

THE MOTOR VEHICLES ACT 1988 AND VEHICULAR POLLUTION - NEED FOR LEGAL OVERHAUL

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Introduction

The pace of social and economic development of any society is dependent upon the mobility of men and materials. The transportation, therefore, assumes an important role in the development of societies. Amongst the various modes of transport, road transport has been, is and will remain vital mode as it enables access even to the remotest area.

Indian economy is heavily road dependent accounting for 55% of freight traffic and 80% of passenger traffic. These percentages are likely to increase in future. The road transport comprises of motor vehicles, which in its simplest form is a heat engine, transforming the chemical energy of fuel into thermal energy to produce mechanical work. However, just as motor vehicles, are the symbol of a modern technological society, they are major sources of air pollution during the usage phase¹. Hence, the need to legally address the vehicular air pollution problems.

The laws in respect of mechanically propelled vehicles can be made both by the Central Government as well as the State Government under Entry 35 of the Concurrent List. Placement of the relevant entry in the Concurrent List enables the centre to establish uniformity across the country and maintain free flow of traffic. At the same time, it enables the State Government to ensure better implementation and to enact laws wherever considered necessary depending on the local conditions.

In the exercise of its powers the Central Government has consolidated and amended the law relating to motor vehicles under the Motor Vehicles Act, 1988 (hereinafter referred as MV Act). The MV Act has been amended several times to keep it up to date taking into account² -

- (i) the fast increasing number of both commercial and personal vehicles in the country;
- (ii) the need for encouraging adoption of higher technology in automotive sector;
- (iii) the greater flow of passenger and freight with the least impediments so

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1 Centre for Science and Environment, *Green Rating Project - Environmental Rating of Indian Automobile Sector 1* (2001). Also see, Section 2(2b) Motor Vehicles Act 1988.

2 A.S. Bhatnagar, "How to claim, contest and motor accident compensation" 3 (1995).

that islands of isolation are not created leading to regional or local imbalances;

- (iv) concern for road safety standards and pollution control measures, standards for transportation of hazardous and explosive materials;
- (v) simplification of procedure and policy liberalization for private sector operation in the road transport field; and
- (vi) need for effective ways of tracking down traffic offenders.

Placed in nutshell, the legislative policy relating to registration, grant of driving licences, road safety, maintenance of motor vehicles, standards for pollution, control of traffic have been spelt out in the Act.

However, the scope of this paper is confined to the overall effect of vehicular emissions spewed out by the vehicles and adequacy of the existing legal provisions under the MV Act to control the same in order to protect the environment not only for the present but also future generation.

Carcinogenic Vehicular Emissions - A Price for Increased Motorisation

Urbanization offers both an opportunities and challenges for national development. With such developmental pace, transport becomes an important requirement in urban centre. Higher incomes, expanding cities and the proliferation of employment centres have increased the demand for motorized transport, resulting in disproportionately high concentration of vehicles in urban centres. Motorization in turn manifests high mobility pattern chugging out toxic vehicular emission which tend to be geographically concentrated. These emissions are at street level where people live and work and are difficult to disperse.

The emissions consists mainly of carbon monoxide, hydrocarbons, oxides of nitrogen, sulphur, partial oxides of aldehyde, particulate matter which have proven to be harmful to human body³. Toxic effects of vehicular emission can lead to deleterious effects, for instance - respiratory and cardiac diseases, mental health problems, non-developmental and malfunctioning of nervous and reproductive systems as summarised in below mentioned Table 1⁴.

Thus, the vehicles have become a licence to kill people. India is reeling under deteriorated air quality with considerable levels of mortality and morbidity⁵.

3 *Supra* note 1 at 3-4.

4 A.S. Subramanian, "Fuelled pollution-A question of quality" *Survey of the Environment, The Hindu* 123 (2000).

5 Kalpana Jain, "Dirty Delhi makes you breathless" *The Times of India New Delhi* (July 22, 1999); Radhika Srivastava, "Pollution, Population keeps TB cases on the rise" *The Times of India New Delhi* (January 13, 2001).

