Newsletter on Eco-labelling and Eco-friendly Products

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INDIA
ENVIS CENTRE

Vol. 05, No. 04 January - March 2011

Contents ***Page***

- *Automobile and Environment* *1*
- *Major Pollutants Associated with Automobiles* *3*
- *Green Automotive Industries* *5*
- *Eco Car Care* *7*
- *Eco News* *9*

Sponsored by:

Ministry of Environment and Forests, Government of India

ENVIS Centre on:

Eco-labelling and Eco-friendly Products

Foreword

The Indian Automobile Industry is manufacturing over 11 million vehicles of these about 1.5 million are exported every year. The dominant products of the industry are two wheelers with a market share of over 75% and passenger cars with a market share of about 16%. Commercial vehicles and three wheelers share about 9% of the market between them. About 91% of the vehicles sold are used by households and only about 9% for commercial purposes.

As per Consultation paper on "Standards and Labelling of Fuel Consumption in Cars" released by Bureau of Energy Efficiency (BEE) in 2011, the fuel consumption by the Indian car has increased three fold in last 10 years. It is anticipated that if the trend of buying cars will be the same, the annual car sales in 2020 will be over 5.5 million per year. The annual fuel consumption per year will be excess of 25 million ton of oil equivalent.

Pollutants derived from automobile operation have begun to pose environmental problems of considerable magnitude**.** A mixture of gases that discharge from automobiles pollute our atmosphere, and recklessly making the environment an abode unfit for living. A combination of un-burnt hydrocarbons, carbon monoxide, oxides of nitrogen combine to spread an obnoxious mixture. When in excess quantity, these tend to cause automobile pollution. Within a certain limit they are acceptable, but when the engine is not maintained properly, or a vehicle uses outdated technology, or the quality of fuel is not good, all these result in a higher level of emission of all the gases.

To regulate the output of air pollutants from internal combustion engine, Government of India instituted emission standards. These are Bharat stage emission standards. The Bharat Stage (I -IV) norms have been adopted to suit specific needs and demands of Indian environment. These are Euro based emission norms suitable to India. Guidelines for auto fuels and reduction of pollution from older vehicles are also created. The fuel specification of petrol and diesel has also been matched with the corresponding European fuel specification for meeting the Euro emission norms.

Government plays a significant role in shaping the development of the industries, and in determining the standards governing individual products and the impact of those products on the environment. Now it is our responsibility also to keep the air clean and protect the environment by following the norms set up by government.

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Automobile and Environment

The automobile has been a poisonous polluter all around. Automobiles influence the environment in many ways. Its impact begins from the day of its manufacturing to the last day with its scrap in a junkyard. On an average during the life of an average motor vehicle, most of the environmental damage occurs during driving and is mainly associated with fuel consumption. Nearly 90% of its lifecycle ("cradle to grave") is spent in greenhouse gas production. According to the Society of Indian Automobile Manufacturers, India's auto production has doubled from 7 million units in 2004 to over 14 million units in 2010 largely backed by a buoyant domestic market.Automobile emissions are responsible for 70% of the country's air pollution. Pollution from vehicle exhaust is a growing problem for India. Exhaust from automobiles has increased eight-fold over levels of twenty years ago. According to Chandra Bhushan, coordinator, Green Rating Project, Center for Science and Environment "Vehicles are the core of the automobile industry since they alone generate about 80 per cent of the total life cycle pollution."

Automobiles and Pollution

The power to move an automobile comes from burning fuel in an engine. Emissions from an individual automobile are generally low, but in numerous cities across the country, the personal vehicle is the single greatest polluter, as emissions from millions of vehicles on the road add up. Driving a private car is probably a typical citizen's most "polluting" daily activity. The car runs when fuel is burnt in an engine and pollution comes from by-products of the combustion process (exhaust) and from evaporation of the fuel itself. These gases consist of a blend of hydrocarbons (HC), Carbon Monoxide (CO), Oxides of Nitrogen (NOx) and the excess quantity of all these un-burnt gases. The mixture of these gases result in automobile pollution. The atmosphere can sustain a certain amount of emission but the problem arises when the vehicles starts emitting excessive amount of these gases. The reason may be due to deficient engine, obsolete technology in the vehicle, and bad quality of fuel.

