 The Committee also recommends that the control room of traffic police should also start taking cognisance of these complaints latest by 30th June 2000. In addition, this control room must also take complaints about polluting vehicles. All such complaints must be attended to within 72 hours excluding holidays, if any, failing which the Asstt. Commissioner of Police (Traffic) of the concerned area would be held responsible.
- 16.3 Motor Vehicles Department should also set up a similar control room by 30th June 2000. Complaints from citizens about polluting vehicles mechanically defective vehicles or any other offending vehicles under the provisions of Motor Vehicles Act , 1988 should be recorded and acted upon within 72 hours (excluding holidays if any) failing which the concerned Regional Transport Officer should be personally held responsible.
- 16.4 For effective monitoring and speedy action , it would be necessary that all these control rooms are computerised and are inter-connected. The Committee recommends that the inter-connected computers in the three control rooms should become operational by 31st December 2000.
- 16.5 It has been observed by the Committee that the work of digging up the roads is carried out round the year. Instances have been noticed where soon after the restoration work had been carried out, digging up was taken up by another utility at the same place. This clearly pointed to lack of coordination between the different utility services. Accordingly, the Committee recommends a coordination committee to be chaired and conducted by the Municipal Commissioner himself to coordinate the road digging activities by different utility services like Mahanagar Telephone Nigam Limited, BrihanMumbai Electric Supply and Transport Undertaking, Mahanagar Gas Limited, Maharashtra State Road Development Corporation and the Road Department of

**Municipal Corporation of Greater Mumbai. This Committee should meet at least once in a month . The Committee should have Additional Commissioner of Police (Traffic) as one of its members. The Chief Executives of the concerned utility services themselves should take part in the meetings of this Committee.**

**16.6 The Committee recommends that it should become operational latest by 1st June 2000.**

**16.7 The Committee has noticed a very poor state of road markings. Even the markings wherever they exist do not last very long since they are not carried out with thermo plastic paint. Although road marking is essentially the responsibility of the municipal corporation, it does not take much interest and executes only to the extent grant-in-aid is forthcoming from the State government. As the aid is always limited, the work is not performed satisfactorily and road safety is the main casualty. The Committee recommends that with effect from 1st June 2000, a monthly review of the road markings should be carried out by the Addl.Municipal Commissioner and Addl.Commissioner of Police, Traffic, and this work must be done by the municipal corporation regularly at their cost.**

**16.8 The Committee has also observed that there are no clear directions to indicate which is the lane meant for fast moving traffic. Some times the fast moving vehicles are overtaking from the left while some are overtaking from the right. The Committee, therefore, recommends that to bring about a proper system, the road markings should clearly identify wherever feasible, the lane which is meant for fast moving traffic. It needs to be mentioned that proper lane discipline leads to 30% better utilisation of the carriageway.**

**16.9 It is an accepted fact that synchronised signals help in faster clearance of the traffic. If the vehicle is not required to stop and start, it also pollutes much less. Therefore, it is essential that all the traffic signals in Mumbai should be systematically synchronised. The Traffic Police**

Department should take a 6 monthly review of signal timings during the different traffic phases and update their timings on a continuous basis.

16.10 It is also noticed by the Committee that the local traffic police functionaries very frequently switch off the signals and operate them manually. Such manual operations always cause greater congestion and slower movement of traffic. The Committee, therefore, recommends that the automatic working of the signals should not be tinkered with unless it is absolutely essential. Even in such a situation, an officer not below the rank of Assistant Commissioner of Police should authorise the switching over to manual system. He should maintain a record of the circumstances which necessitated it and the duration for which it was continued.

16.11 The Committee was informed that area traffic control system had already been prepared by the Traffic Police Department over 2 years back for 37 identified traffic signals. Under the system with the help of remote sensors and a master computer, a real time assessment of the traffic at these 37 identified junctions could be taken and the signal timings adjusted on a real time basis to optimise the clearance of traffic on these signals. For the scheme, a loan from Mumbai Metropolitan Region Development Authority has also been approved by the government. Action to invite tenders and purchase the equipment was required to be taken by the Municipal Corporation of Greater Mumbai. During the discussions with the concerned officers, the Committee felt that there was an urgent need to expedite the implementation of this area traffic control system by all the concerned agencies through better coordination as it would help in fast clearance of the traffic from these 37 traffic junctions. The Committee, therefore, recommends that the above Area Traffic Control System should be made operational by 1st April 2001. The Metropolitan Commissioner, Mumbai Metropolitan Region Development Authority would be responsible for coordinating with Addl. Commissioner of Police (Traffic) and the Municipal

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**Commissioner, Municipal Corporation of Greater Mumbai to ensure that the above scheme becomes operational by that date.**

**16.12 The Committee noted that the scheme of Wadala Truck Terminus had been planned a number of years back with a view to reduce the heavy vehicular traffic in Mumbai. Certain activities have been completed and Wadala Truck Terminus is operational partially. To give impetus to shifting all heavy goods vehicle business at Wadala Truck Terminus, the office of the Regional Transport Officer, Mumbai (East) was shifted to Wadala Truck Terminus in late 1999. Despite that, a lot more needs to be done to make Wadala Truck Terminus fully operational. Since this would go a long way in easing congestion of heavy vehicles in Mumbai, the Committee recommends that the Metropolitan Commissioner, Mumbai Metropolitan Region Development Authority should ensure that this terminus becomes fully operational by 31st December 2000.**

**16.13 At present, the tourist buses are entering Mumbai city from different directions and are adding to the traffic congestion in Mumbai. The Committee feels that there is no need for these vehicles to come inside the city. Instead, they can be terminated at Wadala Truck Terminus and they should operate from there only. The passengers using these buses could use any other transport to and from the Wadala Truck Terminus. Accordingly, the Committee recommends that with effect from 1st January 2001, all tourist buses would operate to and from Wadala Truck Terminus.**

**16.14 It is an accepted fact that efficient public transport system helps in reducing congestion on the roads and thereby pollution from the vehicles. Though BEST provides an efficient bus system, to cope with the increasing demand, they are adding more buses on the road every year. This is adding to congestion on the roads. A better system would be to get better output from the existing number of buses by increasing their speed thereby enabling them to make more number of trips. This**

can be achieved only if the BEST buses are provided exclusive bus lanes and synchronised signals in these bus lanes which give preference to the BEST buses. Such a system would reduce the journey time for the passengers also. Accordingly, the Committee recommends that exclusive BEST bus lanes with synchronised signals should be provided for BEST buses on all major roads in a phased manner by 31st March 2002 by the Traffic Police Department.

16.15 The Committee also noted that a lot of congestion during peak hours was caused due to parking of vehicles on the major roads. The Committee, therefore, recommends that on all the major roads, as defined in the Development Plan, parking should be totally banned between 0900 and 1200 hours and 1700 to 2000 hours in the peak direction of the traffic. This should be brought in force with effect from 1st June 2000 after giving adequate publicity. The Traffic Police Department should be responsible for its strict implementation.

16.16 The Committee also observed that a number of traffic congestions were the result of some morcha which was taken out on the public roads. Such morchas have an adverse impact on smooth flow of traffic which lasts for hours. The right to express their feelings can be exercised by demonstrations in open grounds especially earmarked for the purpose. For this purpose it is not essential that the members should walk in a procession on public roads to reach such open grounds. The Committee, therefore, recommends that no morchas should be permitted on any public roads. The marriage processions would also have to follow the same restrictions of not being permitted on public roads. However, the Committee does not propose ban on traditional religious processions which have been carried out in the past for at least 5 years continuously. New religious processions, however, should not be allowed on public roads.

16.17 The Committee also noted that a very large number of speed breakers of all sizes and shapes have been erected all over the city without much

justification. The Traffic police played a very lenient role in this matter due to various local pressures. All vehicles slowing down at these speed breakers almost to zero speed and then picking up, create additional avoidable pollution. The designs of the speed breakers, which have been prescribed, are also not followed. Accordingly, the Committee recommends that speed breakers of the approved design and only at approved locations should be permitted in the entire Mumbai Metropolitan Region with effect from 1st June 2000. All non-conforming speed breakers should be removed by the Municipal Corporation of Greater Mumbai by that date. The action of constructing unauthorised speed breaker should be a cognisable and non-bailable offence.

16.18 The Committee noted that every day 220 new vehicles are being registered in Mumbai city. The number of vehicles on Mumbai roads has increased to such an extent that average vehicle speed has declined by over 20% and the journey period between the same two points has gone up by nearly 25%. The road length is not increasing in the same proportion as the increase in the number of vehicles. Traffic congestions leads to idling of vehicles which adds to air pollution substantially.

16.19 To cope up with this problem of traffic congestion, a traffic restraint scheme has been thought out by the Committee as a pilot project for a period of 6 months starting from 1st October 2000. This scheme would be brought in force on an experimental basis after giving wide publicity. As per the scheme all privately owned 2 and 4 wheelers whose registration numbers end in digit 1 or 2 shall not be allowed to ply their vehicle in the island city of Mumbai on one day in a week viz. on Monday. Similarly, vehicles whose registration number end in digit 3 or 4 shall not be allowed to ply on one day in the week viz. Tuesday. Similarly, vehicles with registration numbers ending with 5 or 6, would not be allowed to ply on Wednesday, 7 or 8 on Thursday and 9 or 0, on

**Fridays. On Saturdays, Sundays and all public holidays, these restrictions would not apply. The island city comprises of area South of Mahim Causeway, Mahim Junction, Mori Road, Senapati Bapat Marg Extension, Mahim Rail over bridge, Sant Rohidas Marg (Dharavi Road), Sion Junction, Road No.29 beyond Barkat Ali Road Junction broadly the area where autos are not allowed to ply. The above restrictions would be applicable only from 0900 to 1600 hours. Vehicles of police, fire brigade, ambulances, cranes and government vehicles entitled to red or amber dome light would not be covered under the above scheme. However, vehicles coming from outside Mumbai would have to comply with the above restrictions. The scheme would be enforced by the Traffic Police Constables and other higher officers of the Traffic Police Department as well as by the Asstt. Inspectors of Motor Vehicles and their superiors of the Motor Vehicles Department. Any vehicle which violates the scheme would be detained at an appropriate location without obstructing the smooth flow of traffic and would be released only after 1600 hours on payment of a fine of Rs.1000/-. Vehicles coming from outside Mumbai would be regulated at the entry points of the island city.**

**16.20 The working of this experimental scheme would be monitored by a Committee under Principal Secretary (Transport) with Transport Commissioner, Addl. Commissioner of Police (Traffic), Head of Transport Planning, Mumbai Metropolitan Region Development Authority and Head of Traffic Engineering, Municipal Corporation of Greater Mumbai as members. This Committee will have the powers to make suitable modifications in the scheme for its proper implementation. However, all such decisions taken by this Committee would be reported to the High Court. At the end of the experimental period, this Committee would submit a report to the High Court about the scheme.**

- 16.21** The Committee is aware that some agencies have expressed reservations and opposition to the proposed scheme. The Committee considers this to be only natural since no one wants any restrictions to be put on ones liberty in any manner. However, when such restrictions are imposed for general good, it is only expected that the people would put up with small inconvenience. Small inconvenience on one day would be worthwhile since on the remaining days of the week they would not face traffic congestions.
- 16.22** On the day of restrictions, the affected vehicle owners are expected to either use a taxi or a public transport vehicle or a car pool. The Committee has accordingly recommended a mobile telephone system or wireless network for hiring a taxi by dialing a number. The Committee has also recommended increase in the number of airconditioned buses to 500 by 31st March 2002 to enable such car owners to use the public transport in comfort. It goes without saying that a number of trips which can be adjusted, would shift to those days when there is no restriction on plying of their vehicles. Likewise, a number of activities would get carried out outside the period of restriction viz. 0900 to 1600 hours.
- 16.23** The Committee also took into consideration some other vehicle restraint schemes like freezing the number of vehicles at the existing level or charging toll amounts for entering the Central Business District area during peak period on the pattern of schemes followed in countries like Singapore. However, taking into account the various complexities involved in formulating such a scheme, the Committee recommends that an expert committee of traffic and transport experts should be constituted which should give its recommendations on such traffic restraint techniques to the Hon'ble High Court within a period of 3 months. This Committee should also look into all aspects of improving public transport system including railway services.

**16.24 The Committee also recommends that the implementation of Development Control Rules 1991 of the Municipal Corporation of Greater Mumbai should be rigidly carried out. No permission should be granted to any shopping centre, restaurant, small or any other traffic generators on any major road as specified in the D. C. Regulations 1991.**

**16.25 The Committee also noted that the problem of hawkers and encroachments by them on foot paths and roads also needed to be given a very high priority.**

## CHAPTER XVII

O) Effective methods of monitoring and improving prescribed emission norms

17.1 At present, the monitoring of existing emission levels in Greater Mumbai is done by the Maharashtra Pollution Control Board and the Brihanmumbai Municipal Corporation . The Maharashtra Pollution Control Board has identified five locations for continuous air quality monitoring (2 in western suburbs, 2 in eastern suburbs and 1 in island city). This is in addition to one mobile testing van of Maharashtra Pollution Control Board. The Brihanmumbai Municipal Corporation carries out air quality monitoring at 6 fixed stations manually and at 3 traffic junctions with the help of automatic monitors installed in one mobile van, twice a week. The Maharashtra Pollution Corporation Board has submitted a detailed proposal for additional funds for installation of continuous air quality monitoring stations, a copy of which is annexed herewith.

17.2 The existing infrastructure available with Brihanmumbai Municipal Corporation can measure SO<sub>2</sub>, NO<sub>x</sub> and RSPM at the fixed stations and SO<sub>2</sub>, NO<sub>x</sub>, CO and RSPM through the mobile van. Similarly, the infrastructure available with Maharashtra Pollution Control Board can measure CO, SO<sub>2</sub>, NO<sub>x</sub>, RSPM and HC through the mobile van. There is a need to equip both the organisations to measure Benzene levels also.

17.3 The Committee also observed that the pollution levels are not being publicised adequately nor at the desired periodicity.

### ANNEXURE XXVI

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## CHAPTER XVIII

### **P) General Recommendations**

- 18.1** The Committee has taken into consideration the fact the existing petrol dispensing machines do not have an inbuilt vapour recovery system. This results in significant emissions of hydrocarbons into the atmosphere.
- 18.2** The Committee noted that there was a tendency to operate taxis and autorickshaws on diesel in view of lower operating cost of diesel compared with petrol. However, the Committee noted that the diesel vehicles required much higher level of maintenance which was rarely carried out by the taxi owners in view of the nature of the taxi trade. To reduce and curb the ill-effects of pollution from diesel vehicles, the Committee recommends that no new registration as replacement of any taxi or autorickshaw operating on diesel should be permitted in the city of Mumbai after 1st May 2000.
- 18.3** The Committee noted that the lower price of diesel as compared to petrol, is encouraging the use of diesel engines particularly for non-commercial use. Diesel engines which are primarily for heavy duty long haul applications are therefore, being used within Mumbai under stop-go/stop-go situations. This results in considerable increase in pollution. It may also be noted that the major pollutant emitted by diesel engines is SPM, the levels of which are far in excess of the maximum permissible standards in almost every part of Mumbai. To

put a check on increasing use of diesel in private cars, the Committee recommends that all private diesel vehicles which are registered in Mumbai city after 1st October 2000 should pay an additional one time levy of Rs.20,000/-, Similarly, the Committee recommends that all existing private diesel vehicles which are now older than 15 years should be made to pay a one time cess of Rs.10,000/- in the office of the Regional Transport Officer unless they converted their vehicles to clean fuel by 1st October 2000.

- 18.4 The Committee discussed the system of certification of the mass emission standards by approving agencies, in particular Automotive Research Association of India. It was brought to the notice of the Committee that on the basis of international practice, the standard deterioration factor of 1.2 was being applied while granting type approval. This factor was adopted to determine the level of emissions which would be from the engine at the end of its life. In European conditions where the maintenance standards are better than those prevalent in India and where the quality of fuel is superior and unadulterated, a deterioration factor of 1.2 could have been suitable. However, in Indian conditions the level of emission at the end of life of the engine would positively be more than 1.2 of the level of new engine, being adopted at present. The Committee is, therefore, of the view that the Ministry of Surface Transport, Government of India should review the deterioration factor of 1.2 being applied at present by the testing authorities while giving type approval and increase it to 1.25 or 1.3 as may be warranted by the prevailing conditions in India.

- 18.5** The Committee, during the course of its deliberations was struck by the multiplicity of agencies involved in the job of controlling vehicular pollution, traffic management, curbing fuel adulteration etc. The Committee felt that if these issues have to be addressed promptly and properly, there is a need to create a unified authority that would be empowered to take decisions and implement them with statutory powers. The Committee therefore feels that there is a need to create a central authority called the Vehicular Pollution (Prevention and Control) Authority.
- 18.6** The Committee was informed that the existence of encroachments on the pavements and the carriageways results in a significantly decrease in the road capacity since part of the road becomes non-usable for motor traffic. Encroachments on pavements force pedestrians to walk on the carriageways, which also creates a serious safety problem. The reduction in the available road space results in slow movement of traffic and increases traffic congestion, thus increasing vehicular pollution.
- 18.7** The Committee has noted that due to typical geographical location, the road traffic gets blocked in the stretch of road from Haji Ali to Nariman Point in South Mumbai particularly during peak hours. The congestion on this road can be taken care of by providing a separate transportation link connecting these two locations separately in such a manner that it does not lead to environmental degradation. The need to have such a separate transportation link has been brought out by various agencies in the past.

- 18.8** The Committee is of the view that in addition to encouraging the use of clean fuels such as CNG and LPG, the new generation of “Zero Emission Vehicles” (or battery powered vehicles) also needs to be encouraged. These vehicles are already being manufactured in India. One of the factors likely to discourage its use is the high capital cost of the vehicle and the high replacement cost of the battery packs. The Committee, therefore feels that all duties and levies applicable to such vehicles and their battery packs need to be brought down.
- 18.9** The Committee is of the view that if the motor Vehicles Department is to rigorously implement the provisions of the Motor Vehicles Act and the orders of this Hon’ble Court, it would be required to be strengthened both in terms of equipment and man-power. It is necessary that the Motor Vehicles Department be provided with mobile communication systems, vehicles, computerisation of records for issuing of licences, vehicle registration, fitness certification, prosecution cases etc.
- 18.10** The Committee is of the view that the constitution of the flying squads for on the spot checking and fining of polluting vehicles and volunteer participation therein under the order of this Hon’ble Court dated 15th December 1999 is an extremely wel-come and progressive step. It has been pointed out, however, that though some volunteers have come forward, the number of such volunteers who would be available on short notice on a regular basis is extremely limited. The present level of volunteer participation is therefore very low and required to be increased. It has been suggested that NGOs such as Dignity Foundation, would be in a position to provide volunteers on a daily basis. It has also been suggested that such volunteers should be reimbursed an amount of Rs.100 per day to cover their expenses. The Committee is of the view that this is reasonable, keeping in mind the

**fact that amount in excess of Rs.50 lakhs has been collected in the form of fines since 1st January 2000.**

**18.11 Since a number of agencies are involved in providing urban transport services and a lot of coordination is needed in different agencies connected with the same , the Committee recommends the setting up of a unified Urban Transport Authority (similar to Delhi Urban Transport Authority in Delhi) by 1st January 2001.**

## **CHAPTER XIX**

### **ACKNOWLEDGEMENTS**

The Committee wishes to thank the following persons, who, either in their individual capacities or on behalf of organisations, sent written representations making useful suggestions as regards reduction of pollution from vehicles:

1. **Shri Rahul Asthana,  
General Manager,  
Brihanmumbai Electric Supply  
& Transport Undertaking,  
Mumbai.**
2. **Shri H.Gajbhiye,  
Controller of Rationing,  
Government of Maharashtra,  
Mumbai.**
3. **Shri R.T.Rathod,  
Additional Commissioner of Police (Traffic),  
Mumbai.**
4. **Shri P.N.Prasad,  
Vice President,  
Mahanagar Gas Limited,  
Mumbai.**
5. **Shri Sudhir Singhal,  
Acting Director,  
Indian Institute of Petroleum,  
Dehradun,**
6. **Shri Rajat Nandi,  
Executive Director,  
Society of Indian Automobile Manufacturers,  
New Delhi.**

7. **Shri K.Rajeshwar Rao,  
Joint Director (M C & E S),  
Oil Co-ordination Committee,  
New Delhi.**
8. **Shri Sharad Sharma,  
State Level Co-ordinator, Oil Industry,  
Maharashtra , Mumbai.**
9. **Dr.M.Koteeswaram,  
Executive Director,  
Association of State Road Transport  
Undertakings, New Delhi.**
10. **Shri P.K.Ghosh,  
Senior Deputy Director, VEL,  
Automotive Research Association of India,  
Pune.**
11. **Dr.M.Z.Hasan,  
Deputy Director & Head,  
Air Pollution Control Division,  
National Environmental Engineering  
Research Institute,  
Nagpur, Maharashtra.**
12. **Shri Arun Firodia,  
Chairman,  
Kinetic Engineering Limited,  
Pune.**
13. **Shri N.H.Iyer,  
Senior Legal Advisor,  
Hindustan Petroleum Corporation Limited,  
Mumbai.**
14. **Shri H.Rohinesh,  
Senior Deputy General Manager (Law),  
Tata Engineering & Locomotive Company Limited,  
Mumbai.**
15. **Shri G.N.Pareek,  
Company Secretary,  
Hindustan Motors Limited,  
Calcutta.**

16. **Shri Ravi Pisharody,  
Vice President (Marketing),  
Castrol India Limited.**
17. **Shri P.Ramkrishnan,  
Mumbai.**
18. **Dr.Sandeep Rane,  
President,  
Smoke Affected Residents' Forum,  
Mumbai.**
19. **Shri Vimal Shah,  
President,  
Western India Automobile Association,  
Mumbai.**
20. **Smt. Kunti Oza,  
Clean Mumbai Foundation,  
Mumbai.**
21. **Shri Pranalal Bhogilal,  
President,  
Vintage & Classic Car Club of India,  
Mumbai.**
22. **Shri Kisan Mehta,  
President,  
Save Bombay Committee,  
Mumbai.**
23. **Shri Ramesh Kundanmal,  
Convener, Legal Affairs Committee,  
Federation of All Maharashtra Petrol Dealers Assn.  
Mumbai.**
24. **Shri S.H.Chauhan,  
Vice President-Chamicals,  
Dodsai Indmag Limited.**
25. **Shri G.J.Thorne & P.J.Granmer,  
Performance Marking Technologies,  
Rohm & Haas (UK) Limited,  
United Kingdom.**

26. **Dr.T.Wilkinson,  
Biocode Limited,  
United Kingdom.**
27. **Smt.Kajal Mehta,  
Toxics Link,  
Mumbai.**
28. **Reliance Petroleum Limited,  
Mumbai.**
29. **Shri MohinderSingh Ghura,  
President,  
Maharashtra Rajya Truck Tempo Tanker  
Bus Vahatuk Mahasangh,  
Mumbai.**
30. **Shri A.L.Quadros,  
General Secretary,  
Mumbai Taximen's Union,  
Mumbai.**
31. **Shri Mohinder Singh,  
President,  
Mumbai Taxi Association,  
Mumbai.**
32. **Shri Fredrick D'sa,  
General Secretary,  
Petrol Dealers' Association,  
Mumbai.**

**The Committee is grateful to Shri Bhure Lal, Chairman, Environment Pollution (Prevention & Control) Authority for the National Capital Region of Delhi who made available all the background material/reports prepared by him. The Committee is immensely benefited by the same.**

**The Committee is also grateful to other individuals who have submitted their representations for consideration and extended help and co-operation in any other manner and whose names have not been specifically mentioned.**

**Our special thanks are due to Smt.Meher Rafaat, Smt.Kunti Oza, Smt.Bharti Gandhi and Shri Ravi Shinde all of whom attended several meetings of the**

Committee at the request of the Chairman and made an invaluable contribution to its deliberations.

We must also specially mention the untiring and maticulous assistance rendered to this Committee by Shri Satish Sahasrabudhe, Dy.Transport Commissioner (Enforcement), whose contribution has been invaluable throughout the proceedings of this Committee, and without whom this Report would not have been as detailed and complete.

Last but not the least, the Committee wishes to place on record its appreciation of the hard work and care with which Smt.C.P.Naik and Smt.S.S.Rao typed and retyped several drafts and the final version of this report.

**(V.M. Lal)**  
**Chairman & Convenor &**  
**Transport Commissioner,**  
**Maharashtra State, Mumbai.**

**(Vijai Sharma)**  
**Joint Secretary,**  
**Ministry of Environment & Forests,**  
**Government of India,**  
**New Delhi.**

**(Dr. P.S. Pasricha)**  
**Additional Director General**  
**of Police (Training)**  
**Government of Maharashtra**  
**Mumbai**

**(A.M. Deshpande)**  
**Air Pollution Abatement Engineer,**  
**Maharashtra Pollution Control Board,**  
**Mumbai.**

**(Debi Goenka)**  
**Representative,**  
**Bombay Environmental**  
**Action Group, Mumbai.**

**(Zinnia Khajotia)**  
**Representative,**  
**(C.L.E.A.N. - Air)**  
**Citizens Leadership in Environmental Action & Networking-Air**  
**Mumbai.**

## ANNEXURE I

### Minutes of the 1st meeting of the Committee, constituted under directions of the High Court to examine and recommend measures to control vehicular pollution held on 29th December, 1999.

The Hon'ble Chief Justice, High Court, Mumbai had by his order dated the 15th December, 1999 in a Public Interest Litigation filed by the Smoke Affected Residents' Forum, Chembur and others directed to constitute a Committee under the chairmanship of Mr.V.M.Lal, Transport Commissioner, Maharashtra to examine, consider and recommend measures to reduce vehicular pollution in Greater Mumbai. A time frame of 12 weeks is given to the committee to give its recommendations to the High Court.

Accordingly first meeting of the Committee was held on the 29th December, 1999 in the office of the Transport Commissioner at Bandra, Mumbai.

Following members participated in the meeting:

- a) Mr.Gajbhiye, Controller of Rationing, Govt. of Maharashtra
- b) Dr.P.S.Pasricha, Addl. D.G.P. & Director, Police Academy, Nashik.
- c) Mr.P.N.Prasad, Vice President, Mahanagar Gas Limited, Mumbai.
- d) Dr.Sandeep Rane, President, Smoke Affected Residents' Forum, Mumbai.
- e) Mr.M.M.Khan, State Level Co-ordinator of Oil Industry.
- f) Mrs.JayshreeDeshpande, Scientist, Brihanmumbai Municipal Corporation.
- g) Mrs. Suranjana Bhende, Scientist, Maharashtra Pollution Control Board.
- h) Mr.Mandar Naik, Assistant Sub-Inspector of Police (Traffic)
- i) Mrs. Zinnia Khajotia, CLEAN-AIR.
- j) Mr.Debi Goanka, Bombay Environmental Action Group.
- k) S P S Yadav Additional Commissioner of Police (Traffic)

The background and purpose of the meeting was explained to all the participants by the Transport Commissioner. The terms of reference were then taken up for discussion.

As regards the issue of improvement in quality of fuel with particular reference to reduction of Sulphur content of diesel and benzene content of petrol to acceptable limits, Mr. Khan, SLC-OI was asked to submit a detailed paper detailing the current position, plans for the future and their relationship with EURO-I, II & III norms. He was also asked to submit all information, even if it was confidential, for the purpose of information of the Committee.

He was also requested to suggest various controls on the use of kerosene, rexon, cexon etc. to be imposed on the manufacturers of these products so that their sale is restricted/controlled. Data of kerosene import and its utilization was also requested to be supplied to the Committee.

He was further requested to inform the plans (existing as well as future) to detect cases of fuel adulteration, readiness of their laboratories and improvement in the method of density checks used to detect cases of fuel adulteration. Similarly adoption of different colour codes for the tankers of petroleum products needed to be immediately done which will help in immediate identification of the cases of adulteration. As regards the issue of desirability and feasibility of ensuring premixed oil (petrol & 2 T) and banning simply of loose 2 T oil, the SLC was requested to give more details in this regard.

(Action : Mr. Khan, State Level Co-ordinator, Oil Industry)

Regarding use of alternative fuels such as CNG, reformulated gasoline and LPG, it was informed by the Mahanagar Gas Limited that its capacity is not even 50% utilized and utilization is also not uniform as certain dispensing stations are utilised more than other stations.

Dr. Pasricha expressed the view that the CNG dispensing units are required to be increased substantially so as reduce dead mileage required to be done to get CNG.

Dr.Pasricha further expressed the view that the cost of CNG should be substantially lower than petrol and not comparable thereto, which will encourage conversions from petrol to CNG as fuel.

Dr.Rane of the Smoke Affected Residents' Forum expressed the view that CNG outlets should be more evenly distributed and more facilities are required to be provided in south Mumbai. It was informed that the Oil Companies are not giving outlets to Mahanagar Gas Limited in their areas.

Reacting to this, it was informed by Mahanagar Gas Limited that the Liquefied Petroleum Gas (LPG) is in short supply and imported hence there is a limitation to its use as automobile fuel. Even if the Ministry of Surface Transport clears LPG as automobile fuel it should not be allowed in Mumbai as it will adversely affect the operations of the Mahanagar Gas Ltd.

The Mahanagar Gas Ltd. has at present more than 50% spare capacity for use of vehicles running on CNG. The network of CNG is limited at present as they have to pay heavy charges to Brihanmumbai Mahanagar Palika for laying of pipe lines. Economically this is not feasible. He requested to exempt Mahanagar Gas Ltd. from these charges or reduce the same to the extent possible. As regards further plans he informed that 5 more outlets will be added by Mahanagar Gas Ltd. by 31st March, 2000 positively and 14 more outlets will be added in the next year. Total target for them is 35 outlets and conversion of 80,000 vehicles to CNG by 31st March, 2001. He also desired that the BEST should make more number of buses run on CNG. This is not happening at present because dedicated CNG engines are not being supplied to the BEST.

The Transport Commissioner informed the Mahanagar Gas Ltd. to regularly advertise the locations of their existing dispensing stations and proposed outlets at least twice in a month. He also informed, for information of all the participants, that a proposal for exempting Excise, Customs and Octroi duty on the CNG conversion kits and cylinders has already been forwarded to the State Government and Central Government for a favourable decision. It was decided to check up whether an interim report of the Committee with specific reference to reduction of

levies on CNG kits and cylinders can be presented to the High Court as the proposals for finalising budget by Govt. of India will start soon.

(Action: Mahanagar Gas Limited BEAG)

It was also decided to make reference to the Ministry of Surface Transport to seek clarification from them as to how much time will be required by them to authorise use of LPG Gas as automobile fuel. It was decided to make a reference to the Ministry of Petroleum as to what will be their pricing policy for LPG as automobile fuel with or without subsidies.

(Action: Transport Commissioner's Office)

It was decided to make a reference to the Brihanmumbai Electric Supply & Transport (BEST) calling up their plans for addition of dedicated CNG Buses and difficulties they face in increasing the number. A copy of the letter was also decided to be sent to the Ashok Leyland Ltd. for their comments.

As regards the issue of effect of the use of unleaded petrol without catalytic convertors it was decided to obtain the views of the National Environmental Engineering and Research Institute (NEERI) and Society of Indian Automobile Manufacturers (SIAM) also the exact size of Catalytic Convertor and its exact location with reference to popular brands of vehicles in the market was also desired from both the agencies.

(Action: Transport Commissioner's Office)

As regards the issue of assessment of whether the exhaust emission norms are required to be revised for Mumbai city and if so at what levels they should be fixed, it was decided by the Committee that the exhaust norms should take into consideration the age and total running of the vehicle and they should not be uniform for all ages. It was also decided to make a reference to the Ministry of Surface Transport to direct its Technical Committee to examine this issue. SIAM should also be asked to give their views in this matter.

It was discussed whether the Benzene and Sulphur di oxide can be separately measured by the PUC testing machines and which will be the standards for both these machines from the tail pipe and exhaust of motor vehicles.

(Action : Transport Commissioner's Office)

As regards the issue of desirability and feasibility of phasing out of vehicles (private cars, trucks, buses, taxis, autorickshaws and two wheelers) over a certain age limit it was decided by the Committee to take into consideration the basis adopted by the Committee headed by Shri Bhurelal under directions of Supreme-court. It was decided to make a reference in this regard to Dr.Kirit Parekh, Director, Indira Gandhi Institute of Development & Research (Dr.Jyoti Parekh , Sr.Professor), Goregaon (East). It was also decided to obtain an age profile of all categories of vehicles.

(Action Transport Commissioner's Office)

As regards action required to be taken in respect of two wheelers and three wheelers utilising two stroke engine it was decided to make a reference to M/s Bajaj Auto Ltd., M/s Kinetic Engineering Ltd., M/s LML Ltd. & SIAM and obtain their views on the issue.

(Action Transport Commissioner's Office)

As regards the issue of financial incentives which can be made available for replacement of old taxis and autorickshaws with new vehicles running on clean fuel it was decided to study the scheme of Delhi Government in this regard and also get report about interest subsidy from Shri Satish Mehta, General Manager, Housing Development Finance Corporation.

As regards the issue of proper management and regulation of traffic with a view to reduce vehicular pollution the Committee desired to know the present status of installing synchronized signals in the city of Mumbai which helps in fast clearance of traffic.

(Action :Addl.Commissioner of Police, Traffic)

The Committee desired to have a plan for road improvement and footpath improvement in the city of Mumbai from the Brihanmumbai Mahanagar Palika.

(Action: Transport Commissioner's Office)

As regards the issue of pollution monitoring the MPCB and BMC were directed to submit a note taking into consideration the equipment they have at present, their future requirements and the method of informing public about

pollution monitoring. The notes should avoid repetition of issues. It was also decided that the data collected by both the agencies should be properly analysed and conclusion drawn for taking corrective measures subsequently.

( Action: Brihanmumbai Municipal Corpn.)

At the end all the concerned agencies were requested to give their notes to the office of the Transport Commissioner by 25th January, 2000 in 10 copies. The next meeting of the Committee will be held in the office of the Transport Commissioner at 11.30 a.m. on 27th January, 2000. The meeting ended with a vote of thanks to the chair.

Transport Commissioner,  
Maharashtra State, Mumbai.

**Minutes of the meeting of the High Court Committee,  
held on 27th January, 2000.**

The second meeting of the Committee constituted by the High Court, Mumbai to examine, consider and recommend measures to reduce vehicular pollution in Greater Mumbai was held on 27th January, 2000.

The meeting was held under the Chairmanship of Shri V.M.Lal, Transport Commissioner. Following members attended the meeting:

A) Dr.P.S.Pasricha : Addl.D.G.P. & Director, Maharashtra Police Academy, Nasik.

B)Mrs.Suranjana Bhende : Scientist, Maharashtra Pollution Control Board (in place of Shri A.M.Deshpande, Abatement Engineer, M.P.C.B.-nominee of MPCB)

C)Shri Debi Goenka : Bombay Environmental Action Group

D)Smt.Zinnia Khajotia : CLEAN Air

Shri Vijay Sharma, Joint Secretary, Ministry of Environment & Forests,

G.O.I. was not present for the meeting.

The meeting was also attended by the following invitee members:-

A)Shri S.P.S. Yadav : Additional Commissioner of Police (Traffic)

B)Shri Mandar Naik : Police Sub Inspector

C) Shri G.N.Warade : Environment Department, Government of Maharashtra

D) Shri B.G.Pawar : Deputy Controller of Rationing

E) Shri B.Ghosh : Automotive Research Association of India, Pune.

F) Shri G.V.S.Prasad : Vice President, Mahanagar Gas Ltd.

G) Shri Vimal Shah : President, Western India Automobiles Association.

H) Shri R.S.Prabhu : Mahanagar Gas Limited.

- I) Smt.Bharti Gandhi : Doctors Intervenor/I.M.C.  
J) Smt.Kunti Oza : Clean Mumbai Foundation  
K) Dr.Sandeep Rane : Smoke Affected Residents Forum  
L) Ravi Shinde : Smoke Affected Residents Forum

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The representatives of the Brihanmumbai Municipal Corporation & State Level Co-ordinator - Oil Industry (Maharashtra) were absent.

The Transport Commissioner welcomed the members to the meeting. It was informed by him that some presentations/papers in response to an appeal made, had been received and they were being scrutinized. A few papers were also circulated amongst the members for information. The Committee has also received papers from the Bhure Lal Committee appointed by the Supreme Court of India.

It was informed by the Transport Commissioner that the proposal for import duty and sales tax & octroi exemption on the CNG conversion kits has already been taken up with the Ministry of Finance, Government of India and the Government of Maharashtra. The members were requested to make any suggestions in this regard to Shri Rustagi, Joint Secretary, TRR Cell, Ministry of Finance, Govt. Of India. The Transport Commissioner agreed with the members that an interim-report of the Committee, on duty exemptions, be presented to the High Court, requesting appropriate directions to the Central and the State Government in this regard before the presentation of the budget.

It was also informed to all the members that the State Level Co-ordinator Oil Industry has made available two mobile laboratories for checking fuel adulteration on the spot. 4 petrol pumps have been checked for adulteration with the help of these vans. Adulteration has not been detected at these 4 petrol pumps. It has been planned to check more pumps in the future.

The participants desired to know the details of checking carried out at the four octroi points (i.e. Mankhurd, Airoli, Mulund & Dahisar). The desired

information will be kept on record in the next meeting of the Committee to be held on 3rd Feb., 2000.

(Action: Transport Commissioner's Office)

Dr.Sandeep Rane informed that they are making available 10 PUC testing machines (5 petrol & 5 diesel) to be set up at the octroi points to check vehicles for pollution at the entry point itself.

Shri Debi Goenka made certain suggestions about drafting of the minutes of the Committee as these minutes will form permanent record of the proceedings of the Committee. The suggestions have been noted.

Further, he informed that the safety aspect of use of LPG as automobile fuel has not been adequately covered. This issue will be covered in detail in subsequent meetings of the Committee. He also informed that in the USA, the standards prescribed for auto-pollution are applicable till end of life of the engine of the vehicle and there was a need to adopt similar norms which would be applicable throughout the life of the engine.

Shri Ghosh informed that in the Indian conditions, a deterioration factor of 20% is applied which means that the difference between, performance level of a brand new engine and that at the end of its life is assumed at 20%. If the performance of new engine is 10 it is certified for 8. It was felt that this method needed to be relooked into.

The Transport Commissioner desired to know whether any experiment to test an engine at the end of 4 to 5 years was again carried out by the A.R.A.I. which would help to find whether maintenance of a vehicle in Indian conditions justified 20% factor particularly for emissions. The W.I.A.A. offered to supply 3 vehicles for such tests. Shri Ghosh informed that the Standards Committee & the Committee on Pollution of the A.R.A.I. undertakes testing as above. It will have to be done now.