Table 1 : Types of Pollutants and Their Effects

Pollutant	Major source	Health effect
Carbon monoxide	All gasoline vehicles - more from those without a catalytic converter	Highest affinity exhibited by haemoglobin, reduces the oxygen carrying ability of blood and hence increases risk for people with heart disease. Affects reflexes and thinking. Serious combined effect with other pollutants.
(Unburnt or partially burnt) Hydrocarbons (HC)	Major contributors are petrol vehicles without cat. converter, two-stroke engines and fuel pump stations (Spillage)	High irritant to eyes. Affects respiratory system. Suspected carcinogenic effect depending on presence of benzene in fuel, converted aromatics and pyro-synthesis of PAH during combustion.
Nitrogen Oxides (NO ₂)	More from diesel vehicles and less from petrol vehicles.	Affects respiratory system due to acidic effect. Aggravates asthma and irritant to eyes. When combined with HC and other pollutants can be more harmful.
Particulate matter	Mostly from diesel fuelled vehicles and oil burning in two-stroke engines. Very fine and low in petrol fuelled vehicles.	Affects respiratory system more seriously. When combined with SO ₂ irritates and impairs breathing. Diesel exhaust particulate contains PHA which are likely to be carcinogenic to human beings.
Lead	Petrol vehicles- Basically from lead in fuel	Affects circulatory, reproductive and nervous system - mental functioning of children - and increases risk to people with high blood pressure. Affects respiratory system.
Sulphur di-oxide (SO ₂)	Both petrol and diesel-basically from the sulphur level in fuel.	Directly affects the respiratory system. Very high irritant. When combined with particulate matter, affects people with chronic bronchial and heart patients.
Benzene	Mostly from fuel directly. Occasional formation in combustion or conversion of aromatics.	Known carcinogen. Direct health effect on continued exposure. Reproductive problems and birth defects are likely.
Ozone	Mostly from HC and NO _x	Irritation to respiratory organs and eyes. Decreases the resistance power to infections. Aggravates illness.

Legislative Regime (Weak and Nebulous)

Till 1990s, the Indian legislature remained almost blind to the air pollution for mobile sources like motor vehicles. Fragmented regulations to deal with vehicular emissions came into force only in 1990s⁶. The legislations addressing the vehicular air pollution problem are the

- Air (Prevention and Control of Pollution) Act 1981 (hereinafter referred as Air Act),
- Environment (Protection) Act 1986 (hereinafter referred as EP Act) and
- Motor Vehicles Act 1988 (hereinafter referred as MV Act).

However, the *Air Act*⁷ and *EP Act*⁸ are statutes only on papers as they are not strong enough to play a precautionary or a corrective role to control the problem of vehicular emission. In practice, the Pollution Control Boards or the Ministry of Environment and Forests have never notified the emission standards for vehicles. These bodies are mere advisers. It is, infact, the Ministry of Surface Transport under the MV Act which notifies the standards besides implementing the same⁹. The standards are generally re-notified under the Air Act and EP Act.

The MV Act though loosely worded, is the principal legislation that regulates emissions from vehicles. Two kinds of approaches - primary and secondary - are embodied under the Act to arrest the deteriorating air quality.

The primary approach deals with the mandatory requirements of new vehicles whereas the secondary approach concentrates on the maintenance of in-use vehicles. Rule-making power is given to Central and State Government for the new and in-use vehicles, in order to effectuate the purpose of the Act, under the Central Motor Vehicle Rules 1989 (hereinafter referred as CMV Rules). Both these approaches are dealt in detail as under-

6 Anil Agarwal, Anju Sharma and Anumita Roy Chowdhary, *State of India's Environment: National Overview: The Citizens' Fifth Report Part 1* 195 (1999); Shyam Divan et al., *Environmental Law and Policy in India* 269-271 (2001).