Automobile pollution is also caused when the air fuel mixture is not in accurate proportion. Further the disproportionate ratio also leads to low engine power and wastage of fuel resulting in low performance and lower fuel economy. As mentioned earlier automobiles also release toxic emissions damaging environment by adding to the greenhouse effect, reducing air quality, and decreasing the ozone layer.

The production and disposal of automobile is also detrimental to the environment. Itis adding CFCs (chlorofluorocarbon) to the environment and creating landfills for tyres. In the production of cars, CFCs are entered into the car system. Even a small amount of

CFCs release does a good amount of damage into the atmosphere. CFCs are also released during the life of the automobiles and released once again in the destruction of vehicles. Tyres are non- biodegradable and damage the environment.Tyres are usually discarded in a tyre dump. These landfills also create problems because of the amount of disease spread from the large amount of insect populations growing in these tyres and cause much of a threat to humans.

Due to heavy metals and other toxins/pollutants in tyres there is always risk of leaching these toxins in to the ground water when placed for landfills. Now many industries have developed activities of recycling tyres out of an environmental green drive. These industries are now offering a wide range of products and services like rubber powders for the brake lining industry and reclaims for manufacturers of a variety of products. Rubber from scrap tyres is reused as a low-volume filler material in a new tyre. These companies are now a reliable second-tier supplier for the car industry.

Runoff lubricants, coolants and gas deposits of travelling automobiles damage the water supply. When run off mixes in to the rivers and lakes through sewer system, these toxic chemicals stimulates the growth of aquatic plants which in turn deplete dissolved oxygen of water. It causes the death of fishes and also creates bio-accumulative toxic substance that marine animals eat. These substances then pass along to humans in the food chain. It causes health problems for humans and marine animals.

Major Pollutants Associated with Automobiles

Automotive engines emit different types of pollutants. Here's what an automobile is producing:

Carbon dioxide is one of the dominant greenhouse gases. It traps earth's heat and causes global warming and contributes to climate change.

Carbon monoxide is colourless, odourless, and poisonous gas. It is a product of incomplete burning of hydrocarbon gas and also a product of incomplete combustion of fuel. Major source of emission of carbon mono oxide is automobiles. Two-thirds of the carbon monoxide emissions come from transportation sources. Cars are the largest contributors. When it is inhaled, it combines with haemoglobin and forms carboxy-haemoglobin, weakening the flow of oxygen to brain and other parts of the body. Carbon monoxide can poison slowly over a period of several hours, even in low concentrations.

Sulphur oxides are present in motor vehicle emissions, as the result of fuel combustion. It affects human health when it is breathed in. It contributes to respiratory illness, irritates the nose, throat, and airways to cause coughing, wheezing, and breathlessness. Its effects are felt immediately and most people particularly children and elderly feel the worst symptoms within 10 or 15 minutes after breathing it in and also people suffering from asthma and emphysema. Sulphur oxides are one of the primary sources that contribute to the formation of acid rain, which damages trees, crops, and buildings; and makes soil, lakes, and streams acidic.

Oxides of nitrogen (NOx) are noxious pollutants and present in the exhaust of any combustion engine. These dominate diesel engine emissions. Automobiles and other mobility sources contribute about half of the NOx that is emitted. As one of the components of smog, its inhalation causes the reduction in lung function and increases the respiratory problems. Nitrous oxide is a greenhouse gas and it contributes to ozone depletion in the stratosphere. These are the acidic gases that contribute to smog formation and acid rain.