Shri Ghosh was requested to place before the next Committee meeting the revised testing procedure on the above lines, i.e. testing of the engine after 4 to 5 years.

(Action: A.R.A.I./W.I.A.A.)

It was observed that the illegal parking of motor vehicles on the roads adds to congestion & affects adversely on the speed of the vehicles. This increases pollution. Shri Yadav, therefore suggested that no new vehicles should be registered in Mumbai unless there is a specific parking place available with the owner. This measure will keep a check on new additions of motor vehicles on roads and help increase the speed of vehicles there by reduce pollution. Dr.Pasricha, however cautioned that while doing so, attention should also be paid to tendency of registration of vehicles outside Mumbai, say Thane etc. and then being used in Mumbai. Shri Yadav further informed that to ensure that parking place is provided, the purchaser of vehicle should bring a 'no objection certificate' from the B.M.C. and produce before the Registering Authority. This measure will be prospective and not retrospective. Additionally, either the plying of odd and even number vehicles on alternate days or prohibit plying of vehicles with registration numbers ending on say 0 & 9, 1 & 8, 2 & 7 and so on specifically on one day like Monday, Tuesday etc. should be adopted. This will restrict the number of vehicles plying on the roads by 20% and reduce pollution also. The details of the scheme will have to be worked out. Dr.Pasricha informed that such measure can be introduced provided there is a proper and efficient mass transportation system. The Transport Commissioner suggested that Dr.Pasricha, Shri Yadav and Shri Debi Goenka will prepare separate write up on the issue and present it within one week before the Committee.

(Action: Dr.Pasricha, Shri Yadav, Shri Debi Goenka)

Dr.Pasricha expressed the need to take into consideration the violations of Development Control Rules, hawkers zones, mix of traffic on the roads, road conditions, road markings etc. which have effect on the flow of vehicles on the road.

Shri Yadav requested to include the PUC machines owned by the Police (Traffic) in the list of Designated PUC centres. The Transport Commissioner accepted this and informed that these will be included as requested.

(Action: Transport Commissioner's Office)

About monitoring of pollution levels in Mumbai city, Smt. Bhende informed that the M.P.C.B. & B.M.C. have divided the area between them. Monitoring has started at 6 locations. There are two mobile vans for this purpose, one each with MPCB & BMC. Shri Warade informed that the proposal to set up machinery for checking pollution in different Municipal Corporation areas in the Mumbai Metropolitan Region (i.e. New Mumbai, Thane etc) has to be sent to the Department of Environment for consideration of the Government. The Transport Commissioner desired to know whether the Department of Environment had asked for their action plans by the MPCB & BMC. It was informed by Smt. Bhende that the MPCB has proposed to the Government to establish continuous air quality monitoring stations at Hutatma Chowk, Andheri (West), Sion, Chembur and Wadala. Each such station would cost about Rs.70 lakh. A proposal for sanctioning total Rs.10 crores has been submitted by them to the Government. The Transport Commissioner informed that the benzene content need not be measured at all the stations to begin with. It may be measured only at one of the stations. For the purpose of seeking funds and starting the centre immediately, it was decided that the Transport Commissioner will write to the Chairman, Maharashtra Pollution Control Board. It was also decided that for the purpose of calling up of tender, finalisation of the same etc. the M.P.C.B. should compress the time schedule. Mrs. Bhende will give the details of costing to the Transport Commissioner.

(Action: Mrs. Bhende, M.P.C.B.)

About increasing the number of filling stations of CNG, it was informed by Shri Prasad that the Development Control Regulations were coming in the way of opening more centres at petrol pumps and due to paucity of space, even if the D.C. Regulations were amended, petrol pumps in South Mumbai would not be able to dispense CNG. Shri Jadhav, Joint Transport Commissioner requested to consider the option of opening up of CNG Stations on the upstairs of the existing petrol pumps. Shri Prasad informed that the refilling time of BEST buses is also required to be improved. The Transport Commissioner expressed the need to invite BEST for the next meeting.

About fuel adulteration, Shri Pawar informed that no further checks for adulteration could be carried out if density checks were found correct. The Transport Commissioner informed to check up whether this provision can be amended suitably.

(Action - Controller of Rationing)

About 'NO PUC - NO FUEL' scheme, Shri Yadav informed that there is a need to check whether this is being adhered to by arranging surprise incognito visits to petrol pumps.

Dr.Rane requested to take up the issue of grant of permission to them to erect temporary booths for the purpose of carrying out PUC checking at the octroi check posts of B.M.C. and for safe custody of PUC machines to be supplied by the SARF. The BMC will be suitably requested for the purpose.

(Action: Transport Commissioner's Office)

It was unanimously agreed by all the members that illegal parking, at the unauthorised garages on the roads is required to be dealt with very seriously.

Shri Yadav desired to ensure proper calibration of PUC machines at the Designated PUC Centres. Also, reacting to the issue of phasing out of old vehicles, Shri Yadav informed that such a mechanism is inbuilt in the High Court directions as registration of vehicles is required to be cancelled after the third offence and offences will be repeated in older vehicles.

About use of catalytic converters in in-use vehicles, Shri Ravi Shinde informed that all the existing vehicles can be improved by fitting catalytic converter. There is no substance in saying that the traces of leaded petrol in the engine will poison the catalytic converters.

At the end of the discussions, the Transport Commissioner informed that the future meetings according to main issues to be discussed will be as indicated below:

Date	Topics	Special invitees
1. 3-2-2000	a) Conversion of buses to CNG b) Applicability of EURO-I/II norms to private and commercial vehicles c) Action to be taken for two/three wheelers using two stroke engines d) Improvement of emission levels of in-use vehicles.	a) BEST b) SIAM c) ARAI
2. 10-2-2000	a) Monitoring of pollution levels b) Financial incentives to be provided for replacement of existing old taxis & Autorickshaws c) Conversion to new and cleaner technologies.	a) Banks b) Taxi Association/ c) MRTTTBV Mahasangh
3. 17-2-2000	a) Issues relating to fuel b) Desirability of ensuring pre-mixed oil and banning sale of loose 2 T oil	a) SLC Oil Industry
4. 24-2-2000	Improved traffic management	
5. 2-3-2000	Age of vehicles.	

Further, it was decided to visit ARAI, Pune and get conversant with the technologies and procedure adopted to measure vehicular pollution levels. The visit is scheduled for 7th February, 2000 which was accepted by Shri Ghosh, A.R.A.I., Pune.

The meeting ended with a vote of thanks to all the members present.

Transport Commissioner,  
Maharashtra State, Mumbai.

**Minutes of the meeting of the High Court Committee held on  
3rd February, 2000.**

The 3rd meeting of the Committee constituted by the High Court, Mumbai to examine, consider and recommend measures to reduce vehicular pollution in Greater Mumbai was held on the 3rd Feb., 2000.

The meeting was held under the Chairmanship of Shri V.M.Lal, Transport Commissioner. List of members and invitees who attended the meeting is enclosed.

Dr.P.S.Pasricha, Addl. Director General of Police (Training) and Mrs.Zinnia Khajotia, CLEAN Air were unable to attend.

The Transport Commissioner well-comed all the members of the Committee.

It was decided to take up first the issues of :

- 1) use of alternate fuels such as compressed natural gas and
- 2) desirability and feasibility of converting the existing buses to CNG on priority. Accordingly the representatives of the B.E.S.T. were requested to inform the existing position and their future plans for conversion of buses to run on CNG. It was informed by the representative of the BEST that 10 buses were being operated on CNG and there are plans for adding of more buses to run on CNG. As regards conversion of all the buses of B.E.S.T. to run on CNG, it was informed by the representative of Ashok Leyland Limited that for the old buses CNG kits cannot be fitted until Automotive Research Association of India approved the same. ARAI will take about 4 to 6 months period for the approval. The kit costs approximately Rs.3.7 lakh. The BEST will have to take into consideration the cost of the CNG conversion kit and prepare their programme accordingly. Dr.Pande informed that apart from the cost, technical feasibility of the CNG kits will also have to be checked as the experiment of Delhi Transport Corporation buses was not found to be satisfactory. It was informed by the representative of Society of Indian Automobile Manufacturers that the process of retrofitment of CNG kits on diesel vehicles is a very complex process and its satisfactory functioning cannot be guaranteed. Therefore, instead of using vehicles running on CNG, EURO-I and

EURO-II compliant vehicles should be aimed at by suitable improvements on the in-use vehicles. The representative of Ashok Leyland Ltd. informed that a proper mix of technological improvements and new buses to run on CNG could be considered. Ashok Leyland is in a position to manufacture about 300 to 400 buses per month which run on CNG. Out of this, up to 100 buses can be given to the BEST every month. The representative of the BEST was of the view that the decision between use of buses running on CNG and buses complying with EURO-I & EURO-II norms is required to be taken by the BEST.

The Transport Commissioner asked the BEST representative to take up the issue of acquiring CNG buses alone as replacement of the existing buses with the General Manager, BEST for a policy decision. He also desired to know whether BEST will face any difficulty in this regard if the High Court directed to that effect. A detailed note in this regard should be given immediately.

As regards supply of CNG it was informed by the representative of the Mahanagar Gas Ltd. that if supply of vehicles running on CNG from M/s Ashok Leyland Ltd to the BEST is assured them the Mahanagar Gas Ltd. is fully equipped to supply adequate quantity of CNG to the BEST. It was also informed that the fast filling CNG unit of BEST is not used to its full capacity as there is only one bus that can take benefit of this facility. The present filling time of a fast filling bus is about 10 minutes. The buses have to be filled-in immediately and the gas caskets also should not get exhausted. BEST with the help of Ashok Leyland should take immediate steps for modification on balance 9 buses for fast filling. The Transport Commissioner requested M/s Ashok Leyland Ltd to indicate at the earliest the break-up of cost including duties of their CNG kits to be supplied to the BEST for fitment on their buses. The representative of the Ashok Leyland assured to supply the same by the 7th Feb., 2000. Dr.Pande informed that there is a set procedure to avail of reduced customs duty on the imported CNG kits. M/s Ahok Leyland may take benefit of the same. As regards supply of buses running on CNG by TELCO, it was informed by their representative that TELCO can supply high grade diesel engine as well as CNG engine vehicles. The results are satisfactory. 4 buses running on CNG have already been sold by TELCO. TELCO

for their own engines did not recommend conversion on CNG. They however recommended replacement of existing engines by dedicated CNG engines or by EURO-II norm compliant engines. It was assured that about 2000 such engines can be supplied by TELCO in about 4 months notice.

As regards concessions from the customs duty, the SIAM and TELCO requested that the concessions in the customs duty applicable to CNG conversion kits may also be extended to other related components in the CNG engine. They also requested that these concessions may be given for at least 2 to 3 years. Dr.Goanka of SIAM was of the view that the retrofitment conversion programme of BEST may stretch to about 4 to 5 years. Instead the BEST should resort to a programme for replacement of their existing engines. It was also thought whether an optimal mix of both the options is a better solution. M/s Ashok Leyland was requested to give costing of their option for retrofitment and SIAM was requested to give details of costing of both the options mentioned above in co-ordination with Ashok Leyland and BEST before the next meeting. They were also requested to indicate the time frame for implementation of the programme.

The Transport Commissioner desired to know the programme of BEST for phasing out old buses from existing fleet of vehicles. It was informed by BEST that age is not a significant factor as the engines are overhauled continuously. BEST has about 550 buses that are more than 15 years old.

On the issue of fuel adulteration it was informed by the BEST that they do not face the problem of fuel adulteration as they have their own oil tankers. Similarly all the dispensing units are located inside the depots. The activities of filling up of the tanks etc. are very closely monitored. On a suggestion from Transport Commissioner the representative of the SIAM informed that they would consider giving a mobile fuel adulteration checking van to Transport Commissioner for checking fuel adulteration. Dr.Pande desired to know whether level of benzene can be checked by the mobile fuel adulteration vans. Mr.Khan for the State Level Co-ordinator Oil Industry informed that this can be done in octane testing and the presently mobile testing vans cannot test this.

The Transport Commissioner was of the view that those aspects of fuel adulteration which are not covered by the two mobile adulteration testing van of State Level Co-ordinator Oil Industry can be checked by the vans of SIAM. The SIAM should make necessary arrangements in their vans of such equipment.

The Transport Commissioner also asked the representative of the BEST to take up the issue of exemption of customs duty etc. on the CNG kits with the Ministry of Finance, Revenue Department, Government of India; Commissioner of Sales Tax, Government of Maharashtra and the Commissioner of Excise, Government of Maharashtra. The copies of the proposals be given to Transport Commissioner for further follow-up. Mrs. Bharati Gandhi desired that the BEST should also include the expected costing of total conversion of their fleet on CNG including time required for the same. Similar details are also awaited from BEST by Mahanagar Gas Ltd. The representative of the BEST was also asked to submit a note with reference to transport management covering issues like dedicated bus lanes or synchronised signals for buses etc.

The Society of Indian Automobile Manufacturers made a presentation covering the issues under consideration of the Committee. This was followed by discussion on the preparedness of the automobile industry to meet the pollution norms equivalent to EURO-I and EURO-II.

Shri Shastri of the Oil Co-ordination Committee and Shri Nandi of SIAM have to make co-ordinated efforts with all concerned departments of the Govt. so that improvement in fuel quality and engine design go hand in hand. The Transport Commissioner desired to know whether the Environment Ministry, Govt. of India can play a coordinating role in this regard. Dr. Pandey agreed to examine this. It was decided that the concerned officers of the Ministry of Petroleum will also be invited for the meeting of the Committee to be held on the 17th Feb. 2000. As regards applicability of EURO-II norms to CV/MUV the Transport Commissioner desired that these norms be made applicable with effect from 1-1-2002 instead to 1-4-2003 suggested subject to availability of special quality fuel. SIAM was requested to consider this issue in further detail.

M/s Ashok Leyland Ltd. was requested to consider whether they can supply EURO-II compliant vehicles immediately.

The Transport Commissioner requested Shri N.V.Iyyar of M/s Bajaj Auto Ltd to submit a paper about 4 stroke engines to be fitted to all 2 & 3 wheelers manufactured in future. The SIAM was of the view that retrofit kits for older vehicles which can bring down the emission levels substantially should be made compulsory for trucks. Such kits may cost between Rs.40,000 and 50,000. Such standards can be applied to vehicles say more than 6 years of age. The kit will be developed by the vehicle manufacturers in house. SIAM recommended this as an alternative to prescribing a fixed age of vehicles beyond which it has to be scrapped. It was further informed by them that age alone is not a proper criteria it should also take into consideration total running of a vehicle. The Transport Commissioner requested SIAM to give a note on this before the next meeting.

SIAM & ARAI were requested by the Transport Commissioner to give report on reduction of existing PUC standards vis-a-vis applicability of EURO-I & EURO-II norms within a period of 2 weeks. SIAM was also requested to help in developing pollution measuring instruments which can measure sulphur dioxide, NOX, Benzene, hydro-carbon etc. which are not presently measured.

The Transport Commissioner, before concluding, requested all the members to submit their notes, as decided, immediately. The next meeting will be held at 11.30 a.m. on 10th Feb., 2000. The meeting ended with the vote of thanks.

Transport Commissioner,  
Maharashtra State, Mumbai.

List of Members.

- 1) Shri G.K.Pandey : Director, Ministry of Environment & Forests,  
Government of India, New Delhi.
- 2) Shri A.M.Deshpande : Air Pollution Abatement Engineer,  
Maharashtra Pollution Control Board.
- 3) Shri Debi Goanka : Bombay Environmental Action Group
- 4) Ms Meher Raffat : Representative of Mrs.Khajotia - CLEAN Air

Invitees:

- 1) Mrs.Hemlata Barde : Environment Department, Government of  
Maharashtra, Mantralaya.
- 2) Mrs.S.S.Bhende : S.R.O., Maharashtra Pollution Control Board.
- 3) Mrs.J.M.Deshpande : Scientist, Municipal Corporation of Greater  
Mumbai
- 4) Mr.Pawan Goanka : Mahindra & Mahindra Ltd. & President of SIAM
- 5) Mr.Rajat Nandi : Executive Director, Society of Indian Automobile  
Manufacturers.
- 6) Mr.M.Saravanan : Maruti Udyog Ltd.
- 7) Mr.K.Gandhi : Sr.Advisor, Society of Indian Automobile  
Manufacturers.
- 8) Mr.N.V.Iyer : Bajaj Auto Ltd.
- 9) Mr.Jairam Ramnath : Tata Engineering Ltd.
- 10) Mr.R.Ramakrishnan : Ashok Leyland Ltd.
- 11) Dr.K.Kumar : Maruti Udyog Ltd. Undertaking
- 12) Miss Bhuvaneshwari .  
Jayaraman : Society of Indian Automobile Manufacturer.
- 13) Mr.P.N.Burgul : Ind Auto Ltd.
- 14) Mr.V.A.Patankar : Brihanmumbai Electrical Supply & Transport
- 15) Mr.P.K.Sawant : Brihanmumbai Electrical Supply & Transport  
Undertaking
- 16) Ms Kunti Oza : Clean Mumbai foundation

- 17) Mr.R.S.Prabhu : Mahanagar Gas Ltd.
- 18) Mr.P.N.Prasad : Mahanagar Gas Ltd.
- 19) Mrs.Bharati Gandhi : Doctors Intervenor/I.M.C.
- 20) Mr.Niranjan Mehta : Western India Automobile Association.
- 21) Mr.B.Ghosh : Automotive Research Association of India, Pune.
- 22) Mr. M.M.Khan : Dy.Manager, SLC Office, Bharat Petroleum Corporation Ltd.
- 23) Shri B.J.Patil : Dy.Controller of Rationing
- 24) Shri Mandar Naik : Asstt.Inspector of Police, Traffic Police,Mumbai

**Minutes of the meeting of the High Court Committee**  
**Held on the 10th February, 2000.**

The 4th meeting of the Committee constituted by the High Court, Mumbai to examine, consider and recommend measures to reduce vehicular pollution in Greater Mumbai was held on the 10th February, 2000.

The meeting was held under the Chairmanship of Shri V.M.Lal, Transport Commissioner. List of members who attended the meeting is enclosed.

The Transport Commissioner welcomed all the members of the Committee and informed that the discussions will mainly concentrate on the following two issues, namely:

i) financial incentives that can be made available for replacement of old taxis and autorickshaws with new vehicles running on clean fuel.

ii) incentives for conversion to cleaner technologies including in particular reduction of import duties and other levies on CNG kits and catalytic converters.

On these issues, Shri Patankar, Assistant General Manager, BEST informed that a note on the programme of conversion of existing BEST buses either on CNG or EURO-II compliant engines will be submitted to the Committee shortly. It was explained by SIAM that EURO-II compliant buses will be available between 9 & 12 months from now. The Ministry of Petroleum has been asked to give an assurance on the date of supply of diesel with 0.05% Sulphur content. The emission of suspended particulate emission (SPM) from CNG vehicles is less than EURO-II compliant vehicles. Similarly, oxides of nitrogen and hydrocarbons are also emitted less in CNG vehicles and therefore, it is less harmful. Dr.Rane of the Smoke Affected Residents Forum expressed the need to convert even the existing buses to CNG and not new buses alone. It was clarified by Ashok Leyland that they can offer CNG conversion kits and I-2000 norms compliant kits, for existing BEST buses. However, about 6 months time will be required for the same.

The Transport Commissioner on financing of taxi cabs and autorickshaws, then, requested the representatives of the autorickshaw, taxi unions and the Mahasangh to present their expectations before the Committee.

Shri Quraysh of the City Taximen Union desired to know why LPG cannot be permitted to be used as automobile fuel. Transport Commissioner explained that LPG is not permitted to be used under the provisions of the Motor Vehicles Act as an automobile fuel as yet. Even, the High Court, Karnataka has withdrawn its order permitting use of LPG as automobile fuel. However, the Ministry of Surface

Transport is very actively considering this issue and amendment to the Motor Vehicles Act is expected soon.

Shri Ghura of the Maharashtra Rajya Truck Tempo Tankers Bus Vahatuk Mahasangh, Shri Quadrose and Shri D'sa for the taximens unions wanted to know whether the incentives to be offered for replacement of existing taxi cabs cover even the loans availed for purchasing the existing taxi cabs and whether the financial institutions will waive all the existing liabilities including loans and interest on loans. It was informed by them that they want atleast 90% of cost of vehicle as loan, at 4% rate of interest. Also, the repayment period should be extended to 7 to 8 years from present 5 years. Further, the vehicles also should not be hypothecated/leased to the banks.

The representative of the autorickshaw unions also put forth the same demands. Shri Arya of the Azad Taxi Chalak Sangh demanded for 10% interest subsidy, exemption from octroi duty and loans from nationalised banks. Shri Ghura wanted government to be guarantor to the loan - which fits into guideline of the Reserve Bank of India. The representatives of the Samajwadi Union also supported the same demands.

As regards use of CNG, Shri Ghura mentioned that it should be available without any waiting period for its filling. Further, the cost of CNG should remain stable for the next 5 to 6 years at least and it should not be increased suddenly and abnormally. Shri D'sa expressed the view that the increase in the number of CNG filling stations has not kept pace with time. They want guarantee for increasing the facilities if the taxi cabs are to switch over to CNG. The representatives of the Mumbai-Pune/Nasik taxi unions demanded setting up of CNG dispensing stations en-route to Pune and Nasik.

The Transport Commissioner, then, asked the representatives of the banks to react to the demands made for financing of taxi cabs as well as Mahanagar Gas to the points made pertaining to them.

Shri R.Inamdar of the Bharat Co-operative Bank explained that they have not given loans to taxi cabs so far. They finance only the autorickshaws. Autorickshaw loans are given directly to the vehicle owners and also, through agents. The interest is charged at 16%.

As the involvement of agents is not a healthy practice, the Transport Commissioner desired that this should stop immediately. He informed them to create machinery to disburse loan directly without involvement of agents. The bank should take immediate corrective steps in this regard. As regards taking action on loan defaulters, it was explained that the Bharat Copoperative Bank does not resort to taking action unless the default extends to three instalments of repayment.

It was informed by S/Shri Thumpi, Quadrose and Ghura that the banks take into their possession, the original registration certificate of the vehicle.

Shri Jadhav, Jt.Transport Commissioner clarified that original registration certificate is required to be carried with the vehicle. However, if it is not carried, a time of 7 days is granted to produce the same.

The Transport Commissioner clarified that since the procedure adopted by the banks is in contradiction to legal provision under the Motor Vehicles Act, the banks should not resort to this. Instead, they may take into possession a certified copy of the registration certificate or an extract of particulars of the vehicle from the RTO office.

Shri S.Ashraf of the Bombay Mercantile Co-operative Bank informed that they are in the business of taxi financing. 75% of the cost is given as loan at 15% interest rate. The amount of 75% of the cost is decided as per policy of the bank and there are no RBI restrictions in this regard. On being asked by the Transport Commissioner whether they are willing to go beyond 75% upto 90% of cost as loan amount, it was mentioned by the representative of the Bombay Mercantile Bank that it was possible. However, the interest burden will increase. Shri Quadrose informed that even the interest rate should also be reduced. Transport Commissioner asked the representative of the Bombay Mercantile Bank to submit their note for increasing the loan amount from 75% to 90%, within the next 7 days. Shri Quraysh mentioned that the banks should reconsider their policy towards the security to the loan. The loan should be soft and for a longer period as is done for the agricultural sector. The Transport Commissioner desired to know the policy of the bank towards guaranters. The representative of the Bombay Mercantile Bank informed that they require 2 guaranters, who by themselves are holders of taxi cab permits. Vehicles of the guaranters are also hypothecated to the bank and the guaranters, individually, should not have any liabilities more than 7.5 lakhs. The existing policy does not appear to be very objectionable. Shri Ghura mentioned that guaranters should not be there at all under any circumstances. Similar view was also expressed by Shri Quadrose. Both of them informed that the guarantee should be given by the Government. The representative of the Bombay Mercantile Bank informed that the 15% interest rate which is on reduced balance basis is reasonable. However, reduction in interest rate as well as extended repayment period for upto 7 years can be taken up with the management. The bank faces the problem of transferring/selling vehicles directly without any intimation to the bank. This needs to be looked into. The representative of the Bombay Mercantile Bank further informed that the bank does not have any scheme where the government can be a guaranter to the loan.

Shri U.Shetye of the New India Co-operative Bank informed that they are in the field of taxi financing. He requested to involve a few more co-operative banks and nationalised bank for further discussions on the issue of financing of taxi cabs.

The Transport Commissioner asked the representatives of the transporters to give justification for soft loan and for having no guarantee for the loan. Shri Ghura informed that the consumer courts pass an immediate decree in non payment of loans on the guaranters to the loan and this happens frequently as the taxi owners are out of business due to recession. This results in harassment of the guaranters.

The Transport Commissioner while reacting to this mentioned that the fares which are fixed for the taxi cabs and autorickshaws take into consideration all the relevant factors like consumer price index etc. and hence if the transporters do not want any guaranters to the loan, no bank will advance loan.

The Transport Commissioner enquired whether the banks are willing to give loans only for replacement of the existing vehicles. The representative of the Bombay Mercantile Bank informed that they are advancing such loans upto 80% of the cost. Shri Ghura informed that the Punjab & Maharashtra Bank offers 100% loan for upto 10 years old vehicles and less than this for vehicles which are more than 10 years old.

The Transport Commissioner informed the scheme of keeping 20% of the private vehicles off the roads on any particular day for the information of all and particularly the taxi unions for soliciting their reaction to the same. Shri D'sa was of the view that the proposal is not acceptable. What is required is a total ban on registration of new vehicles. Business will not increase unless and until this is done. Shri Ghura, Shri Quadrose and Shri Thampi did not have any objection to the scheme and agreed that it would help in improving their business.

The Transport Commissioner then requested Shri P.N.Prasad, Vice-President of the Mahanagar Gas Limited to explain their plans about installation of CNG at dispensing stations. The representative of the Mahanagar Gas Limited informed that during last month 300 vehicles were converted to run on CNG. 50,000 kgs of gas is being dispensed every day. The Mahanagar Gas Limited is not aware of any long queues at any of their stations as of now. Slightly more than 1000 taxis can be catered at each station per day and slightly more than 20,000 taxis are catered at all stations every day. Their peak period is from 8 a.m. to 8 p.m. It was informed by them that 5 more stations are coming up in this financial year and 14 more stations will come up during the year 2000 - 2001. As regards increasing the dispensing units in South Mumbai it was informed that space constraints do not permit the same. The representatives of the Mahanagar Gas Limited and the Petroleum Dealers Association will carry out a combined inspection of a few petrol pumps in South Mumbai where there is a possibility to set up CNG dispensing stations.

The Transport Commissioner desired to know whether the Transporter's Association are willing to offer appropriate locations for installation of dispensing stations. The Transport Commissioner further wanted to know which is the preferred fuel between CNG and LPG. The taxi unions were unanimous in saying

that any fuel which is economical would be acceptable. However, LPG would be more acceptable due to its easy availability. Mr.D'sa informed that the octroi and sales tax are required to be waived immediately on both i.e. the LPG and CNG kits. It was informed by the Transport Commissioner that since the LPG kits are likely to cost around Rs.10,000/- why subsidy is required even on this amount to which Shri Ghura informed that they are ready to fund installation of these kits from their credit society itself. The representative of the Mahanagar Gas Limited in support of CNG informed that the per Km cost of CNG is Rs. .93 whereas that of LPG is 1.38. These calculations are based on the subsidised cost of LPG as of today. The Mahanagar Gas Limited does not have licence from the Government of Maharashtra for operations outside Mumbai limits. Shri Rajat Nandi, Executive Director, SIAM informed that the Ministry of Surface Transport is very actively considering the use of LPG as automotive fuel. The LPG tank has to be a fixed tank and not changeable for 4 wheelers, however, for 2 wheelers small cylinder which can be changed is in the process of development.

As regards permitting advertisements to be displayed on taxi cab Shri Quadrose informed that the Municipal Taxes for the same are Rs.1,800/- per year which are very heavy. Commission from the advertising agencies proves to be inadequate to cover these taxes and other expenses. The scheme therefore is not satisfactory.

The Transport Commissioner asked the representatives of the transporters to put-forth their views about 3 cylinder engines. Shri Ghura was of the view that if the conversions have been done in the past with permission these should be allowed to continue. Any engine which pollutes should be liable for action and no action is required to be taken in respect of an engine which does not pollute.

The Transport Commissioner further wanted to know whether the unions are ready to get these engines certified by ARAI. However, the unions informed that they want time to react to the suggestion. It was explained by the Transport Commissioner that such certification is required as the engines have not been approved under the provisions of the Motor Vehicles Act.

Shri Ghura mentioned that the non-governmental organisations will have to help the associations for conversions of engines. Smt.Kunti Oza was of the view that if permissions have been given in the past, the government should now take lead for making finances available.

As the Transporters Union have other issues to be addressed to the Transport Commissioner, it was decided that a meeting with the Transporters Association in this connection will be held at 11.30 a.m. on 24-2-2000.

The Transport Commissioner was of the view that measures for replacement of such taxi cabs have now to be thought of and solutions found. The banks should step in for financing. Management of the banks will have to be

impressed upon for this. Each and every organisation concerned has to contribute their mite to this mass programme of containing vehicular pollution.

Dr.Rane informed that certain corporate houses are ready to finance. However, not much subsidy in the interest rate can be given. Longer repayment period for the loans can be considered however, there should not be any default in the repayment.

The representative of the WIAA mentioned that CNG availability is still a problem. The problem is more acute as CNG dispensing station is located at Arthur road. The representative of the Mahanagar Gas Limited informed that in fact this outlet sells maximum CNG in the city. The Transport Commissioner requested the representatives of the Mahanagar Gas Limited and WIAA to carry-out a combined inspection, confirm the fact and report.

As regards funding to be provided for replacement of taxi cabs Mrs Bharati Gandhi was of the view that the taxi owners may contribute 1/3 of the cost, the NGOs and citizens may contribute 1/3 and balanced 1/3 cost be contributed by the Government.

As regards testing of taxi cabs with imported 3 cylinder engines for pollution, the representative of SIAM informed that they are ready to help in testing vehicles. Charges of ARAI for PUC test for 10 engines will be paid by SIAM. ARAI will also be informed to comment about availability of spares of these engines, servicing etc.

The Transport Commissioner, then requested Shri Rathod, Additional Commissioner of Police (Traffic) to explain the proposal of keeping 20% private vehicles off the road on one day. The proposal was explained by Shri Naik, A.P.I.(Traffic). Mrs.Bharati Gandhi informed that a large number of VIP vehicles are not really required, they should not be permitted to ply on the roads. They are often found openly flouting traffic regulations regularly. "The 20%" scheme should be made applicable to even such categories of vehicles. Finally it was decided that all Government vehicles with Yellow or Red light on them would be exempted from the schemes.

The Transport Commissioner asked the representative of the WIAA to give written comments on the scheme by 17-2-2000. It was agreed to by all the members that the scheme will not exempt vehicles running on fuel like CNG or LPG. All the members felt that this scheme needed to be implemented to reduce congestion and thereby reduce pollution.

The next meeting will be held at 11.30 a.m. on 17th Feb., 2000. The meeting ended with the vote of thanks.

Transport Commissioner,  
Maharashtra State, Mumbai.

List of Members.

- 1) Dr. G.K.Pandey : Director, Ministry of Environment & Forests, Government of India, New Delhi.- nominee of Shri Vijay Sharma, Jt.Secretary, Ministry of Environment & Forests, G.O.I., New Delhi.
- 2) Shri A.M.Deshpande : Air Pollution Abatement Engineer, Maharashtra Pollution Control Board.
- 3) Shri Debi Goanka : Bombay Environmental Action Group
- 4) Ms Meher Raffat : Representative of Mrs.Khajotia - CLEAN Air

Dr.P.S.Pasricha, Additional Director General of Police (Training) could not attend the meeting.

Invitees:

- 1) Mr.R.T.Rathod : Addl.Commissioner of Police (Traffic)
- 2) Dr.S.K.Rane : Smoke Affected Rresidents' Forum , Chembur.
- 3) Shri Ravi Shinde : Smoke Affected Rresident's Forum, Chembur.
- 4) Mrs.S.S.Bhende : S.R.O., Maharashtra Pollution Control Board.
- 5) Mrs.J.M.Deshpande : Scientist, Municipal Corporation of Greater Mumbai
- 6) Mr.Rajat Nandi : Executive Director, Society of Indian Automobile Manufacturers.
- 7) Mr.Jairam Ramnath : Tata Engineering Ltd.
- 8) Mr.P.N.Burgul : Ind Auto Ltd.
- 9) Mr.V.A.Patankar : Brihanmumbai Electric Supply & Transport
- 10) Mr.P.K.Sawant : Brihanmumbai Electric Supply & Transport Undertaking
- 11) Ms Kunti Oza : Clean Mumbai foundation
- 12) Mr.P.N.Prasad : Vice President, Mahanagar Gas Ltd.
- 13) Mr.R.S.Prabhu : Mahanagar Gas Ltd..
- 14) Mrs.Bharati Gandhi : Doctors Intervenor/I.M.C.

- 15) Mr.Niranjan Mehta : Western India Automobile Association.
- 16) Mr. M.M.Khan : Dy.Manager, SLC Office, Bharat Petroleum Corporation Ltd.
- 17) Shri Mandar Naik : Asstt.Inspector of Police, Traffic Police,Mumbai
- 18) Mr.Uday Shetye : New India Co-operative Bank
- 19) Mr.Sajjad Ashraf : Bombay Mercantile Co-op Bank
- 20) Shri Vijay D.Mudgal : The Maratha Mandir Co-op Bank.
- 21) Shri R.G.Inamdar : The Bharat Co-operative Bank, Mumbai
- 22) Mr.Mushtaq Al-quraysh: City Taximens Union  
Mr.A.Hasan City Taximen Union
- 23) Shri Shirish Naik : Bombay Autorickshawmen's Union
- 24) Shri Tambi Kurian : Bombay Autorickshawme's Union
- 25) Shri Ramachand Arya : Azad Taxi Chalak Sangh
- 26) Shri S.M.Vaidya : Sangli Bank, Bombay Branch
- 27) Shri Sunil Merchant : Western India Automobile Association
- 28) Shri Usman Patel :
- 29) Shri G.M.Kathya : Samajwadi Workers Union.
- 30) Shri K.P.Badala : Maharashtra Tempo Association.
- 31) Shri R.D.Shinde : Bus Owners Sangh
- 32) Shri B.R.Shende : Bus Owners Sangh
- 33) Shri A.R.Dalvi : S.B
- 34) Shri N.L.Sawant : Samajwadi Taxi Union.
- 35) Shri Jagtar Singh : Maharashtra Tempo Association.
- 36) Shri G.S.Bindra : Maharashtra Tempo Association.
- 37) Shri Mohinder Singh Ghura: M.R.T.T.T.V.Mahasangh
- 38) Shri Mhatre : Brihanmumbai Tempo Malak Sangh
- 39) Shri A.L.Quadros : Bomaby Taximens Union.
- 40) Shri D'sa : Bombay Taximens Union.
- 41) Shri Samson Joseph : Brihan Mumbai Tempo Association
- 42) Shri R.K.Krishnaraj : Brihanmumbai Tempo Association
- 43) Shri Sanjay Jadhav : Brihanmumbai Tempo Association

**MINUTES OF THE MEETING OF THE HIGH COURT COMMITTEE  
HELD ON THE 17th FEBRUARY, 2000.**

The 5th meeting of the Committee constituted by the High Court, Mumbai to examine, consider and recommend measures to reduce vehicular pollution in Greater Mumbai was held on the 17th February, 2000.

The meeting was held under the Chairmanship of Shri V.M.Lal, Transport Commissioner. List of members who attended the meeting is enclosed.

The Transport Commissioner welcomed all the members of the Committee.

Shri Iyyer, representative of SIAM informed that during development trials on a particular model, a 4 stroke engine for a 3 wheeler application was not found to meet the standards of CO emissions without having been fitted with a catalytic convertor. It meets the standards only after fitment of a catalytic convertor”.

It was informed by them that though the 4 stroke engines have better fuel efficiency, they emit higher CO & NOX, and lower HC, compared to 2 stroke engines. The emissions from 2 stroke engines with catalytic converters are comparable to those from 4 stroke engines without catalytic converters.

It was informed by him that in Delhi, emission warranty for 30,000 kms. on catalytic converters is being given by two stroke two wheeler manufacturers. However, for the warranty to be effective, the vehicle has to be maintained as recommended by the manufacturer. It will be the responsibility of two stroke two wheeler manufacturers to rectify defects or replace the catalytic converter during warranty period if it fails in spite of maintaining as recommended. It will be checked whether this could also be offered in Mumbai. It was also informed that the Bhure Lal Committee has recommended only 4 stroke engines on all new vehicles. However SIAM has filed an affidavit on this issue and given an undertaking for warranty for 30,000 kms. on 2 stroke engines with catalytic converter. Further hearing is yet to take place and Supreme Courts decision on the recommendation is awaited.

SIAM was requested to obtain specific comments on this representation made by SIAM through the affidavit from the Bhure Lal Committee so that our recommendations were not at variance from Bhure Lal Committee’s report. Even the representatives of Ministry of Environment & Forests were requested to obtain views of Environment Pollution (Prevention & Control) Authority for the National Capital Region.

It was emphasised by SIAM that two stroke engine with a catalytic converter is not a bad technology vis-a-vis 4 stroke engine. However, a two stroke engine fitted with a catalytic convertor should also have a warranty. Even in 4 stroke engines, NOX emissions are too high though NOX + HC emissions criteria

is met with. Even the particulate matter emissions from a 4stroke engine are expected to be lower due to lower oil consumption than 2 stroke engine.

Shri Ravi Shinde of Smoke Affected Residents Forum mentioned that excess oil in the 2 stroke engines, many a times added by vehicle owners, affects the catalytic converter. This necessitates permitting only 4 stroke engines. Shri Iyer, SIAM explained that excess oil per-se does not affect catalytic converter. However, the warranty given by the manufacturer to be effective, expects proper ratio of oil and not excess quantity of the same. Shri Iyer further mentioned about use of pre-mixed oil and putting a ban on sale of 2 T-oils at garages, service stations etc.

The Transport Commissioner asked SIAM to conduct a study for about 3 to 4 months on the emissions of the existing 2 stroke engines of two wheelers, fitted with catalytic converters and report to him the findings.

It was informed by SIAM that they do not have any scheme to popularise use of catalytic converters on existing 2 stroke engines at present. The in-use vehicles have to be properly maintained in the inspection and maintenance programmes.

The Transport Commissioner was of the view that the industry has to take a lead in fitment of catalytic converters on the existing 2 stroke engines of two wheelers. 4 stroke engines are definitely better than 2 stroke engines and in future, till sufficient data on 2 stroke engines with catalytic converters is available, this will have to be assumed to be true.