7 The Air Act 1981, a *lex specialis*, mainly deals with preventing and controlling industrial pollution. Section 20 of the Act, is the lone section, that talks of emissions from vehicles by empowering the State Government to give instructions to the concerned authority in charge of registration of motor vehicles under the MV Act 1988 for ensuring standards for emission from motor vehicles and the authority is obliged to comply with such instructions.

8 The EP Act 1986, under Sections 3 and 6 empowers the Central Government to take all such measures as are necessary for purpose of protecting and improving the quality of environment. Though, a sweeping power, it is necessary for the Central Government to take up environmental protection measures which includes laying down emission standards from new manufactured products like motor vehicles.

9 Anil Aggarwal, "Hammer of Thor" *Down to Earth* 5 (April 30, 2000).

Primary Approach

For the new vehicles, Section 110 of the MV Act empowers the Central Government to make rules with respect to –

- (a) Standards for emission of air pollutants (known as the mass emission standards);
- (b) Installation of catalytic converters in class of vehicles to be prescribed; and
- (c) Warranty after sale of service and norms thereof.

Mass emission standards refers to gm/km of pollutants emitted by the vehicle, the composited pollutants in the emitted gases should be within the prescribed limit under the law both for petrol and diesel driven vehicles¹⁰. These standards are infact, technology forcing deadlines to compel the manufacturers to upgrade their technology to meet these norms by a particular date. The mass emission standards were notified under the CMV Rules by Ministry of Surface (Transport wing) for the first time in 1991¹¹, which were progressively revised in 1996¹² and 2000¹³.

The setting of mass emission standards is not a fool proof exercise as it is a more based on relative experience and not absolute targets. Parameters such as pollution levels, availability of pollution control technology, technological capability of automobile industry and experiences with pollution control in other countries become the prime considerations for setting up emission standards¹⁴. The below mentioned Table 2¹⁵ indicates the emission standards for 1991, 1996 and 2000 according to type approval test¹⁶ and conformity of production test¹⁷ -

In addition, the Act lays down emission norms for vehicles fitted with original equipments running on alternate clean fuels i.e. Compressed Natural Gas (CNG) and Liquefied Petroleum Gas (LPG), as a result of stringent directions by apex court in *M.C. Mehta vs. Union of India*¹⁸. The original equipment vehicles must meet the prevailing emission norms i.e. Bharat II norms.

10 Anil Aggarwal, Anju Sharma and Anumita Roy Chowdhary, *Slow Murder – The Deadly Story of Vehicular Pollution in India* 50 (1996).

11 CMV Rule 115(3).

12 *Id.* 115(9).

13 *Ibid.* 115(9) and (10).

14 *Supra* note 10 at 51.

15 *Ibid.* at 53.

16 Type approval test means where standards are set according to the make and reference weight of the vehicles for two, three and four wheeler vehicles.

17 Conformity of production test implies where a vehicle is randomly selected by the testing agency from mass scale production in factories.

18 1998(4) SCALE(SP) 7.

Table 2 : Progressive revision of emission standards for Indian vehicles (1991-2000)

Types of Vehicles and pollutants	April 1991 standard	April 1996 standard	April 2000 standard
Petrol vehicles: 2 wheelers			
CO (gm/km)	12-30	4.5	2.0
HC (gm/km)	8-12	-	-
HC + NOx (gm/km)	-	3.6	1.5
Petrol vehicles: 3 wheelers			
CO (gm/km)	12-30	6.75	4.0
HC (gm/km)	8-12	-	-
HC + NOx (gm/km)	-	5.40	1.5
Petrol vehicles: Cars			
CO (gm/km)	14.3-27.1	8.68-12.40	2.72
HC (gm/km)	2.0-2.9	-	-
HC + NOx (gm/km)	-	3.00-4.36	0.97
Diesel vehicles*			4.5
CO (gm/kmh)	14.0		1.1
HC (gm/kmh)	3.5	11.2	8.0
NOx (gm/kmh)	18.0	2.4	0.36
PM (gm/kwh)	-	14.4	
Diesel vehicles**			
CO (gm/kmh)	14.3-27.1	-	5.0-9.0
HC+NOx (gm/kmh)	2.7-6.9	-	2.0-4.0
* : gross vehicle weight > 3.5 tonnes		kwh = Kilowatthour	
** : gross vehicle weight < 3.5 tonnes		gm/km : grammes per kilometer	