Particulate matter is microscopic soot, smoke, and dust particles produced in the combustion process primarily from engines, car parts, tyres, and diesel exhaust. Very little particulate emission (5%) is from petrol engines, though, with much more (19%) coming from diesels, disproportionately from the larger diesels in trucks and buses. The National Environmental Technology Centre (NETCEN) recently suggested that one bus could produce as many particulates as 128 typical cars. Exposure to fine airborne particulate matter is associated with cardiovascular and lung problems and mortality in older and cardiac patients. The US Environment Protection Agency estimates that particulate pollution kills more than 60,000 people per year. As per data released by the Central Pollution Control Board for 2007 under the National Quality Monitoring Programme (NAMP) in the cities like Ahmedabad, Varanasi, Chennai, Pune, and Kolkata the PM10 levels have reduced in 2007 compared to 2002 levels. However in the cities like Mumbai, Faridabad, Lucknow, Bangalore and Delhi the PM10 annual average levels have increased in 2007 over 2002.

Hydrocarbons are found in petrol and diesel fuels. When it reacts in the presence of nitrogen oxides and sunlight it forms ground level ozone. This ozone is a major component of smog and it irritates eyes and damages the lungs that aggravate respiratory problems. A number of exhaust hydrocarbons are also toxic can cause cancer, birth defects, and other illnesses.

Lead is used in a number of automobile components, including lead batteries, lead wheel weights and solder in electronics. A report released by the Michigan-based Ecology Center and New York-based Environmental Defense said that the use of lead in cars accounts for the largest remaining source of lead pollution. One car component, the lead starter battery, is responsible for the majority of current lead

use in the world. "Automobiles are responsible for a majority of lead pollution in North America, or approximately 16 pounds of lead per vehicle over its lifetime" said Jeff Gearhart, report author and Clean Car Campaign Research Director for the Ecology Center. The amount of lead in cars is particularly significant because of its serious impact on human health, including behavioural problems and learning disabilities.

All of these automobile pollutants affect the environment in different ways. But one thing that they all have in common is that their affect on the environment is a negative one, which in turn affects humans in a negative way also.

Automobiles and global warming

We humans are the main culprit for causing global warming with the emission of greenhouse gases-carbon dioxide, methane, and nitrogen oxide. These gases form an effect of green house on the earth's exterior that prevents the reflection of the sun's rays and so causes the rise in temperature.

Automobiles are the second largest source that creates nearly 1.5 billion tons of CO_2 annually. According to a study by Environmental Defense, US automobiles and light trucks are responsible for nearly half of all greenhouse gases emitted by automobiles globally. Automobiles are a source of substantial pollution at the global level, including a vital fraction of the total greenhouse gas emissions.

Its exhaust emissions have a tremendous impact on the cumulative effects of global warming. Each vehicle manufactured, purchased, and used adds regularly to the carbon burden of the planet. The more vehicles sold, the higher the contribution to the carbon load. It's a simple matter of arithmetic.

Any effort to fight global warming has to include cutting automobile emissions. Building cleaner cars and efficient component options offer an effective and immediate way to tackle the greenhouse and other pollutant emissions from automobiles. Alternative fuels are potential options to curtail the carbon dioxide emissions from motor vehicles. Reliance on renewable energy sources should be more. Hybrid gas-electric engines can cut global warming pollution.

Vehicular Pollution loads (tonnes/day) in eight Indian cities

City	*Carbon monoxide*	*Oxides of nitrogen*	*Hydrocarbons*	*Particulate matter*
Agra	17.93	3.30	10.28	0.91
Bangalore	207.04	29.72	117.37	8.11
Chennai	177.00	27.3	95.64	7.29
Delhi	421.84	110.45	184.37	12.77
Hyderabad	163.95	36.89	90.09	8.00
Kanpur	28.73	7.25	11.70	1.91
Kolkata	137.50	54.09	47.63	10.80
Mumbai	189.55	46.37	89.93	10.58

Sources : Ministry of Petroleum & Natural Gas (2002)

Green AutomotiveIndustries

The major environmental concerns in this century are atmospheric pollution and its impact on human health, global warming and ozone layer depletion, scarcity of freshwater, raw material, and land availability. All these environmental impacts have a great impact on how companies manage their business. The automobile industry has had few radical changes over the last 30 years. The environmental impacts of the automotive industry are spread through out the whole life cycle of the vehicle - production, use, and the end of life of vehicles. The use of the cars is where there is the major energy consumption and emissions. Nevertheless, environmental pressures occur to reduce emissions and waste throughout production, use, and end-of-life vehicles.