It was clarified by SIAM that the catalytic converter is required to be replaced at the end of its life in order to be effective always. A catalytic converter decreases its usefulness gradually and not suddenly. It continues to function, through not efficiently, even after its prescribed life.

Smt.Zinnia Khajotia of CLEAN-Air desired to know whether the manufacturers follow any inspection and maintenance programme.

It was explained by SIAM that there is a network of dealers and authorised service stations. However, it was experienced that the vehicle owners do not take benefit of this facility. The owners should compulsorily be made to make use of these facilities. They should not go to unauthorised garages. SIAM was asked to give a proposal for compulsory inspection and maintenance programme to the Committee even for the existing vehicles. It was informed by Dr.S.V.Reddy, Deputy Director, Ministry of Environment & Forests that the Bhure Lal Committee has recommended vacating the stay to the Authorised Testing Stations Scheme granted by the High Court, Calcutta several years back.

The inspection and certification programme should also include private vehicles and not transport vehicles alone.

Mrs. Bharti Gandhi of the Indian Merchants Chamber was of the view that till such time as the amendments are carried out, the manufacturer should start programme to check their existing vehicles, may be at some cost.

The Transport Commissioner asked SIAM to give a note on the measures /proposals for improvement of in-use vehicles from pollution point of view.

Shri Debi Goanka of the Bombay Environmental Action Group was of the view that all free services should be included by the manufacturers in the cost of the new vehicle itself. The Transport Commissioner asked SIAM to put up a note on this issue.

As regards the proposal of keeping 20% vehicles off the roads, the Western India Automobile Association had some objections to the scheme. It was informed by Shri Niranjan Mehta of WIAA that in that case people will have to use the public transport, which in any case is inadequate and polluting. WIAA was of the view that unless some efficient alternative is provided, car-owners will be forced to wait for taxis.

It was clarified by the Transport Commissioner that people may use 'Car Pool' Scheme. Inconvenience, if at all, will only be once in a week.

WIAA wanted to experiment it before making it compulsory.

Smt. Zinnia Khajotia of CLEAN-Air was of the view that such measures will necessarily lead to good public transport.

The Transport Commissioner informed that the consensus is that the scheme is acceptable and worth recommending for its implementation to the High Court.

Shri R.T. Rathod, Addl. Commissioner of Police (Traffic) explained the 'No Parking' Scheme prepared by them. According to the Scheme, the vehicle owners will have to submit proof of parking at the time of registration of a new vehicle. The Scheme will not be applicable to the existing vehicles. The Transport Commissioner was of the view that new addition of vehicles on the Mumbai roads has to be checked, controlled and stopped, if possible.

Shri Debi Goenka of BEAG was of the view that new vehicle should be added only against scrapping of one existing vehicle.

Smt. Zinnia Khajotia of CLEAN-Air was of the view that the current 0% interest car financing scheme should stop.

On pointing out by Transport Commissioner and WIAA, that more than 60% of car owners do not have parking place in their names, Shri Mandar Naik, Assistant Police Inspector (Traffic) informed that the scheme is not applicable to existing vehicles. However, parking place proof will have to be submitted for replacement of the existing vehicle.

The Transport Commissioner was of the view that if the existing vehicle is being parked on public roads, its replacement could also be allowed. It was generally felt by everybody that the existing vehicle should be sold outside Mumbai.

Regarding disposal of the scrapped vehicles, Transport Commissioner desired manufacturers to check up whether they can take back their vehicles and whether any scrap yards can be set up. He was further of the view that every new vehicle should be against cancellation of an existing vehicle.

The Police Department (Traffic) were requested to consider the above issues and the discussions that followed, and modify their scheme suitably. Modified Scheme to be presented by 24th February, 2000.

It was decided to call Mumbai Metropolitan Region Development Authority & Brihanmumbai Municipal Corporation for the next meeting of the Committee to be held on 2nd March, 2000 to discuss the issues pertaining to truck terminal at Wadala.

Regarding conversion of BEST buses to run on CNG, note will be given by them by 21st February, 2000. It was also decided to take up issues related to fuel and oil with State Level Co-ordinator, Oil Industry on 24th February, 2000.

The taxi unions and transporters association have demanded certain relaxations from the High Court directives to the government. Their demands were informed to the members. Everybody vehemently impressed that there is no need to give any relaxation in this regard.

The next meeting will be held at 11.30 a.m. on 24th February, 2000.

The meeting ended with a vote of thanks.

Transport Commissioner,  
Maharashtra State, Mumbai.

List of Members.

- 1) Dr. G.V.Subrahmanyam : Director, Ministry of Environment & Forests, Government of India, New Delhi.- nominee of Shri Vijay Sharma, Jt.Secretary, Ministry of Environment & Forests, G.O.I., New Delhi.
- 2) Shri A.M.Deshpande : Air Pollution Abatement Engineer, Maharashtra Pollution Control Board.
- 3) Shri Debi Goanka : Bombay Environmental Action Group
- 4) Smt.Zinnia Khajotia : Convenor, CLEAN - Air
- 5) Ms Meher Rafaat : Representative of Mrs.Khajotia - CLEAN Air

List of the invitees:

- 1) Shri R.T.Rathod : Addl.Commissioner of Police (Traffic)
- 2) Shri S.T.Thorat : Dy.Commr. of Police (Traffic)
- 3) Dr.S.U.Reddy : Dy.Director(S) Ministry of Environment & Forest, New Delhi.
- 4) Mr.Barkat Mujawar : Senior Inspector (TrafficPolice)
- 5) Shri Mandar Naik : Asstt.Inspector of Police, Traffic Police, Mumbai
- 6) Mr.P.N.Prasad : Vice President, Mahanagar Gas Limited
- 7) Mr.R.S.Prabhu : Manager (CNG) Mahanagar Gas Ltd.
- 8) Mr.B.G.Pawar : Dy.Controller of Rationing, Mumbai.
- 9) Shri V.A.Patankar : Bombay Electric Supply & Transport Undertaking
- 10) Shri P.K.Samant : -do-
- 11) Mrs.S.S.Bhende : S.R.O.Maharashtra Pollution Control Board
- 12) Mrs.J.M.Deshpande : Scientist Incharge, Municipal Corporation Greater, Mumbai.

- 13) Mr.M.M.Khan : Dy.Manager, SLC Office,  
Bharat Petroleum Corporation Limited
- 14) Dr.S.K.Rane : Smoke Affected Resident's Forum
- 15) Shri Ravi Shinde : Smoke Affected Resident's Forum
- 16) Mr.Ishan Raveshia : Smoke Affected Resident's Forum
- 17) Mr.Parag Shukat : Smoke Affected Resident's Forum
- 18) Mrs.Bharati Gandhi : Doctors Intervenor/I.M.C.
- 19) Mr.Niranjan Mehta : Chairman, Traffic Sub-Committee Western  
India Automobile Assn.
- 20) Mr.Sunil Merchant : Traffic Sub-Commtee W.I.A.A.
- 21) Shri Rajat Nandi : Executive Director, Society of Indian  
Automobiles Manufacturers
- 22) Shri N.V.Iyer : General Manage, M/s Bajaj Auto Limited
- 23) Shri M.N.Muralikrishna : Vice President TVS SUZUKI (TECH)

**MINUTES OF THE MEETING OF THE HIGH COURT COMMITTEE**  
**HELD ON THE 24TH FEBRUARY, 2000**

The 6th meeting of the Committee constituted by the High Court, Mumbai to examine, consider and recommend measures to reduce vehicular pollution in Greater Mumbai was held on the 24th February, 2000.

The meeting was held under the Chairmanship of Shri V.M.Lal, Transport Commissioner. List of members who attended the meeting is enclosed.

The Transport Commissioner welcomed all the members of the Committee and informed that discussions will mainly concentrate on

- i) issues pertaining to the oil industry and
- ii) issues pertaining to improved traffic management.

Shri Rajeshwar Rao, Joint Director, Oil Coordination Committee mentioned that the white paper from Ministry of Petroleum & Natural Gas (MOP&NG), New Delhi on the issues pertaining to the oil industry has been received and presented to the Chairman. According to the white paper, supply of extra low sulphur HSD with 0.25% (max-) sulphur has commenced in Mumbai with effect from 1-4-1998 and rest of Maharashtra will be covered from 1-1-2000. For this purpose, the oil industry has set up Diesel Hydro De-sulphurisation (DHDS) plants in Mumbai. Supply of ultra low Sulphur HSD & Motor Spirit with sulphur content of 0.05% (max-) by weight would start for non-commercial vehicles conforming to EURO-II norms in Mumbai w.e.f. 1-1-2001. Similarly, oil industry is supplying Motor Spirit (MS) with 5% (max-) benzene all over the country and MS with 3% (max-) benzene will be supplied in the 4 metros with effect from 1-4-2000. The Transport Commissioner was of the view that the oil industry should indicate a tentative date for the supply of MS with 1% benzene. There has to be better coordination between the oil industry and the vehicle manufacturers as EURO-II compliant vehicles will require special quality fuel. Society of Indian Automobile Manufacturers (SIAM) was asked by the Transport Commissioner to give a paper to the Oil Co-ordination Committee (OCC) about speciality fuels required for EURO-II compliant vehicles. It was informed by Shri Iyer of SIAM that they had

given their requirements to the Standing Committee on Implementing Emission Legislations and the Standing Committee wanted comments of OCC in this regard.

Shri Rao of the OCC informed that MS with 1% benzene is not supplied, even in Delhi and no date has also been fixed. Regarding the query of Shri Debi Goenka of Bombay Environmental Action Group (BEAG) if the Reliance Industries Ltd. could

supply MS with 1% benzene, why the oil industry could, it was informed by Shri Rao that they are also not producing but have capability to do so. Shri Nitin Dossa of the Western India Automobile Association (WIAA) informed that the Reliance Industries Ltd. have filed an affidavit that they are producing.

The Transport Commissioner desired to know if the Reliance Industries Ltd. is producing MS with 1% benzene, where is it going and if they have capacity to produce, can the Oil Co-ordination Committee give logistic support for its distribution. Further, is it that those who have capacity to produce are not allowed as it will put pressure on the others to start production.

Shri G.K.Pandey, Director, Ministry of Environment & Forests (MOEF), Government of India informed that the Reliance Industries Ltd. can produce HSD with 0.05% sulphur and MS with 1% benzene. However, they want a premium price for the same. Mrs. Bharti Gandhi of the Indian Merchants Chamber desired to know how long will the oil industry take to supply above quality HSD & MS. The Transport Commissioner pointed out that the High Court expects a time frame to be specified in this regard.

Shri Vijai Sharma, Joint Secretary, MOEF was of the view that MS with 1% benzene and MS & HSD with 0.05% sulphur content will be required for EURO-II norms compliant vehicles. EURO-II compliant vehicles could run on slightly higher levels of sulphur content in diesel, but in such an eventually the vehicle cost will increase as there will be some modifications required to upgrade the engines to higher levels. As the situation in Mumbai is not very different from Delhi, the pollution norms applicable in Delhi will have to be replicated for Mumbai. Further, the oil industry should supply correct information to the Transport Commissioner.

It was informed by SIAM that all the EURO norms are based on a standard reference fuel and any sudden reduction of sulphur content may affect the lubricating properties of fuel. The commercial fuel available in the market has to be of the same standard as reference fuel.

The Transport Commissioner desired that the Oil Coordination Committee should give a clear date about their readiness to supply proper fuel to commercial vehicles. Regarding supply of pre-mix oil, it was informed by Shri Vijai Sharma, Jt. Secretary, Ministry of Environment & Forests that pre-mix 2 T oil dispenser will have to be installed immediately in Mumbai.

The Transport Commissioner was of the view that supply of pre-mix 2T oil at all petrol pumps in Mumbai should commence from 1-10-2000, which was tentatively agreed to by the OCC.

The representative of castrol India Limited informed that they have demanded a modification of the Supreme Court order for which an appeal has been filed by them. According to them, the Supreme Court order was based on Bhure Lal Committee report. The spirit of the ruling is that loose oil should not be sold. 2T oil has to be sold alongwith fuel. Therefore, the packaged and sealed 2T oil sold by castrol in sachets should be allowed.

However, representative of the OCC was of the view that the pre-mix oil has to be dispensed through a separate line alongwith petrol line. Castrol was of the view that consumers should have a choice and therefore, they had suggested amendment to the Supreme Court order for not banning other forms of oil. Castrol was agreeable to pre-mix oil method. However, he mentioned that quantity of the same at the dispensing station can be changed manually.

Shri Vijai Sharma, Jt. Secretary, MOEF informed that the measure was introduced as mainly the three wheeler owners have a tendency to add oil more than required. The notification of MOEF does not ban sale of loose oil. It should be pre-mixed in the petrol pumps and then dispensed. Shri Rajeshwar Rao of the OCC was of the view that the oil should be stored in a tank. Shri Ajit Kamlani of Federation of All Maharashtra Petrol Dealers Association (FAMPEDA) informed that pre-mix oil is not largely available in Mumbai. It is necessary to properly

measure the oil quantity and oil container should not be tamperable. Castrol should be allowed to sell their product. Shri Iyer of SIAM was of the view that at the dispensing units there has to be control on sale of their oil by the oil companies and the quality of oil should be maintained. The dosage should not be variable manually. It should be pre-set. If these problems are taken care of, pre-mix oil dispensation is a good system. Consumer may be allowed to have only petrol from petrol pump and put oil from sachets. SIAM supports Castrol in this regard. Shri Ravi Shinde of Smoke Affected Residents Forum (SARF) informed that the three wheeler owners want 5% oil against 2% recommended by vehicle manufacturers. They want thicker oil. The Transport Commissioner was of the view that serious steps are required to be taken to ensure that spurious oil are not sold in Mumbai. In order to ensure this, the mixture has to come pre-mixed as ground realities show a lot of spurious oil circulates in the market. Shri Sharma of OCC informed that they are taking serious action against spurious oil sellers.

On the issue of fuel adulteration, Shri Sharma of OCC informed that they have periodical checking schedules for retail stations. They have 2 mobile adulteration testing vans and the number is to be increased to 4. The Ministry of Petroleum & Natural Gas has directed the oil companies to ensure upliftment by their wholesalers of 60% of the quota by 10th of the month; 25% during the next week and balance 15% during the following week. Shri Gajbhiye, Controller of Rationing informed that by staggered upliftment, problem of shortage of kerosene has been taken care of. However, whatever has been saved of kerosene must be going for something else. The parallel marketeers of kerosene are licensed by the Food & Civil Supplies Department. They have to be accountable for distribution of kerosene to other users. The parallel marketeers have to file prescribed returns. The parallel marketeers can sell the product to bulk users and retail outlets, both. The Transport Commissioner informed that it is said that the blue colour of kerosene disappears if some chemical is added to it and then such kerosene is added to diesel and adulteration cannot be identified. Shri Rajeshwar Rao of the OCC was of the view that the government should get prescribed returns from dealers of parallel marketeers about the end use of kerosene. However, this is very

difficult as the end-user can again be a whole-seller and he can sell it further to anybody. The returns from the parallel marketeers have been prescribed only by the governments of Maharashtra & Andhra Pradesh. Shri D'sa of the Petrol Dealers Association informed that kerosene alone is not used for adulteration. Imported kerosene quota has increased from Jawaharlal Nehru Port Trust, however, since it is claimed that the kerosene quantity is reduced in Public Distribution System, where does the remaining kerosene go? The Department of Civil Supplies should identify the importers, their purpose of import, what is the use to which it is put and what is the end-product of the use. The Transport Commissioner was of the view that the system is not full-proof and has certain lacunae. He informed Shri Gajbhiye, Controller of Rationing, to insist on proper returns, identify end-users & monitor distribution of quota of imported kerosene through parallel marketing vis-a-vis distribution of kerosene through Public Distribution System.

Shri Vijai Sharma, Joint Secretary, MOEF asked the oil companies to provide a research and development center to detect fuel adulteration near Mumbai. Even, SIAM can provide such facilities. Shri Ravi Shinde of Petrol Dealers Association informed that even an addition of 20% naphtha in petrol goes unnoticed in fuel adulteration tests. It was informed by Shri G.K.Pandey, Director, MOEF that naphtha does not really affect as adulterant as it is low octane petrol itself. Only, the engine efficiency gets affected. There is no direct effect of increased pollution levels. Shri D'Sa of Petrol Dealers Association proposed that the tankers carrying petrol and diesel should be given specific colours so that whenever product is being off-loaded, it will become easy to identify as to what is being off-loaded and at which place. The transportation rate may be proportionately increased to compensate the cost of painting. Shri Rajeshwar Rao of the OCC informed that these measures are under consideration of the Ministry of Petroleum. The proposed measure may also increase the idle time of the tanker.

Shri Ravi Shinde of SARF then, explained the 'Marker System'. Shri Sharma of OCC informed that experimentation of marker system has already commenced in Gujrat. The Transport Commissioner was of the view that there has to be a system to check fuel adulteration on the spot. The indicative tests, and not

the time consuming laboratory tests, should be sufficient to proceed against the dealer adulterating fuel. The Transport Commissioner, further desired to know the approach of oil companies about fuel additives available in the market. Do the oil companies want to certify them as helping in reducing vehicular pollution or introduce their own additives. It was informed by the OCC that the Indian Institute of Petroleum, Dehradun is the correct agency to certify such additives. Even the Indian Oil Corporation has introduced such an additive. The Transport Commissioner was of the view that the Committee can recommend to the High Court that such additives can be certified for use through one of the test agencies like Indian Institute of Petroleum. As regards taking action against sale of products like rexon, patrex etc; the OCC was of the view that the State Government can take action in such cases as it is against the Regulation & Control Order of Ministry of Petroleum and Natural Gas.

On the issue of keeping 20% vehicles off the roads as a measure for improved traffic management, Dr.Pasricha, Additional Director General of Police (Training) had certain reservations. According to him, the traffic restraint measures like this require a detailed study. The High Court may be requested for issue of directions only on studying these measures in depth and the authority which will manage their implementation. Shri Debi Goenka of the BEAG was of the view that these measures have also been discussed in the past for over 10 years including by former Chief Secretary Shri Paranjape and there is no need to ask for any more time to study them again. The “20% vehicles off the roads” Scheme has to be submitted to the High Court for orders for its implementation. The Transport Commissioner was of the view that other measures like taking action on road encroachments, unauthorised garages on the roads, multi-storey car parks etc. can be referred to the High Court for consideration separately. As regards synchronisation of traffic signals, Dr.Pasricha was of the view that the signal time is required to be monitored atleast every 6 months. The Automated Traffic Control (ATC) system should be implemented immediately. He asked the Traffic Engineering Department of Police (Traffic) to submit a note about their requirement of technical staff, equipment etc. to the Transport Commissioner.

36 junctions have been identified for the pilot project of ATC system and Mumbai Metropolitan Region Development Authority (MMRDA) has promised loan for the same. MMRDA has to be persuaded in this regard. Shri Nitin Dossa of the WIAA requested to start BEST services from both the air-ports, through which passenger luggage can also be carried. WIAA will give a separate proposal to start such a service of their own. Dr.Pasricha directed the DCP (Traffic) to immediately give a note on improvement of traffic signals, more one-way systems, unauthorised garages lane marking, speed brakers and formation of a combined authority of Addl.Commissioner of Police (Traffic), Addl.Municipal Commissioner etc. to take care of day-to-day traffic related issues.

Mrs.Zinnia Khajotia of CLEAN Air desired that the function of road markings with the BMC should be given entirely to Police (Traffic). Dr.Pasricha desired to have orders from the High Court of early commissioning of Wadala Truck Terminus ; freezing of taxi/autorickshaw permits; not allowing tourist buses in South Mumbai; banning parking of vehicles on major roads; erection of bus bays by B.M.C; confining 'morcha'/public demonstrations to a single area and not everywhere; ban on 'morchas'; ban on public processions on the roads; provision of more parking places in commercial and residential areas and establishment of link between Haji Ali and Marine Drive (not necessarily a sea link). Dr.G.K.Pandey, Director, Ministry of Environment & Forests desired that water ways for transportation can be tapped in and around Mumbai.

It was decided to invite representatives of the B.M.C. and M.M.R.D.A. for the next meeting as many of the above issues also concern these organisations.

The meeting ended with a vote of thanks.

The next meeting of the Committee will be held at 11.30 a.m. on the 2nd March, 2000.

Transport Commissioner,  
Maharashtra State, Mumbai.

List of Members.

- 1) Shri Vijai Sharma : Joint Secretary, Government of India, Ministry of Environment and Forests.
- 2) Dr.P.S.Pasricha : Addl.Director General of Police (Training)
- 3) Shri Debi Goanka : Bombay Environmental Action Group
- 4) Smt.Zinnia Khajotia : Convenor, CLEAN - Air

Shri A.M.Deshpande, Representative of M.P.C.B. Requested for leave of absence.

Invitees:

- 1) Shri G.K.Pandey : Director, Ministry of Environment & Forests
- 2) Shri Harshwardhan Gajbhiye : Controller of Rationing, Mumbai.
- 3) Shri S.T.Thorat : Dy.Commr. Of Police (Traffic), Mumbai.
- 4) Shri K.D.Phadtare : S.E. (Elect.) (Traffic Police)
- 5) Shri Mandar Naik : Asstt.Inspector of Police, (Traffic)
- 6) Shri S.S.Kambli : Sr.Police Inspector (Plg),O:O the Addl.Commr. of (Traffic)
- 7) Mr.B.B.Mujawar : P.S.I.(Plg), Traffic
- 8) Mrs.J.M.Deshpande : Scientist, Municipal Corpn. of Greater Mumbai.
- 9) Shri V.A.Patankar : Asstt.General Manager, B.E.S.T.
- 10) Mr.P.K.Samant : E.Engineer, BEST Undertaking
- 11) Mr.P.N.Prasad : Vice President , Mahanagar Gas Limited
- 12) Mr.Vijay K.Sangori : Coordinator, Mahanagar Gas Limited
- 13) Mr.S.Sengupta : General Manager, Indian Oil Corporation
- 14) Mr.K.Rajeshwar Rao : Jt.Director, Oil Coordinator Committee
- 15) Mr.Sharad Sharma : State Level Codordinator, Maharashtra.
- 16) Mr.M.M.Khan : Dy.Manager, S.L.C,Maharashtra
- 17) Mr.S.K.pal : Sr.Manager, Tech., Hindustan Petroleum Corpn.Ltd.
- 18) Mr.S.S.Sundarajan : Bharat Petroleum Refinery
- 19) Mr.N.V.Iyer : General Manager (ES), Bajaj Auto Limited.

- 20) Mr.P..Burgul : General Manager,(PE), Ind Auto Limited
- 21) Mr.R.Ramakrishnan : Technical Advisor, Ashok Leyland,  
rep.Society of Indian Automobile  
Manufacturers
- 22) Mr.A.S.Puri : Asstt.Gen.Manager, SIAM/Tata Engineering
- 23) Smt.Saba Khan : Society of Indian Automobirole Manufacturers
- 124) Smt.Kunti Oza: : Chairperson, Clean Mumbai Foundation,  
CLEAN-Air
- 25) Ms Meher Rafaat : Representative of Mrs.Khajotia CLEAN Air
- 26) Smt.Bharti Gandhi : Doctors Intervenor/I.M.C.
- 27) Mr.Vimal Shah : President, Western India Automobiles Assn.
- 28) Mr.Nitin Dossa : P.President W.I.A.A.
- 29) Shri Ravi Shinde : Tech.Advisor,Smoke Affected Residents'  
Forum
- 30) Mr.Ravi Pisharody : Castrol India
- 31) Dr.A.L.Ravimohan : Head Technology, Castrol India
- 32) Mr.Anil Jayaraj : Product Manager, Castrol India
- 33) Mr.Ajit Kamlani : Petrol Dealers Assn., Bombay.
- 34) Mr.Fruderick D'Sa : Petrol Dealers Association.

**MINUTES OF THE MEETING OF THE HIGH COURT COMMITTEE**  
**HELD ON THE 2nd MARCH, 2000**

The 7th meeting of the Committee constituted by the High Court, Mumbai to examine, consider and recommend measures to reduce vehicular pollution in Greater Mumbai was held on the 2nd March, 2000.

The meeting was held under the Chairmanship of Shri V.M.Lal, Transport Commissioner. List of members who attended the meeting is enclosed.

The Transport Commissioner welcomed all the members of the Committee.

On the issue of conversion of buses of BEST on the CNG, it was informed by the representative of the BEST that they want to introduce buses running on CNG in a phased manner. It was observed that the buses running on CNG had problems related to engine cylinder head. On introduction of more number of such buses, if the problem persists, the BEST will not be able to turn out full compliment of their buses on all the days. Shri Ramkrishna of Ashok Leyland was of the view that the engine governors have a problem. Transport Commissioner expressed unhappiness that even after 3 years of introduction of such buses, Ashok Leyland was unable to stabilize the engine. The BEST should ensure a judicious mix of new CNG fitted buses, buses retro-fitted with CNG conversion kits and buses with upgraded EURO-II engines.

On the issue of desirability and feasibility of phasing out of vehicles (private cars, trucks, buses, taxis, autorickshaws and two wheelers) over a certain age limit recommendation made by the Society of Indian Automobile Manufacturers have been received. As regards fleet of buses of BEST, average age of a bus is 9 years. The BEST maintains 45 hartridge smoke units as pollution norm for their own vehicles. It was observed that this 45 hartridge smoke unit norm can be observed even for 15 years old vehicles.

To the query made by the Transport Commissioner for prescribing a certain stricter pollution norm for older vehicles, the representative of the BEST informed that though they maintain 45 hartridge smoke units as norm for their own buses it can be restricted generally to 40 to 45 hartridge smoke units. The representative of Ashok Leyland was of the view that replacement of engine by new EURO-I

compliant engine can ensure compliance with stricter PUC norms. Different pollution norms can be tried out starting with 35 hartridge smoke units as pollution norm for new engines of BEST .

Shri Nitin Dossa of Western India Automobile Association was of the view that if the private vehicles are able to meet the existing pollution norms they should be allowed to continue without any reference to age. However, separate stricter norms for private cars can be prescribed.

The Transport Commissioner was of the view that the older vehicles after a certain age have to compulsorily switch over to clean fuels like CNG.

As regards conversion of vehicles running on diesel to CNG it was informed by representative of the BEST that such conversion has not yet been established and the conversion cost works-out to around rupees five lakhs including the cost of labour etc. Dr. Rane of the Smoke Affected Residents' Forum was of the view that monitoring older vehicles with stricter pollution norms is going to prove very difficult. The real solution lays in phasing out the older vehicles. Smt. Zinnia Khajotia was of the view that the BEST should insist upon EURO-II compliant buses. It was informed by the representative of the Ashok Leyland that their plan for supply of new buses running on CNG, conversion of existing buses to run on CNG, EURO-I compliant buses and EURO-II compliant buses has already been given to the BEST.

On the issue of improving traffic management, the representative of the Mumbai Metropolitan Region Development Authority informed that the original loan for covering 38 traffic junctions will be linked to the World Bank project. The pilot project for 38 junctions cannot be considered separately as separate tenders for the same will have to be called now. Certain clauses in the tenders are linked to expansion of these 38 junctions subsequently. MMRDA is ready to implement the project for 38 junctions if the Traffic Police want the same. However, in that case, the Traffic Police should not ask for another study for expansion of these 38 junctions to 65. The Transport Commissioner was of the view that let MMRDA implement the pilot project for 38 junctions through the loans committed by them and the action for the same should be quick. It was informed by MMRDA that the

Brihanmumbai Municipal Corporation should float and finalise the tender. MMRDA will release the money in about 3 to 4 months time from now.

Shri Mathankar, Additional Municipal Commissioner was of the view that in order to expedite the matter, a token amount be given to the B.M.C. by the MMRDA alongwith commitment for releasing the loan so that BMC can start the process of calling up tenders etc. BMC will take about 3 months for finalisation of tender after receipt of the letter from MMRDA. This proposal was accepted by the MMRDA.

On the issue of setting up of Wadala Truck Terminal, it was clarified by the Transport Commissioner that the restrictions on putting up offices in South Mumbai has now been removed. Shri Mathankar, Additional Municipal Commissioner informed that BMC has not given water connection so far due to non-payment of property tax to the BMC. The MMRDA representative informed that the phase-I of the Terminal is ready and phase II can be ready in 3 more years. Commencement Certificate has not been given by the BMC for further construction. Problem of agreements with individual owners has now been sorted out. The individual booking agents of goods can be forced to shift to the new Wadala Truck Terminal. The Bombay Goods Transport Association and the Mahasangh have now to construct godowns. The Transport Commissioner was of the view that let MMRDA conduct a separate meeting to start the Wadala Truck Terminal at the earliest. By 1st October, 2001, the Wadala Truck Terminal should be ready and operational in all respects. The Transport Commissioner will write a separate letter to the Municipal Commissioner and Metropolitan Commissioner in this regard.

As regards construction of speedbrakers, Shri Vishwanath, Deputy Chief Engineer (Traffic), B.M.C. informed that the specification about the same exist. Speedbrakers are constructed after obtaining consent of the Police (Traffic) regarding its need and convenience. It was informed by him that there are 275 old unauthorised speedbrakers and 325 speedbrakers not meeting the specifications in the city. The Transport Commissioner was of the view that the speedbrakers not meeting specifications should be standardised and unauthorised speedbrakers

removed within the next three months. Shri Vishwanath, was of the view that a rigid policy on construction of speedbrakers is not desirable as they are constructed taking into consideration the local needs and demands. Shri Mathankar, Additional Municipal Commissioner was of the view that speedbrakers should be replaced by ramblers.

As regards the specifications of the speedbrakers, the Shri Vishwanath was of the view that the 'hump' type of speedbrakers may be constructed depending upon the local conditions and recommended by a body and the 'bump' type of speedbrakers should be constructed only at the locations authorised by law. Shri Mathankar, Additional Municipal Commissioner was of the view that there is a need to provide for punishment for constructing unauthorised speedbrakers as there exists none at present. Further, Shri Mathankar, Additional Municipal Commissioner directed Shri Vishwanath to supply a list of authorised speedbrakers to all the ward offices so that the unauthorised ones can be removed. The Transport Commissioner desired that the B.M.C. & Traffic Police will check up all the speedbrakers for their authorisedness atleast once in two years.

On the issue of paintings/road markings on roads, Shri Vishwanath informed that the work has already started. The thermoplastic paint now lasts for about 2 years, which will also be used on arterial roads. The Transport Commissioner desired that the roads should be properly marked/painted atleast once in 6 months and as far as possible, fast moving lanes be clearly demarcated.

Shri Vishwanth will send a note on the fee structure of 'Pay & Park Scheme' including the proposed hike, to the Transport Commissioner. Shri Mathankar, Additional Municipal Commissioner informed that B.M.C. has already formed a study-group for underground car parking. The D.C. Rules are required to be amended. The proposal for multistorey car-park is under consideration. It is also being considered to give the space under the Khodadad Circle fly-over for car-parking, after which the vehicles will not be allowed to park in the surrounding areas. Smt. Zinnia Khajotia desired that this needs to be informed to the public. Shri Ravi Shinde of Smoke Affected Resident's Forum suggested for providing parking on the upper floor of the petrol pumps.

Shri Mathankar, Additional Municipal Commissioner was of the view that DC rules have to provide for atleast one parking place per flat in the new buildings. Adequate parking places as per fixed norms should be provided for marriage halls etc. Shri Vishwanath was of the view that 'Traffic Impact Statement' should be provided for any new construction activity. The present NOC from the Traffic Police does not provide this. The Transport Commissioner directed Shri Vishwanath to give exact recommendation in this regard so that specific directions can be obtained from the High Court for suitable amendment to DC rules. The formula for having parking places should also be mentioned.

As regards concretisation of roads, it is informed that the B.M.C. has given this work to Central Road Research Institute. It is expected that 19 kms. of roads will be concretised by 31st May, 2000 or early June. This will take the length of concretised roads in the city to 295 kms. out of 450 kms. The concretisation work will be taken up only where drainage and pipe lining for water is over.

On the suggestion by Smt.Khajotia to carry out 'Traffic Impact Assessment' study on Phirozshah Mehta Road, near Khadi Gramodyog Bhavan, the Transport Commissioner asked the Traffic Police to do the same immediately.

Shri Mathankar, Addl. Municipal Commissioner was of the view that the Traffic Police should have a fresh look at all the one-ways permitted in the past and have a periodic review of the same. Further, even the transport Vehicles like buses/trucks parked unauthorisedly should be towed away. The Transport Commissioner was of the view that scrap yards for the vehicles impounded by B.M.C. for no-parking etc. should be set up by the B.M.C.

The Transport Commissioner then gave the taximens unions and transporters association an opportunity to present their case before the Committee.

The representative of the tempo association read out the written submission presented by them to the Committee.

The Samajwadi Taxi Union was of the view that there is no need to put 15 years age restriction on taxis as fitness certificate is granted for one year after inspection of the vehicle every year.

Mr. Frederick D'Sa for the Petrol Dealers Association informed that the taxi owners should be provided with 100% loans for purchase of new taxis at concessional rates of interest of 50% of Prime Lending Rate of State Bank of India. This will help bring in new models of vehicles and replace diesel vehicles by petrol/CNG vehicles. Loan should be granted on the basis of permit, replacement order and residence proof alone. The incentives are demanded for purchase of new vehicles and not for CNG conversions. He further informed that the Department should adhere to the 65 HSU norm for pollution from diesel vehicles. The association is ready to conduct PUC tests for their members at the three R.T.Os only for Rs.10/-. Rs.50/- being charged presently for a PUC test is required to be reduced to Rs.25/-. Action is also required to be taken against fuel adulteration, spurious parts etc. Non BIS spare parts should not be allowed to be sold. He also demanded reduction in waiting period at CNG distribution facility and opening of at least 25 more CNG stations in next three months out of which 5 to 6 stations are required in South Mumbai beyond Byculla & Mahalaxmi.

He further welcomed LPG as auto fuel when introduced, as kit costs only 7 to 10 thousands. Let the LPG & CNG programmes be time-bound and let the market forces decide which is better.

He also questioned the need for phasing out of taxis as mechanical inspection is carried out every year and diesel engine has to be opened after 1 lakh kilometers in about two years time. Only conformity with PUC norms should be the criteria. He also questioned why the old vehicles should have a stricter norm when the new vehicle has to meet the norm of 65 Hartridge Smoke Units. So long as it is road-worthy and meeting the prescribed pollution norms, it should be allowed to ply.

Shri Mohindersingh Ghura, President, Maharashtra Rajya Truck, Tempo, Tankers, Bus Vahatuk Mahasangh, referred to his representation of 15-1-2000 submitted to the Committee. On the issue of financial incentives for replacement of old taxi, he informed that as they are opposed to scrapping of vehicles, they are not asking for any financial assistance for the members of the Mahasangh. Further, he also demanded giving petrol pump agencies/authorised agencies of spare parts to

their members. He also demanded setting up of 'mechanic nagars' and not adding the repair activity at the truck terminal. Transport nagars/truck terminal should be for offices and mechanic nagars for repairs, separately, in central and western suburbs. He further demanded that once issued, the PUC certificate should be accepted till its validity.

Shri Jagtiar Singh of Bombay Taximens Association demanded strict action to be taken against fuel adulteration.

The Samajwadi Union was of the view that UNO model of Fiat India is not suitable as taxi. Indica of TELCO does not meet the 65 HSU norm. It will, therefore, be incorrect to have stricter norms for older vehicles.

Shri Ghura was of the view that during warranty period, vehicle should be taken back by the manufacturer if pollution is found to be more than the standard prescribed.

Shri Bhiwandivala of the Mahasangh was of the view that there has to be a warranty by the manufacturer. Even imported vehicles do not conform to pollution norms if not maintained properly. He also demanded to check fuel adulteration.

Shri D'sa requested to adopt advertisement pattern for taxi cabs as has been done in Calcutta.

At the end, the automobile manufacturers present informed that the guarantee cannot remain valid if vehicle is not maintained as specified by the manufacturer.

The meeting ended with a vote of thanks.

Transport Commissioner,  
Maharashtra State, Mumbai.

List of Members.

- 1) Dr.G.V.Subrahmanyam:Director, Ministry of Environment & Forest,New Delhi
- 2) Dr.S.V.Reddy : Dy.Director(S),Ministry of Environment & Forests,Government of India,New Delhi.-
- 3) Shri A.M.Deshpande : Air Pollution Abatement Engineer, Maharashtra Pollution Control Board.
- 4) Smt.Zinnia Khajotia : Convener, CLEAN Air

Invitees:

- 1) Shri V.B.Mathankar : Addl.Commr.Municipal Corpn.,Mumbai.
- 2) Shri R.T.Rathod : Addl.Commissioner of Police (Traffic)
- 3) Mr.P.N.Prasad : Vice President, Mahanagar Gas Ltd.
- 4) Shri Ashok Kadam : Chief Inspecting Officer, Controller of Rationing
- 5) Mrs.S.S.Bhende : S.R.O., Maharashtra Pollution Control Board.
- 6) Mrs.J.M.Deshpande : Scientist, Municipal Corporation of Greater Mumbai
- 7) Mr.V.A.Patankar : AGM(TE),Brihanmumbai Electric Supply & Transport
- 8) Mr.P.K.Sawant : E.E.T.Brihanmumbai Electric Supply & Transport Undertaking
- 9) Mr.Vijay K.Sanguri : Co-ordinator (CNG) Mahanagar Gas Ltd.
- 10) Mr. R.I.Mehta : Dy.Manager, SLC, Maharashtra Oil Industry 11)  
Dr.S.K.Rane : Smoke Affected Residents' Forum , Chembur.
- 12) Shri Ravi Shinde : Smoke Affected Resident's Forum, Chembur.
- 13) Dr.S.Vishwanath : Dy.Chief Engineer (Traffic), B.M.C.
- 14) Mr.Rajat Nandi : Executive Director, Society of Indian Automobile Manufacturers.
- 15) Ms Kunti Oza : Clean Mumbai foundation
- 16) Ms Meher Raffat : Member- CLEAN Air

- 17) Smt.Saba Khan : Executive Director, S I A M
- 18) Mrs.Bharati Gandhi : Doctors Intervenor/I.M.C.
- 19) Mr.Sunil Merchant :Traffic Sub.Committee, P.President Western  
India Automobile Association.
- 20) Mr.Nitin G.Dossa : P.President Western India Automobile Assn.
- 21) Shri.K.D.Phadtare: Supdt.Engineer (Traffic), Traffic Police  
Headquarter
- 22) Shri B.B.Mujawar : Police Sub Inspector (Traffic)
- 23) Shri Mandar Naik : Asstt.Inspector of Police, Traffic Police,Mumbai
- 24) Shri T.M.Sohani : Marketing Manager, M.M.R.D.A.
- 25) Shri Murty : Sr.Transp.Planner, M.M.R.D.A.
- 26) Mr.V.A.Prabhu : Sr.Executive(M&S), Maruti Udyog Ltd
- 27) Mr.M.Y.Kadam : Executive (M&S), Maruti Udyog Ltd.
- 28) Mr.Atul Akolkar : G.M.(Commercial) FIAT
- 29) Mr.Sharad Jain : Zone Leader, FIAT
- 30) Mr.Sandeep Bafna : Dealer, Hindustan Motors Ltd.
- 31) Mr.R.Ramakrishnan : Tech.Advisor, Ashok Leyland Representing  
SIAM
- 32) Mr.Ravi Khadke : Territory Manager, Hindustan Motors, Mumbai
- 33) Mr.George Gregore : -do-
- 34) Mr.Mushtaq Al-quraysh: City Taximens Union
- 35) Mr.A.Hasan : City Taximen Union
- 36) Mr.A.N.Khot : General Secretary, Bhartiya Taxi Chalak  
Sangh
- 37) Mr.R.Ramesh : Bhartiya Taxi Chalak Sangh
- 38) Mr.Vijay K.Pal : Azad Taxi Chalak Sangh
- 39) Mr.O.P.Singh : Azad Taxi Chalak Sangh
- 40) Mr.N.Thapa : PUC Centre, Asha Auto Service
- 41) Mr.Nana Bansode : PUC Centre, Velankani PUC Centre
- 42) Mr.M.R.Javle : Partner, Autogas Conversion Indik

- 43) Mr.Raghubir Singh : Dasmesh CNG IMPEXPOT Ltd.
- 44) Mr.Tarlok Singh : Dasmesh Auto Gas
- 45) Mr Bimal Shrimankar : Director, Shrimankar Gas Co.Ltd.