But with time, fixing of emission standards has been knocked out of its scientific domain and is substituted by politics of norms despite setting of high powered committees on vehicular emission¹⁹. Lack of transparency, political and economic considerations, no public participation and bureaucratic indifference are often cited as reasons for weak, nebulous and inadequate regulations. For instance, the most serious criticism of 2000 emission regulations was (popularly known as Bharat I and II norms) is the adoption of outdated European emission regulations [EURO1 and EURO II] which Europe had enforced way back in 1992 and 1996²⁰. What is the point setting norms which do not aspire to achieve higher targets and make the air quality goal remain

19 For instance, H.B. Mathur Committee (1991); S. Raju Committee for Petrol Vehicles (1995); B.P. Pundir Committee for diesel vehicles (1995).

20 *Supra* note 6 at 194.

elusive? The government has not been proactive in setting stringent emission targets to push the industry to improve technology and as a result the vehicles manufactured emit high level of pollutants even when they are new.

While at one level, emission standards are weak, at another level, technical parameters for measuring mass emission standards have been played around to make them even weaker. Parameters such as warm and cold start emissions²¹ and Indian driving cycle²² have been complex debatable issues. Never ever these issues have been brought before the public for discussion. The automobile industry, right from the beginning, has resisted and even succeeded in delaying the adoption of all those measures which have a significant bearing on reducing actual emission levels. The attributable reason for such an attitude stems from the fact that huge investments have to be made by the concerned industry in upgrading their technology, for which they are not ready. For example, an investment of more than Rs.50,000 crore in technology had to be made by the automobile industry in order to meet the 1996 and 2000 emission norms²³. Similarly, the recent Mashelkar Report on Auto Fuel Policy²⁴, while emphasising on stringent emission norms, forces the vehicle manufacturers to further upgrade their technology by making an investment of Rs.25,000 crores in order to meet the Bharat Stage III norms which would come into force in the year 2005.

Fitment of catalytic converter²⁵ has been made as a mandatory requirement for registration of all four wheeled petrol driven vehicles in four metro cities and other 45 cities of the country²⁶. Exhaust emissions of such vehicles are substantially less than that of vehicles not fitted with catalytic converters²⁷. Interestingly, the Central Government came out with the said rule only when direction were issued by Supreme Court in *M.C. Mehta vs. Union of India*²⁸.

21 Warm start refers to the warm conditions of the engine when started whereas cold start refers to engines condition being cold when started.

22 Indian driving cycle means driving cycle that simulates average road conditions such as acceleration, deceleration, cruising, idling.

23 *Supra* note 10 at 53.

24 Chetan Chauhan, "All vehicles must meet Bharat II norms by 2003" *The Hindustan Times New Delhi* (January 13, 2002); Radhika Sachdev, "Improving City's pollution standard" *The Hindustan Times New Delhi* (February 4, 2002).

25 A catalytic converter removes the pollutants from the exhaust by reducing or oxidising them. However, in US doubts have been raised about the efficiency of these converters as studies have shown that their use is a growing cause of global warming due to emissions of nitrous oxides, a greenhouse gas, more than 300 times carcinogenic than carbon dioxide.

26 See, The Report of Ministry of Surface Transport, *Annual Report 12* (1995-96).

27 <www.delhigovt.nic.in/dept>, visited on February 20, 2004.

28 1997(4) SCALE (SP) 10.