As per the study "Green operations initiatives in the automotive industry - an environmental reports analysis and benchmarking study", published in Benchmarking: An International Journal Breno Nunes and David Bennett - "The automotive industry's positive contributions to the world economy are offset by its products and processes significant environmental impact. Total world production of cars reached more than 53 million units in 2007, and if commercial vehicles are incorporated this increases to 73.10 million units. There are approximately three-quarters of a billion cars worldwide and, if the industry continues to produce cars at the current rate, there will be two billion cars on the road by 2050 (unless personal transport takes to the skies by then!)." Now the world's big and small car industries are pursuing various hi-tech environmental initiative involving green operations initiatives. These initiatives include green buildings, eco-design, green supply chains, green manufacturing, reverse logistics, and innovation.The car manufacturers are considering the design of car as the main activity for addressing the environmental concerns as it affects the whole life of the product. The car companies are addressing the main environmental impact of manufacturing through technology-based solutions. They are using waterborne paint sprayers and water based solvents, conserving energy and water, reducing greenhouse gas emission, managing recyclable and non-recyclable waste and using recyclable material in the manufacturing. These are the main initiative to achieve greener production. Now car manufacturers are taking environment initiative from manufacturing process to product performance, supply chain, non-manufacturing facilities, and final disposal.

To deal with the increasing number of vehicles, Government of India is setting 10 modern recycling centers by 2014 for dismantling, recovering useful materials, and recycling of the remained part. Government is also trying in bringing modern facilities and technologies from western countries for recycling metal and plastic parts.

Eco-Friendly Cars

Soaring gas prices and environmental concerns have compelled the automotive industries for innovation of new technology. These concerns of automotive industries have blown the door wide open for fuel-efficient hybrid cars. To stay commercially and environmentally viable, the automobile industry needs to make hybrid and other low-emission vehicles.

Petrol

Petrol is an energy filled fuel to run cars. Now mainly four different types of petrol are evolved to combat environmental pollution. These are rated on the basis of their octane number. Higher the number better is the fuel efficiency, less emission, and more resistant to engine knocking.

Unleaded petrol is the most common type used in cars and its octane reading is 93.This is generally used for engines fitted with catalytic convertors. It emits more pollutants and poisonous gas if it is used without catalytic converters.

Super or Premium Unleaded Petrol is a special type of petrol with octane reading 95. It is much better for cars and other vehicles for its high engine performance and reduced engine knocking. There are some old cars that are not suitable for this special type of petrol because of the type of engine produced in the olden days.

Leaded four-star petrol with octane reading 97 has a special kind of additive. It is used to give protection to the valve seat. Valve seat is the surface between the air intake valve and exhaust valve in the car engine. It is good for cars but is not so common in India.

High Performance Petrol with an octane reading 102 is the best among all. The cleanest and purest form of petrol is used mostly in high performance vehicles for an excellent ride and optimal performance. Bharat Petroleum

Corporation Limited has produced "Speed "petrol and is the most commonly used high performance petrol in India. Speed is mixed with a number of performance enhancing additives to restore engine's performance, reduce emission, and ensure smooth driving.

Alternative Fuels

The automobiles are actually environmentally friendly if it doesn't require fossil fuels and therefore doesn't release carbon dioxide gases into the atmosphere.The fuel used in transportation is made from petroleum. Green cars also referred to as eco-friendly cars operate on alternative fuels rather than petroleum. Each type of alternative fuel has its own benefits but one thing is in common that they emit less pollutants and emission and share the eco-friendly factor.

Alternative fuels are not made from petroleum. Vehicles can run on different kinds of fuels that are not made from petroleum. The United States Department of Energy officially recognizes the following list of alternative fuels:

- Alcohols - ethanol and methanol
- Compressed natural gas (CNG) - natural gas under high pressure
- Electricity - stored in batteries
- Hydrogen - a very special type of gas
- Liquefied natural gas (LNG) - natural gas that is very, very cold
- Liquefied petroleum gas (LPG) (also called propane) - hydrocarbon gases under low pressure
- Liquids made from coal - gasoline and diesel fuel that doesn't come from petroleum
- Biodiesel - a lot like diesel fuel, but made from plant oil or animal fat

The most common types of eco-friendly cars are:

- **Hybrid Vehicles** – These are the most common eco-friendly cars on the roads. They use both gas and battery power for propulsion. They are the most affordable eco-friendly cars and attract the highest auto insurance discounts. Their only disadvantage is that they still give gas emissions, since half the time they still operate on regular fuels.