**ANNEXURE-II**

**BHARAT PETROLEUM CORPORATION LTD.  
STATE CO-ORDINATOR, OIL INDUSTRY  
MAHARASHTRA**

**Ref : amm.legal**

**Dt. 18.2.2000**

Shri V.M.Lal  
Transport Commissioner  
Maharashtra State  
Administrative Building, IV Floor  
Government Colony,  
Bandra (East)  
Mumbai-400 051.

Dear Sir,

Sub : Submission of White Paper

We write further to our letter of even reference dated 16.2.2000. We have now received the White Paper from the Ministry of Petroleum & Natural Gas, New Delhi. A copy of the same is enclosed.

Kindly let us know, in case, any further clarifications are required.

Thanking you,

Yours faithfully,

Sd/-  
SHARAD SHARMA  
SLC, Maharashtra

**Writ Petition No.1762 of 1999 filed by Smoke Affected Residents Forum in  
the judicature of Hon'ble High Court of Bombay-White Paper to be  
Submitted to V.M.Lal Committee**

**1. RELATIONSHIP BETWEEN QUALITY OF FUEL AND EURO NORMS**

The important parameters of MS and HSD specifications as per Euro-I and Euro-II Norms are as under:

<b><u>MS</u></b>	<b><u>EURO-I</u></b>	<b><u>EURO-II</u></b>
Benzene % Volume	5	5
Lead Content Gm/Lt.	0.013	0.013

<b><u>HSD</u></b>	<b><u>EURO-I</u></b>	<b><u>EURO-II</u></b>
Sulphur % Weight	0.2	0.05

**2. PLANS FOR IMPROVEMENT OF FUEL QUALITY IN MUMBAI CITY AND OTHER PARTS OF MAHARASHTRA**

2.1 Arising from the accelerated pace of reforms and economic development, there has been a significant boom in automobile population in the country during the last decade. This boom in vehicular population is more in metros/major cities. Correspondingly, vehicular pollution due to auto emission in these cities has increased.

2.2 In order to protect the environment, MOP&NG/Oil industry has been taking various measures for improving the quality of transportation fuels. The details of improvements undertaken in MS and HSD quality in Mumbai and other parts of Maharashtra together with the plans for further improvement are given hereunder:

2.2.1(a) Improvement of HSD quality - Reduction of Sulphur from 1%

	Mumbai	Rest of Maharashtra
<u>Low Sulphur Diesel with 0.5% (max.) Sulphur</u>	1.4.1996	-
<u>Extra Low Sulphur HSD with 0.25% (max.) Sulphur</u>	1.4.1998	1.1.2000

In order to supply 0.25% (max.) by weight Sulphur HSD all over the country. Oil industry has put up Diesel Hydro De-sulphurisation (DHDS) Plants at the Refineries by investing an amount of about Rs.5600 crores. HPC and BPC have set up DHDS Plants at their refineries in Mumbai with an investment of about Rs.1416 crores.

2.2.1(b) In continuation of the efforts to minimise the Pollution caused due to auto-emissions, MOP&NG / Oil Industry have planned to further improve the quality of MS and HSD. Accordingly, Ultra Low Sulphur HSD and MS with Sulphur content of 0.05% (max.) by wt. would be made available at select retail outlets for new private (non-commercial) vehicles conforming to EURO-II norms in Mumbai city with effect from 1.1.2001.

2.2.1(c) Government has constituted various committees to chalk out a plan for supply of 0.05% Sulphur HSD all over the country including whole of Maharashtra.

## 2.2.2. Improvement of MS quality

### 2.2.2(a) Phasing out of Leaded Petrol

Leaded Petrol had been totally eliminated in whole of the country and Oil Companies are supplying only Unleaded Petrol with effect from 1.2.2000. The milestones in phasing out of Leaded Petrol in Mumbai and the rest of Maharashtra are as under:

	Mumbai	Rest of Maharashtra
Low Lead Petrol with 0.15 gm/Lt.(max.)	1.6.1994	31.12.1996
<u>Lead</u>		
Unleaded Petrol with 0.013 gm/Lt.(max.)	1.4.1995	ULP made available at select ROs along the radial routes emanating from Mumbai
Lead at select Retail Outlets		
Only Unleaded Petrol with 0.013 gm/Lt. (max.)lead at all Retail Outlets	2.10.1999	1.2.2000

### 2.2.2(b) Reduction of Benzene content in MS

Benzene content in MS is 5% by volume as per the EURO-II norms. Oil industry is supplying MS with 5% (max.) Benzene all over the country. MOP&NG / Oil industry have voluntarily planned to supply MS with 3% (max.) by Vol. Benzene in all the 4 metro cities w.e.f. 1.4.2000. Two Committees, Dr.Bhatnagar Committee and Dr.Mukhopadhyaya Committee constituted by MOP&NG and CPCB respectively, are examining the feasibility of further reducing Benzene content to 1% in MS supplied in 4 metros.

### **3. STEPS TAKEN BY MOP&NG/OIL INDUSTRY TO PREVENT ADULTERATION OF PETROLEUM PRODUCTS**

In order to curb adulteration of MS/HSD at the retail Outlets, MOP&NG caused PSU Oil companies to take the following measures:-

#### **Furfural Doping of Kerosene**

Doping of kerosene with furfural is being done at the depots/terminals before supplying to the Kerosene dealers. The principle is to dope Kerosene with furfural to 20ppm level. When this doped kerosene is used for adulteration of MS/HSD, the formation of a pink colour in MS/HSD with aniline and glacial acetic acid mixture is an indication of adulteration of Petrol/Diesel with Kerosene.

#### **Mobile Laboratories**

With a view to facilitate 'on the spot' test and quicken the pace of action taken, oil companies have introduced mobile laboratories which are conducting surprise inspections at retail outlets. So far, a total number of 23 mobile laboratories are under the control of State Level Coordinators. As directed by MOP&NG, Oil Companies are procuring another 27 mobile labs to increase the total number to 50 all over the country. As of now 2 mobile labs based at Mumbai are carrying out surprise inspections at retail outlets in different parts of Maharashtra. These labs conduct surprise inspection either on its own or as per the requirements of the State Govt. 2 more mobile labs are planned by the oil industry for Maharashtra. Among these 1 lab will be placed at Nagpur and the other at Aurangabad.

#### **Checking Density and/or other parameters of MS/HSD:**

MS & HSD Control Order, 1998 has been promulgated to empower the inspecting agencies for drawing samples from retail outlets and send them to laboratories for analysis to check whether the density and/or other parameters of MS/HSD conform to the requirement as indicated in the Order.

#### **Regular/Surprise inspections:**

Regular/surprise inspections of retail outlets are being carried out by oil companies personnel as well as joint industry teams. Oil companies follow the following inspection schedule:

- By sales Officer: Once in 3 months
- By Officers of Gr.'C' & above Once in 12 months
- By Joint Industry Teams: 20% of ROs in each District once a year

In addition, 10% of the retail outlets are covered once a year under random inspections by officers of 'C' Grade and above.

Oil companies have evolved Marketing Discipline Guidelines. These Guidelines have been revised from time to time to make them more stringent to prevent adulteration and other mal-practices/irregularities at the retail outlets.

Further, in order to prevent diversion of Kerosene meant for distribution under PDS for adulteration at retail outlets by ensuring the product reaches to the targeted people, MOP&NG has taken the following steps:

Directed the oil companies to ensure upliftment by their wholesalers as under:

- \* 60% by 10th of the month
- \* 25% during the next week and
- \* balance 15% during the following week.

Advised State/UT Governments from time to time:

- \* To identify and plug loopholes in the distribution system
- \* To implement the scheme of delivered supply of Kerosene
- \* To review the scale of distribution of Kerosene to various card holders both in urban and rural areas having regard to factors such as availability of alternative fuels.
- \* To discontinue allocation of Kerosene to the card holders having double LPG cylinder connection and allocate a marginal quantity to card holders with single cylinder connection.
- \* To discontinue allocation of Kerosene for uses other than cooking and illumination. Requirement of Kerosene for other purposes to be met from Private marketers.

The State Govt. Authorities are also empowered under the MS/HSD Control Order to conduct inspections at retail outlets and take appropriate action against the erring dealers in case of any mal-practices/irregularities detected.

Further, MOP&NG/Oil companies undertake special vigilance drives to check adulteration, mal-practices and other irregularities at retail outlets, SKO dealerships, etc.

#### **4. PLANS TO IMPROVE TESTING METHODS FOR FUELS, DENSITY TESTS ARE NO LONGER FOOLPROOF**

All the key parameters of the characteristics of MS and HSD are tested in addition to density tests. MS/HSD Control Order 1998 has accordingly been promulgated.

#### **5. CONTROLS ON USE OF KEROSENE, REXON, CEXON, ETC TO BE IMPOSED ON THE MANUFACTURERS OF THESE PRODUCTS SO THAT THEIR SALE IS RESTRICTED/CONTROLLED. DATA OF KEROSENE IMPORTS AND ITS UTILISATION**

5.1 In order to empower the state Govts. to seek information from parallel marketers so that kerosene imported under Parallel Marketing Scheme is not used for adulteration of MS/HS. MOP&NG has amended the Kerosene (Restriction on Use and Fixation of Ceiling Price) Order, 1993 during October, 1998 and added the following:-

- (i) No person shall sell or use Kerosene imported under Parallel Marketing System (PMS) as fuel or as additive to the fuel in the motor vehicle.
- (ii) No person other than the dealer of Government oil company or Parallel Marketer shall sell Kerosene to any person.
- (iii) Parallel Marketer shall file End Use Certificate from industrial consumers, to whom he sells the Kerosene and also furnish customer wise sales to the State Government/Civil Supplies Authority by whatever name called, on a quarterly basis.
- (iv) MS/HSD Control Order 1998 stipulates that nothing other than petroleum Products (i.e. MS/HSD) shall be sold by any one to refuel the vehicles.

5.2 MOP&NG has promulgated Motor Spirit and High Speed Diesel (Regulation of Supply & Distribution and Prevention of Malpractices) Order, 1998 with a view to curbing/checking adulteration of MS/HSD and other irregularities at retail outlets. As per the provisions of this Order the inspecting officer has been empowered to draw samples from retail outlets and send them to laboratories for analysis to check whether the density and/or other parameters of the products conform to the requirement as indicated in the order.

#### **6. SEPARATE COLOUR CODE FOR SKO TANK LORRIES**

This subject is under examination.

## **7. PLANS ON DISTRIBUTION OF PETROLEUM PRODUCTS BY PRIVATE PARTIES LIKE RELIANCE ETC.**

Govt. vide its Notification No.224 dated 24-11-1997 has declared the phased programme for de-regulation of petroleum products. Accordingly, all petroleum products except MS, HSD, ATF, LPG (PDS), SKO (PDS) and NGL have been deregulated with effect from 1-4-1998. As per the above Notification deregulation of all petroleum products is expected by end of 2001-02. Allowing

distribution of the products like MS and HSD, which are still under control, by the private parties depends upon the policy decision to be taken by the Govt. of India.

## **8. LPG AS AUTO FUEL**

### **8.1 STATUS**

8.1.1 With the improved LPG availability scenario and the need to reduce pollution caused by fuels like Petrol, Diesel etc., use of LPG, a clean and environmentally friendly fuel, in the automotive sector is being considered by the Government.

8.1.2 For this purpose, in April 1996, MOP&NG constituted two committees to Examine all aspects for developing an integrated approach for introduction of LPG in automotive sector. These committees comprised representatives from oil companies, automobile manufacturers, Ministry of Industries, Ministry of Surface Transport, Ministry of Environment and Forests, BIS, Department of Explosives, Automobile Research Association of India and the parallel marketers etc. These Committees submitted their reports in January 1997.

8.1.3 Further, in May 1997, an expert committee consisting of representatives from MOST, OISD, OCC, CCOE, BIS, VRDE, IIP, ARAI and oil industry was constituted by the Government for :

- \* Necessary amendment to the Motor Vehicles Act Rules, Gas Cylinder Rules and LPG Control Orders
- \* Developing various standards for conversion kits, cylinder to be fitted on the vehicle for use of LPG as auto fuel,
- \* Developing standards for Indian LPG Dispensing Stations, Service Stations for retro-fittings and various other requirements for the approval of the type of conversion kits/fittings etc.
- \* LPG specification etc.

This committee, after detailed deliberations during various meetings, finalised the draft on amendments and various standards for adoption.

8.1.4 Presently, under the provisions of liquefied Petroleum Gas (Restriction on Use) Order, 1974, use of LPG is not permitted for automotive purposes other than research and experimental purposes on automobiles. The said order gives power of search and seizure to the designated Police/Govt. offices to ensure compliance of this order.

8.1.5 In order to legally permit the use of LPG as an automotive fuel, MOP&NG along with the other concerned Ministries/Departments has been pursuing necessary legislative and regulatory framework for safe usage of LPG as an automotive fuel such as issue/amendment of --

- \* LPG (Distribution and Regulation of Use in Motor Vehicles) Order
- \* SMPV Rules and Gas Cylinder Rules
- \* Sec.52 of the Motor Vehicle Act, 1988
- \* Central Motor Vehicle (Code of Practice for Use of LPG Fuels in IC Engine Vehicles) Rules

8.1.6 The following has been the progress made in carrying out the amendments to the various acts/rules:

- \* MOP&NG has already kept an LPG Control Order ready for issue to regulate the sale and use of LPG in the vehicles.
- \* Ministry of Industry has made all necessary amendments in the Gas Cylinder Rules and SMPV Rules to provide for safety in the use of LPG as fuel in the vehicles. While Gas Cylinder Rules have been Notified on 10-8-98, amendment to SMPV Rules has been cleared by Law Ministry and is ready for notification.
- \* The draft amendment to Section 52 of the Motor Vehicle Act has been Finalised by MOST but the same could not be pursued further due to dissolution of Lok Sabha and announcement of Parliamentary Elections. With the formation of the new Government, action is now Being taken by MOST to push through the necessary amendment in the newly constituted Parliament.
- \* Necessary action is also being taken by MOST to expeditiously finalise the Central Motor Vehicle (Code of Practice for use of LPG fuels in IC Engine Vehicles), Rules.

8.1.7 Meanwhile, PSU oil companies have initiated action to set up Auto LPG dispensing stations at the existing retail outlets wherever space is available, mainly in the big cities.

## 8.2 COST OF AUTO-LPG Vs CNG/PETROL

<u>Particulars</u>	<u>Petrol</u>	<u>LPG</u>	<u>CNG</u>
<b><u>Mileage</u></b>			
Petrol (Km/Ltr)	10	-	-
LPG (Km/Kg)	-	16	-
CNG (Km/Kg)	-	-	-
<b><u>Fuel Cost</u></b>			
Petrol (Rs/Ltr)	28.47	-	-
LPG(Rs/Kg)	-	22.08	-
CNG (Rs/Kg)	-	-	14.8
<b><u>Operating Cost (Rs/Km)</u></b>			
Petrol	2.85	-	-
LPG	-	1.38	-
CNG	-	-	-
Operating Kms Per day	100	100	100
Savings per Month (Rs.)		4350.00	5700.00

Note:

- The cost of LPG is based on present market rates for commercial use and Supplied by private LPG suppliers/dealers.

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**ANNEXURE -III**

**RELIANCE  
PETROLEUM  
LIMITED**

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RPL House, 15, Walchand Hirachand Marg, Ballard Estate, Mumbai-400 001. Phone: 261 0442 Fax: 022-2610092 Telex : 011-83331 RPL IN

**March 18, 2000**

**Transport Commissioner,  
The Transport Commissioner's Office  
Administrative Building,  
3rd & 4th floor, Near Dr. Ambedkar Udyan,  
Government Colony, Bandra (East),  
Mumbai-400 051.  
Fax no. 641 4901  
Dear Sir,**

This has reference to your letter no. **PUC 2000/D-II(B)/2(15)/ON-3346, dated 08.03.2000**, addressed to our Executive Director regarding measures to reduce vehicular pollution in the city of Mumbai.

Please find given below the information sought by you :

(a) Reliance Petroleum Ltd. (RPL) will be able to supply gasoline having Benzene and Sulphur contents at 1% and 0.05% maximum respectively as well as diesel having 0.05% maximum of Sulphur content. These supplies would commence in about 3 - 4 months.

(b) RPL will also be able to supply gasoline with TAME to meet the entire requirement of Mumbai.

(c) It is expected that the superior fuels as above would cost about Rs.0.50 per liter more at the refinery gate (without duties & taxes) than the existing motor fuels.

We trust you will find the above information useful.

Thanking you,

Sincerely yours,  
Sd/-  
(N.B. Deshmukh)

**ANNEXURE IV**

**SIAM**

**Society of Indian Automobile Manufacturer**

Core 4-B,5th Floor

India Habitat Centre

Lodi Road, New Delhi - 110 003

Phone 91-11-4647810-12, 4648555, Fax : 91-11-4648222

E-mail : siamsoc @ bol.net.in / aiam@vsnl.com

SIAM:1495:(99:164M)

14 January, 2000

Mr.Vinay M.Lal  
Transport Commissioner,  
Government of Maharashtra  
New Administrative Building (Near Chetna College)  
Government Colony, Bandra (East),  
Mumbai-400051.

Dear Sir,

In pursuance to our discussions, we submit our recommendations on vehicular emission based on the Terms of Reference directed by the Hon'ble Mumbai High Court.

We would be grateful if an opportunity is given to SIAM to make a presentation to members of the Committee, at the earliest.

On behalf of the Automobile Industry and SIAM we would like reiterate our total commitment and support in your endeavour to achieve better air quality in Mumbai.

With kind regards,

Yours faithfully,

Sd/-  
Rajat Nandi,  
Executive Director,

Encl: as above (being forwarded by courier today)

Copy to: Mr.S.V.Sahasrabudhe, Dy.Transport Commissioner, Govt. of Maharashtra.

**Terms of Reference for Committee under the Chairmanship of  
Mr Vinay Lal, Transport Commissioner, Maharashtra for  
Recommending measures to control vehicular pollution in Mumbai.**

1. Improvement in quality of fuel with particular reference to reduction in sulphur content of diesel and benzene content of petrol to acceptable limits.
2. Use of Alternate Fuel such as CNG/reformulated gasoline, etc. Administrative and regulatory measures that would be required for setting up additional pumps for dispensing CNG.
3. Desirability & feasibility of converting existing buses/taxis to CNG.
4. Assessment of whether the existing emission norms require to be revised for Mumbai only and if so at what levels they should be fixed.
5. Applicability of Euro I and Euro II norms for commercial vehicles ( non private vehicles ).
6. Desirability and feasibility of phasing out of vehicles ( private cars, trucks, buses, taxis, autorickshaws and two wheelers ) over a certain age limit.
7. Measure for improvement of emission level of in-use vehicles correspondingly.
8. Financial incentives that can be made available for replacement of old taxis and autorickshaws with new vehicles running on clean fuel.
9. Action required to be taken in respect of two and three wheelers utilising two stroke engines.
10. Effect of the use of unleaded petrol without catalytic converter.
11. Desirability and feasibility of ensuring pre-mixed oil ( petrol & 2T ) and Banning supply of loose 2T oil.
12. Effective method of monitoring and improving emission performance of in-use vehicles.

**1. Improvement in quality of fuel with particular reference to reduction sulphur content of diesel and benzene content in petrol to acceptable limits.**

**Diesel**

**Sulphur content in Diesel**

Diesel fuel sulphur occurs naturally in crude oil, if it is not removed in the refining process it affects engine emission. Sulphur contributes significantly to Particulate Matter ( P M ) emissions, through formation of sulphates both in the exhaust system and in the atmosphere. Increase Sulphur contents in diesel leads to corrosion and wear of engine system reduces efficiency of exhaust after-treatment systems and affects the functioning of electronic devices in the engine.

To meet the emission norms for the year 2000, that is, the India 2000 norms ( Euro I equivalent ) for the entire country, **SIAM** has already suggested that sulphur content in diesel should not exceed 0.25% m/m, the same is also proposed in the **BIS** specifications. To meet the further tighter India Stage II norms (Euro II equivalent), diesel with max. 0.05% m/m sulphur is a prerequisite. Future regulations will require after-treatment devices to be installed also in diesel vehicles to control NOx, PM and fuel consumption. Sulphur poisoning can render these devices permanently ineffective and would require further reduction in sulphur content.

Studies conducted by Ricardo Consulting Engineers, UK have shown that increasing fuel sulphur from 0.05% to 0.25% will increase the total particulate level from 100% to approximately 150%.

Necessary timeframe for reducing sulphur content in diesel for non-commercial vehicles in Mumbai .

	<b>Orders of the Hon'ble Mumbai High Court.</b>	<b>Sulphur content in Diesel should be</b>
1 January 2000	Introduction of India-2000 Compliant vehicle	0.25% m/m ( max.)
1 January 2001	Introduction of India Stage II (Euro II equivalent) compliant vehicles	0.05% m/m ( max.)

As regards the maximum sulphur content in Diesel in Europe, EU Directive 93/12/EEC was issued on 23 March 1993 which mandated maximum sulphur

content in diesel throughout the European Union at 0.2% by weight from October 1994 and 0.05% from 1 October 1996. This in effect meant the availability of

0.05% sulphur content fuel from 1 October 1996, well before 1 January 1997, the date for compliance with Euro II norms for all models of vehicles.

Once of the public sector oil companies, IOC has started supplying 0.05% sulphur diesel to DTC in New Delhi, and, Reliance Petroleum in a communication to SIAM has conveyed its ability to produce about 6 million metric tonne (mt)/annum of diesel with 0.05% sulphur and about 5.7 Million Mt/annum of diesel with 0.25% sulphur content. In addition the company has also indicated that it can supply lead free petrol with maximum sulphur content of 0.05% and 1% max. of benzene.

### **Sulphur in Petrol**

Need for reduction in sulphur content in petrol also to 0.05% by weight (max) is equally compelling particularly for compliance with Indian equivalent of Euro II norms.

Sulphur has a significant impact on vehicle emissions by reducing the efficiency of catalysts.

Sulphur causes formation of acids, which attacks catalyser resulting in corrosion and etching away of catalyser surface, reducing its life. Sulphur adversely affects heated exhaust gas oxygen sensor. Results of Air Quality Improvement Research Programme ( AQIRP ) and European Programme on Emissions, Fuels, and Engine Technology ( EPEFE ) studies show that reduction in sulphur will provide immediate reduction of emissions from all catalyst equipped vehicles on the road. High Sulphur Petrol delays Catalyst light-off time, increases light-off temperature besides reduction in its efficiency across a full range of air/fuel ratios. Sulphur slows the lean-to-rich transition, thereby introducing an unintended rich bias into the emission calibration.

At present sulphur limit in European petrol is 500 ppm, i.e., 0.05% which is being reduced to 150 ppm (0.15%) from year 2000. It is proposed to be further reduced from 2005 and is likely to become as low as 30 ppm (0.003%) in line with US reformulated petrol and world-wide fuel charter. From year 2000 Indian emission norms will be at par with Euro- I norms. Vehicle manufacturers feel that sulphur value of higher than 500 ppm will not be able to give desired results. As per fuel quality survey conducted by one of SIAM members in four metro cities, present sulphur level is in the range of 300-800 ppm. This should be controlled to 500 ppm max. It is assumed that major modifications in refining process would be required for further reduction in sulphur level. Vehicle manufacturers feel that it will be worthwhile to aim at lower value of 30 ppm for 2005 in harmony with world-wide fuel charter. This will result in overall reduction in emission from new vehicles as well as in-use vehicles. The vehicle and fuel should be treated as a single system

and emission norms and fuel quality / specifications should be notified in tandem, as in Europe and USA.

While Automobile Industry is willing to contribute its mite by advancing compliance with Indian equivalent of Euro I and Euro II norms for private ( non-commercial ) 4-wheeled vehicles, it is imperative that matching fuel quality is made available by Oil Industry all over Mumbai to achieve the desired result of reducing emission from vehicles while in actual use.

## **Petrol**

### **Benzene content in petrol**

Benzene has got no direct effect on vehicle performance or total hydrocarbon emissions. Vehicle exhaust accounts for 85-90 percent of benzene emissions; the remainder is from evaporative and distribution losses. Benzene in fuel and dealkylation of higher aromatics in the combustion process contribute about equally to benzene emissions. A third small source comprises the partial combustion products of other hydrocarbons. Control of Benzene levels in petrol is the most direct way to limit evaporative and exhaust emissions of Benzene from automobiles. Lowering the benzene fraction in petrol from 3 to 2 percent has shown reduction in benzene emissions by about 17 percent. Benzene should be limited to 3% vol.max. immediately and brought down to 1% at the earliest as per category 3 of World-wide Fuel Charter, purely due to environmental considerations.

M/s Reliance Petroleum have conveyed that they can supply 3.0 million metric tonne per annum of petrol containing 1% benzene.

It is submitted that Benzene content in Unleaded Petrol be limited to 1%. Similarly, sulphur content in both diesel and petrol, should be restricted to 0.05% maximum.

### **2. Use of Alternate fuels such as CNG/reformulated gasoline, etc. Administrative and regulatory measures that would be required for setting up additional pumps for dispensing CNG and desirability and feasibility of converting buses/taxis to CNG**

Alternate fuels like CNG, LPG have now been established as suitable alternate automotive fuels, particularly from the point of view of emission control. There is need to gradually increase the number of such vehicles in the fleet.

## **Conversion of Buses and Taxis to CNG**

Mumbai is one of the few cities to take an early lead in the introduction of CNG as an alternate automotive fuel, particularly for taxis. CNG has found acceptance with taxi operators. However, there is a need to ensure wider availability, so that it finds more use in taxis as well as private vehicles.

As regards retrofitting/converting in-use diesel taxis to CNG, it is submitted that the exercise is still in development stage. Converting diesel engines to CNG is technically complex and consequently an expensive proposition compared to converting a comparable petrol engine to CNG and may not find acceptance among taxi operators.

There are few CNG buses being run by BEST in Mumbai. Industry also has the capability to retrofit CNG on existing fleet depending upon the engine condition. In view of the complexity involved converting old diesel buses to CNG, we suggest that it may be advisable to recondition the vehicle with an updated diesel engine rather than reconfigure old buses with CNG.

CNG buses entail an incremental cost of Rs.3-7 lakhs over the price of diesel buses. Manufacturers presently are dependent on imports for CNG engine/kits. Indigenous production can be undertaken and consequently cost can be reduced if the short term and long term plans of the Government/BEST for procurement of CNG buses are made known.

3-wheelers operating on CNG are under development. It may however not be possible to retrofit on old 3-wheelers in view of the not-so-sturdy chassis frame of these vehicles and heavier weight of CNG kits/cylinders.

We submit that, while use of CNG on three wheeled vehicles technically feasible, the same does not appear to be so for two-wheeled vehicles on account of the heavy weight of the CNG container and absence of adequate space on small two wheelers to accommodate such tanks.

It may, however, be possible to use LPG, another clean fuel, on certain types of two wheeled vehicles.

We would further like to submit that, it does not appear to be technically correct to presume that CNG, or other gaseous fuels, are the final solution to all vehicular emission problems. Several issues need to be considered such as the unique emission characteristics of engines running on gaseous fuels, which are not necessarily totally clean, the availability of the gas in abundant quantities to the users, the price of the gas, the initial and running costs etc. The issue needs a careful examination and assessment before the final choice is made. We believe that an optimum combination of technologies and fuels will need to be worked out

for every type of vehicle and each city and switching over the gaseous fuels across the board may not be the most practical and cost effective approach.

Various issues relating to sustainability of CNG program, such as fiscal incentives, low interest rate loans for CNG minibus and taxi operators, Government role in promoting CNG by way of public awareness, ensuring fuel quality and availability, vehicle safety and public concerns, need to be taken into account.

Alternate fuels such as CNG, LPG, etc are universally used in an optimal mix with conventional hydrocarbon based petrol and diesel fuels.

The usage is determined by availability, technology solutions, costs and customer preferences. Depending on availability and preference the user may opt for CNG or LPG vehicles.

In the case of three wheelers and four wheelers, it may be possible to use both CNG and LPG and technologies are being developed for the same.

In the case of two wheelers, due to the bulky nature of the CNG tank, this fuel option is not feasible but industry has started working on the feasibility of usage of LPG in two wheelers.

Use of LPG would necessitate it being declared as an automotive fuel and making it widely available in addition to legislating proper safeguards and safety precautions.

**3. Assessment of whether the existing emission norms require to be revised for Mumbai city and if so at what levels they should be fixed.**

**Current methodology for notifying norms for new vehicles.**

Emission norms are notified by the Ministry of Surface Transport (MOST) under the Central Motor Vehicle Rules (CMVR) and are applicable throughout the country from a particular date.

Notification is issued at least 4-5 years before the effective date of implementation. This lead time given enables manufacturers to develop technologies to comply with the notified norms.

The norms are applicable to new vehicles from date of manufacture and not date of registration. This is the universal practice because there is a time lag between date of manufacture and date of actual sales, since the vehicles have to be transported from the place of manufacture to place of distribution.

Separate norms for different regions is not widely followed because it is not feasible to have separate manufacturing units to produce vehicles complying with

region-specific norms. Other associated parameters like fuel quality also render this approach unviable.

However, if in view of acute pollution problems in a particular region, it is thought fit to have separate norms then it would be necessary to ascertain, in quantitative terms, the pollution contributions of different types of vehicles and other sources over projected periods of time. Requirement of new norms can then be arrived at by taking into account the effect of other measures to meet desirable

air quality goals for each pollutant. It will be necessary to avoid an ad hoc approach as it may lead to incurring of costs by the society without commensurate benefits.

While for four wheelers we have followed the Euro norms, it is necessary to appreciate that, in case of two and three wheelers, the Indian 2000 norms are the tightest in the world and major technological developments will be required to achieve further reductions in emissions. SIAM has already taken the initiative and suggested to the Central Government to appoint a team of international experts to review the potential technology routes for further emission reduction.

In the case of emission standards for in-use vehicles petrol driven vehicles, tightening up the idle emission norms will not serve any useful purpose. The main use of the idle emission norm is to indicate the state of maintenance of the vehicle.

Studies conducted by the Automotive Research Association of India (Ref SAE paper No 981379 ) on randomly selected in-use two wheelers have shown that if the vehicle is badly maintained and tuned, it shows high idle emissions and also high mass emissions. However, no significant mathematical correlation could be found between the idle emission and mass emission values. The study further revealed that all those vehicles which failed the PUC test ( idle CO less than 4.5 percent ) had high mass emissions and all those which passed the idle test had mass emissions within the stipulated limits. While the range of idle CO values was from 4.6 percent to 5.9 percent, the corresponding mass emission values on these vehicles ranged from 5.3 g/km to as high as 14.5 g/km.

After these vehicles were subjected to repair and tuning, all of them passed the idle CO test and all but two vehicles passed the mass emission tests.

The range of improvement in mass emissions by carrying out repairs was found to be 20 percent to 88 percent, the average being about 60 percent. The above indicates that the idle emission test is a 'go-no-go' inspection tool that helps to identify a vehicle which has high mass emissions, is a gross polluter and needs to be maintained or repaired. It is, however, not possible to get quantitative values of mass emissions from the idle emission values. Consequently, it is not possible to bring about a reduction in the mass emissions by simply tightening up the idle emission standard.

In recognition of the above facts, the idle emission limits for in-use vehicles in the developed countries have remained virtually unchanged though the mass emission limits have been progressively tightened up. This is the case for two and three wheelers in Europe and Taiwan also. The idle CO emission limit in Taiwan for in use two wheelers has remained at 4.5 percent throughout the period of 1988 to 1998 though the mass emission limits have been tightened up by nearly 65 percent during the same period.

#### **4. Applicability of Euro-I and Euro-II norms for Commercial Vehicles ( non private vehicles ).**

SIAM has already made its submissions on the applicability of India Stage I norms ( Euro I equivalent ) and Stage II norms ( Euro II equivalent ), for commercial vehicles in its affidavit to the Hon'ble High Court, dated 7 October 1999.

The time frame for compliance with Stage II norms by commercial vehicles and multi utility vehicles, has been drawn up on the basis of evaluation of availability of technology and associated parameters like gearing up of supply chain, fuel quality etc.

#### **Buses & Trucks**

As for Buses and Trucks, the manufacturers are working to meet India 2000 (Euro I equivalent norms w.e.f. 1-4-2000 as already notified by the Government of India, Ministry of Surface Transport vide notification No. GSR 493 (E) dated 28 August 1997.

Further, Automobile Industry has offered to the Government to comply with Indian equivalent of Euro-II norms for Buses & Trucks from 1.4.2003.

Engines fitted to the commercial vehicles are very specific to the Indian products and the development of the engine as well as the new components have to be carried out locally and introduced into production. This requires a longer lead-time than for passenger cars. Some of these new components are :

- (i) **Higher pressure injection pumps** : These pumps have to be developed specifically for the Indian engines and it is not possible to import off-the-shelf pumps for fitment.
- (ii) **After coolers/Inter coolers** : This is a new product to be developed for Euro-II engines; current level of production and supply for this product is very low. The characteristics of the after cooler/inter cooler has to be matched very closely to an engine.
- (iii) **Advanced design of piston rings** : These rings are needed to achieve the tight particulate standards of Euro-II. Indian piston ring manufacturers

need two years to establish the facility to manufacture these advanced design of rings called asymmetrically barrel honed rings. The rings are not readily available from imports, because they are specific to the Indian engines.

To meet the Indian Stage II (Euro-II equivalent) norms, commercial vehicles need diesel with 0.05% sulphur (max.). The oil companies may be able to supply this

low sulphur fuel in limited quantities in metropolitan areas. For commercial vehicles unless the fuel is available throughout the country it will not serve the purpose, as these vehicles operate over long distances and have to be filled with diesel, en route. Hence, the meaningful implementation of India Stage II (Euro-II equivalent) norms for commercial vehicles requires adequate lead time.

### **Multi Utility Vehicles**

Multi Utility vehicles have a unique role in the Indian transportation sector

- They provide mobility in rural areas for passenger and freight movement
- They are used for inter city transport
- They provide feeder service on intra-city routes

Large number of models of this category of vehicles have been developed indigenously to meet the specific requirements of Indian conditions.

While manufacturers have offered to meet India Stage (Euro II equivalent) norms for Multi Utility Vehicles sold in NCR, from 1.4.2000 and in Mumbai, Calcutta and Chennai from 1.10.2000, they would require lead time till 1.4.2002 for compliance in other parts of the country. This is primarily to complete the indigenous development of technology, gear up the supply chain for larger volumes and also due to the requirement of appropriate quality of fuel, i.e. 0.05% sulphur content, which may take 2-3 years to be available throughout the country.

It is our submission that the date for implementation of Stage II (Euro II equivalent) norms for commercial vehicles should be decided after due consideration of the above mentioned issues. Adequate lead time is required to gear up the supply chain, make necessary arrangements for carrying out tests in the national test agencies, and also gear up the administrative mechanism- registering authorities. Auto Industry would also require clear indication regarding availability of low sulphur diesel. Ad hoc measures will lead to confusion and avoidable difficulties to Industry, authorities and customers.

**5. Desirability and feasibility of phasing out of vehicles ( private cars, trucks, buses taxis, autorickshaws and two wheelers ) over a certain age limit**

The Delhi model for the phasing out of autorickshaws could be considered for Mumbai also. While, as in Delhi, a beginning could be made with + 15 years old vehicles, in the long term, it may be better to consider the phasing out of vehicles which are + 10 years old.

In line with the Hon'ble Supreme Court directions, prohibiting plying of old commercial vehicles in Delhi, suggest the following phase out schedule for all categories of over aged vehicles as follows :

	Immediate For CVs only	W.e.f. 2000		W.e.f. 2005	
		CVs	Others	CVs	Others
Four metros and state capitals	+15 years	+12 years	+15 years	+ 9 years	+12 years
'A' class cities	--	+15 years	--	+12 years	+15 years
'B' class cities	--	--	--	+15 years	+20 years

\* CVs denotes - Trucks, Buses, Multi-Utility Vehicles, Taxis and Three Wheelers used in the business of running them on hire.

**Rationale**

- 1991            Emission and safety norms introduced for the first time in India for all new vehicles manufactures
- 1996            Move towards aligning emission norms with EEC regulations
- 1999/2000    Fresh set stringent emission norms in line Euro-I and world's tightest emission limits for 2 and 3 wheelers.

For two wheelers a programme to phase out all +12 year old two wheelers on a continuous basis, beginning with 1.4.2000 may be considered. The programme may be begun with the oldest of the vehicles and may be continued at a uniform rate

through the years. This would amount to spreading out the phase out of a large number of +12 year old vehicles over a period of time which may be administratively more convenient.

It is possible to consider making this programme as an ongoing exercise which will ensure that the two wheeler fleet, at any point of time, remains young, healthy and environmentally friendly.

Notwithstanding the above recommendations, SIAM is of the view that, unless a small window is created for scrapping of all types of vehicles of very old vintage which have outlived their useful life, the relocation of vehicles would in the long run amount to shifting the problem from one area to another.