Emission warranty²⁹ for vehicles finds a place under section 110(p) of the MV Act. The Central Government has been given the power to make rules in this regard, but till date no rules have been made. However, for the first time, since the year 2001 the automobile industry decided to take the responsibility for emission loads through a warranty for all categories of vehicles including passenger cars, multiutility vehicles, two or three wheelers sold after July 1, 2001 and all commercial vehicles from the date of implementation of Bharat II emission norms³⁰. The warranty period of each vehicle category is as follows:

2 wheeler	- 30,000 km or 3 years whichever occurs earlier.
3 wheeler	- 30,000 km or 1 year whichever occurs earlier
Passenger car	- 80,000 km or 3 years whichever occurs earlier.
MUV	- 80,000 km or 3 years whichever occurs earlier.
Commercial vehicle	- 80,000 km or 3 years whichever occurs earlier.

It is hoped that the Government would look into this matter and enact appropriate rules at the earliest.

Secondary Approach

Maintenance of in-use vehicles is the secondary approach for reducing vehicular emissions in order to have beneficial impact on the air quality. The maintenance programme is aimed to be designed to return malfunctioning high emitters to their design specifications. The effectiveness of the industry in performing the appropriate repairs, the accuracy of the test procedures in identifying the high emitters and deterioration rate after maintenance will affect the actual emission reductions³¹.

Considering that a large population of vehicles belong to pre-emission control period i.e. prior to 1991 and that a large majority of these vehicles are poorly maintained, it is apparent that these vehicles are gross polluters and need to be tackled on priority for emission abatement. Unless attempts are made to reduce emissions from older vehicles, new vehicles which are only 8 percent of the total vehicular population and are going to be better designed to meet emission standards, will not make much impact³².

29 Emission warranty implies that emission levels of vehicles will not drop below a specified level for certain period of vehicle life or upon certain kilometers.

30 See, The Report of EPCA *Eleventh Report 3* (January to May 2001).

31 Institute of Public Administration and Teknektron Inc., "Evaluating transportation controls to reduce motor vehicles emissions in major metropolitan areas" quoted in Irving N. Sax, *Industrial Pollution* 345-359 (1974).

32 <www.siamindia.com/technical/emission.htm>, visited on September 15, 2003.

Section 109 of the MV Act³³ mandates maintenance of in-use vehicles. Rule-making power is given to Central Government under section 110 of the Act to lay down standards for maintaining the emission of smoke, vapour, sparks, ashes, grit or oil from motor vehicles and maximum allowable limits of their emission coupled with Section 111 of the Act which gives power to the State government to make rules for periodical testing and inspection of vehicles by prescribed authorities and fee to be charged for such a test. Thus, the owner is made responsible for volumetric concentration of gases in the total exhaust measurement of emission for vehicles on road by tailpipe emission tests and pollution under control certificate. The same have been notified under the CMV Rules.

A tailpipy emission test has been laid down under Rule 115(1) in order to ensure that the engine is properly tuned and is not emitting smoke, visible vapour, grit, sparks or oily substances. Every motor vehicle must comply with the following emission standards³⁴ -

- (a) Idling CO (carbon monoxide) emission limit for all four wheeled petrol driven vehicles shall not exceed 3 percent by volume;
- (b) Idling CO emission limit for all two and three wheeled petrol driven vehicles shall not exceed 4.5 percent by volume.

The smoke density for all diesel driven vehicles shall not exceed 75 Hartidge Units (full load) and 65 Hartidge units (free acceleration). The same standard have been retained for 1996 and 2000 respectively.

It is submitted that tuning of vehicles is a non-satisfactory test procedure for tailpipe emission of in-use vehicles for two reasons -

- (i) Why is the test procedure restricted to CO alone and not for particulate matter or nitrous oxide? The question assumes importance in light of new range of vehicles for which the government is very firm that the new vehicles must meet stringent emission norms of CO, HC and NOx for petrol and diesel vehicles and particulate emissions for diesel vehicles;
- (ii) Why is the tail pipe test dealing with pollutants at individual level? Is it not important to take all the pollutants on a comprehensive basis to solve the problem of vehicular pollution?

There is a need to plug in the loophole by amending the law on above-mentioned lines, considering the situation in entirety.

33 Section 109: Every motor vehicle shall be ... so maintained as to be at all times under the effective control of the person driving the vehicle.