- **Electric Vehicles** – These are Battery powered vehicles. Hydrogen is typically used to power the batteries. These are the most environmentally friendly vehicles on the market, as they emit no pollutants. The only disadvantage of using these batteries is that both the costs of acquisition and maintenance are high.

- **Plug-in Hybrid Electric Vehicles** (PHEV) – These cars are powered by a combination of alternative fuel and electricity stored in batteries. The battery is used to run the car most of the time, and in most cases light-duty PHEV owners can drive to and from work without switching on their fuel energy. The advantages of PHEVs are low fuel costs and minimal emissions. The battery is also fully rechargeable, either via the car's built-in combustion engine or an external electric power source, which is another advantage. The only disadvantage in using this car is the high cost of acquisition. They are the most expensive type of eco-friendly vehicles in the market.

- **Alternative fuel vehicles** – These cars use ethanol, natural gas, hydrogen, or biodiesel. All these fuels have minimal to zero emissions, which is their strongest point. Biodiesel can be produced from numerous sources and is biodegradable. Ethanol is a decent fuel but it's expensive, can only be used on flexible fuel vehicles and is not readily available. Hydrogen is expensive, and gets fewer miles for a full tank of compressed natural gas. Also, some models may not qualify for insurance discounts.

Now many individuals are looking for automobiles that promote a green environment rather than going for the conventional, petroleum based vehicles. To promote the eco- friendly car, government of many countries are giving state incentives, tax credits, and affordable insurance. Many automobile industries like Chevrolet, Renault Mitsubishi, and Ford are also planning on introducing fully electric vehicles in the coming couple of years.

Most pressure groups therefore also lobby for better mass transportation modes rather than individual vehicles. This no only helps in reducing the fuel based pollution but also costs incurred by the public at large on fuel. Besides the visual pollution of over crowed streets, parking woes etc. are covered by introducing efficient, fast and comfortable transportation for all.

Source: http://frugallygreen.org/an-explanation-of-eco-friendly-cars/ http://www.energyquest.ca.gov/transportation/index.html

Eco Car Care

Proper caring of the car and its maintenance protect the environment.

Minimal use of resources (water and energy), minimal waste, and use of eco products will keep the environment cleaner and greener. Caring for the car is a win-win situation. It protects the environment and reduces water and air pollutionbut also properly maintained and operated vehicle runs efficiently, last longer and are easy on the pocket.

By following these simple tips, you'll keep your vehicle in good shape while reducing its environmental impact.

Keep your engine tuned

A dirty spark plug causes misfiring and it can reduce fuel efficiency as much as 30 %. Follow the service schedule listed in your owner's manual. Replace the filters and fluids as recommended. To keep battery in proper function- clean battery terminals they should be free of corrosion, and connections should be secure.

Check your tyres for proper inflation

With change in temperatures the pressure of tyre changes. It is important to check tyre pressure after weather changes.Under-inflated tyres wastes fuel and so engine has to work harder to drive the vehicle. To extend tread life of tyres, they should rotate after every oil change and be well aligned. Properly maintained tyres last longer, meaningless scrap for disposal.

Keep your air conditioner in top condition

Air conditioners contain green house gases and

according to US Environmental Protection Agency one third of the CFCs released in to atmosphere come from mobile air conditioners. A certified technician should service it. Before the heat sets in, AC system should be checked. Use A/C sparingly and in recirculation mode whenever possible, it saves fuel and reduces the release of green house gases.

Dispose of used motor oil, anti-freeze/coolant, tyres, and old batteries properly

Recycling is the only safe way. Many repair facilities accept these items. Used motor oil, automotive fluids, or anti-freeze should not be dumped on the ground or in open streams. Used motor oil should not be mixed with other used and recyclable fluids. It is important to follow procedures laid down and the used products should be delivered to the recommended recyclers.