## **6. Measure for improvement emission level of in-use vehicles correspondingly**

In order to improve the emission performance of in-use vehicles it is very important that the Government should have a strict enforcement on Pollution Under Control (PUC). Every vehicle plying on the road should have a valid PUC certificate and the sticker should be prominently displayed on the wind screen of every vehicle. There should be a regular audit of all PUC certificate issuing centres in the city. A stiff penalty should be imposed for issuing improper certification.

Mumbai has already initiated important measures to control pollution from in-use vehicles as directed by the Hon'ble High Court inter alia Order dated 15 December 1999.

Revision of emission standards for in-use vehicles requires detailed consideration since we have vehicles of varying vintages on the road and in different state of maintenance. The emission performance of in-use vehicles is dependent on the level of maintenance, driving habits of the owner/driver, quality of fuel used, road condition etc.

Maharashtra Transport Department had sought to revise the free acceleration smoke limit for diesel vehicles from 65 HSU to 30 HSU. It has been observed that even Euro II vehicles may not be able to meet the limit of 30 HSU consistently. Smoke level is dependent on the engine at the time of type approval, therefore tighter limits for old vehicles is not feasible. Sulphur content in diesel also has a direct impact on the smoke values. Any tightening of the existing emission values should be referred to the Central Motor Vehicle Rule (CMVR) technical committee for a detailed study and decision. Any adhoc decision without considered technical possibilities will not yield the desired result.

Inspection and Maintenance (I/M) measures to control emissions from in-use vehicles are an essential complement to emission standards for new vehicles. I/M

programme is also needed to ensure that the benefits of new-vehicles control technologies are not lost through poor maintenance.

A comprehensive I/M programme requires the following major elements :

- A suitable test procedure, supplemented by inspection of emission control systems where necessary.
- Effective enforcement of vehicle compliance.
- Adequate attention to repair procedures and mechanic training.
- Routine quality control.
- Enforcement of programme requirements for inspectors and mechanics, especially in decentralised programmes.
- Periodic evaluation and review to identify problem areas and develop solutions.

**International Experiences (some developing countries) :**

**Brazil**

Preliminary estimates show that a centralised I/M program for the Sao Paulo

Metropolitan Region could reduce carbon monoxide, unburned fuel and particulate matter emissions by 10 to 20 percent.

I&M Programme in Chile has also revealed similar results, as explained by the following chart :

The orders of the Hon'ble Mumbai High Court dated 15 December 1999 directing steps to be taken for ensuring compliance to the emission norms by the in-use vehicles and strict monitoring of fuel quality will have a significant impact on maintenance of in-use vehicles.

Periodic inspection and maintenance, statutorily enforced will help check pollution from in-use vehicles. Lack of periodic maintenance of critical emission related parts is likely to cause substantial deterioration of the emission

characteristics of even the most advanced low emission engines. An effective inspection and maintenance programme can prevent such deterioration and ensure that the emission is always within the limits for which the vehicles has been designed.

An I/M programmes serves two purposes. First it helps to identify vehicles in which some of the emission related parts, such as carburettors, spark plugs, air filters etc have got maladjusted or have developed some other mechanical problem at mileages ahead of that at which routine maintenance is advised by the vehicle manufacturer.

Second the I/M programme ensures that the emission control equipment such as catalytic converters, remain in place and are functioning properly. This aspect I/M will assume increased significance when a large number of two wheelers will also be equipped with catalytic converter to meet India 2000 norms.

### **Impact of I/M programme**

The potential of a sound and well enforced I/M programme in bringing about substantial reduction in emissions is well established as can be seen from numerous studies in countries that have had such programmes in place for some years now. Most of these programmes are also reported to have achieved a reduction in fuel consumption of the vehicles covered in the programme.

A limited study carried out by the Automotive Research Association of India (ARAI) has demonstrated the emission and fuel consumption benefits achievable through simple routine maintenance of in-use two and three wheelers. This study included 13 and 7 numbers of randomly selected two and three wheelers respectively, as well as 35 passenger cars that belonged to manufacturing years 1986 and 1993.

The study involved testing the vehicles for mass emission and fuel consumption in the "as received" condition and after carrying out a need based minor repair and tuning. The results of these studies indicate substantial improvements in the mass emission rates and fuel consumption as can be seen from the table below :

Percent improvement in Emissions and Fuel Consumption by carrying out minor repair and maintenance

Pollutant	Percent improvement	
	Two wheeler	Three wheeler
CO (gm/km)	60	31
HC (gm/km)	31	22
Nox (gm/km)	Values insignificant	Values insignificant
Fuel consumption (kmpl)	15	13

It is possible that the committee may consider selective retrofitment for addressing this Terms of Reference (TOR).

**7. Financial incentives that can be made available for replacement of old taxis and autorickshaws with new vehicles running on clean fuel.**

It is necessary that financial incentives are worked out in detail to encourage taxi and autorickshaw owners to replace old vehicles with vehicles running on clean fuels. Any scheme so worked out should be given wide publicity before them same comes into force.

Vehicle manufactueres are already manufacturing taxis running on alternate fuels likely CNG. As regards autorickshaws running on clean fuels, the industry is developing vehicles that can run on CNG. Presently, the requirements of Delhi only are being addressed since, as per Hon’ble Supreme Court Order, Delhi is lekely to have a large number of CNG filling stations. This is not the case in Mumbai. It will, therefore, be necessary that an order similar to that for Delhi regarding CNG filling stations is issued and implemented as per a time bound programme before this proposal can be considered. Widespread availability of gas is far more important for the autorickshaws due to their limited ranges and relatively small trip lengths.

The use of LPG in three wheelers may also be considered subject to necessary safeguards being put in place.

**8. Action required to be taken in respect of two and three wheelers utilising stroke engines.**

Traditionally, two-stroke engines have been the preferred prime movers for small two and three wheelers all over the world due to the several advantages they offer. Over 78% of Indian two wheelers are powered by two-stroke engines ( the corresponding world figure is 73% ).

The relative merits and demerits of the two types of prime movers are given below :

**COMPARATIVE PERFORMANCE, CONSTRUCTION AND COST CHARACTERISTICS**

Sl. No.	Pollutant	Conventional		Advanced (meeting 2000 norms)	
		2 Stroke	4 Stroke	2 Stroke (with CAT.Conv.)	4 Stroke
<b>PERFORMANCE</b>					
1	Power/Weight Ratio	↑	↓	↑	↓
2	Torque	↑	↓	↑	↓
3	Acceleration	↑	↓	↑	↓
4	Fuel Efficiency	↓	↑	↓	↑
<b>CONSUMPTION</b>					
1	No.of moving parts	↓	↑	↓	↑
2	Volume and Weight	↓	↑	↓	↑
<b>COST</b>					
1	Initial Cost	↓	↑	↓	↑
2	Maintenance Ease	↑	↓	↑	↓
3	Maintenance Cost	↓	↑	↓	↑

↑- Higher

↓ - Lower

It is often stated that two-stroke engines are more polluting than four-stroke engines. The question whether one engine is more polluting than the other depends upon the pollutant under consideration. There are some differences in the emission characteristics of these two types of engines when their conventional forms are considered. For Instance a conventional two-stroke engine emits lower levels of

Carbon Monoxide (CO), as compared to a corresponding four-stroke engine. *In this respect, the two-stroke engine is less polluting than the four-stroke*

*engine.* The conventional four-stroke engine, on the other hand, emits lower levels of Hydrocarbons (HC) as compared to the two-stroke engine and in that respect, *the four-stroke engine is less polluting.* The emission of Nitrogen Oxides (Nox) from a conventional two-stroke engine is much lower than that from a conventional four-stroke engine and is less polluting than the four-stroke engine.

These comparative equations have changed substantially over the last decade due to major advancement in the designs of two-stroke engines and improvement in four stroke engines.

Beginning with the promulgation of progressively stringent emissions standards from 1991 through year 1996 and 2000, the design of two stroke engines in India have undergone major advancements, and a substantial reduction in their hydrocarbon emissions has been achieved, whilst not causing an increase in the emission of the other two pollutants.

Similarly, improvements have been made in the four-stroke engine designs to limit the emission of Carbon monoxide. These efforts have resulted in a considerable narrowing down of the differences between the emission characteristics of these two types of engines. The advanced two-stroke engines and the new four-stroke engines, thus, have emission levels that are significantly lower than those of their conventional predecessors and are now at comparable levels.

### COMPARATIVE EMISSION CHARACTERISTICS

Sr. No.	Pollutants	Conventional		Advanced (Meeting 2000 norms)	
		2 stroke	4 stroke	2 stroke CAT conv.	4 stroke
1	Carbon Monoxide (CO)			↔	↔
2	Hydro Carbon (HC)			↔	↔
3	Nitrogen Oxides (NOx)				
4	HC + NOx			↔	↔
5	Visible Smoke			↔	↔

• With use of 2T oils mandated under EPA.

Both two-stroke and four-stroke engines in India have to meet the same emission standards.

Since regulation of emissions from vehicles is governed by environmental considerations, the Indian emission norms for two- and three wheelers do not differentiate between two-stroke and four-stroke engines. The emission norms are the same irrespective of the type of engine that is used. This is not the case in Europe and Japan, Where consideration is given to the inherent differences in the emission characteristics of conventional two-stroke and four-stroke engines. However, the emission standards of these countries are so much less stringent than the Indian norms that the two and three wheelers there continue to use the conventional types of engines, as is evident from figures below:

### **Indian 2000 Norms Tighest in the World**

The emission standards that will take from April 1,2000 in India are among the strictest in the world. These levels of emissions are achievable only by the more advanced two-stroke engines and the improved four-stroke engines.

For complying with emission norms for the year 2000, several manufacturers have already introduced four stroke models in addition to two stroke two wheelers fitted with catalytic converter. The emission level from these vehicles whether fitted with an advanced two-stroke engine with catalytic converter or four-stroke engines with or without catalytic converter will be similar.

This is supported by data generated by ARAI while conducting tests on various models of 2-stroke and 4-stroke 2/3 wheelers for conformance to the year 2000 emission norms. A summary of the test data findings of ARAI are reproduced below:

Engine Type	Range	CO	HC+ Nox	CO+HC+Nox
2 Stroke	Minimum	0.22	0.80	1.02
	Mean	0.78	1.23	2.01
	Maximum	2.01	1.65	3.66
Engine Type	Range	CO	HC+Nox	CO+HC+Nox
4 stroke	Minimumn	0.40	0.86	1.26
	Mean	0.85	1.06	1.91
	Maximum	1.85	1.68	3.53
Overall	Mean	0.81	1.16	1.97

The mean values of total pollution levels for two-stroke and four stroke engines are respectively 2.01 gm/km and 1.91 g/km, which differ from the overall mean by not more than 2 to 3 per cent.

It is submitted that the Authorities should mandate the norms as dictated by the need to meet desired air quality goals and leave the technology routes to achieve these to the industry.

## **9. Effect of using unleaded petrol without catalytic converter**

Elimination of leaded petrol will be a positive measure to control lead emission, which is a serious health hazard. Auto Industry welcomes the supply of only Unleaded Petrol (ULP) in Mumbai from October 1999.

Emission of lead cannot be controlled through engine modification or exhaust after-treatment devices. All petrol engined vehicles including passenger cars, taxis and two & three wheelers are capable of running on unleaded petrol, even if not fitted with catalytic converter.

In the past fifteen years, the world over, there have been substantial reduction in the use of lead in petrol as the adverse health impacts of lead have become better known.

Unleaded petrol is necessary to support emission technologies such as catalytic converters and oxygen sensors. As catalyst efficiencies are increased, tolerance to lead contamination is very low. Even a slight lead contamination can destroy modern day catalyst. Lead free petrol is therefore essential in the long run.

Only ULP is being supplied in Delhi for over a year now, since September 1998, and there have not been any adverse reports on use of ULP in vehicles without catalytic converter. Automobile industry has already endorsed shift to Unleaded Petrol in its press release dated September 3, 1998. Lead content in ambient air at traffic intersections in Delhi has reduced from  $335 \times 10^{-9} \text{ g/m}^3$  in 1995 to  $136 \times 10^{-9} \text{ g/m}^3$  in 1998 (reduction of 60%) after introduction of unleaded petrol in 1995 (Source: Parivesh Newsletter; June 1999).

Developed countries such as Japan switched to 100% ULP way back in 1980s; Canada phased out leaded petrol in 1990; Guatemala and Columbia in the early 1990s; Austria, Korea and Sweden in the year 1993; and USA made the transition from January 1, 1995. Thailand switched over to ULP in 1995 and Taiwan would follow suit by January 2000.

SIAM supports complete phase-out of Leaded Petrol.

## **10.Desirability and feasibility of ensuring premixed oil (petrol and 2T) and banning supply of loose 2T oil**

The proportion of lubricating oil used in a two stroke engine is much higher than that in four stroke engine because of inherent design considerations. Since the lubricating oil does not burn fully in the engine, it becomes a constituent of the exhaust in the form of partially burned or unburned aerosols. In many cases, particularly when excessive quantities or inferior grades of oil are used, these aerosols impart a visibility to the exhaust gases.

The visibility level of smoke can be controlled by using the least quantity of oil that is optimally required by the engine. Further new two stroke engine oils (2T oils) have now been developed that use a blend of mineral and synthetic base oils with better burning qualities. Oils that comply with JASO (Japanese Automobile Standards Organisation) FC quality standards bring about substantial reduction in the visibility of the exhaust.

In order to pass on the benefit of the superior 2T oils, which are termed as 'smokeless' or 'low smoke oils' to the entire population of in-use vehicles, Ministry of Environment & Forests notification no.GSR 504(E) dated 20 August

1998 allows the sale of only those 2T oils that conform to the API TC grade for various performance characteristics and JASO FC grade for smoke performance. This notification came into effect from 1 April 1999.

Common perception that 2 stroke 2/3 wheelers emit more pollutant is because of visible smoke arising out of usage of inappropriate/substandard/recycled lube oil and incorrect proportion of lube oil.

Ensuring the use of right quality and quantity of 2T oils leads to considerable reduction in the visible smoke from the two stroke engines used on two and three wheelers. Based on the orders from Supreme Court, sale of loose 2T oil has been banned in Delhi, and is being sold only through premixing dispensers. The premixed system is one method of controlling and preventing adulteration by the oil companies themselves and other enforcement agencies.

Government of India vide GSR No.504(E) dated 20th August 1998, has mandated use of 2T oils conforming to minimum Smoke Index of 85, (which are commonly known as smoke less oils) throughout the country with effect from 1.4.99. Implementation of this order and banning of sale of loose 2T oil will reduce the smoke emission from two and three wheelers considerably.

M/s Castrol, in their intervening affidavit, had suggested that sale of 2T oil in sealed sachets should also be permitted. An impression was also given that in

Delhi sale of 2T oil in sachets is not permitted as per the order of Government of India GSR 517 dated 31st December, 1999.

Under item 2(b) of the above order, a “container” is defined as “a sealed package containing per-packed 2-T oil in declared quantity”.According to our understanding, a sachet would qualify as a “container”.

We would suggest that while banning sale of loose of 2T oil, in addition to sale of 2T oil through premixing dispensers, sale of 2T oil in sealed sachets should also be permitted.

### **In conclusion**

All measures undertaken to improve air quality need to be looked at in an integrated manner. We suggest that an integrated approach to vehicular pollution be adopted.

### **An Integrated Approach to Vehicular Pollution Control**

We ought to be addressing the issue of building up a comprehensive strategy for controlling vehicular pollution. In Europe, when Euro-I and Euro II were

introduced, it was part of a comprehensive strategy to control air pollution and it was not visualised in isolation.

An integrated approach to vehicular pollution will encompass:

- Vehicular Technology
- Fuel quality
- In-use vehicle maintenance
- Traffic management & road infrastructure
- Transport management

Each one of these in isolation may not yield substantial benefits, but require to be implemented simultaneously. While emission standards will control proliferation of emission from new vehicles, they need to be complemented by a sound inspection and maintenance programme for in-use which constitute a large proportion of the total vehicle population. It has been demonstrated that 5% of polluting vehicles in the vehicle fleet contribute to 25% of the total pollution load.

The above components of an integrated approach need to be addressed under the ambit of air quality management system.

An extremely useful guide for this purpose is the “Guidebook for Urban Air Quality Management Strategy for Asia”, prepared by the World Bank as a part of their “Metropolitan Environmental Improvement Programme (MEIP),” published in December 1997.

Mumbai is the only Indian city that joined the World Bank aided MEIP in 1990 and the Urban Air Quality Management Initiative (URBAIR) was conceived and launched in 1992. The extensive work done in this programme, has been published by the World Bank (Ref. Urban Air Quality Management Strategy in Asia, Greater Mumbai report, WB Technical Paper No.381, December 1997).

**A R A I**  
**THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA**

**VEL/BG/DIR/022**

**FAX: 022-6414901.**

**January 11, 2000**

Sh.V.M.Lal,  
Transport Commissioner, MS  
Transport Commissioner's Office,  
Administrative Building, 3rd & 4th floor,  
Near Dr.Ambedkar Udyan,  
Government Colony, Bandra (East),  
Mumbai 400 051.

Sub: Implementation of High Court directions for containing vehicular  
Pollution in Mumbai City -

Dear Sir,

In response to letter # MAPO198/CR 37(A)/D-2(1)/99/ON-17742 dated December 24, 99 addressed by Dy.Transport Commissioner, Maharashtra State to Sh.B.Bhanot, Director, ARAI, we have the following comments to offer. These comments have concurrence of Director, ARAI.

(a) Point of reference of Committee:

Improvement in quality of fuel, with particular reference to reduction of Sulphur content of diesel and benzene content of petrol to acceptable limits.

ARAI's comments

Reduction of Sulphur in diesel to 0.05% max. would bring down the emission levels of particulate emissions substantially as well as other components of emissions viz. CO and HC.

Benzene content of petrol is max. 5% now in India. This is being targetted to bring down to 3% max or even less. Benzene is harmful to health, hence required to be controlled.

(b) Point of Reference of Committee

Use of alternative fuel such as CNG / reformulated gasoline etc. Administrative and Regulatory measures that would be required for setting up additional pumps for dispensing CNG

Use of CNG reduces pollution of CO and HC and also in some cases pollution of Nox. Improvement in CO and HC can be of the order of 10 to 50 % or even more in the extreme case. Besides, there is no smoke in CNG vehicles. Hence this may

be encouraged. However, sufficient CNG filling stations should be made available.

Reformulated gasoline would help bringing down emissions, eg. hydrocarbon components such as benzene in exhaust. This should be taken up with refineries and tried in India.

(c) Point of Reference of Committee

Desirability & feasibility of converting the existing buses / taxis to CNG

ARAI's Comments -

Experience in conversion of in-fleet diesel vehicles has been limited world over. Some proposals are being tried in India, but the experience will show how successful they will be, especially in fleet, which has otherwise lived its life. It is understood that MOST is trying to issue a notification for conversion of diesel vehicles to CNG operation.

(d) Point of Reference of Committee

Assessment of whether the existing emission norms require to be revised for Mumbai city & if so at what levels they should be fixed.

ARAI's Comments

India Stage I would be applicable in Mumbai City as well as other places in India for all vehicles from 31-03-2000. India Stage II is applicable for cars from 31-03-2000 in Delhi. Introduction of advanced regulation like India Stage II from an early date would help in bringing down emission. Vehicle manufacturers are geared up to meet this demand for cars, as they are doing in Delhi (National Capital Territory - (NCT)). What is to be ensured is supply of fuel compatible with Euro II requirement i.e. Sulphur content of 0.05%.

(e) Point of Reference of Committee

Applicability of Euro I and Euro II norms to commercial (non private vehicles)

ARAI's Comments:

Euro I (equivalent India 2000 Stage I) is applicable all over India for all vehicles from 31-03-2000. Euro II (equivalent India Stage II) will be applicable for cars from 31-03-2000 in Delhi. Commercial vehicle manufacturers are not yet ready to meet India Stage II Norms.

(f) Point of Reference of Committee

Desirability & feasibility of phasing out of vehicles (private cars, trucks, buses, taxis, autorickshaws & two-wheelers) over a certain age limit.

ARAI's Comments

It is desirable to phase out vehicles and is feasible as the process has been started in NCT (National Capital Territory). This would bring in more effective reduction of pollution. All vehicles may be included in above scheme. Taxis, commercial vehicles, rickshaws need more frequent replacement because of their higher usage factor.

(g)Point of Reference of Committee

Measure for improvement of emission level of in-use vehicles correspondingly.

ARAI's Comments

yearly check by R.T.O's would be helpful. New advanced Inspection and Maintenance Centers for advanced checks may be created. High Investment would be required for infrastructure development. Need to be privatised. Progressive increase of yearly taxation for older vehicles would be appropriate.

(h)Point of Reference of Committee

Financial incentives that can be made available for replacement of old taxis and autorickshaws with new vehicles running on clean fuel.

ARAI's Comments:

State Government/Central Government may decide. Taxes levied for import of kits and licensing may be reduced / waived. Any other measure, as appropriate, may be thought of. There should be reduced Sales Tax/ Excise duty for replacement of older vehicles in exchange of new vehicles.

(i)Point of Reference of Committee

Action required to be taken in respect of two wheelers and three wheelers utilising two stroke engines.

ARAI's Comments

2-Stroke engined vehicles pollute more than 4-stroke engined vehicles (4-5 times HC emission). Catalytic Convertor fitted on 2-stroke engines reduces pollution. However, proper maintenance is required as well as adulteration in fuel / oil to be checked to prevent reduction in life of Catalytic Convertors. Durability clause for Catalytic Convertor be introduced for a minimum mileage of 30,000 km.

(j)Point of Reference of Committee

Measures to prevent fuel adulteration

ARAI's Comments

This is an administrative action/measure to be decided upon by Central/State Government/Oil Co's, who should ensure quality supply at retail outlets.

(k)Point of Reference of Committee

Effect of the use of Unleaded petrol without catalytic convertors

ARAI's Comments

When Unleaded petrol is used on vehicle without Catalytic Converter, benzene emission is not controlled. However, with Catalytic Converter also only part of benzene emission is converted and not fully.

On the vehicles of 1990's the valve seat recession problem with unleaded petrol has been taken care of by vehicle manufacturers.

(l)Point of Reference of Committee

Incentives for conversion to cleaner technologies including in particular reduction of import duties and other levies on CNG kits and catalytic convertors.

ARAI's Comments:

This is an administrative measure to be introduced by the Government. Encouragement may be given for use of CNG kits and catalytic convertors on old vehicles. However, use of catalytic convertors on old vehicles is not a simplistic affair though the usefulness of the same cannot be denied. Yet, catalytic convertors may not be effective after short duration if the correct engineering is not employed in the conversion of old vehicles. There are cases of catalytic convertors burning and fusing owing to incorrect technology being adopted, because of high amount of fuel going through the carburettor. Hence this measure needs more study/thinking.

(m)Point of Reference of Committee

Desirability & feasibility of ensuring premixed oil (petrol & 2T) and banning supply of loose 2T oil

ARAI's Comments:

This will be a welcome step, as already being tried in Delhi.

(n)Point of Reference of Committee

Proper management & Regulation of Traffic with a view to reducing vehicular pollution

ARAI's Comments:

It is well-known that proper management and regulation of traffic would bring down pollution to a great extent.

If a mass transit system is employed, the same will reduce pollution in a high proportion since mass transit users would not be required to use private transport vehicles. The same may be planned for future.

(o)Point of Reference of Committee

Effective methods of monitoring and improving prescribed emission norms.

ARAI's Comments

The parameters to be measured for checking emission of used vehicles have been already prescribed. These are also specified in Notifications issued by MOST, which stipulates that for gasoline powered vehicles, the idling CO is to be measured which should be less than 3% and for diesel vehicles free acceleration smoke emission should be less than 65 HSU. These are partially effective and practical methods. In the proposed Inspection and Maintenance programme, it could be addressed in more scientific and effective manner, as is practiced in other parts of the world.

Thanking you

Yours faithfully,

Sd/-

B.GHOSH,  
SR.DEPUTY DIRECTOR, VEL.

Cc: Sh.B.Bhanot,  
Director, ARAI.

**ANNEXURE VI**

**REPORTABLE**

**IN THE SUPREME COURT OF INDIA**

**CIVIL ORIGINAL JURISDICTION**

**274430**

**WRIT PETITION (CIVIL) NO.13029 OF 1985**

M.C.Mehta

..Petitioner

Versus

Union of India and others

..Respondents

WITH  
WRIT PETITION NO.939 OF 1996  
ORDER

Realising the urgency and importance of protection and improvement of the environment, this Court has given directions from time to time and impressed upon the authorities to take urgent steps to tackle the acute problem of vehicular pollution in Delhi. Assurances have been held out to the Court through various affidavits filed by the competent officers that effective steps shall be taken in a phased manner within a specified time span. In spite of the matter having engaged the attention of this Court for a long time and lengthy debates on each hearing, precious little appear to have been done by the State Administration to check and control the vehicular pollution. We are rather distressed at this apathy of the State Administration, when according to the White Paper published by the Government of India, the vehicular pollution contributes 70% of the air pollution as compared to 20% in 1970. In the White Paper published by the Government of India, a dead line of 1st April, 1998 had been proposed for implementation of major actions. No concrete steps have however, been taken till date in spite of the assurances held out in the affidavit dated November 18, 1996.

We find from the report submitted by the Authority appointed vide Gazette Notification dated 29th January, 1998 that none of the major actions, as proposed, has been implemented. The Authority headed by Shri Bhure Lal has also proposed certain measures for immediate improvement of air quality and has given a time frame but for the time being we are not engaging our attention to that time frame. We are, however, of the view that to arrest the growing pollution of air certain steps need to be taken immediately we, therefore, direct :-

1. Implementation of directions to restrict plying of commercial vehicles including taxis, which are 15 years old, by 2nd October, 1998.
2. Restriction on plying of goods vehicles during the day time shall be strictly enforced by 15th August, 1998.
3. Expansion of pre-mixed oil dispensors (petrol and 2T oil) shall be undertaken by 31st December, 1998.
4. Ban on supply of loose 2T oils at petrol stations and service garages shall be enforced by 31st December, 1998.

The Committee headed by Shri Bhure Lal has also proposed the following measures within the time frame in its action taken report filed in the Court.

	<u>Time frame</u>
A) Augmentation of public Transport (Stage carriage) to 10,000 buses	1.4.2001
B) Elimination of leaded petrol from NCT Delhi as proposed by the Authority and agreed to by the Ministry of Petroleum & Natural Gas.	1.9.1998
C) Supply of only pre-mix petrol in all petrol filling stations to two-stroke engine vehicles.	31.12.1998
D) Replacement of all pre 1990 autos and taxis with new vehicles on clean fuels.	31.3.2000

- E) Financial incentives for replacement of all post 1990 autos and taxis with new vehicles on clean fuels. 31.3.2001
- F) No 8 - year old buses to ply except on CNG or other clean fuels. 1.4.2000
- G) Entire city bus fleet (DTC & private) to be steadily converted to single fuel mode on CNG. 31.3.2001
- H) New ISBTs to be built at entry points in North and South-West to avoid pollution due to entry of inter-state buses. 31.3.2000
- I) GAIL to expedite and expand from 9 to 80 CNG supply outlets. 31.3.2000
- J) Two independent fuel testing labs to be established. 1.6.1999
- K) Automated inspection and maintenance facilities to be set up for commercial vehicles in the first phase. Immediate
- L) Comprehensive I/M programme to be started by transport department & private sector. 31.3.2000
- M) CPCB/DPCC to set up new stations and strengthen existing air quality monitoring stations for critical pollutants. 1.4.2000

We approve the directions given and the time frame fixed by Shri Bhure Lal Committee. The time frame, as fixed by that Committee and today by this Court, in consultation with learned counsel for the parties, shall be strictly adhered to by all the authorities who shall also take effective and adequate steps to bring, to the notice of the public, both through print and electronic media various directions issued by this Court from time to time in general and the directions hereinabove contained in particular. Report in this behalf shall be filed in the Court within four weeks. We, administer, a strong caution to all concerned that

failure to abide by any of the directions hereinabove noticed would invite action under the contempt of Courts Act against the defaulters.

.....J.  
(A.S.ANAND)

.....J.  
(B. N. KIRPAL)

New Delhi  
July 28, 1998

.....J.  
(V. N. KHARE )

**MAJOR DIFFICULTIES FACED BY MAHANAGAR GAS LIMITED.**

- 1) Amendment of DC rules, 1991 for incorporating the requirement of CNG in existing petrol pumps and independent plots.

MGL explained that the prevailing D.C. Regulations 1991 do not permit opening of CNG outlets in existing petrol pumps, as the maximum permissible electric power as per the DC rules for a petrol filling station and for a petrol filling cum service station is 7.5 K.W. Also the maximum permissible employment is 9. The requirement of electric power for running an on-line CNG station is minimum 75 K.W per On-line compressor and the maximum power required will be 225 K.W. (300 H.P.) Considering a maximum of 3 nos of such compressors can be installed in an existing petrol pump.

MGL informed that an On-line station which is fed through a pipe line network required a minimum of 75 K.W per compressor. However for a daughter booster station which is fed through mobile cascades (cascade is a group of 40/80 cylinders), mounted on L.C. Vs/ Trailers, the requirement of electric power is minimum 30 K.W per booster compressor and a maximum of 90 K.W., considering a maximum of 3 nos of such compressors can be installed in an existing petrol pump.

MGL informed that there was a series of discussions with B.M.C and U.D.D and also a joint survey was carried out at one of the existing CNG outlets.

Based on the information furnished by BMC, MGL informed that the file has been sent along with draft recommendations by B.M.C to Deputy secretary U.D.D on 18th December, 1999 for their necessary action.

However, the exact progress on this matter was not known as the concerned members from UDD & BMC were not present in the meeting. MGL expressed that any further delay in DC rules amendment would seriously affect opening of 5 more outlets proposed by March 2000. MGL mentioned that the NOCs/approvals from BMC for existing outlets mainly 13 CNG outlets which are installed in the existing petrol pumps are still pending for want of DC rules amendment.

MGL informed that the present DC rules do not specify any limits for sound levels for existing petrol stations and hence it was felt that the DC rules should be amended without linking to sound levels. The Chairman suggested that a sound level of 80 dbA, which is the maximum permissible sound level for a 2 wheeler as per CMVR Act, could be considered as the limiting factor. MGL confirmed that this limit of sound level is acceptable as all the compressor enclosures are designed for a maximum sound level of 75 dbA at one meter distance from the compressor enclosure which is also as per international standards. MGL also informed that though the acoustic enclosures are very expensive, they are going ahead with such enclosures for all the compressors to achieve the sound levels of 75 dbA at 1 mtr. Distance. MGL clarified that for proper cooling and ventilation of the compressor unit mounted inside the acoustic enclosure suitable inlet and exit ducts are to be provided on the enclosures which limit further reduction in the sound levels. As desired by Chairman, MGL agreed that they will discuss with the manufacturers of CNG compressors on the possibility of further reduction in sound levels.

MGL suggested that to avoid any ambiguity, the amendment of DC rules 1991 should be clearly spelt out as under :

Existing clause (at Sr.No.XI of DC rules 1991)

Category	Max.permissible power (kw)	Max.permissible employment	Max.permissible floor are (Sq.m)
36) Petrol filling stations in plot size of 30.5 m x 16.75 m and petrol filling and service stations in plot size of 36.5 m x 30.5 m	7.5	9	No limit

Amendment proposed : The above existing clause shall be replaced by amended clause as under :

Category	Max. Permissible power (kw)	Max. Permissible employment	Max. Permissible floor are (Sq.m)	Special conditions, if any.
36 (a) Petrol filling stations in plot size of 30.5 m x 16.75 m and petrol filling and service stations in plot size of 36.5 m x 30.5 m	7.5 KW	9	No limit	NIL
36 (b) Installation of CNG dispensing facilities in existing petrol filling stations and in petrol filling cum service stations as per the requirement of safety guidelines laid down by Chief Controller of Explosives, Nagpur	75 KW per compressor	9	No limit	Maximum permissible sound level is 80 dbA at one meter distance from each compressor enclosure
36(c) Installation of CNG dispensing facilities in independent plots of size 220 sq.mtr or smaller plots but shall meet the requirement of safety guidelines laid down by chief controller of Explosives, Nagpur	75 KW per compressor	9	No limit	Maximum permissible sound level is 80 dbA at one meter distance from each compressor enclosure

2. Single window clearance from BMC for opening of CNG outlets. Also, single window clearance from BMC, preferably within 72 hrs. of application from MGL for road digging permission to lay pipelines  
MGL informed that for opening of CNG outlet in existing petrol pumps and in independent private plots, there has been lot of delays from BMC & CFO. It was desired by MGL that once approval of CCOE is obtained, BMC should not insist on other requirements such as storage licence and other

formalities or else there should be a single window clearance from BMC. Since concerned person from BMC was not available, this matter could not be deliberated upon.

3. Release of BEST depots in South Mumbai, namely, Colaba & backbay bus depot for installation of CNG facilities. Also, release of other BEST depots for CNG outlets

MGL informed that the petrol pumps of OMCs situated in South Mumbai are very congested and there is hardly any space to provide CNG dispensing facilities. Also there is no adequate space to meet the safety guidelines laid down by Chief Controller of Explosives (CCOE), Nagpur. In view of this, MGL informed that they had requested BEST to release BEST depots namely Backbay and Colaba for installation of CNG facilities for refueling of both BEST buses and outside vehicles. However, BEST has refused to release these depots on the grounds that the parking of buses will be affected. Also at Backbay depot, it was clarified by BEST that there is no space along the boundary to allow refueling of outside vehicles. The Chairman requested BEST to relook into Colaba bus depot, as Backbay depot was not found to be feasible. The Chairman informed MGL to explore other BEST bus depots in the suburbs. MGL clarified that a joint survey of all the BEST depots in Mumbai was already carried out and accordingly MGL has requested BEST to release Colaba, Backbay depots in South Mumbai and Oshiwara/Goregaon, Ghatkopar bus depots in the suburbs.

MGL again reiterated that it will not be possible to open CNG outlets in South Mumbai unless BEST Depots/Government land is made available. Chairman asked MGL to locate Government land.

4. Exemption of Custom Duty on imported CNG conversion kits, vehicle cylinders, CNG equipments such as compressors, dispensers, fittings, valves, hoses etc.

MGL informed that total import duty on CNG equipment including CNG kits is exorbitant. It was explained that exemption of custom duties will help MGL to expand their network at a greater speed and also will help vehicle owners as the payback period for CNG conversion will be very less. The Chairman informed that based on the detailed submitted by MGL on the duty structure on CNG kits and cylinders, a proposal has been already sent to Jt. Secretary, Ministry of Finance, New Delhi for exemption of custom duty. The Chairman advised MGL to also submit a proposal to Jt. Secretary for exemption on custom duty on both CNG kits and other CNG equipments.

The Chairman also informed that the matter has also been taken up with GOM for exemption of Sales Tax, Octroi etc. on CNG Kits and Cylinders.

**ANNEXURE VIII**

**RAHUL ASTHANA I.A.S.**  
GENERAL MANAGER

**BRIHAN-MUMBAI ELECTRIC SUPPLY  
& TRANSPORT UNDERTAKING**  
Tel:287 3961 (Per.),2856262 (PBX)  
Fax: 285 1244  
E-mail:gm@bestundertaking.com  
BEST BHAVAN, BEST MARG,  
MUMBAI -400 001.

Ref: No.:DO/GM/8815/2000

February 22, 2000

**Sub: High Court Committee's 3rd Meeting held on 03.02.2000**

Dear Shri Lal

As desired by the High Court Committee, following information pertaining to BEST Undertaking is enclosed in the attached Note.

1. Procurement of CNG buses.
2. Retrofitment of CNG kits on existing buses.
3. BEST's Policy for buses older than 15 years.
4. Bus lanes and synchronised signals for BEST buses.

As regards the custom duty etc. on CNG kits, the details are just received from M/s Ashok Leyland and proposal for exemption for the same is being taken up with State and Central Government Authorities.

With regards,

Yours sincerely,

Sd/-  
**(Rahul Asthana)**

Shri V.M.Lal,  
Transport Commissioner &  
Chairman, High Court Committee,  
4th Floor, Transp.Commr's Office,  
Near Dr.Ambedkar Garden,  
Government Colony, Bandra (East),  
Mumbai 400 051.  
Encl: Note.

**- NOTE -**

The 3rd meeting of the Committee constituted by the High Court, Mumbai to examine, consider and recommend measures to reduce vehicular pollution in Greater Mumbai was held on 3rd February, 2000 in the Chamber of Transport Commissioner. In this meeting, BEST was asked to submit the following information.

1. BEST's policy to replace existing buses with CNG buses.
2. BEST's policy to convert its existing buses to CNG mode by way of retrofitment.
3. BEST's policy about its fleet older than 15 years.

**INFORMATION ASKED BY THE COMMITTEE IS SUBMITTED**

**BELOW-:**

**1. REPLACEMENT OF EXISTING FLEET WITH CNG BUSES-:**

BEST introduced its first CNG mono-fuel bus in service in January 1997 and the second, in June 1997. Eight more buses were put on road between July to September 1998. Today the total fleet of CNG buses of BEST is 10.

Following problems/deficiencies are encountered on these buses:

**1.1 Longer time required for refilling of CNG**

At present a CNG bus needs about 12-15 minutes for refilling as against 2-3 minutes required for a conventional bus. Ashok Leyland has modified one bus to improve the filling time to 8.5 minutes. BEST has requested the firm to improve it to five minutes on all the buses.

1.2 **Low engine life**

It is observed that a CNG engine give 50% life as compared to diesel engines fitted on BEST buses.

1.3 **Unsatisfactory performance of clutch mechanism.**

Hydraulically assisted diaphragm type clutch provided on the CNG buses gets frequently defective and its replacement needs two days.

1.4 **Acute scarcity of spares including imported components.**

Spares are not readily available; some of the components are imported and the chassis manufacturer also is unable to fulfil BEST's requirements.

Solutions are being sought for these problems jointly by BEST and Ashok Leyland. However, no easy and ready solutions are available. In short, the model needs some more time to get stabilised. At present, availability of CNG buses for service is about 85% as against 96% of conventional buses due to the defects mentioned above. BEST is extremely hesitant to increase the number of CNG buses further unless proper and satisfactory solutions of the abovementioned problems are found out by M/s. Ashok Leyland Ltd.

A meeting with the Secretary, Ministry of Surface Transport, regarding pollution control measures in STUs, held in Delhi on 7-2-2000 was attended by BEST. It was reported by DTC in the meeting that it has ten CNG buses in service for about 4 to 5 months and within this period three engines have failed. It was further added that DTC is facing problems of starting trouble, electrical defects and of spare parts on these buses. DTC has stated that it is difficult to agree to the conversion of all vehicles to CNG mode for DTC.