34 CMV Rule 115(2).

Rule 115(7) mandates every motor vehicle to obtain Pollution Under Control Certificate (hereinafter referred as PUC Certificate) for periodical tailpipe testing and inspection of vehicles. After the expiry of a period of one year from the date on which the motor vehicle was first registered, every vehicle shall carry PUC certificate issued by an agency authorized for this purpose by the State Government. The validity of the certificate shall be for six months or any lesser period as may be specified by the State Government from time to time and the certificate shall always be carried in the vehicle and produced on demand by an officer not below the rank of sub-inspector of police or inspector of motor vehicles. A penalty of Rs.1000/- for the first offence and Rs.2000/- for every subsequent offence of violation may be imposed on the owner of motor vehicle found to be not in possession of a valid PUC certificate³⁵.

The PUC certificate being a statutory and potentially powerful instrument in checking emission levels, no doubt is a good step, but in reality it has failed to make an impact on controlling vehicular pollution due to extremely poor enforcement. The vehicle owners themselves are responsible for such a sorry state of affairs in addition to the enforcing authorities. Getting PUCs by hook or crook has become the aim of vehicle owners, who merely want to avoid paying Rs.1000/- as fine. Adjustments are made to the carburetor which regulates the flow of fuel to the engine and makes it difficult to accelerate beyond a point. However, after getting the certificate, vehicle owners can easily change the carburetor settings to the original, which would result in vehicle polluting, just as much as before the check³⁶.

Many a times several complaints are made that fake certificates are being issued by checking centres on payment of extra money or genuine tests are not carried out. The skepticism expressed in a report prepared by Automobile Association of Upper India (AAUI)³⁷, based on its campaign about genuineness of PUCs test in many centres is an eye-opener. AAUI estimated that any pollution test would take at least 2-3 minutes for parking and positioning of the vehicles and another 6 to 8 minutes for testing and adjusting of carburetor. Thus, on an average, each vehicle would take a minimum of 10 minute for the test. Accordingly, only six vehicles could be tested properly per hour. Based on this estimate, the AAUI report commented: "It, therefore, raises doubts about the genuineness of the testing, when more than 100 vehicles are tested by any service station in one day, assuming eight hours of work."

35 *Ibid* 116.

36 *Supra* note 6 at 2000; Saurabh Sinha, "Who Cares about PUC?" *The Times of India New Delhi* (April 4, 2002).

37 Automobile Association of Upper India (AAUI), *Analysis of Random check of vehicles for air pollution* 20 (1995).

Even the enthusiasm of enforcers to check PUC certificate has fizzled out. Infact, checking for seatbelts, number plates and red light violations are the in-things - pollution does not matter any more. Ironically, a report by Delhi Transport Department found out that the number of vehicles checked by pollution team was very poor as it ranged between 2.57 to 5.67 percent between 1994-2001³⁸.

The general feeling among the public is that these checks are fake, cause harassment and that the difference these checks would make to air pollution would be negligible. In order to make this statutory requirement an effective tool to combat pollution, it is necessary that random checking of PUC certificates should be done by the transport department on regular basis.

Besides this, the MV Act nowhere lays down any other criteria for maintaining the vehicles for cleaner combustion. To that extent, the Act is inadequate and insufficient and needs to be amended in order to include vehicular inspection and maintenance scheme, with written procedures in proper manner. A well-maintained vehicle not only pollutes less but also gives better fuel mileage. Rules relating to proper tuning of the carburetor and lean mixture setting, regular cleaning of air filter, regular checking of ignition system (with special attention to spark plug, plug gap, ignition coil, condenser, leads ignition timing and battery voltage), proper valve tappet clearance, steering and wheel alignment, tyre pressure and wear must be framed for lower pollution levels from the vehicles³⁹.

Even the supplemental maintenance control strategies in the form of retrofit⁴⁰ or conversion⁴¹ must be a prime parameter for effective inspection and maintenance programme under the Act to arrest vehicular pollution. However, any consideration of the feasibility of a specific retrofit or conversion system must includes a determination of the emission control potential, the population of vehicles to be controlled, installation requirements, system reliability, cost of implementation and cost of vehicle owner⁴².

