

Killer auto pollution

OUR EARTH is poisoned. Every day, thousands of tons of hazardous gases are pumped into the air by innumerable industries, thermal power plants and millions of motor vehicles on road. The atmosphere has had enough. At some places, even the rain water tastes sour. Blackened streets, poisoned rivers, thirsty villages... everything spells danger.

One of the major contributing factors are automobiles.

The number of vehicles have increased at least a ten-fold over the past ten years. Today, there are 500 million vehicles all over the world. In India, the number is around 15.0 million. There has been a rapid increase in vehicle numbers in India in the 1980s. The import of technologies and the transport policy we pursued are the most important reasons for this development. In the year 2000, India will have about 42.5 million vehicles on the road—a three-fold increase.

Until two decades ago, the popular belief was that the only

problem the vehicles pose to man was to his physical safety on the road. Even in USA, people started looking at the vehicles from the ecological angle only in the beginning of 1970s.

There are about a thousand chemicals in the motor vehicle exhaust. We are yet to find out the effects of many of these.

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And of the chemicals we know, the most important ones are, carbon monoxide, nitrogen oxides, lead and hydrocarbons. Though the developments in technology have helped to decrease toxic emissions, the sheer increase in the number of motor vehicles has nullified all improvements effected by technology.

Globally, 15 per cent of the carbon dioxide emission comes from automobiles. The increase in the carbon monoxide concentrations will enhance the build-

up of greenhouse gases by the destruction of hydroxyl radicals. This will contribute to global warming. In Britain, nearly 40 per cent of the nitrogen oxide and 80 per cent out of the total carbon monoxide emissions, of 44.5 lakh tones are due to automobiles.

Nitrogen oxides and hydrocarbons are the major factors

contributing to acid rain. Acid rain is harmful not only to humans but also to the forests and fresh water resources. Nearly 30 per cent of the acidity of the rain is due to nitrogen oxides. Sulphur dioxide emissions from the thermal power plants and the industries contribute the rest.

Ozone another component of

exhaust fumes is harmful to the plants and the crops. According to the 1986 statistics of the World Wildlife Fund (WWF), 52 per cent of the West German forests have been affected by acid rain. Other Scandinavian countries have been similarly affected. In Norway alone, nearly 35,000 square kms of lake land has been affected by acid rain.

In view of automobiles' contribution to fouling the air, many nations have been compelled to impose restrictions on vehicular traffic. In order to protect the city and its historical monuments, Athens has restricted the entry of automobiles. Excessively polluting vehicles are not allowed in West Berlin. Hamburg and Munich have imposed similar restrictions. In

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Rome, traffic policemen wearing anti-smog masks are becoming a common sight. In Singapore, drivers are fined if there are fewer than four persons in a car.

The World Health Organisation (WHO) has suggested upper limits for the atmospheric concentration of poisonous gases. These levels differ in different countries. In India, though limits have been set, they are not effective; in fact they are rather loose; in many parts of Bombay and Delhi even these limits are being violated.

New traffic rules have imposed restrictions on the automobile emissions. According to the measurements conducted by the traffic department in Bangalore, 70 per cent of the petrol vehicles and 80 per cent of the diesel vehicles do not come under the limits. The manufacturer has to ascertain that the exhaust emissions do not exceed the limits when the vehicle rolls off from the factory. Field checks are, however, rare.

Many western countries consider lead as the most dangerous chemical in the automobile exhaust. Lead (in the form of lead tetraethyl) is added in small quantities to petrol to achieve anti-knock properties. In USA, only lead-free petrol has been sold for the past 15 years. In India we are adding about 0.8 gram of lead in every litre of petrol even now; this is much higher than the limits in many of the countries.

Eco-movements in the west are questioning the use of motor vehicles itself. Newer technologies suggest methods of reducing automobile emissions. In USA, exhaust limits came in to existence in 1970. Later in 1975, 1980, 1981 and 1983 newer limits came in to being. Each of these was more stringent than its predecessor.

The conventional way of reducing exhaust emissions is by the use of catalysts. By connecting a catalytic converter to the exhaust system the gases that are normally given out can either be converted to less harmful ones or their concentration reduced. The most efficient three-way catalytic converter in

market, can reduce not only carbon monoxide but also nitrogen oxides and hydrocarbons. This kind of catalysts became a must for all the automobiles marketed in USA since 1983.

Improvements are being made in engine design towards the development of environment friendly automobiles. One example is the lean-burn engine; it uses a high air-to-fuel ratio to reduce the emissions. This is not as effective as the catalytic converter. The use of alternate fuels is an active area of investigation.

Until the beginning of 1970's people thought that diesel vehicles are much more safe than the petrol driven ones. And because of this, the production of diesel vehicles went up. It is only very recently that researchers discovered that the fine particles emitted from diesel vehicles can pose serious health problems. These minute particles, less than 0.2 micron across, cloud the atmosphere and when we breathe in they are drawn deep into the lungs.

We have not yet started looking at the vehicle problem from the ecological standpoint, perhaps because only about one per cent of our population own vehicles. In Delhi, the number of public transport vehicles is only 1.5 per cent of the total fleet. This number is not

very different in other Indian cities. This suggests that the environmental threats come mainly from private vehicles. The politics of every other environmental issue is the same - a tiny minority versus a huge majority. A democratic transport policy is very much in need today. Since we have not yet started looking at the environment as a resource, a majority may not agree to this suggestion. But those who are willing to look beyond the immediate future will understand the point.

Public transport is viewed as an industry today. Other service sectors such as Post & Telegraphs and Railways, are also looked at similarly. If cheap and comfortable transport facility can be brought to everyone, this explosion in vehicle population will automatically come down. This was in fact tested in Britain in the early 1980s. Though there are scientific remedial measures, they will not eliminate the problem completely. Today, for us in India the most important thing is to understand and make others understand the problem. Wherever environment is looked upon as the toy of the rich and where a democratic development policy has not yet evolved, problems of this kind will continue to persist.

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