The original plan of BEST about procurement of CNG buses was as follows:-

<b><u>YEAR</u></b>	<b><u>NO. OF CNG BUSES</u></b>
2000-2001	80
2000-2002	50
2000-2003	50
	-----
Total :	180
	-----

Present cost of a CNG chassis is Rs. 14.6 lacs and that of a EURO-1 compliant chassis, Rs. 9.1 lacs.

BEST has received nine CNG chassis from Ashok Leyland Ltd. In Feb. 2000 against a purchase order placed with the firm in March 1999. The firm is carrying out some modifications on one of these chassis in Mumbai to improve fuel-filling time.

Taking into consideration the above-mentioned points, BEST would like to proceed in phased manner with its plans to procure CNG buses till the model gets established. In case the model cannot be improved to the desired level, BEST may have to procure equivalent no. of chassis with EURO-1 complaint diesel engine.

2. **RETROFITMENT OF CNG KIT ON EXISTING CONVENTIONAL BUSES:-**

It has been indicated by Ashok Leyland that a retrofit kit consisting of set of piston cylinder head, CNG gas cylinders, valves, tubing, carburetor, regulator and other items may cost Rs.3.75 lacs plus taxes plus labour totalling approximately Rs.5.50 lacs.

The job of retrofitment is intricate and laborious which demands considerable skill and time. For retrofitment, the present engine has to be removed for modification and has to be tested on test rig before refitting. It is, therefore, highly expensive to convert existing bus to CNG mode.

During the 3rd meeting of the Committee, held in Transport Commissioner's chamber on 3-2-2000, representative of Ashok Leyland Ltd. informed that for the old buses CNG kits cannot be fitted until Automotive Research Association of India approved the same. ARAI will take about 4 to 6 months period for the approval.

During the same meeting, Dr.Pande, Director, Ministry of Environment & Forests, informed that apart from the high cost, technical feasibility of the CNG kit will also have to be checked as the experiment of DTC buses was not found to be satisfactory. Also SIAM representative added that the process of retrofitment of CNG kits on diesel vehicles is a very complex process and its satisfactory functioning cannot be guaranteed.

During the meeting with Secretary, Ministry of Surface Transport regarding pollution control measures in STUs held in Delhi on 7-2-2000 which was attended by BEST, it was stated by DTC that their two engines were converted to CNG mode with imported kits from Italy. Both these engines failed within two to three months after covering about 9000 kms and 6700 kms. Respectively. Investigation of failure revealed that the main cause of engine failure was the high operating temperatures of CNG engine. The engines primarily designed for diesel as fuel are not suitable for CNG as a fuel since

operating temperature of CNG engine is about 200° to 300° C. more than that of diesel engine.

BEST proposes to have 1163 buses in service by 1.4.2003 with a mix of Euro-1 compliant diesel and dedicated CNG engines by way of purchase of new chassis and by retrofitment of Euro-I compliant diesel engines. The major constraints against converting the remaining fleet of about 2345 conventional buses to CNG mode by retrofitment are as follows:

- 2.1 Exorbitantly high initial expenditure of Rs.130 crores to be incurred for such retrofitment at the rate of about Rs.5.5 lacs per bus, if all remaining buses were to be retrofitted to CNG mode.
- 2.2 No definite information whether all types of existing engines can be converted to CNG mode is available so far.
- 2.3 Uncertainty about availability of CNG kits and spares,
- 2.4 Uncertainty about the performance of retrofitted kit.

BEST, therefore, has presently no plans to convert its existing buses to CNG mode by retrofitment. This stand will be reviewed when the chassis manufacturer will offer their retrofitment kit at an affordable price and successfully overcome the deficiencies of existing CNG buses.

In light of the above, it would not be advisable for the Committee to recommend to the High Court that BEST be directed to convert its fleet to CNG. Were the High Court to give us directions, the following acute problems would arise :

a) The failure rate of engines for buses running on CNG is extremely high till such time as this situation is rectified, large scale conversions would result in a corresponding large number of buses being docked for maintenance / overhauling.

b) The cost of CNG kits or new CNG Chassis are prohibitive as compared to EURO 1 or EURO 2 engines. Best would not be able to finance this conversion.

3. **BEST'S POLICY ABOUT BUSES MORE THAN 15 YEARS OLD-:**

BEST Undertaking is operating stage carriage passenger service in the metropolis of Mumbai for more than fifty years and has grown steadily with the city. Presently, it has a fleet of 3458 buses operating in 431 different routes throughout the city. Suburbs and some portion of New Mumbai. BEST buses daily cover more than 7 lacs kilometers and cater to the needs of about 46 lacs passengers. BEST has about 750 chassis, which are older than 15 years. However, it should be pointed out here that the engine of a BESXT bus gets replaced with an overhauled and tested spare unit after about two to three years, In addition periodic replacement of fuel. Injection pump and injectors is carried out at predetermined kilometers once in a year and every bus is produced for RTO passing annually. Due to our maintenance practices smoke level of older buses is not different from that of newer buses. **The concept of age of the buse, is, therefore, not relevant as the engine is replaced on the chassis.** Therefore, older BEST buses need not be withdrawn from road only because of the age of the chassis, as the engines are relatively newer.

Out plan for procurement of chassis for the next three years to replace these vehicles and retrofitment of EURO-1 complaint diesel engines is as follows:-

Financial year	Euro-1 Buses	CNG Buses	Euro-1 Retrofitment	Total
2000-2001	236	80	75	391
2001-2002	114	50	75	239
2002-2003	338	50	75	463
	688	180	225	1,093

On persuing the above, by 1-4-2003, we will have buses with following composition:-

Total No. Of buses with Euro-1 engine	-	963
Total No. Of buses with CNG engines	-	<u>200</u>
Total	-	<u>1163</u>

Thus nearly 33% of the fleet will be with Euro-1/CNG engines.

In addition to the to the above, all the engines purchased after 1-4-2000 for replacement will be Euro-1 compliant engines.

It is evident that because of its financial difficulties, BEST cannot afford to procure sufficient number of new buses in order to withdraw all buses older than fifteen years from service. If the Authority directs to withdraw all its older buses then BEST will have no option but to reduce its bus fleet buy about 20%. This evidently will adversely affect the services and may result in a state of chaos in city of Mumbai.

### **CONCLUSION**

BEST is a forward looking organization committed to the cause of pollution control. For the past several years we are striving hard to offer will maintained buses to the citizens of Mumbai. BEST shares the anxiety of the Committee to reduce pollution level in the City. Our credentials are proved by the following facts:

4.1 Timely and prompt attention to defects and to well-defined PM schedule of buses which keep the smoke level low.

4.2 Introduction of CNG buses for the first time in India in 1997.

4.3 BEST has already started retrofitment on buses of EURO-1 compliant diesel engines on its own.

4.4 BEST is using approved electronic smoke meters in each of its twenty-seven bus depots.

4.5 BEST is striving to keep smoke level of its buses below self-imposed norm of 45 HSU.

4.6 On its own BEST has introduced automatic transmission, automatic lubrication and automatic brake adjuster on some of its new buses which in addition to other advantages, may help contain air pollution.

4.7 BEST introduced AC stage carriage service at affordable rates in Mumbai in 1998 for the first time in India with an intention to offer a good alternative to personalised transport which may reduce congestion and thereby reduce pollution.

**If BEST is compelled to procure only CNG operated buses, it will have no other option left but to procure less number of buses because of its limited financial resources and higher initial price of CNG chassis. This itself will defeat the cause of pollution control because mass transport need to be encouraged in order to limit the personalised transport and thus reduce air pollution. The question of utilising EURO-1 / EURO-II engines instead of CNG should be seriously considered.**

**4. BUS LANE AND SYNCHRONISED SIGNALS:-**

Of late, it has been experienced that our buses are being held up in traffic jams, especially during the peak hours. There is tremendous growth in the no. of Vehicles without any increase in the road network in city of Mumbai. As a result

of growing congestion, the speed of bus has come to 12 kms. Per hour, which in turn has affected mobility standards of public transport in major corridors of the City. It is, therefore, imperative to consider effective traffic measures like BusLanes to ensure faster movement of Bus Transport. The segregation of Bus Lane will help in faster movement of other vehicles also.

Taking into consideration the feasibility based on available width of the specific roads/corridors, we have identified following locations for providing Bus Lanes.

Sr.No	Area suggested for Bus Lane
1	Mahim to Sayani Road Junction via Lady Jamshedji Road & Gokhale Road
2	Leningrad Chowk to HaJi Ali via Appasaheb Marathe Marg & Dr. Annie Besant Road & Lala Lajpatrai Marg.
3	Parel Bridge to J.J. Hospital Junction via Dr. Babasaheb Ambedkar Road
4	Shreyas Cinema Junction to Mulund Check Naka via Lal Bahadur Shastri Marg.

In addition to this, for better vehicular mobility in the above stretches it is also suggested that the traffic signals should be synchronised in such a way that the BEST buses as well as the other vehicles get clearance at the starting point from the Bus Lane (Junction) to the end point of the Bus Lane (Junction). This will help us as well as the Traffic Police for faster clearance of vehicular traffic in these stretches.

-Sd/-

**General Manager**  
**BEST Undertaking**

**ANNEXURE IX**

**A.S.DAYAL & ASSOCIATES**

**Advocates & Solicitors**

Atul S. Dayal  
Advocate & Solicitor

715, Maker Chambers V

Nariman Point, Mumbai 400 021.

Telephone:287 3738

285 6289

Fax 287 2087

**Our Ref: RPL/043/2000**

**14th January, 2000**

V.M.Lall, Esq.  
Chairman  
Nodel Committee  
Transport Commissioner's Office,  
New Administrative Building,  
Bandra Reclamation, Bandra (East)  
Mumbai.

Sir,

Re: IN THE HIGH COURT OF JUDICATURE AT BOMBAY  
ORDINARY ORIGINAL CIVIL JURISDICTION  
WRIT PETITION NO. 1762 OF 1999

Smoke Affected Residents Forum ..Petitioners versus  
Municipal Corporation of Greater Bombay  
and others Respondents

- 
1. We are concerned for Reliance Petroleum Limited, Respondent No.22 in the above matter.
  2. On behalf of our clients, we send herewith the Submissions made to the Esteemed Committee by our clients.
  3. Our clients are willing to furnish any further information or explanation that may be required by the Esteemed Committee on any of the aspects covered in the Submissions.
  4. Our clients also request the Committee to grant them a personal hearing before finalizing the Report to be made to the Hon'ble Court to elucidate some of the aspects of the Submissions made by our clients.
  5. We shall forward five more copies of our client's submission during the course of tomorrow.

Yours faithfully,  
**A.S.Dayal & Associates**

Sd/-

Proprietor

Encl:

E-Mail:Jaidev@bom5.vsnl.net.in

**IN THE HIGH COURT OF JUDICATURE AT BOMBAY  
ORDINARY ORIGINAL CIVIL JURISDICTION  
WRIT PETITION NO.1762 OF 1999**

Smoke Affected Residents' Forum .. Petitioners

V/s

Municipal Corporation of Greater Bombay & Ors .. Respondents

**Submission on behalf of Reliance Petroleum Limited, Respondent Nop.22  
before Shri V.M.Lal Committee:**

1. The Hon'ble Bombay High Court in the matter of **Smoke Affected Residents Forum V Municipal Corporation of Greater Mumbai and others**, impleaded us as respondents in the instant matter, to obtain the benefit of our advice as to the technical feasibility of producing Low Sulphur Diesel and Low Benzene Gasoline. We accordingly put our views before the Hon'ble Court in the affidavit filed before them dtd. 5th Nov 99, a copy of which is annexed hereto as **Appendix 1**. The Affidavit may be treated as a part of our submissions, to the Committee.
2. In recognition of the irreparable damage cause by automobile pollution to the environment and health of citizens, there has been a global move to address the issue. Two leading programmes in this regard were those conducted jointly by the Automobile and Oil Industry ,in the US; under the aegis of AQUIRP (Air Quality Improvement Research Programme) as part of its Auto Oil Programme, 1989-92 and in the European Union; under the aegis of EPEFE (European programme on Emissions, Fuels & Engine Technology, 1993-95), to study the impact of Fuel Quality is required on emissions. Both these studies while establishing the impact of improvement in certain properties of fuel on emissions, concluded that a sustained effort to improve the Fuel Quality in tandem with the development in vehicle Engine technologies.
3. Pursuant to the EPEFE studies, an action plan was drawn in Europe to implement emission and fuel quality norms, more stringent than the previously prevailing emission and fuel quality norms. Sulphur content in Diesel and Benzene content in Gasoline (especially unleaded) were identified as the single most important causes of vehicular pollution. The emission and fuel quality norms have been implemented in the European Union in three stages beginning with Stage 1 (Euro I) in 1993, Stage 2 (Euro II) in 1996/7, Stage 3 (Euro III) in 2000 and Stage 4 (Euro IV) proposed to be implemented in 2005.

4. In the US ,while there has been a cohesive policy followed in different parts of the country which encompasses the issues of engine technology, fuel quality and maintenance and certification, the thrust of the action has been to ensure the use of Reformulated Gasoline (whose specifications include a minimum of 2% oxygen and a maximum of 1% benzene), on a mandatory basis, in the most polluted metropolitan areas.
5. In India, the EU Stage 1 (Euro I) norms will be implemented from 1-4-2000. The Supreme Court has directed the Govt. Agencies to implement Euro I norms in the National Capital Region from 1-6-99 and Euro II norms from 1-4-2000.

### **Diesel**

6. The Automobile manufacturers in India, however, have demanded that they be provided Diesel containing less than 500 ppm Sulphur in order to meet the Euro II norms in line with the European Diesel specs. Oil cos. have already started supplies of low Sulphur Diesel to Delhi Transport Corporation (DTC) bus depots in New Delhi and it is expected that the entire National Capital Region will be supplied with the low Sulphur Diesel (S<500 ppm) from 1-4-2000.
7. The Health Effects Institute has published a series of articles on the effects of Sulphur on the environment and human health, a few of which have been annexed hereto and marked as **Appendix 2-A to 2-D**, namely
  - i) Comparison of the Carcinogenicity of Diesel Exhaust and Carbon Black in Rat Lungs
  - ii) Executive Summary: Diesel Exhaust: Critical Analysis of Emissions, Exposure and Health Effects
  - iii) Synopsis: Effects of Fuel Modification and Emission Control Devices on Heavy Duty Diesel Engine Emissions
  - iv) Statement: Particulate Air Pollution and daily mortality.

The Sulphur content in Diesel has been identified as the single largest contributor of pollution in the EPEFE & AQUIRP studies.

#### **1. Deisel with Low Sulphur content is desirable due to the following reasons;**

- i) Oxidation of Sulphur into SO<sub>2</sub> and SO<sub>3</sub> affects the environment directly. SO<sub>2</sub> and SO<sub>3</sub> are major and hazardous pollutants on their own, these emissions are retained at ground level and on inhalation can cause irritation, exacerbates, asthma and emphysema.

- ii) Sulphur also contributes significantly to the fine particulate matter (PM) emissions through the formation of Sulphates both in the exhaust stream and in the atmosphere. Sulphur in Diesel is also oxidised into Sulphur trioxide (SO<sub>2</sub>). In the exhaust system, SO<sub>3</sub> hydrolyses to form Sulphuric Acid (H<sub>2</sub>SO<sub>4</sub>) which combines with water to form a mist that is exhausted as part of Diesel PM. The smaller particulate emissions of sizes less than 10 pm are respirable and enter the lungs through the breathing process. They stay there for long duration causing respiratory complications such as bronchitis, allergies, coughing etc. and are therefore called Respirable suspended particulate matter (RSPM). The impact of such small particulate emissions on health is a matter of great concern and studies conducted by various medical organisations confirm the same. A study conducted by the Health Effects Institute, which elaborates on the link of PM emissions with Lung Cancer, 'Diesel Emissions and Lung Cancer; Epidemiology and Qualitative Risk Assessment', is annexed hereto and marked as **Appendix 3**.
- iii) Sulphur and Sulphur compounds also react with the catalytic components incorporated within the exhaust aftertreatment devices to form Sulphates that make the catalyst ineffective.

9. Sulphate PM produced by the Engine is directly related to the Fuel Sulphur content and the only way to eliminate such Sulphate PM and ultimately the total PM emitted by the vehicles is to reduce the Sulphur content. In a paper presented by Mr.Sudhir Singhal, Director IIP, Dehradum, on 'Automotive Fuel Quality and Euro Norms - Indian Perspective', (annexed hereto and marked as **Appendix 4**) reference has been made to the effect of reduction in Sulphur content on the overall reduction in particulates. It has been estimated that by reducing sulphur content in the fuel from 0.25% to 0.05% about 13% improvement in the total particulates can be obtained.

10. The use of low sulphur diesel is especially relevant in a country like India, where formal vehicle emission norms were first introduced in an extremely preliminary form in 1991. Though these norms were further upgraded in 1996, India will be implementing the equivalent of Euro I norms only from April 1, 2000. Therefore the majority of the Diesel commercial vehicles on road today, which are registered before 1996, do not conform to any norms on PM. Norms on CO, HC & Nox were also very lenient. Even those vehicles which have been registered after 1996, are not required to meet any norms on PM. This fact has been highlighted in a paper titled 'Fuel Quality Aspects related to Auto Emissions and Challenges ahead' presented by Dr.A.K.Bhatnagar and Mr.N.R.Raje of Indian Oil Corporation Ltd's R&D Centre, is annexed hereto and marked **Appendix 5**. The effects of implementing Euro norms in new vehicles India would be felt only if the majority of vehicles meet the Euro norms. This, however, will take about 15 years. In light of the above it becomes very important to address the

problem of old, in-use vehicles. While the Euro norms addresses the emissions in new vehicles introduction of low Sulphur Diesel together with aftertreatment devices will alone address the problem of emissions from in use vehicles.

11. In the National Capital Region of New Delhi, the Hon'ble the Supreme Court has directed the concerned Departments and Government Agencies to convert the entire fleet of commercial Diesel vehicles running on Diesel to CNG. This is a very cost intensive proposal, since conversion of buses which have compression ignition engines to CNG which require spark ignition engines similar to Gasoline, call for major investments. The entire cost of conversion would amount to about Rs.3.0 lacs per bus. The Delhi Transport Corporation is finding it difficult to fund this conversion. Besides the conversion of engines, it also requires major investments in the CNG pipelines and filling stations. The CNG cylinders loaded on the bus also increases the weight of the bus by about 1.0 MT, this puts additional strain on the old buses which are already overcrowded.

12. Low Sulphur (less than 0.05%) Diesel combined with the use of exhaust after-treatment devices like Oxidation catalysts and soot filters/particulate traps drastically brings down the harmful emissions from vehicles. In addition to the immediate decrease in PM emissions in old vehicles, it is also a cost effective alternative to the use of CNG.

### **Gasoline**

13. Tetra ethyl lead (TEL) was used by the refineries traditionally to boost the Octane number of Gasoline. With the mandatory use of unleaded Gasoline, the alternatives before the refineries are to blend more of Aromatics & Olefins or Oxygenates, which are also Octane Boosters, to fill in the void created by unleading of Gasoline.

- iv) The blending of additional quantities of Olefins, which are unsaturated Hydrocarbons, leads to gum formation and deposits in an engine's intake system. Formation of deposits in the Engine's intake system hampers the engine performance leading to overall increase in emissions of Hydrocarbons (HC) and Carbon Monoxide (CO). Therefore fuel stability and smooth engine operation can be achieved only when the Olefin content in gasoline is maintained at a bare minimum.
- v) The blending of additional quantities of Aromatics results in production of Benzene in the exhaust process by de-alkylation. The ill effects of Benzene are numerous in number and have been elaborated in the

enclosed Affidavit. We reiterate that Benzene is a known Human Carcinogen and causes Leukaemia. It also results in

- vi) the induction of aplastic anaemia and immuno and neuro toxicity.
- vii) Children are more susceptible to the ill effects of Benzene. Hereto annexed and marked **Appendix 6** is a copy Report titled 'Carcinogenic Effects of Benzene: An Update' published by the Environment Protection Agency (EPA) of US in April 98, which gives details of ill effects of Benzene. Besides the Carcinogenic effects, the toxic effects of Benzene are also under various stages of evaluation. The only way to reduce the effect of harmful Benzene emissions is to reduce the Benzene content in Gasoline to less than 1%.
- viii) Oxygenates such as MTBE, ETBE and TAME, while being good Octane Boosters, also help in the reduction of the harmful Carbon monoxide (CO) emissions from the Gasoline vehicles. Carbon monoxide (CO) is known to impair the Oxygen carrying capacity of the blood causing drowsiness, headaches and slow reflexes. The same has been dealt with in detail in two reports prepared by the Health Effects Institute namely:-
  - ix) Carbon Monoxide and Cardiac Arrhythmia
  - x) Carbon Monoxide and Atherosclerosis, which have been enclosed herein as **Appendix 7**.

Thus, introduction of Oxygenated Gasoline (i.e. containing Oxygen content of 2.0% by weight, min) with a Benzene content of less than 1% will help in bringing down the emissions drastically.

### **Alternative Fuels**

14. We would also like to bring the attention of the Committee that use of LPG as a fuel in commercial Gasoline vehicles such as Auto rickshaws & Taxis with petrol engines may be encouraged because the vehicles used in this sector are generally old vehicles (in particular the taxis), they are not properly maintained and there is a tendency to voluntarily adulterate with Kerosene or other available cheap solvents. There have been references made to use of CNG as an auto fuel in the city. The infrastructure requirements for the implementation of the CNG programme would be much more as compared to LPG. The LPG conversion kits are about 3-4 times cheaper as compared to the CNG conversion kits. Adequate availability of CNG for the automobile sector also cannot be ensured at this stage since the existing commercial users having Natural Gas quota are not getting their full requirements. The implementation of LPG in the commercial Gasoline vehicle sector will help in reducing the emissions and improving the

environment. LPG for autorickshaws can be made available in smaller cylinders of 5-8 Kg at most of the locations in the city while

Taxis can ply on bigger cylinders of 15 Kg or so. In the long run LPG filling stations, with a provision to refuel the vehicle's fuel tank directly can be set up, on similar lines as the existing Gasoline filling stations.

15. **Submissions:**

- 2) Combination of improvement in the engine technology and supply of better quality of fuels can only tackle the issue of improvement of Ambient Air Quality. While the implementation of India 2000 (Euro I) emission norms addresses the emission problems of new vehicles, improvement in fuel quality along with the use of exhaust after-treatment devices will alone bring down the emissions in the existing vehicles.
  - 3) Use of Diesel containing less than 0.05% Sulphur and Oxygenated Gasoline containing less than 1% Benzene would immediately bring down the levels of pollution caused by automobile emissions in Mumbai, irrespective of the engine technology of the vehicles using such fuels.
  - 4) Use of LPG may be encouraged in the commercial gasoline vehicles in lieu of CNG.
  - 5) We have already expressed the capability of our Jamnagar Refinery to produce these Clean Fuels in the affidavit made before the Hon'ble High Court.
16. We request the Esteemed Committee to grant us a personal hearing in order to elucidate some of the submissions contained above.

Dated this 14th day of January, 2000.

**ANNEXURE X**

**Ashok Leyland**

BUILDING NO.2,7th FLOOR,  
KHIVRAJ COMPLEX,  
477, 482, ANNA SALAI,  
NANDANAM, CHENNAI-600035  
PHONE (044)4331120  
FAX:(044)4338344.

1st March, 2000.

Dy.Transport Commissioner,  
Maharashtra State,  
Admn.Bldg.,  
Govt.Colony, Bandra (East)  
Mumbai 400 057.

Sub: Meeting of the High Court Committee held on 3rd February 2000

Sir,

We refer to your letter dt.28th February 2000 asking for our comments on the first 3 points mentioned by BEST in their note dt.22nd February 2000 submitted to the high court committee, Mumbai. Our comments are given below.

1. Replacement of existing fleet with CNG buses
- 1.1 Longer filling time required for refilling of CNG

We have made changes to the piping and valves by virtue of which we have reduced the time for filling from 12 - 15 minutes to 8.5minutes. We note BESTs requirement to reduce the time to 5 minutes. We are therefore carrying out additional changes to achieve this target. We expect this exercise to take one month and once accepted we will carry out these changes on all 20 CNG buses plying in BEST as well as on future supply of buses.

- 1.2 Low engine life:

The problems relating to engine life have been investigated and remedial action implemented. We have also provided training to some of the BEST technicians on the maintenance of this new design of engines introduced in their fleet, and are extending this training to cover more maintenance staff. We are confident that the problems will not repeat and have assured BEST that the same warranty terms offered by us to the diesel engines will also be applicable for the CNG engines.

We would also point out that out of the 10 CNG buses, operating in BEST fleet, 2 buses have covered more than 1.5 lakh kms., and the other 8 have crossed 85,000 kms. so far.

### 1.3 Inadequate clutch life:

We have agreed to supply future buses with mechanically operated clutches insted of the hydraulically operated clutches fitted on the CNG buses to assess their suitability under Indian urban driving conditions. The design of the mechanical clutch will be similar to that fitted on BEST fleet.

### 1.4 Acute scarcity of spares including imported components

Out of the 127 items ordered by Best only 11 items are yet to be supplied. These are items imported from our overseas kit suppliers discrete to out chassis and hence the delay. We have urged them to give priority to these items and we have been assured that these will be delivered within 4 weeks. Out of the second order for 91 items received from BEST, we have despatched 72 items and the balance 19 items, which are imported, will be supplied shortly.

Such problems are characteristic of introduction of a new product, in small numbers and once the offtake is regular and in larger numbers these problems will be overcome. We are confident that the availability of CNG buses for service will improve from the present 85% to 96%, on par with the conventional buses, once regular supply chain is established. While appreciating BEST's hesitation to increase the number of CNG buses, we are assuring them that they will not encounter these problems, on the 80 chassis that they propose to order on us during 2000 - 01 which will, in turn, give them the confidence to go for larger number of CNG buses in the future.

### **DTC:**

We would point out that DTC have just commissioned 10 CNG buses and have encountered some problems associated with a new product in operation and maintenance. The engine failure due to overheating was due to inadequate ventilation provided by the body builder for cooling the engine. The electrical problems were due to loosening of cables and other minor defects. These have been overcome and during the last two months the utilisation of the CNG bus is the same as that of the diesel buses in the DTC fleet. DTC have now placed an order on us for 100 CNG bus chassis and we are confident that with the larger offtake of buses, the problems encountered on the initial batch will cease to exist, particularly with the better familiarity of the staff in operation and maintenance of the new product.

## 2. Retrofitment of CNG kit on existing diesel buses:

As stated by the undersigned at the meeting of the High Court committee on 3rd February, 2000 we expect to get the ARAI approval for the conversion kits developed by us and commence supplies within 12/16 weeks from the date of order. While the conversion of a diesel engine to CNG operation is more involved than in the case for a petrol engine, it is still feasible and has been carried out by bus operators in other countries. The unsatisfactory experience of the converted engine in DTC was not related to the kit developed by us and was presumably due to inadequate development and testing of the kit, which, even, if imported, has to be designed to match the engine to which it is to be fitted. We are confident that the kit developed by us will be satisfactory in service as we are adopting the same design standards for a new engine but we can demonstrate this to BEST only after the approvals are received from ARAI.

We have advised BEST that when converting used engines to CNG, the age of the engine be taken into account, to ensure the economic life of the converted CNG engine. We have also informed BEST that it is not possible to convert the double deckers in their fleet to CNG operation because of the non availability of space to accommodate the large number of gas cylinders required to facilitate gas filling only once a day.

Based on these considerations, BEST may wish to indicate the number of engines in their fleet which may be earmarked for conversion to CNG, after their trial exercise. We would point out that our offer to BEST includes the supply of kit and the conversion of the diesel engine to CNG being carried out by Ashok Leyland, and BEST have only to carry out the fitment of the engine and the gas cylinders and other accessories on the bus.

Ashok Leyland has suggested to BEST to consider a retrofit kit fitment on such of those diesel engines in their fleet which are not suitable for conversion to CNG to reduce their exhaust emission. We believe that the rebuild of the old engines using the retrofit kit comprising of the discrete components fitted to our Euro 1 engine, will drastically reduce the atmospheric pollution, and in particular the particulate emissions.

We would comment on the constraints expressed by BEST for the conversion exercise as follows:

1.5 The expenditure for conversion can be reduced by a judicious selection of the engines to converted to CNG, by excluding the very old engines and the double deckers and upgrading the remaining engines by retrofitment of Euro 1 kit.

1.6 AL have informed BEST about the engine models that can be converted to CNG (copy of our letter attached).

1.7 AL will ensure the availability of kits and spares given a sufficient lead time for procurement.

1.8 AL will give a 12 month warranty for the CNG engines converted by AL for BEST.

In the light of the above, we have submitted to BEST a proposal for the most optimal and risk free route for induction of CNG buses in their fleet and will be discussing our proposal with them on 6th March (copy of our letter attached).

We share BEST's concern about the high cost of the bus which is a major hurdle for its acceptance. We believe that this is an area which calls for some financial incentives from the Govt., considering the superior emission performance of CNG vehicles and their significant contribution to air quality and reduced health costs to the Society. We enclose a copy of recent issue of the European Fuel News which indicates the Govt. initiatives and support for induction of CNG buses in many countries of even the developed world.

We would therefore recommend the following package of incentives:  
Incentives for operation of CNG buses

1. Budgetary allocation to purchase 200-250 CNG buses annually (corporation)
2. Grant of Rs. 1.00 lakh for every new CNG bus purchase for the next 5 years (State govt.)
3. Reduction of Sales tax on chassis by the same percentage as the increase in cost, so that there is not loss of revenue to the exchequer, though there is no gain due to higher product costs. (State Govt.)
4. If the above are not possible, a fare increase of 7 paise/pass. Km for the next 5 years across the board will help recover the cost. (Corporation)
5. Maintaining the present price differential of 30% between CNG/Kg and diesel / litre (Mahanagar Gas Ltd.)
6. 5% price differential on price of CNG for bus operation as compared to other vehicles (Use of CNG on petrol drive vehicles results in reduced fuel costs , whereas on diesel buses there is an increase in cost due to drop in fuel efficiency of the CNG engine compared to diesel and increase in vehicle unladen wt. of nearly 1 ton due to the heavy gas storage cylinders for CNG.
7. Road Tax reduction (State Govt.).

**3. BEST's policy about buses more than 15 years old**

We agree that the replacement of the engine on old buses by new engines improves the emission performance of the old buses. However, conversion to CNG or replacement of an old engine by a Euro1 engine will significantly reduce the pollution from these buses. We enclose a statement showing the reduction of pollution that will result from a judicious mix of new CNG buses / conversion CNG engines upgraded Euro1 engines.

Conclusion:

In conclusion, we would state that the changeover to CNG as fuel for urban buses represents the easiest and probably the least cost route for drastically reducing the

emissions from the buses in cities where supply of CNG is feasible, as in Mumbai and Delhi.

The nearest diesel bus option readily available is Euro 2 but it still has 10 times more particulate emission compared to CNG (Euro-2 - PM .15gm/kw.hr. CNG - PM .014 gm/kw.hr). Even at Euro 3 level, the particulate emission limit is 0.1 gm/kw .hr. And at Euro 4 level it is expected to be .05 gm/kw.hr. Thus, the estimated increase in product cost for reducing .1 gm of particulate from Euro 2 to Euro 3 level is as high as Rs.3,00,000whereas for the CNG engine it works out to approximately Rs.1,00,000. Further, CNG is acknowledged as a clean fuel and cannot be adulterated or pilfered. Its toxic hydrocarbon emission are lower than for diesel as also its ozone forming potential due to its lower No. and HC emissions. Though, CNG is considered a greenhouse gas, the amount of methane present in the exhaust gas is quite small and is only slightly inferior to diesel when considering the well-to-wheel' emission.

The following enclosures provided information about CNG as an alternate fuel particularly from environmental considerations.

1. AL - CNG engine - emission performance
2. Typical exhaust emission levels for various types of gas engine (13 Mode Test cycle) - Concawe Report 2/95
3. Co2 emissions during fuel production - concawe Report - 2/95
4. Fuel options for controlling emissions - World Bank Report
5. The cleaner choice
6. Heavy duty emissions - Report by Mr Richard Kassel
7. CNG clean fuel for the future - paper submitted by Mr. M Natraj at the TERI conference
8. Natural Gas fuels - Copy of issue dt. January 2000

Yours Faithfully,

Sd/-

R.Ramakrishnan.

# T A T A

14th January, 2000

**Shri V.M.Lal**  
Transport Commissioner  
Government of Maharashtra  
Kalanagar, Bandra,  
Mumbai 400 051.

Dear Sir,

Re: Order dated 15th December, 1999 passed by the Hon'ble Bombay High Court in Writ Petition No.1762 of 1999 (Smoke Affected Residents Forum V/s Municipal Corporation of Greater Bombay and Others)

1. We are making this representation and furnishing the following information pursuant to the liberty granted to us by the Hon'ble Bombay High Court by its order dated 15th December 1999. M/s TATA Engineering are Respondent No.23 in the abovementioned Writ Petition. Our representation and information furnished is in respect of the issues raised in para 3 (B)(2) of the Order dated 15th December, 1999.

2. TATA ENGINEERING is the largest manufacturers of trucks and buses in India (92,500 trucks and buses in the year 1998-1999) and a large manufacturer of motor cars and multi-utility vehicles (37,000 in the year:1998-1999). In December 1998, TATA ENGINEERING launched a new indigenously made car called the "Indica" (in which it had invested an amount of Rs.1700 crores), which is the first truly indigenously manufactured car to compete with the various models of car which are being manufactured in India by foreign car manufacturers. Indica was manufactured to meet Euro-I norms in regard to emission controls, though none of the other manufacturers of similar model cars was meeting Euro-I standards at the time. This was because TATA ENGINEERING is an extremely environment conscious Company and desire that there vehicles meet the highest emission control standards.

3. As a large manufacturer and distributor of different kinds of vehicles including trucks, buses, multi-utility vehicles, cars, etc., TATA ENGINEERING

TATA ENGINEERING  
Tata Engineering and Locomotive Company Limited  
Bombay House, 24 Homi Mody Street, Mumbai 400 001.  
Tel 91222049131, Fax 91222045474

has a large Research & Development Department, which spends a great deal of money and time on research in order to produce vehicles which are environment friendly. TATA ENGINEERING is therefore in a position to assist this Honorable Committee in devising methods in order to check and improve the Ambient Air-quality of Mumbai. Following are some of the recommendations in this regard.

**6. Desirability and feasibility of converting the existing buses/taxis to CNG**

It may not be desirable to convert the old buses to CNG in view of addition of about a ton of load to be placed on the old structure. It may be pointed out that there is an option to the above in respect to the Tata Engineering buses of 1984 to 1992 vintage viz. Converting existing buses to meet CMVR 1996 norms by reconditioning them with suitable upgradation. The changes entail :-

- New assembly cylinder head
- Port swirl, round exhaust port, modified valve depth and new valve guide seats
- New exhaust Manifold
- Reconditioning of cylinder block, where needed
- New type piston rings
- Recalibration of fuel injection pump
- New low sac volume injectors (nozzle)

The cost for the retrofitment to bring the old engines to CMVR 1996 emission standards would be around Rs.20,000 - Rs.25,000 per vehicle (TATA Engineering), which is much cheaper than a conversion to CNG, which would cost approximately Rs.6 lakhs.

These improvements will lead to about 30% reduction in emissions from the old in-use vehicles.

We trust that the above information and recommendations made by us will prove to be useful to the Hon'ble Committee. Should the Hon'ble Committee require any clarification in respect of the above, or any other matter, kindly feel free to contact us at the above mentioned phone numbers and we shall be happy to furnish you with the necessary clarifications, as also appear before you.

Thanking you,

Yours faithfully,

Tata Engineering & Locomotive Co.Ltd.  
Sd/-  
H.Rohinesh  
Sr.Dy.Gen.Manager (Law).

**ANNEXURE XII**

Dr.M.Koteeswaran,  
Executive Director

No.ASRTU/ED/363

13th March,2000.

Dear Shri Lal,

Thank you for your fax dated 11-3-2000. I am enclosing a brief note on the issue raised in the reference. I trust this will be some use

I request you to kindly treat the enclosed notes as ASRTU's representation before the Committee under para 3 (iii & iv).

With Kind Regards,

Yours sincerely,

Sd/-  
(M.KOTEESWARAN)

Encl: As above

Shri V.M.Lal  
Transport Commissioner  
Administrative Building,  
4th Floor, Govt. Colony,  
Bandra (East),  
MUMBAI.

**Association of State Road Transport Undertakings**  
7/6, Sirifort Institutional Area, Khel Gaon Marg, New Delhi-110049  
Phone : 6499791 (Direct), 6496864, 6498019, 6499784/85/86  
FAX : 91-11-6491137 E-mail: asrtu@de 12.vsnl.net.in

**(C) Desirability and feasibility of converting the existing buses and taxis to CNG**

The existing petrol vehicles can use natural gas by installing bifuel conversion kits and the converted vehicles will have flexibility of operation either on CNG or on Petrol. Conversion of diesel engines in dual-fuel mode is more complex and costly. The dedicated CNG vehicles appear to be a better option than conversion. On energy equivalent basis, natural gas costs approximately one third of the cost of the gasoline. However, in case of diesel vehicles, the advantage does not appear to be significant.

At present, CNG kits have been developed and type approved for the following four wheeler petrol vehicles:

Maruti 800, Maruti Van, Maruti Zen, Maruti Gypsy, Premier Padmini , Premier 118NE, Contessa Car, Ambassador Nova, Ambassador Isuzu, Cielo and three wheeler petrol Bajaj Autorickshaw. Apart from the above M/s Hindustan Motors have already launched factory fitted CNG Ambassador Cars.

So far as diesel buses are concerned, Ashok Leyland have assured to make available CNG conversion kits for converting the existing diesel buses. M/s TELCO informed that it was not desirable to convert their existing Tata engines into CNG. In the Delhi Transport Corporation (DTC), M/s Ashok Leyland have offered to convert their existing Leyland engines into CNG mode at a cost of Rs.3 lakhs. Some private parties have also been offering conversion of the DTC buses at almost the same price. But the experience of DTC with regard to the performance of the diesel engines converted to CNG mode was not satisfactory. Two engines converted by the private firm had failed within 6000 to 9000 kms.. As against DTC's order for 10 vehicles for conversion by M/s Ashok Leyland, three engines failed but Ashok Leyland replaced them. These vehicles were also suffering from electrical problems and starting troubles. The conversion cost was about Rs.3 lakh per engine. The BEST also faced similar maintenance problems as in DTC. However they propose to increase the CNG dedicated Ashok Leyland buses from its present strength of 10 by adding 30, 60, 50 and 50 CNG buses during the next four years.