Tips to Save Fuel & Money

Driving should be gentle. Speed limits should be observed. Mileage of fuel decreases above 80-85 km /hour. Sudden accelerations and jerky stop-and-go's should be avoided. Engines should be turned off rather than letting it idle for more than a minute. Combine errands into one trip.

Extra weight in the car reduces fuel mileage. Better to remove unwanted material. Store only in storage space rather than on the roof to reduce air drag.

Get vehicle maintained at the authorized service stations only. Always use commercial car washes. Replace air filters regularly. Use recommended grades of oil.

Try to travel when traffic is less to avoid stop and go condition.

Walk, bike, take a bus or metro and carpool when possible.

Green Interiors

Driving eco car also means having a green and clean interior using safe, non-toxic, and eco friendly products to protect health and the environment. The environment inside the car can also impact immediate and long-term health. This is important because the average person spends hours while commuting and running daily errands.

Cleaning of the interior of the car with cleaners fill the interior with chemical irritants. Better to avoid cleaners and regular vacuuming and dusting with a microfiber cloth or a small duster reduce the build up of grime.

Remember, how your car runs, how you drive it, and how its fluids, old parts, and tyres are disposed of all have serious consequences on the environment.

Some hi-end vehicles use eco-friendly products, like coco husk for the seat fillers etc.

ECO NEWS

An Eco-friendly Drive

More taxi companies in US, New Zealand, UK, Japan, Netherland, and other countries are turning to greener operations. In India some states have made some form of natural gas compulsory for all public transport. Environment- friendly taxi companies have popped up in the different cities across the world in recent years. They are appealing to riders to minimize their carbon emissions while on the road. Electric hybrid cars and low emission vehicles are now in the market and causing less impact on the environment. A hybrid car uses two sources of power to drive the car: a small, efficient petrol engine and an electric motor. With the electric motor helping out, the petrol engine doesn't need to work as hard. And that means cleaner air, enhanced fuel economy, and a better deal.

These taxi companies also offer car pool - a rideshare services - to their customers who want to keep fares down and travel greener. The taxi companies pick other customers who are headed in the same direction. GPS navigation has also improved the efficiency by providing shortest routes via uncongested roads.
Source: Span: January/February 2012

E-Vehicles: Zero Emission Vehicles

With the rising cost of fuel at international and national level, increasing levels of pollution and congestion in transport systems especially in urban areas, higher running and maintenance cost of vehicle, the electrically charged bikes or scooters have a very bright future in area of personal transportation. E-bikes are bicycles with an electric motor used to power the vehicle. These bicycles use rechargeable batteries can travel up to 55 km/hour. These e-bikes are lightweight and maintenance free and also economical, safe, and pollution free. Being petrol free, these e-bikes are gaining popularity in many parts of the world. Its usage worldwide has experienced fast growth since 1998. The sales of these e-bikes are expanding in China, Japan, Europe, USA, the Netherlands, Switzerland, India, and many more countries. High oil prices and stringency in pollution and climate regulations, major car makers have of late looked beyond conventional technologies and are going the electric way. In India, two-wheeler industry has incorporated the new concept of Electric Bikes and Scooters. Electrotherm India, Hero Electric, and Bangalore based ACTD Electronics & Electrical Pvt. Ltd are already in the race.

Electric Cars are considered as the future driving technology all over the world. High cost of fuel, large carbon emissions and high running cost have set a widespread platform for Electric cars. At present, Reva is running on Indian roads. Now the automobile companies in this segment are inspired with the idea of manufacturing electric cars. Hero Electric is introducing an electric car by 2013 with capacitors for instant charging. Mahindra and Mitsubishi Motors are also developing electric cars for the Indian Market. In association with Norwegian electric car specialist Miljoebil Grenland Tata Motos are rolling out the e-version of Nano.

Source: http://www.surfindia.com/automobile/electric-bikes-scooters.html Down to Earth, February 1-15,2010

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