In the year 2000-01 to fulfil its constitutional commitment of improving air quality, the government notified rules relating to emission standards for the

38 Chetan Chauhan, "Vehicular Pollution unabated despite CNG: A Report" *The Hindustan Times, New Delhi* (December 26, 2001).

39 *Supra* notes 27 and 31.

40 A retrofit method can be defined as an application of a device or system that may be added to a motor vehicle. For instance, fitting of CNG conversion kit on existing in-use gasoline and diesel vehicles.

41 Conversion implies any modification or adjustment to be made to the engine of motor vehicle. For instance, exchange of old diesel engine for a new CNG engine on existing in-use diesel vehicles.

42 *Supra* note 31.

retrofitted and converted in use vehicles running on alternate clean fuels i.e. CNG⁴³ and LPG⁴⁴. The rules provide that the in-use retrofitted and converted vehicles (gasoline and diesel) with CNG kit and retrofitted vehicles (gasoline) with LPG kit must meet the emission norms as applicable to the prevailing norms corresponding to the year of manufacture of vehicles.

Here is the catch The CNG/LPG norms are fundamentally flawed and complete eye wash as they dilute the very purpose of curbing vehicular pollution. The rule states that emission standards should correspond to the year of manufacture (emphasis added). Take for instance a situation where vehicle was manufactured in 1991. If the vehicle is changed to CNG/LPG kit in today's date, it would mean that it should meet the 1991 standard, which by all parameters was very inadequate and weak. Another situation may be if the vehicle was manufactured in 1985 and is changed to alternate clean fuel kits in today's time. A plausible question may come up as to which standard becomes applicable? The question assumes importance as prior to 1991 there were no emission standards laid down for the vehicles. In order to find solutions to these kind of situations, there is a need to change the rule by inserting the clause that emission standards must correspond to the year of retrofitment/conversion or the prevailing norms, whichever is later considering the fact that India has a legacy of grossly polluted personalized vintage vehicles.

Conclusion

Against this backdrop, the legislative measures in the form of command and control approach for combating vehicular pollution under the MV Act have been circumvented and completely ignored leading to deterioration of air quality in the last decade. A few fragmented laws cannot help to make the air any cleaner. There is an urgent need to plug in the shortcomings in law by adopting an integrated and holistic approach encompassing both short and long term measures to improve the air quality.

For new vehicles, the government should be proactive in setting stringent emission targets in a transparent manner by allowing a public debate to assess their adequacy for protecting and improving the atmosphere. The automobile industry must be pushed to improve their technology for different models of vehicles, instead of buying time and delaying the deadlines of emission standards. Similarly, the rules relating to emission warranty for longer period and mileage must be seriously taken up by the government, thereby placing responsibility on the vehicle manufacturer to control emissions for major period of vehicle life.

43 CMV Rule 115B (The Central Motor Vehicles (4th Amendment) Rules, 2000).

44 *Ibid.* 115C (The Central Motor Vehicles (3rd Amendment) Rules, 2001).

For the in-use vehicles, regular and proper vehicular maintenance programme is the need of hour. It is recognised that emissions performance of vehicles can quickly deteriorate if vehicles are not properly maintained. The legislative regime is scattered, loosely worded and sometimes silent on this aspect and hence a need to update and enact laws. The tailpiper requirement must be amended to include all the carcinogenic pollutants on a comprehensive level and strict emission norms for alternate clean fuel be revamped. The PUC certificate must be implemented in the right earnest in order to solve the problem of vehicular pollution. Even the rules relating to cleaning of engine for cleaner combustion, supplemental strategies must be introduced under the MV Act as mentioned earlier.

No doubt all these measures could mean a higher cost of transportation to individuals and the economy as a whole. But the choice is ours - whether we want to spend more to get clean air or spend still more to fight the illness due to air pollution?