The situation is, the cost of diesel buses is about Rs.8 lakh and conversion costs another Rs.3 lakh. The CNG dedicated bus may cost around Rs.1.3 million. The conversion of the petrol cars is estimated to cost only around Rs.50,000/-. In respect of petrol vehicles, major advantage arises from change over of fuel from petrol to CNG. Hence it is popular. Therefore, conversion of existing taxis to CNG would automatically expand with that of easy availability of CNG and without any subsidy as an economic decision for the private operators. The conversion of existing buses into CNG is not desirable though feasible.

--

**TATA**

March 8, 2000

Fax: 6414901

To

Transport Commissioner  
Maharashtra State,  
Mumbai.

Kind Attn: Mr.S.D.Sahasrabudhe  
Dy.Transport Commissioner

Sub: Supply of Euro II compliant engines by TELCO

Dear Sir,

This is with reference to your letter PUC2000/D-II(B)/2(15)/ON-3348 dated 8th March, 2000. We hereby confirm that, TELCO can supply Euro-II compliant diesel engined chassis in 4 to 6 months time from the date of order.

Regards

Sd/-  
Jairam Ramnath

**TATA ENGINEERING**

Tata Engineering and Locomotive Company Limited  
Bombay House 24 Homi Mody Street, Mumbai 400 001  
Tel 91 22 204 9131 Fax: 91 22 204 5474

**SUPPLEMENTARY AMENDMENT  
CENTRAL MOTOR VEHICLES (AMENDMENT)  
RULES, 1997**

G.S.R. 493 (E), dated the 28th August, 1997 - Whereas the draft of certain rules further to the Central Motor Vehicles Rules, 1989 was published as required by the sub-section (1) of Sec. 212 of the Motor Vehicle Act, 1988 (59 of 1988) in the *Gazette of India*, *Extraordinary*, Pt. II, Sec. 3, sub-section (i), dated the 18th March, 1997 with the notification of Government of India in the Ministry of Surface Transport (Transport Wing) No. G.S.R. 153 (E), dated 18th March, 1997 inviting objections and suggestions from all persons likely to be affected thereby within a period of 45 days from the date on which copies of the *Gazette of India* containing the Notification are made available to the public;

And whereas copies of the said *Gazette* were made available to the public on 31st March, 1997.

And whereas, the objections and suggestions received have been considered by the Central Government.

Now, therefore, in exercise of the powers conferred by sub-section (1) of sec. 110 of the said Act, the Central Government, in consultation with the Ministry of Environment and Forests, hereby makes the following rules further to amend the Central Motor Vehicles Rules, 1989, namely :

1.(1) These rules may be called the Central Motor Vehicles (Amendment) Rules, 1997.

(2) They shall come into force from the 1st day of April, 2000.

2. In the Central Motor Vehicles Rules, 1989 (hereinafter referred to as the principal rules) in rule 115, after sub-rule (9), the following sub-rule shall be inserted, namely :-

“(10) MASS EMISSION STANDARDS FOR VEHICLES  
MANUFACTURED ON AND AFTER 1ST APRIL, 2000.

**A. FOR PETROL DRIVEN VEHICLES**

1	PASSENGER CARS	CO (g/km)	HC + NO <sub>x</sub> (g/km)
	Type Approval	2.72	0.97
	Conformity of Production	3.16	1.13

**NOTES :-**

The test shall be as per the modified Indian Driving Cycle, with cold start, as specified in Annexure IV-B, on chassis Dynamometer.

There should be no crankcase emission.

Evaporative emission should not be more than 2.0 g/test.

For vehicles fitted with catalytic converter, a deterioration factor of 1.2 on Type Approval Limits will be applicable for durability.

Commercial fuel shall be as notified by the Ministry of Environment and Forests *vide* Notification No. G.S.R. 176 (E), dated the 2nd April, 1996.

Reference test fuel shall be as specified in Annexure IV-C

2-Wheeler and 3-Wheeler	CO (g/km)		HC + NO <sub>x</sub> (g/km)	
	2-Wheeler	3-Wheeler	2-Wheeler	3-Wheeler
Type Approval	2	4	2	2
Conformity of Production	2.4	4.8	2.4	2.4

**NOTES :-**

The test shall be as per the Indian Driving Cycle, with cold start on Chassis Dynamometer as specified in annexure IV-B to the principal rules.

Commercial fuel shall be as notified by Ministry of Environment and Forests *vide* Notification No. G.S.R. 176 (E), dated 2nd April, 1996.

Reference test fuel shall be as specified in Annexure IV-C.

**B. FOR DIESEL VEHICLES (INCLUDING TWO AND THREE WHEELERS)**

**I. Vehicles with GVW exceeding 3.5 ton**

Pollutants	Limits for	
	Type Approval	Conformity of Production
CO (g/kWh)	4.5	4.9
HC (g/kWh)	1.1	1.23
NO (g/kWh)	8	9
PM (g/kWh) for engines with power exceeding 85 kW	0.36	0.4
PM (g/kWh) for engines with power not exceeding 85 kW	0.36	0.4

**II. Vehicles with GVW equal to or less than 3.5 ton**

Pollutants	Limits for	
	Type Approval	Conformity of Production
CO (g/kWh)	4.5	4.9
HC (g/kWh)	1.1	1.23
NO (g/kWh)	8	9
PM (g/kWh) for engines with power exceeding 85 kW	0.36	0.4
PM (g/kWh) for engines with power not exceeding 85 kW	0.61	0.68

### OR Chassis Dynamometer Test

Reference Mass (kg)	Limits for Type Approval gm/km			Limits for conformity of Production gm/km		
	CO	HC + Nox	PM	CO	HC + Nox	PM
$R \leq 1250$	2.72	0.97	0.14	3.16	1.13	0.18
$1250 < R \leq 1700$	5.17	1.4	0.19	6	1.6	0.22
$1700 < R$	6.9	1.7	0.25	8	2	0.29

#### NOTES :-

The test for vehicles with GVW equal to or less than 3.5 ton shall be as per the 13 mode cycle on engine dynamometer specified in Annexure-IV-A to the principal rules.

The test shall be as per the Indian driving cycle, for 2 Wheeler and 3 Wheelers and modified Indian Driving Cycle for 4 wheelers with cold start, as specified in Annexure IV-B on Chassis Dynamometer.

For Vehicles fitted with catalytic converters a deterioration factor 1.1 of CO; 1.0 for HC+NOx and 1.2 for PM on type approval limits will be applicable for durability.

The emission of visible pollutants (smoke) shall not exceed the limit value to smoke density, when expressed as light absorption co-efficient for various nominal flows as in Annexure-1 to rule 115 (9) Notification No. G.S.R. 163 (E), dt. 29 March 1996, when tested at constant speeds over full load. This smoke-limits are without correction factor and engine are to be tested with conditioned air supplied to the engine to maintain atmospheric factor of 0.98 to 1.02.

Commercial fuel shall be as notified by Ministry of Environment and Forest *vide* Notification No. G.S. R. 176 (E), dt. 2nd April, 1996.

Reference test fuel shall be as specified in Annexure IV-D”

2. In the principal rules, after the Annexure IV-A, the following shall be inserted namely:-

**“ANNEXURE IV-B**

*(See rule 115 (10))*

**DRIVING CYCLES AND COLD START**

**A. For all 2 and 3 Wheeler except diesel vehicles :**

**Cold Start Procedures :**

Test Cell Conditions	
Soak Temperature	20 <sup>0</sup> - 30 <sup>0</sup> C
Soak Period	Soak Period
Soak Period	Soak Period
Number of test cycles	6
Break down of cycles	Indian Driving Cycles as per Annexure II to principal rules.

**B. For all other vehicles including diesel 2,3 and 4- Wheeler :-**

**Cold Start Procedure :-**

Soak Temperature	20 <sup>0</sup> - 30 <sup>0</sup> C
Soak Period	6-30 hrs
Preparatory running before sampling	Idling of 40 seconds
Number of test cycles *	4 cycles of Part one and I cycles of Part two
Break down of cycles *	Modified Indian Driving Cycles as per Tables I and II

\* For diesel 2 & 3 Wheelers

Number of test cycles - 6

Break down of cycles - Indian Driving Cycle.

As per Annexure-II to principal rules.

**MODIFIED INDIAN DRIVING CYCLE FOR YEAR 2000**  
**TABLE-I : Operating cycle on the Chassis Dynamometer (Part one)**

No. of operation	Operation	Phase	Acceleration (m/s <sup>2</sup> )	Speed (km/h)	Duration of each		Cumulative time (s)	Gear to be used in the case of manual gear box
					Operation (s)	Phase (s)		
1	idling	1			11	11	11	6s PM+5s K <sub>1</sub> (*)
2	Acceleration	2	1.04	0-15	4	4	15	1
3	Steady speed	3		15	8	8	23	1
4	Deceleration	}	-0.69	15-10	2	}	25	1
5	Deceleration, clutch disengaged	} 4 }	-0.92	10-0	3	} 5 }	28	K <sub>1</sub> (*)
6	Idling	5			21	21	49	16s PM+5s K <sub>1</sub> (*)
7	Acceleration	}	0.83	0-15	5	}	54	1
8	Gear change	} 6			2	} 12	56	
9	Acceleration	}	0.94	15-32	5	}	61	2
10	Steady speed	7		32	24	24	85	2
11	Deceleration	}	-0.75	32-10	8	}	93	2
12	Deceleration, clutch disengaged	} 8 }	-0.92	10-0	3	} 11 }	96	K <sub>2</sub> (*)
13	Idling	9			21	21	117	16sPM+

								5s K <sub>1</sub> (*)
14	Acceleration	}	0.83	0-15	5	}	122	1
15	Gear change	}			2	}	124	
16	Acceleration	} 10	0.62	15-35	9	} 26	133	2
17	Gear change	}			2	}	135	
18	Acceleration	}	0.52	35-50	8	}	143	3
19	Steady speed	11		50	12	12	155	3
20	Deceleration	12	-0.52	50-35	8	8	163	3
21	Steady speed	13		35	13	13	176	3
22	Gear change	}			2	}	178	
23	Deceleration	} 14	-0.86	32-10	7	} 12	185	2
24	Deceleration, clutch disengaged	} }	-0.92	10-0	3	} }	188	K <sub>2</sub> (*)
25	Idling	15			7	7	195	7sPM (*)

(\*) PM = Gear box in neutral, clutch engaged

K<sub>1</sub>, K<sub>2</sub> = First or second gear engaged, clutch disengaged

**MODIFIED INDIAN DRIVING CYCLE FOR YEAR 2000**  
**TABLE-II : Operating cycle on the Chassis Dynamometer (Part two)**

No. of Operation	Operation	Phase	Acceleration on (m/s <sup>2</sup> )	Speed (km/h)	Duration of each		Cumulative time (s)	Gear to be used in the case of manual gear box
					Operation (s)	Phase (s)		
1	Idling	1			20	20	20	K <sub>1</sub> (*)
2	Acceleration	}	0.83	0-15	5	}	25	1
3	Gear change	}			2	}	27	
4	Acceleration	}	0.62	15-35	9	}	36	2
5	Gear change	} 2			2	} 41	38	
6	Acceleration	}	0.52	35-50	8	}	46	3
7	Gear change	}			2	}	48	
8	Acceleration	}	0.43	50-70	13	}	61	4
9	Steady speed	3		70	50	50	111	5
10	Deceleration	4	-0.69	70-50	8	8	119	4s.5+4s.4
11	Steady speed	5		50	69	69	188	4
12	Acceleration	6	0.43	50-70	13	13	201	4
13	Steady speed	7		70	50	50	251	5
14	Acceleration	8	0.24	70-90	24	24	275	5
15	Steady speed	9		90	83	83	358	5
16	Deceleration	}	-0.69	90-80	4	}	362	5
17	Deceleration	} 10	-1.04	80-50	8	} 22	370	5
18	Deceleration	}	-1.39	50-00	10	}	380	K <sub>5</sub> (*)
19	Idling	11			20	20	400	PM(*)

(\*) PM = Gear Box in neutral, clutch engaged  
K<sub>1</sub>, K<sub>2</sub> = First or fifth gear engaged, clutch disengaged

**ANNEXURE IV-C**  
(SEE RULE 115 (10))  
**REFERENCE FUEL PETROL**

	<b>Minimum</b>	<b>Maximum</b>	<b>ASTM Method</b>
Research Octane Number	95		D 2699
Motor Octane Number	85		D 2700
Density at 150C (kg/l)	0.75	0.76	D 1298
Reid Vapour pressure	0.56 bar	0.64	D 323
<b>Distillation :</b>			
Initial boiling point	24 <sup>0</sup> C	40 <sup>0</sup> C	D 86
10% vol. point	42 <sup>0</sup> C	58 <sup>0</sup> C	
50% vol. point	90 <sup>0</sup> C	110 <sup>0</sup> C	
90% vol. point	155 <sup>0</sup> C	180 <sup>0</sup> C	
Final boiling point	190 <sup>0</sup> C	215 <sup>0</sup> C	
Residue		2%	D 86
<b>Hydrocarbon Analysis :</b>			
Olefins		20% vol.	D 1319
Aromatics	(Including max. 5% vol. Benzene) *	45% vol.	(*) D 3606/D 2267
Saturates	balance		D 1319
Oxidation Stability	480 minutes		D525
Existent Gum		4mg/100ml.	D381
Sulphur Content		0.04% mass	D 1266/D 2622/D 2785
Copper Corrosion at 500C			D130
Lead Content		0.005 g/ltr	D3237
Phosphorous Content		0.0013 g/ltr	D3231

**\*Addition of oxygenates prohibited.**

**ANNEXURE IV-D**  
(See rule 115 (10))  
**REFERENCE FUEL DIESEL**

	<b>Minimum</b>	<b>Maximum</b>	<b>ASTM Method</b>
Cetane Number	49	53	D 613
Density at 15 <sup>0</sup> C (kg/l)	0.83	0.84	D 1298
Distillation			D 86
50% point	245 <sup>0</sup> C		
90% point	320 <sup>0</sup> C	340 <sup>0</sup> C	
Final boiling point		370 <sup>0</sup> C	
Flash point	55 <sup>0</sup> C		D 93
CFPP		(-) 5 <sup>0</sup> C	EN 116 (CEN)
Viscosity at 40 <sup>0</sup> C	2.5 mm <sup>2</sup> /s	3.5 mm <sup>2</sup> /s	D 445
Sulphur content	To be reported	0.3% mass	D 1266/D 2622/ D 2785
Copper corrosion		1	D 130
Conradson carbon residue (10%DR)		0.2% mass	D 189
Ash content		0.05% mass	D 482
Water content		0.20 mg/KOH/g	D 95/D 1744
Neutralization (strong acid) No.		2.5 mg/100 ml.	
Oxidation Stability			D 2274
Additives	*		

**\* It must not contain any metallic additives or cetane improver additives.”**

( K. R. Bhati)  
Joint Secretary to the Govt. of India.

**ANNEXTURE XV**

**MINISTRY OF SURFACE TRANSPORT  
(Transport Wing)  
NOTIFICATION  
New Delhi , the 31st January 2000.**

**G.S.R. 77(E)** - whereas the Supreme Court of India vide its order dated 29<sup>th</sup> April 1999 and 13<sup>th</sup> May 1999 in the matter of Writ Petition No. 13029/85 M.C.Mehta vs. Union of India has directed that in the National Capital Region from 01<sup>st</sup> April 2000 no vehicle shall be registered unless it conforms to EURO II norms ;

And Whereas the Central Government has to take steps to implement the aforesaid orders of the Hon'ble Supreme Court;

And Whereas the draft of certain rules further to amend the Central Motor Vehicle Rules, 1989 was published as required by sub-section (1) of section 212 of the Motor Vehicles Act, 1988 (59 of 1988) in the Gazette of India, Extraordinary, Part II Section 3, Sub-section (i) dated the 01st October, 1999 with the notification of Government of India in the Ministry of Surface Transport (Transport Wing), No. G.S.R. 681 (E) dated 01<sup>st</sup> October, 1999 inviting objections and suggestions from all persons likely to be affected thereby within a period of Forty-five days from the date on which copies of the Gazette of India containing the notification are made available to the public;

And whereas copies of the said Gazette were made available to the public on 04<sup>th</sup> October , 1999.

And whereas , the objections and suggestions recieved from the public have been considered by the Central Government.

Now, therefore, in exercise of the powers conferred by Sections 12, 27, 64, sub-section (14) of section 88, sections 110, 137, 164 and 206 read with section 211 of the Motor Vehicle Act, 1988 (59 of 1988), the Central Government hereby

makes the following rules further to amend the Central Motor Vehicles Rules, 1989, namely:-

1. (1) These rules may be called the Central Motor Vehicles (3rd Amendment) Rules, 2000.
- (2) They shall come into force :-
  - (a) in the National Capital Region, on and from 1<sup>st</sup> April 2000, and
  - (b) in other areas of the country, from such date as may be notified by the Central Government.
2. In the Central Motor Vehicles Rules, 1989, in rule 115 after sub-rule (10), the following sub-rule shall be inserted, namely :-

“(11) Mass Emission Standards (Bharat Stage-II)” :-

(A) Motor Cars with seating capacity of and upto 6 persons (including driver) and Gross Vehicle Mass (GVM) not exceeding 2500 kg.

Vehicles with	Standrads (Type Approval = COP) (g/km)		
	CO	(HC + Nox)	PM
Gasoline engine	2.2	0.5	--
Diesel engine	1	0.7	0.08

(B) Four-Wheeler Pasenger Vehicles with GVW equal to or less than 3500 kg and designed to carry more than 6 persons (including driver) or maximum mass of which exceeds 2500 kg.

		Limit Values for Type Approval (TA) as well as COP				
Clas s	Ref. Mass (rw) Kg	Mass of CO (g/km)		Mass of HC + NOx (g/km)		Mass of PM(g/km)
		Gasolin e	Diesel	Gasolin e	Diesel	Diesel
I	rw < 1250	2.2	1	0.5	0.7	0.08
II	1250 < rw < 1700	4	1.25	0.6	1	0.12
III	1700 < rw	5	1.5	0.7	1.2	0.17

NOTES :-

1. The test including driving cycle shall be as per sub-rule (10) with the modifications that :-
  - (i) there shall be no relaxation of norms for COP purposes,
  - (ii) the tests shall be on Chassis dynamometer,
  - (iii) The driving cycle shall be at a maximum speed of 90 Km/h and
  - (iv) The reference fuel shall be of a maximum of 0.05 % sulphur content.
2. Commercial fuel for meeting above norms shall be upto 0.05 % mass maximum sulphur content.
3. There shall be no crankcase emissions for petrol driven vehicles
4. Evaporative emission shall not be more than 2.0 g/test from petrol driven vehicles.
  
5. For the above vehicles when fitted with catalytic convertor deterioration factor shall be as follows :-

Gasoline engines : CO = 1.2; (HC + Nox) = 1.2;

Diesel engines : CO = 1.1; (HC + Nox) = 1.0; PM = 1.2.

Provided that the vehicle manufactures may opt for an aging test of 80,000 kms for evaluating deterioration factor, as per procedure that may be laid down by the Central Government.
6. For diesel engine vehicle, the emission of visible pollutants (smoke) shall not exceed the limit value to smoke density, when expressed as light absorption coefficient for various nominal flows as in Annexure-1 to Rule 115(9) when tested at constant speeds over full load.

(F.No RT.11011/9/99 - MVL)

ASHOKE JOSHI, Secy.

**NOTIFICATION**

Home Department  
Mantralaya,  
Mumbai 400 032.

Dated the 13th May, 1999.

Motor  
Vehicles  
Act, 1988.

No. MVR-1694/1855/CR-109/TRA-2- The following draft of rules further to amend the Maharashtra Motor Vehicles Rules, 1989, which the Government of Maharashtra proposed to make in exercise of the powers conferred under clause (h) of sub-section (2) of section 28; Clauses (iv),(vi),(vii),(viii),(ix),(xiv),(xv),(xvi),(xvii),(xviii),(xix), (xxx) ,(xxxi), and (xxxiii) of sub section (2) of section 96 and sub section (1) and clauses (a) and (e) of sub section (2) of section 111 of the Motor Vehicles Act, 1988 (59 of 1988 ) and of all other powers enabling it in this behalf, is hereby published as required by sub section (1) of section 212 of the said Act, for the information of all persons likely to be affected thereby; and notice is hereby given that the said draft will be taken into the consideration by the Government of Maharashtra on the expiry of thirty days from the date of its publication in the Maharashtra Government Gazette.

2. Any objection or suggestions, which may be received by the Principal Secretary to the Government of Maharashtra, Home Department, (Transport and Excise ) Mantralaya, Mumbai 400 032, from any person with respect to the said draft before the expiry of the aforesaid period will be considered by Government.

**DRAFT RULES**

1. These rules may be called the Maharashtra Motor Vehicles (Amendment), Rules, 1999.
2. After rule 21 of the Maharashtra Motor Vehicles Rules, 1989, (hereinafter referred as the "principal rules") the following rule shall be inserted, namely:-  
"21(A), Rules for conduct and duties of drivers of Maxi Cabs.
  - 1) A driver of Maxi cab shall not cause or allow

any person, animal or thing to be in the space reserved for the driver's seat in accordance with rule 175 or otherwise in such a way as to impede him in having a clear vision of the road or proper control of the vehicle.

2) No driver of Maxicab shall shout in order to attract a passenger.

3) A driver of a maxi cab shall at all times, exercise all reasonable care and diligence to maintain his vehicle in a fit and proper condition and shall not knowingly drive the vehicle when it or any brake, tyre or lamp thereof is in a defective condition, likely to endanger any passenger or other person or when there is not sufficient fuel in the tank of the vehicle to enable him to reach the next fuel filling station on the route.

4) A driver of a Maxi Cab shall not smoke while on duty.

5) A driver of a maxi cab shall behave in a civil and orderly manner to passengers and others.

6) A driver of a maxi cab shall be cleanly dressed and shall wear a grey shirt or bush shirt and grey trousers.

7) A driver of maxi cab while on duty shall display his badge issued under rule 4 read with rule 24 on his left chest and his name in Marathi sewn above the badge on a black strip of cloth of the size of 9cm X 3 cm in white thread.

8) A driver of a maxi cab shall maintain the vehicle in a clean and sanitary condition.

9) No driver of maxi cab shall solicit customer except in a civil and quiet manner; nor shall he in any way interfere with any person boarding or preparing to board another vehicle.

10) A driver of a maxi cab shall in the event of the vehicle being unable to proceed to its destination on account of mechanical breakdown or other cause beyond his control, make bonafide efforts to arrange to convey the passengers to their destination and on his failure to so arrange to do so within a reasonable time, he shall on demand refund to each of the passenger the proportionate amount of fare relating to the completion of journey for which the passenger had paid the fare.

11) A driver of a maxi cab shall not hold more than one badge issued by an authority.

- 12) A driver of a maxi cab shall, if at any time, the authorisation of his driving licence entitling him to drive a maxi cab is suspended or revoked by any authority or by any Court or ceases to be valid by the efflux of time, surrender the badge within seven days to the issuing authority.
- 13) A driver of a maxi cab shall, on demand by any Police Officer in Uniform or any Officer of the Motor Vehicles Department not below the rank of an Assistant Inspector of Motor Vehicles, produce his driving licence for inspection.
- 14) A driver of a maxi cab shall ensure that no passenger is seated in the vehicle and the engine is not in motion, when the same is being filled with the fuel.
- 15) A driver of a maxi cab shall in case of accident of the vehicle, assist the passenger and should make the arrangements of the injured passengers to send them to the nearest hospital.
- 16) A driver of a maxi cab shall not make use of his maxi cab in connection with or for the furtherance of prostitution.
- 17) A driver of a maxi cab shall not carry a cleaner or other attendant.
- 18) A driver of a maxi cab shall not terminate the journey before the agreed contract.
- 19) A driver of a maxi cab shall not allow any person to be carried in his maxi cab in excess of the sitting capacity specified in the certificate of registration of the vehicle.
- 20) A driver of a maxi cab shall not cause or allow to enter into or carried in the vehicle, any person whom he knows or has reason to believe to be suffering from any infectious or contagious disease, to be carried in a maxi cab, provided that, no other person save a person or persons in attendance on the person, so suffering shall be carried in the vehicle at the same time.
- 21) Where a person suffering from an infectious or contagious disease, or the corpse of any such person has been carried in a maxi cab, the driver of the vehicle shall report the fact of such carriage to the medical officer in charge of the nearest municipal, Zilla parishad, Panchayat Samiti or Government Dispensary and shall not cause or allow any person, to use the vehicle until it has been disinfected and a

certificate to this effect has been obtained from the said Medical Officer.

22) A driver of maxi cab shall not drive maxi cab unless it is disinfected with DDT or Phenyle once in every two months.

23) A driver of a maxi cab shall maintain and on demand by an officer of the Motor Vehicles Department of and above the rank of an Assistant Inspector of Motor Vehicles or any Police Officer, produce for inspection a current register showing the dates on which maxi cab was disinfected from time to time.

24) The driver of a maxi cab shall at the conclusion of every journey amke resonable search int he vehicle for anything left by any passenger and shall take into his custody anything so found and shall hand over the same to the officer-in-charge on the nearest Police Station.

25) A driver of a maxi cab shall, whenever the vehicle approches an unguarded level crossing, cause it to be stopped and, after ensuring that no train is approching in either direction, proceed to cross it.

26) The driver of a maxi cab shall cause the personal luggage of a passenger, suspected to be containing substances of dangerous nature, to be inspected under the supervision of any Police officer in Uniform.”

3. In rule 71 of the Principal Rules in sub-rule (1) after the cluase (vi) following clause shall be added, namely “(vii) Form P.Co.P.A-M. For maxi cab.”

4. In rule 73 of the Principal Rules,

A) in the title, for the words “ Entry of Registration mark on permit” following words shall be substituted ,namely:- “Period for production of Vehicle after issuance of the sanction letters”.

B) For sub rule (1) the following shall be substituted,namely :-

“(1) If the applicant is not the registered owner of the vehicle on date of application, the Regional Transport Authority may issue a sanction letter to the applicant for the period of one month or such longer period as such Transport Authority may specify. The Applicant shall whithin that period, produce before the Authority certificate of registration of the vehicle registered in his name.”

5. For rule 75 of the Principal rules, the following shall be substituted, namely:-

“(75)Permit Fees

- 1) Subject to the provisions of this rule, the fees in respect of an application and its renewal for the grant of a permit or counter signature of an application shall be,
    - b. For metered motor cab, hundred rupees;
    - c. For non metered motor cab, one hundred and fifty rupees;
    - d. For maxi cab, one hundred and fifty rupees;
    - e. For contract carriages other than mentioned in (a),(b) and (c) of this rule two hundred rupees .
    - f. For stage carriage, two hundred rupees;  
Provided that, no fees shall be charged under this sub rule in respect of an application for counter signature where the State has entered into reciprocal agreement with any other State, which provided for exemption from the payment of such fees.
  - 1) The fees in respect of an application for a permit and its renewal, for a tourist vehicle shall be three hundred rupees.
  - 2) The fees in respect of an application for a permit and its renewal, for a national permit shall be two hundred rupees.
  - 3) The fees in respect of an application for a temporary permit , counter signature of a temporary permit shall be fifty rupees for each calendar month or part thereof, in respect of each vehicle.
  - 4) The fees in respect of an application for replacement of a vehicle covered by a stage carriage permit, goods carriage or a contract carriage permit, to which the provisions of sub rule (3) of rule 88 apply, shall be one hundred rupees.”
6. In rule 76 of the principal rules the figure “78” shall be substituted by the figure “75”.
7. In rule 78 of the principal rules, -
- a. In sub rule (1) after clause (c) following new clause shall be added, namely:-“(d) No advertising device, figure or writing shall be exhibited on the vehicle,except with the prior permission of the Transport Commissioner, and after paying the fees and cess as prescribed under these rules,”
  - b. In sub rule (2),-
    - i. For clause (a) the following shall be

substituted, namely:-

“(a) that the vehicle shall not be driven in a public place except by the permit holder in case of maxi cab and in case of other contract carriages except by the permit holder or a licenced driver holding an authorisation to drive a public service vehicle and duly authorised by the permit holder in writing which shall be carried by the driver when driving, and produced on demand by any Police Officer or Officers of the Motor Vehicles Department.”

ii. For clause (c) the following shall be substituted, namely:-

“(c)No advertising device, figure or writing shall be exhibited on the vehicle except with the prior permission of Regional Transport Officer, Dy. Regional Transport Officer or Asst. Regional Transport Officer of the District/ Area concerned and after paying the fees and cess as prescribed under these rules.”

c. After sub rule (4), the following shall be added namely:-

“(5) A Permit in respect of a maxi cab, be granted if the applicant fulfils following conditions, namely:-

a) The applicant must have passed the Secondary School Certificate Examination of the State of Maharashtra.

b) Applicant should be a permanent resident of State of Maharashtra for not less than 15 years.

c) Applicant's age on the date of an application should not be less than 20 years and not more than 35 years in case of applicants other than backward class, and in case of backward class, age should not be more than 40 years.

d) Applicant's name should be registered in the Employment and

the Self-Employment Guidance Center in District for minimum two years prior to the date of making application for the maxi cab permit.

e) Applicant should be a holder of public service vehicle authorisation badge other than that for auto rickshaw vehicle issued by the competent authority in the State of Maharashtra;

Provided that, if other conditions being equal, preference shall be given to applicants for permits from-

II. Those whose names appear in the list below poverty line, maintained by District Rural Development Agency;

III. Those who are sponsored by Special Corporations established or to be established by the Government for the upliftment or backward class people.

f) Only one person from each family shall be eligible to get a permit under the scheme.

Explanation - For the Purpose of this sub-rule, the expression "family" means a wife, husband, father, mother son or unmarried daughter.

g) The vehicle for the maxi cab shall be approved by the State Transport Authority in consultation with the Government.

h) The Regional Transport Authority, if it decides to grant maxi cab permit, shall attach to the permit the following conditions, namely:-

- 1) That the maxi cab shall be used only in a specified area, not covering more than one revenue district on the specified routes, the permit can be issued for maximum of four such routes. The route shall be decided by the Regional Transport Authority in consultation with the Regional Manager of the maharashtra State Road Transport Corporation, the permit holder can apply for change in the route or routes only once in a year. However, an application for change of route or routes will not confer any right or privilege to the permit holder applying for the same till the application is decided.
- 2) The permit for maxi cab shall be granted for a vehicle which is constructed or adopted to carry not more than 12 passengers excluding the driver.
- 3) 14 kilograms of passenger's luggage shall be carried free of charge. Suitable arrangement for carrying luggage shall be made on the top of the vehicle.
- 4) The permit holder will have to fix the minimum fares for each route, for each passenger. The rates so fixed should be painted in Marathi Language in bold letters inside the vehicle in the prominent

place and should also be intimated to the Regional Transport Authority concerned within 15 days from the grant of permit.

5) The person in whose name a vehicle of maxi cab has been registered, shall only be permitted to drive the vehicle.

6) Only Regional Transport officers shall be authorised to issue permits under this scheme.

7) Contract carriage permit issued for a vehicle of maxi cab shall be valid for ten year only.

8) At the time of Registration of a maxi cab on contract carriage permit vehicle shall be new one. The vehicle to be replaced on permit shall not more than year old.”

8. For rule 85 of the principal rules, the following shall be substituted, namely :-

“ 85 Renewal of permits - An application for renewal of permit shall be made in writing to the State Transport Authority or the Regional Transport Authority, as the case may be, by which the permit was issued and shall be accompanied by the permit and the fee prescribed in rule 75.”

9. In rule 88 of the principal rules, in sub-rule (1), after clause (ii), the following shall be added, namely :-

“(iii) The replaced vehicle shall be with

identical seating capacity of the vehicle to be replaced.

Provided that, if the permit holder of a six Seater or a three seater auto rickshaw, who fulfils requirements, of rule 78(5), (a), (b), (c) and (f), request for replacement of his vehicle with maxi cab, provisions of this sub-rule will not apply.”

(iv) A stage carriage permit and contract carriage shall be deemed to be invalid from the date on which the motor vehicle covered by the permit completes 9 years , in the case of motor cab and amxi cab and 10 years where the motor vehicle is other than a motor cab and maxi cab unless the motor vehicle is replaced.

(v) Where a vehicle covered by a stage carriage permit is proposed to be replaced by another, the latter vehicle shall not be more than 2 years old on the date of such replacement.

Explanation - For the purpose of this sub- rule, the period of 9 years or 10 years, shall be computed from the date of initial registration of the motor vehicle.

10. In rule 90 of the principal rules, for sub-rule (1) following shall be submitted, namely :

“(1) The holder of a permit may, at any time surrender the permit to the Transport Authority by which it was granted and the Transport Authority shall forthwith cancel any permit so surrendered after recovering an amount of Rs. 200/- by way of penalty.”

11. In rule 91 of the principal rules,

- A) For the title, the following shall be substituted, namely :  
“Transfer of permit other than motor cab and maxi”
- b) In sub-rule (5) for the words “forty rupees” the words “one hundred rupees” shall be substituted.
- c) In sub-rule (6) after the words “motor cabs” the words “maxi cab” shall be inserted.

12. In rule 92 of the principal rules , for sub-rule (1) following shall be substituted, namely :-“(i) in case of death of the permit holder, the person succeeding to the possession to the vehicle covered by the permit may, within (sixty days) from the death of the permit holder, inform the Transport Authority, which granted the permit, about the death of the holder and his/her own intention to use the permit in Form Int.D.Tr. Of the First Schedule. However, in case of the death of the permit holder of maxi cab, the person succeeding the possession of the vehicle must be qualified to get the permit for maxi cab under the rules prescribed within

a period of 12 months.”

13. In rule 105 of the Principal rules,

(a) In the title after the words “motor cabs” the words “ and maxi cabs” shall be added.

(b) In sub rules (1) and (2) after the words “motor cab” the words “and maxi cab” shall be added, respectively.

14. In rule 135 of the principal rules,

(a) In the title after the words “motor cabs” the words “maxi cabs” shall be added.

(b) after sub rule (1) following shall be inserted, namely:-

“(1A) Maxi Cab shall be painted in a Cream Yellow colour and every maxi cab shall carry in a prominent place on the front of the vehicle a distinguishing board in Marathi “ and also the name of the District for which permit has been issued, painted in black colour on white background. The height and width of each letter shall not be less than 127 mm and 34 mm respectively”.

(c) for sub rule (6) following shall be substituted namely:-

“(6) No motor vehicle other than motor cab and maxi cab shall be painted in the manner prescribed in the sub rule (1) and (1A) respectively.”

15. In rule 171 of the principal rules,

(a) in sub rule (1) the words “other than a motor cab” shall be deleted.

(b) after sub rule (1) the

following shall be inserted,  
namely:-

“(1-A) (i) In case of maxi cab all the seats are to be placed across the vehicle and are facing in the same directions, there shall be space of not less than 660 mm between the back of the front seat and front of the rear seat.

(ii) In every maxi cab, each passenger shall be provided with a reasonably comfortable seating space of not less than 381 mm”.

(c) after sub-rule (5) the following shall be added,  
namely:-

“(6) The provisions of sub rule (1) (i),(ii),(iv) and the sub rule (4) shall not be applicable to the maxi cab”.

16. In the rule 172 of the principal rules after sub rule (2), the following shall be added, namely :-

“(3) in a maxi cab where seats are placed across the vehicle there shall be clear place of not less than 305 mm between any part of adjoining seats of their supports.

Provided that the maximum width of that gangway shall not be more than 381 mm.”

17. In rule 173 of the principal rules, in sub-rule (2) for Clause (a), following shall be substituted, namely

“(a) standing passengers may be carried on the lower deck of any such public service vehicle other than maxi cab, if there is a grab bar fixed with hanger straps fixed in the roof of the gangway.”

18. In rule 181 of the principal rules,-
- (a) in sub - rule (1) after the words “every public service vehicle” the words “other than maxi cab” shall be inserted.
  - (b) after sub -rule (1) following shall be added, namely :-  
“(1-A) In case of maxi cab, the vehicle shall be constructed with the water tight roof made up of a metal of suitable strength. The vehicle should be provided with five doors including emergency exit. The glass windows of maxi cab must be provided with effective means to prevent their rattling.”

19. In rule 192 of the principal rules, in sub-rule(1) for the words “stage carriage” the words “public service vehicle” shall be substituted.

20. In rule 197 of the principal rules for the words “stage carriage” the words “public service vehicle” shall be substituted.

21. In the First Schedule to the principal rules, after FORM P.Co.S.P.A. Following format of application shall be added, namely :-

**“FORM P.Co.P.A.M.**  
(See Rule 71 (1) (vii))

Application from for grant / renewal for a permit in respect of a contract carriage to be used as maxi cabs.

To,

The regional Transport Officer.....

In accordance with the provisions of section 69(1), 73 and 74, of the Motor Vehicles Act, 1988, I the undersigned hereby apply for the permit under section 66 of the Act, in respect of a maxi cab as hereunder set out :

1.Full  
Name\_\_\_\_\_   
 (surname)(name) (name of Father /  
 Husband).

2.Date of Birth\_\_\_\_\_   
 (proof to be enclosed) (Year) (Month) (Date)  
 (Years)

3.Full  
Address\_\_\_\_\_   
 (proof to be enclosed) (House Number/Name)  
 (Name of Road) (Name of locality)

\_\_\_\_\_  
 (Village/Town/City). (Taluka) (District Pin  
 No.)

4.Telephone  
No.:\_\_\_\_\_

5.Whether belongs to S.C./S.T./VJNT/N.T./O.B.C.  
Backward Class. (Enclose proof).



Corporation. If yes, state the Name of the corporation.

14. Particulars of any stage carriage or contract carriage permit valid in the State or any other and held by the applicant in respect of  
(a) this vehicle  
(b) any other vehicle

15. Particulars of any Permit held by the applicant in respect of the use of any transport vehicle in any State during the last four years, which has been the subject of any order of suspension or cancellation.

16.\*\* I am in possession of the vehicle, the certificate of Registration of which is enclosed.

17.\*\* I have not yet obtained possession of the vehicle and understand that, the permit will not be issued until I have done so and have produced the certificate of Registration and further declare that I propose to purchase a vehicle manufactured in the year : \_\_\_\_\_

18.\*\* intend to drive the vehicle No. \_\_\_\_\_  
Make \_\_\_\_\_ Model \_\_\_\_\_  
My M.D.L.No. \_\_\_\_\_ PSVA No. \_\_\_\_\_  
Issued by \_\_\_\_\_ valid upto \_\_\_\_\_

19. I hereby declare that the above statements are true and agree with the Conditions of permit issued to me.

Dated : \_\_\_\_\_  
Place :- \_\_\_\_\_

Signature of the  
applicant”

( \*\* Strike out whichever is not applicable )

-----  
By order and in anme of the Governor of  
Maharashtra,

A.N. Kulkarni,  
Deputy Secretary to  
Government.

\_\_\_\_\_

## SIAM

# An aide Memoire on Two Stroke Engines

Society of Indian Automobile Manufacturers

### 6.5 DURABILITY OF THE CATALYTIC CONVERTER

The catalytic converter, used on any type of vehicle, suffers from the problem of a progressive deterioration due to thermal degradation and chemical poisoning and there are no known methods to arrest this trend. Catalytic converters used on all vehicles, therefore, have a limited life, the duration of which depends upon the amount of pollutants it has to convert and the usage pattern of the vehicle. Catalytic converters used on petrol driven passenger cars vary from 80,000 km to 160,000 km depending upon the type of the engine and fuel system.

Worldwide experience on the use of catalytic converters on 2-stroke engines is limited. As we have seen, Taiwan was the first country to have encouraged the use of catalytic converters on small two wheelers through stringent norms. In the initial stages, considering the relatively nascent stage of the development, a low 6,000 km durability requirement was specified in the Taiwan Stage II standards. For Stage III, this has been extended to 15,000 km. There are no Indian regulations for durability of catalytic converters for any type of vehicle, except for 4 wheelers where a deterioration factor is specified for different pollutants for initial conformance. However, in view of the great importance of this requirement, full scale durability tests, both in the laboratory and the field, were conducted by the industry and it was possible to achieve a durability of at least 30,000 km in actual running conditions. The achievement was aided by the fact mentioned earlier, namely, the availability of engines with lower levels of 'engine out' emissions.

**Industry therefore today is in a position to offer an Emission Warranty upto 30,000 kms for all 2000 norm compliant 2-stroke powered two and three wheelers to be sold in Mumbai from 15th February 2000.** This is the first time in India that such a Warranty is being offered and the level of Emission Warranty upto 30,000 kms is the highest for this class of vehicles anywhere in the world.

**ANNEXURE XVIII**

Transport Department  
5/9, Under Hill Road, Delhi 110054

Government of National Capital Territory of Delhi

**F.No.84/Secy/STA/97/3113-28**

**Dated 20-10-98**

**ORDER**

Whereas the Government of National Capital Territory of Delhi have approved financial package/assistance in the form of 4% subsidy in interest rate, to the registered owners of 15 years and above old commercial/transport vehicles whose vehicles are covered by the Hon'ble Supreme Court order on phasing out 15 years and above old commercial/transport vehicles in WP (c) No.13029 dated 22/09/98, for purchase of new transport vehicle to replace the old phased out vehicle.

Whereas the Transport Department , Government of NCT of Delhi has been required to work out the details of the financial assistance in consultation with the Finance Department.

Now, therefore the terms and conditions determining the eligibility period of availing the subsidy and procedural requirements for interest subsidy have been finalised consultation with Finance Department, GNCT of Delhi, which are delineated below:-

1. Subsidy of 4% in interest rate would be offered on loans taken from Delhi Financial Corporation, Delhi Schedule Caste Financial and Development Corporation, any of the Nationalised Banks in Delhi and financing companies owned by the manufacturers of Transport Vehicles. The aforesaid financing companies owned by the manufacturers of the transport vehicles shall advance loans only for the sale of their own vehicles.
2. Any operator who does not take any loan to finance the purchase of replacement vehicle will be given subsidy equivalent to the minimum amount which would have been admissible to him on taking the loan from D.F.C. For purchase of a similar vehicle, provided he satisfies the requirements of these terms and conditions.
3. Institution having commercial vehicles for their own use (not public carrier) for example Banks. Local Bodies, PSUs, Pvt. Organisations (other than Transport Companies), Govt. Organisations, Educational Institutions etc. shall not be eligible for interest subsidy.
4. Interest subsidy would be payable for purchase of a new commercial vehicle of the same category as the phased-out vehicle. For example, the interest subsidy would be payable for replacement of old

autorickshaw with new autorickshaw, old taxi with new taxi, old goods vehicle with new goods vehicle and old passenger vehicle with new passenger vehicle.

5. Affected transporters are required to obtain NOC from their Registering Authority i.e. MLO (Autorickshaw unit Burari) in case of Autorickshaw, Motor Cycle Rickshaw & local taxies and MLO (HQ) in case of other transport vehicles. For obtaining NOC following original documents should be submitted:-
  - a) Registration Certificate.
  - b) Permit,
  - c) Fitness Certificate.
  - d) No Challan report from Traffic Police.
  - e) No Challan report from Enforcement Wing of Transport Department
  - f) Upto-date Tax Report from AAO of Recovery/Accounts Branch of Transport Department.
6. For availing interest subsidy, proof of disposal of the phased out vehicle shall be submitted in the form of registration outside Delhi or alternatively the vehicle shall be surrendered to the Dy. Director (Transport), Burari, for scrapping against issue of a surrender certificate.
7. The phased out vehicles registered in Delhi on transfer from other State during last five years will not be eligible for the subsidy.
8. The new vehicle shall not be sold within or outside Delhi for a period of 5 years from the date of registration failing which the entire subsidy amount would have to be refunded fully in lumpsum.
9. If for any reason/default the vehicle is taken over by the financing agency in the case of a loanee the whole of subsidy shall be refunded by the finance agency and in the case of the owner's of vehicle who has/have acquired the vehicle through his/their own resources, the whole of subsidy received shall be refunded by him/them in lumpsum in case of any default by the beneficiary.
10. Any delayed payment of loan installments would not be covered under interest subsidy for the period of delay.
11. The owner as well as financing agency shall give an undertaking that they agree and abide by the terms and conditions of subsidy on prescribed proforma.

12. The application for release of interest subsidy would be submitted by the transporter concerned to Commissioner (Transport), Govt. Of NCT of Delhi, duly forwarded by the financing agency alongwith following documents:-
  - i) NOC in respect of phased out vehicle, issued by Registering Authority, Delhi.
  - ii) The proof of disposal of the phased out vehicle by way of registration outside Delhi on Surrender Certificate issued by Dy. Director (Transport), Burari.
  - iii) the poof of purchase of new replacement vehicle (of some category as phased out vehicle) in the form of registration certificate of new vehicle.
  - iv) Details of Sales Tax exemption availed.
  - v) The undertaking of the applicant and financier on prescribed proforma on non-judicial stamp paper that they agree and shall abide by the terms and conditions of the interest subsidy.
  - vi) Idemnity Bond of the applicant.
  - vii) Copy of Ration/Food Card or other document such as Photo Identity Card, Driving Licence, Passport, Ownership of the property in Delhi etc. As address proof.
13. The subsidy amount would be released by Transport Department immediately on completion of above mentioned requirements in lumpsum, in favour of financing agency as described in para 1 of these terms and conditions. Where the owner has not availed any loan the subsidy will be released in his favour. In the latter case, the vehicle shall not be hypothecated in favour of any agency, institution or individual. The hypothecation will be permitted only if the loan is taken from the authorised loaning institution mentioned above. It shall not be permitted in any other case if the purchaser of the replaced vehicle intends to avail of the benefit of the subsidy.
14. Various authorised loaning institutions like DFC/DSCFDC/Nationalised Banks and financial companies owned by the manufacturers may have their own rate of interest but the interest subsidy will be admissible on the rate of interest actually charged by them.
15. The benefit of interest subsidy will be available on the replacement by new vehicles purchased on or before 31st December, 1999.

Sd/-  
(A S Kullar)  
Addl. Director (Transport)

F.No.84

Dated:

Copy forwarded to the following:

1. The Secretary to the Lt.Governor, Delhi.
2. Pr.Secretary to the Chief Minister, Delhi.
3. Secretary to the Minister of Transport, Delhi
4. Secretary to the Minister of Finance, Delhi
5. Secretary to the Minister of Labour, Delhi
6. Secretary to the Minister of Industries, Delhi
7. Secretary to the Minister of Health, Delhi
8. Secretary to the Minister of Food & Supplies, Delhi
9. OSD to Chief Secretary, Govt. Of NCT of Delhi
10. Pr.Secretary cum-Commissioner (Transport), GNCT of Delhi
11. Pr.Secretary Finance, GNCT of Delhi
12. Pr.Secretary Planning GNCT of Delhi
13. The Commissioner of Sales Tax, Delhi
14. All authorised Financing Agencies.
15. All Association of Transporters.  
(registered with the Transport Department)
16. Guard File.

Sd/-  
(Vishva Mohan)  
Dy.Director (OPS/SECTT)

**SCHEME FOR COLOUR CODING OF TANKERS**  
**CARRYING PETROLEUM PRODUCTS**

In order to distinguish tankers transporting different petroleum products they should be painted as specified below.

- A) All tankers transporting Petrol/Diesel should be painted in bright maroon colour.
- B) All tankers transporting kerosene, Naphtha, NGL, SKO, OCS-93, C-9, Benzene & other solvents should be painted in bright yellow colour.
- C) All tankers carrying any other petroleum products other than those mentioned above should be painted in bright Green colour.
- D) The tankers carrying water or any other material including hazardous gases should not use the above specified colours.
- E) In addition to the specified colour code as above, the tankers carrying various petroleum products shall fix the emergency information pannels as prescribed in Rule 134 of Central Motor Vehicle Rules, 1989.
- F) No advertisement or transporter's name should be displayed on the body of the tanker.
- G) The oil Refineries should be prohibited from filling the tankers unless they are painted in the specified colour code.

**MARKER TECHNOLOGY AS AN EFFECTIVE TOOL FOR CHECK ON  
ADULTERATION**

Marker when added to Petrol and Diesel will give a definite clue for adulteration by the use of simple electronic device.

Marker technology can be effectively used to tackle adulteration.

Marker technology is very widely used today and has proved to be an effective measure to check adulteration. Cost factor involved is only 2.5 paise per litre.

It is stated that fuel adulteration causes immense vehicular pollution, particularly in Metros. Taxis, Autorickshaws, tempos and truck unions are blaming adulteration as the major cause of smoke emission. They further state that in light of poor quality of fuel they are unable to control the emission from their vehicles.

Euro II norms and even stringent Euro III and IV norms demand high quality of fuel. Large scale malfunction and pollution can occur due to incomplete combustion of a Euro compliant vehicle using adulterated fuel. It will be very difficult to implement these much needed norms if there is no effective control on the quality of fuel at all levels.

Petrol Dealers are demanding to check quality of fuel before decanting in their underground tank. Oil industry insists on unsatisfactory sampling procedure due to lack of any other available and viable solution.

Control orders and Marketing discipline guidelines stipulate elaborate sampling methods to detect for adulteration. These sampling methods and the time frame within which the sample has to be tested leaves much to be desired. There is a huge margin for errors and a good sample can fail a clinical test or octane test for number of reasons.

It has been officially stated and established that 20% mix of Naptha in Petrol and 8 to 10% blend of kerosene in Diesel is undetectable in laboratory test. In light of this fact, the mobile labs and other testing agencies are of very little help in detecting cases of fuel adulteration.

Density testing procedure in vogue has resulted in more problems than it has solved. Hydrocarbons are now available that match Petrol / Diesel Density. This procedure of density now has lost its purpose. Any clerical error on the part of an employee can brand the dealer as an adulterator without any recourse. Co-mingled product in the Underground tank results in density, which goes beyond permissible

variation, and the dealer holding a genuine product faces a prospect of closure of his outlet.

Calibrated electronic testing device, working on Market technology gives a fool proof result in a short time, enabling the dealers, transporters, enforcement agencies to test a product and get a print out with no margin of errors.

**ANNEXURE XXI**

**Comments of the Ministry of Environment and Forests for furnishing to Chairman of the High Court of Bombay constituted committee (V.M. Lal, Transport Commissioner of Maharashtra, Mumbai ), on the terms of reference/issues contained in the Hon'ble High Court of Bombay order dated 15.12.1999 in the matter of WP 1968 of 1999 - smoke Affected Residents Forum Vs. Municipal Corporation of Greater Bombay and Others.**

<b>Sr. No.</b>	<b>Terms of Reference/Issues contained in the order of the High Court of Bombay to reduce vehicular pollution in Greater Mumbai</b>	<b>Comments of the Ministry of Environment and Forests</b>	<b>Suggested timeframe for implementing the TOR/issues</b>
(a)	Improvement in quality of fuel with particular reference to reduction of sulphur content of diesel and benzene content of petrol to acceptable limits.	In pursuance to the decision of the Committee of Secretaries in the meeting held on 21.9.1999, the Ministry of Surface Transport vide its Order No. RT-11011/16/99-MVL dated 19.01.2000 constituted a Committee (copy enclosed) comprising representatives from Automobile Research Association of India (ARAI ), Ministry of Petroleum and Natural Gas (MoP&NG), Department of Heavy Industry and Public Enterprises, Vehicle Research and Development Establishment (VRDE), Central Pollution Control Board (CPCB) and Society of Indian Automobile Manufacturers (SIAM) to work out the phased time table for	---

		introduction of fuel with 0.05 % sulphur maximum content throughout the country. The report of the Committee is awaited.	
(b)	Use of alternative fuel such as CNG/ reformulated gasoline, etc. Administrative & Regulatory measures that would be required for setting up additional pumps for dispensing CNG.	Mahanagar Gas Limited to ensure availability of CNG by increasing existing number of CNG outlets in Mumbai. The existing CNG outlets are not adequate both in terms of their numbers and area coverage.	1.1.2001
(c)	Desirability & feasibility of converting the existing buses / taxis to CNG.	It is suggested that 15 years and above old taxis may be converted on CNG mode with provision of switching over to petrol mode as stand by due to non availability of CNG filling station in the far flung region of Mumbai . No 8 year old buses to ply except on CNG or other clean fuels. This will be in consonance with the Hon'ble Supreme Court order dated 28 <sup>th</sup> July,1998 in the matter of vehicular pollution in Delhi.	1.12.2001
(d)	Assessment of whether the existing emission norms require to be revised for Mumbai City & if so at what levels they	Bharat Stage-II norms notified by the Ministry of Surface Transport on 31.01.2000 to be effective from 01.04.2000 in NCR should be made applicable to private  (non-commercial ) vehicles including passenger cars and the requisite fuel quality i.e. 0.05% sulphur fuel may be made available	01.01.2001

	should be fixed.	to meet the prescribed norms (copy of the Notification enclosed).	
(e)	Applicability of Euro I & Euro II Norms to commercial (non- private vehicles )	<p>India 2000 norms akin to Euro I norms which have already been notified by Ministry of Surface Transport are applicable for all types of vehicles in the entire country from 01.04.2000 for which the required fuel quality is also available and as such all the new vehicles to be registered in Mumbai from 01.04.2000 should meet Euro I norms.</p> <p>For implementing Euro-II norms for commercial (non-private) Vehicles- as indicated in the comments relating to the issue no. (a) i.e. “Soon after working out the phased time table for introduction of fuel with 0.05% sulphur maximum content through out the country by the Committee,”the same may be made applicable to Mumbai.</p>	Euro I- 1.04.2000 and Euro II - 01.01.2001 (private non Commercial vehicles)
(f)	Desirability & feasibility of phasing out of vehicles (private cars, trucks, buses, taxies, autorickshaws and two wheelers) over a certain age limit.	Commercial vehicles more than 15 year old should not be allowed to ply in Mumabai. After 5 years of the age of commercial vehicles, year to year certificate should be made compulsory for fitness of the vehicle. No age limit for phasing out may be prescribed for private vehicles.	-----
(g)	Measure for improvement of emission level of in use vehicles correspondingly.	I & M programme should be introduced and made compulsory for all types of vehicles.	01.04.2002.
(h)	Financial incentives that	Following financial incentives may be considered:	31.03.2001

	can be made available for replacement of old taxies and autorickshaws with new vehicles running on clean fuel.	<ul style="list-style-type: none"> <li>◆ Soft loans for changing to CNG mode for taxies and auto rickshaws.</li> <li>◆ Soft loan for purchase of battery operated three wheelers.</li> </ul>	
(i)	Action required to be taken in respect of two wheelers and three wheelers utilising two stroke engines.	The Ministry of Surface Transport is the nodal ministry in this regard. However, it is suggested that new registration may be allowed only for such vehicles which are using CNG or operating on batteries.	-----
(j)	Measures to prevent fuel adulteration.	A number of fuel testing laboratories are required to be set up in Mumbai to check fuel adulteration. These laboratories should also be equipped to check adulteration due to benzene, paraxylene and other solvents, in addition to routine adulterants like kerosene.	01.04.2001
(k)	Effect of the use of unleaded petrol without catalytic converters.	Old vehicles which are using leaded petrol can safely switch over to use unleaded petrol without any adverse impact on engine. This will go a long way in reducing lead in the ambient air.	
(l)	Incentives for conversion to cleaner technologies including in particular reduction on import duties and other levies on CNG kits and catalytic converters	Fiscal incentives like reduced custom duty in case of CNG kits are already available. Reduced sale tax, octroi etc may also be considered for CNG kits and catalytic converters. Reduced Excise duty, in case of catalytic converters may also be considered.	31.03.2002
(m)	Desirability and feasibility of ensuring premixed oil	The notification dated 31.12.1998 for restriction on sale and purchase of loose 2-T oil in NCT of Delhi issued by the Ministry of	01.04.2001

	(petrol & 2T) and banning supply of loose 2T oil).	Environment and Forests can be extended to Mumbai (copy enclosed).	
(n)	Proper management & Regulation of Traffic with a view to reducing vehicular pollution.	Installation of synchronised traffic signalling system may be recommended for Mumbai.	01.04.2001
(o)	Effective methods of monitoring and improving prescribed emission norms.	<ul style="list-style-type: none"> <li>◆ I &amp; M programmes should be made compulsory for all types of vehicles.</li> <li>◆ Existing air quality monitoring stations are required to be strengthened.</li> <li>◆</li> </ul>	01.04.2001

**ANNEXURE XXII**

MAP 0193/CR-798(A)/Desk-2(1)/ON-17537  
**TRANSPORT COMMISSIONER'S OFFICE,**  
Administrative Bldg., 3rd & 4th floor,  
Near Dr.Ambedkar Udyan,  
Government Colony, Banra (East),  
Mumbai 400 051.  
Date:20-12-1999.

To,

Shri S.D. Mohile,  
Chairman  
The Central Board of Customs & Excise,  
Ministry of Finance , Government of India.  
New Delhi.

Sub: Cost break-up for CNG conversion kits and cylinders

Ref: Letter No.MGL/MUM/CNG/99, dated 2nd Dec.,1999  
Received from the Mahanagar Gas Limited

The Motor Vehicles Department is taking various steps to reduce vehicular pollution, particularly in the city of Mumbai. At present most commonly used fuels in the motor vehicles are petrol & diesel. However, the level of pollutants emitted from use of these fuels are high. These pollutants, being poisonous in nature, directly affect the health of the public at large.

The Compressed Natural Gas is a good environment friendly clean fuel which can be used either exclusively or in combination with petrol. In the city of Mumbai the compressed natural gas is supplied by the Mahanagar Gas Ltd through its 16 outlets. It is a proven fact that the levels of pollution by using compressed natural gas are extremely low.

At present the conversion kits for the use of compressed natural gas are imported and the gas cylinders required can be either imported or made available indigenously.

The costwise break up of imported CNG conversion kits and imported CNG cylinders is annexed herewith. It can be seen that the component of customs duty

applicable for an imported typical CNG conversion kit is 27.28% of the basic price (Rs.2537-00 on Rs.9300). Similarly, the component of customs duty applicable for an imported CNG cylinder is 27.28% of the basic price. As the

CNG is definitely a cleaner fuel, if its use is to be popularized, the customs duty is required to be reduced so as to make the conversion kits and cylinders easily affordable to the normal vehicle user including taxi operators and the autorickshaw operators.

The High Court, Mumbai in a public interest litigation filed on the issue of increasing level of vehicular pollution in the city of Mumbai has also taken a note of the above measure namely popularize use of CNG, to reduce vehicular pollution.

It is therefore proposed that the the customs duty may be waived totally in order to increase the usage of compressed natural gas (or else reduce the same substantially atleast). As regards customs duty, the matter is being separately taken up with the Department of Direct Taxes, Govt. of India.

Sd/-

Transport Commissioner,  
Maharashtra State, Mumbai.

Copy to: The Finance Secretary, Ministry of Finance, Govt. Of India,  
North Block, New Delhi.

Sd/-

Transport Commissioner,  
Maharashtra State, Mumbai.

**ANNEXURE XXIII**

MAP 0193/CR-798(A)/Desk 2(1)/ON-17536  
**TRANSPORT COMMISSIONER'S OFFICE,**  
Administrative Bldg., 3rd & 4th floor,  
Near Dr.Ambedkar Udy  
Government Colony, Bandra (East),  
Mumbai 400 051.  
Date:20th Dec., 1999.

To,  
The Principal Secretary,  
Home Department (Tr.),  
Mantralaya,  
Mumbai.

Sub: Cost break-up for CNG conversion kits and cylinders

Ref: Letter No.MGL/MUM/CNG/99, dated 2nd Dec.,1999  
Received from the Mahanagar Gas Limited

The Motor Vehicles Department is taking various steps to reduce vehicular pollution, particularly in the city of Mumbai. At present, most commonly used fuels in the motor vehicles are petrol & diesel. However, the level of pollutants emitted from use of these fuels are high. These pollutants, being poisonous in nature, directly affect the health of the public at large.

The Compressed Natural Gas is a good environment friendly clean fuel which can be used either exclusively or in combination with petrol. In the city of Mumbai the compressed natural gas is supplied by the Mahanagar Gas Ltd through its 16 outlets. It is a proven fact that the levels of pollution by using compressed natural gas are extremely low.

At present the conversion kits for the use of compressed natural gas are imported and the gas cylinders required can be either imported or made available indigenously.

The cost-wise break-up of imported CNG conversion kits, imported CNG cylinders and indigenous CNG cylinders is annexed herewith. It can be seen that the component of octroi and sales-tax applicable for an imported typical CNG conversion kit is 25.34% of the basic price (Rs.2356.98 on Rs.9300). Similarly the component of octroi and sales-tax in respect of CNG cylinder comes to 25.34% of

the basic price of a typical cylinder (Rs.3028.60 on Rs.11950) and total component of excise duty, sales tax and octroi in case of indigenous CNG cylinder comes to 39.09% of basic price. The effect of customs duty on the conversion kits and the CNG cylinders has not been considered which is another 27.28% of basic price. As the CNG is definitely a clean fuel, if its use is to be popularized, the above levies namely the octroi, sales-tax and excise duty are required to be reduced/waived so as to make the conversion kits and cylinders cheaper and easily affordable to the normal vehicle user including taxi operators and the autorickshaw operators.

The High Court, Mumbai in a public interest litigation filed on the issue of increasing level of vehicular pollution in the city of Mumbai has also taken a note of the above and suggested popularisation of use of CNG to reduce vehicular pollution.

It is therefore proposed that the above levies may be waived totally by the State Government in order to increase the usage of compressed natural gas (or reduce the same substantially). As regards customs duty, the matter be taken up with the Chairman, Board of Customs & Central Excise, Govt. of India.

Sd/-  
Transport Commissioner,  
Maharashtra State, Mumbai.

Copy to: 1) The Municipal Commissioner, Brihanmumbai Mahanagar Palika, Mahapalika Marg, Mumbai.

2) The Commissioner Sales Tax, Govt. of Maharashtra, Sales Tax Office, 8th floor, R.No.829, Mazgaon, Mumbai 10.  
With a request to support the proposal.

3) The Commissioner of Excise, Govt. Of Maharashtra, Old Custom House, Shaheed Bhagatsing Marg, Fort, Mumbai.  
With a request to support the proposal.

Sd/-  
Transport Commissioner,  
Maharashtra State, Mumbai.

**MINISTRY OF ENVIRONMENT AND FORESTS  
ORDER**

New Delhi, the 31st December, 1998

G.S.R. 778(E)-Whereas with a view to protecting and improving the quality of the environment and preventing controlling and abating environment pollution in the National Capital Territory of Delhi , it is expedient and necessary to take measures relating to the supply, distribution, buying and selling of 2-T oil (lubricating oil):

Now, therefore, in exercise of the powers conferred by sub-sections (1) and (2) of Section 3 of the Environment Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following Order namely:-

**1. Short title, extent and commencement:-**

- 1) This Order may be called the 2-T Oil (Regulation of Supply and Distribution) Order 1998.
- 2) It extends to the whole of the National Capital Territory of Delhi.
- 3) It shall come into force on the date of its publication in the Official Gazette.

**2. Definitions :-**

In this Order, unless the context otherwise requires -

- (a) "2-T Oil" means lubricating oil, meeting API-TC (American Petroleum Institute-TC) or JASO (Japanese Automobile Standards Organisation) Specification, used in 2-stroke petrol driven vehicle engines;
- (b) "container" means a scaled package containing pre-packed 2-T oil in declared quantity;
- (c) "loose 2-T oil" means 2-T oil which is not contained in a sealed container;
- (d) "National Capital Territory of Delhi" means the National Capital Territory of Delhi as defined in the Government of National Capital Territory of Delhi Act, 1991 (1 of 1992).

**3. Restriction on sale and purchase of loose 2-T oil:-**

(1) No person shall sell or agree to sell or otherwise dispose of loose 2-T oil in a service garage for use in 2-stroke engine vehicle of any make.

(2) In petrol stations, 2-T oil shall be sold only pre-mixed with petrol through nozzle.

Provided that the above restriction shall not apply to the 2-stroke engine vehicles having separate sump for 2-T oil provided by the manufacturer in containers for use in the engine of such vehicle through such sumps.

(F.No.Q-16014/18/98-CPA)  
VIJAI SHARMA, Jt.Secy.

**ANNEXURE XXV**

**A NOTE ON CURRENT STATUS OF AREA TRAFFIC CONTROL (A.T.C.)  
SYSTEM IMPLEMENTATION**

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Area Traffic Control System (A.T.C.) Is advanced traffic responsive, computer controlled signaling system. In this system signal timings are automatically adjusted, based on the traffic volumes, thereby reducing waiting time of traffic and improving efficiency of signals. Existing signals work on pre-time basis and they do not change the timing to suit existing traffic conditions. This types of signals, when traffic is light, result in wastage of green signal or when traffic is heavy, the traffic is delayed due to short time period. A.T.C. systems is planned for CBD north area (Flag-A). Under this system, 37 advanced traffic signals will be installed and connected to the main computer at Traffic Control Room at Worli. At 10 junctions, C.C.TV also will be installed which will help in monitoring effectiveness of A.T.C. System.

Mumbai Metropolitan Region Development Authority (MMRDA) has agreed to extend a interest free loan of Rs.15 crores for implementation of ATC in Mumbai city. The Government vide G.R.No.1592 /24 / Pol-8, Mantralaya, Mumbai-400032, dated - 30th March, 1999 has permitted us to take loan of Rs.15 crores from MMRDA and asked us to work out the formalities of Loan Agreement. Copy of the G.R. is enclosed.

MMRDA has prepared a draft of Loan Agreement which has approved by Home Department with some suggestions, vide their letter No.TRA 1592/ 24(A)/ Pol-8, Home Department, Mantralaya, Mumbai - 400032, dated-31st December, 1999. The suggestion are being discussed with MMRDA and accordingly final agreement will be prepared. After the agreement is executed between MMRDA and Government, MMRDA will transfer the loan amount ot Municipal Corporation of Greater Mumbai (MCGM). MCGM then will invite globe tender for the project. Tender documents regarding the ATC project are ready with the MCGM.

Implementation of ATC will start immediately after evaluation of the tender. All above activities will need 3-4 months. Completion period of the project will be 18 months after work order is placed.

**MAHARASHTRA POLLUTION CONTROL BOARD**

**Grams: "PREPOLL"**

Tel : 269 2345(4 Lines).  
261 4459/261 4348  
022 - 261 2320.

Shri Chhatrapati Shivaji Maharaj  
Municipal Market Bldg.,  
Mata Ramabai Ambedkar Marg,  
Mumbai: 400 001.

No.BO/APAE/TB/B-67-18

Date: 18-1-2000.

To:

The Transport Commissioner , M.S.  
Transport Commissioner's Office,  
Administrative Building, 3rd & 4th Floor,  
Near Dr.Ambedkar Udyan,  
Government Colony, Bandra (E)  
Mumbai-400 051.

Sub: Vehicular Pollution - Hon'ble High Court's Order  
Dated 15th December, 1999

Sir,

As per Hon'ble High Court's Order dated 15th December 1999 in connection with Writ Petition filed by NGOs, for control of vehicular pollution, a Committee has been constituted under the Chairmanship and meeting of the said Committee was held on December, 1999. In the meeting it was decided that the concerned agency shall submit report to the Committee on or before January, 2000, on actions proposed for implementation of High Court orders.

The point Nos.10 and 11 are related to Maharashtra Pollution Control Board and the action initiated by this Board on the points is illustrated below:

His Excellency Governor of Maharashtra had convened a meeting to discuss the problems of Mumbai. During this meeting it was decided to draw up Action Plan for control of pollution in Mumbai. As a follow up an Action Plan for control of pollution in MMR has been drawn in consultation with Central Pollution Control Board, Ministry of Environment & Forests. This Action Plan has

recommended installation of computerised automated air quality monitoring stations at various interesections for daily monitoring. To take further follow up on this point Maharashtra Pollution Control Board has constituted a committee of experts in the field headed by Member Secretary, MPCB.

The first meeting of this Committe was held on 22-09- 1999 when the issue about fixing of the monotiring stations in MMRDA was discussed. In the said meeting, a Cub-Committee of representatives from MPCB, BMC, Traffic Police, Environmental Experts etc. was constituted. In the meeting of Sub-committe held on 28-09-1999 twelve traffic junctions were identified for monitoring air quality with the intention of getting present status. The monitoring work was carried out at the following traffic junctions:-

- 1) CST Railway Station
- 2) Sion Circle
- 3) Powai Link Road
- 4) Chembur Garden
- 5) Worli Naka
- 6) Dadar Fire Brigade
- 7) K-West Ward Office, Andheri
- 8) Marol Fire Brigade
- 9) Gold Spot, Parle
- 10) Borivali West
- 11) Goregaon
- 12) Aarey Traffic Chowi , Mahim.

The above referred twelve points were settled for monitoring to know the present level of air quality (Results enclosed). However for regular monitoring the Committee in a meeting held on 03-12-1999 decided that with the present facilities available with MPCB and BMC, following eight stations should be monitored twice in a week for 24 hours, using HVS/mobile monitoring van which has facility for monitoring Hydrocarbons, Carbon Monoxide also.

A) Stations to be monitored by MPCB

- 1) Sion Junction
- 2) Mulund West

B) Stations to be monitored by BMC

- 1) Worli Naka
- 2) Khar West
- 3) Saki Naka
- 4) Borivli East
- 5) Maravli
- 6) Kurla

This work is in progress and the results of monitoring will be published in the local News papers every month as per Hon'ble Court's Order.

MPCB has prepared a proposal in detail for installation of automatic ambient air quality monitoring stations in MMR and the same is submitted to State Government for financial assistance as per Hon. High Court's Order. The

14 monitoring stations proposed are as follows:

- |                                      |   |
|--------------------------------------|---|
| 1) Mumbai Municipal Corporation      | 5 Stations  |
| 2) Navi Mumbai Municipal Corporation | 1 Station (in addition to one automatic AAQ monitoring station already installed by MPCB) |
| 3) Thane Municipal Corporation       | 3 Stations  |
| 4) Kalyan Municipal Corporation      | 3 Stations  |
| 5) Ambernath Municipal Corporation   | 1 Station   |
| 6) Ulhasnagar Municipal Corporation  | 1 Station   |

The copy of the proposal submitted to Government is enclosed herewith for information.

Thanking you,

Yours faithfully,

Sd/-

( K. H. MEHTA )

Member Secretary

D.A.: As above

Copy submitted for information to: Secretary, Environment Department, Government of Maharashtra, Mantralaya, Mumbai-32.

## **Proposal for approval**

### Mumbai Metropolitan Region Ambient Air Monitoring System.

Air quality monitoring is usually undertaken to characterised air quality in Urban areas, near large point or line sources of pollution or where there are sensitive environmental receptors with the following objectives:

1. To judge compliance with and/or progress made towards meeting of Air Quality Standards.
2. To activate emergency control procedures to prevent air pollution episodes, display of pollution levels and automatic alarm for Public.
3. To observe air pollution trends through the Region including non-urban areas.
4. To provide a database for application in evaluation of effects, urban land-use, transportation, planning development and evaluation of abatement strategies and development and validation of diffusion Models.
5. To locate and pinpoint pollutants and also to support legislative control strategies to provide clean and wholesome air to the residents of MMR.

### SHORTCOMINGS OF MANUAL MONITORING

The manual monitoring of ambient air quality poses several problems and has inherent shortcomings such as:

1. It involves lot of workforce firstly for collection and secondly for analysing and evaluation of data collected.
2. As the stations are operated in rotation, all stations in the Region are not worked on a particular day. Thus the trend of pollution transportation cannot be studied.

3. The results of sampling are delayed due to time lag in transportation and analysis of the samples and as a result it is difficult to pinpoint the pollutant and take corrective action.

### SYSTEM COMPONENTS

The Maharashtra Pollution Control Board has worked out a plan based on “System Concept” for measurement of air pollution. The Automatic Continuous Monitoring Network comprises of the following system elements:

- (a) Central Monitoring Station with Data Acquisition System and facilities for Data Processing and evaluation.
- (b) Remote Monitoring stations.

The proposed monitoring system will provide both meteorological and air quality information for the Mumbai Metropolitan Region. The Central Monitoring Station located Headquarters will include a central data acquisition system and facilities for data processing and evaluation.

Fourteen remote monitoring stations will be located and selected sites all over MMR. These sites will be selected to assure representativeness of air quality profile of MMR. The site tentatively selected are

- 1) Mumbai Municipal Corporation 5 Stations
- 2) Navi Mumbai Municipal Corporation 1 Stations ( in addition to one automatic AAQ monitoring station already installed by MPCB)
- 3) Thane Municipal Corporation 3 Stations
- 4) Kalyan Municipal Corporation 3 Stations
- 5) Ambernath Municipal Corporation 1 Stations
- 6) Ulhasnagar Municipal Corporation 1 Stations

The details of proposed sampling points are enclosed (Table-I).

The air quality monitoring stations will be connected to Central Control Station through Telemetry & an alarm network alerting them during episode conditions. These warnings will be multi level (e.g. first stage alert, second stage Alert etc.) will also be directed to the Regional offices of MPCB, Collector’s

office, Municipal Corporations, Transport Commissioner's office, Traffic department. These warnings will also be directed to the Public Information Boards.

The Public Information Boards will be provided at the monitoring station and will be designed to display monitored air on-line. The concentration of pollution parameters will be displayed on such boards with provision of flashing alarm lights in case hazardous concentration of one or more of the parameters occurs at a given monitoring station.

The details of expenditure to be incurred would be as below:

No.	Particulars Station	Cost per Station	No. of Station	Total Cost	Remarks
1.	<u>Capital Cost</u>	(Rs.)		(Rs.)	
a)	Purchase of Automatic AAQ Monitoring equipments for SO <sub>2</sub> /No <sub>x</sub> /NH <sub>3</sub> /CO/HC/RSPM/Meteorological Parameters and Installation.	50 lakhs	x 14	7.0 Crores	
b)	Purchase of Benzene Monitoring Equipment	20 lakhs	x 15	3.0 Crores	(Including AAAQM Stations Navi Mumbai.
c)	*Telemetry System, Display panel Board	2 lakhs	x 15	0.3 Crores	0.3 Crores
d)	Housing for Instruments	1.5 lakhs	x 15	0.225	0.225 Crores
	(A) Total Capital Cost -				10.525 Crores
2.	<u>Recurring Expenditure</u>				
a)	Operating & Maintenance (10% of capital cost)				1.0 Crores

b) Office expenditure 1 lakh x 15 Towards Stationery, Telephone, travelling etc.	15.0 lakhs	(including 1 AAAQM station)
c) Manpower requirement & expenditure towards Salary etc.	36.0 lakhs per year	(A separate Table-II Enclosed)
	51.0	Say 0.5 Crore
(d) Total Recurring Expenditure		----- 1.5 Crore =====

Moving Display System - Moving display of 20 characters. Each character of 6” height - each time the information on each pollutants will get loaded as per data readable in day and night. Display readable from a distance of 4M till 20M. (Rs.80,000/- each).

Accessories for display in weather proofbox (Rs.15,000/- each)

Structures for mounting display boards (Depends on height of struture 10 ft to 20 ft approx. Cost from Rs.30,000/- to 75,000).

**TABLE-I**

**LOCATIONS OF PROPOSED AUTOMATIC AIR MONITORING STATION**

-----

**MUMBAI MUNICIPAL CORPORATION AREA**

- 1) Hutatma Chowk
- 2) Sakinaka
- 3) Sion Junction
- 4) Mulund (Near Johnson & Johnson)
- 5) Borivli (Sanjay Gandhi National Park)

**NAVI MUMBAI MUNICIPAL CORPORATION AREA**

- 1) Turbhe Naka
- 2) One sampling station installed at the Office of Thane-Belapur Industries Association.

**THANE MUNICIPAL CORPORATION AREA**

- 1) Talavi Pali (Near the lake)
- 2) Square near M/s.Paper Products Ltd.
- 3) Junction of L.B.S. Marg (from M/s. Vidyut Metallies Ltd. towards Mulund Checknaka).

**KALYAN-DOMBIVALI MUNICIPAL CORPORATION AREA**

- 1) Kalyan-Dombivli Municipal Corportation Office, Kalyan
- 2) Kalyan-Dombivli Municipal Corporation Office, Dombivli.
- 3) Dombivili Common Effluent Treatment Plant (Chemical).

**AMBERNATH MUNICIPAL CORPORATION AREA**

- 1) Ambernath Municipal Corporation Office

**ULHASNAGAR MUNICIPAL CORPORATION AREA**

- 1) Ulhasnagar Municipal Corporation Office.

**TABLE - II**  
**MAN POWER REQUIREMENT & EXPENDITURE TOWARDS SALARY**

Sr. No.	Municipal Corporation	Monitoring Stations	JSO	JSA	Chowkidar
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**MANPOWER :**

1)	Mumbai	5	1	5	10
2)	Navi Mumbai	2 }			
3)	Thane	3 }		1	5
4)	Kalyan	3 }			10
5)	Ambernath	1 }		1	5
6)	Ulhasnagar	1 }			10
			----	---	---
			3	15	30

**SALARY :**

Salary Per Month	12,000/-	8,000/-	4,000/-
Per Annum	36,000/-	1,20,000/-	1,20,000/-
Total ...	2,76,000/-	Say Rs.3,00,000/- per month Rs. 36 lakhs per year	