

# Manual for the Educational PC Game on Children's Environmental Health



**HRIDAY**  
( Health Related  
Information Dissemination  
Amongst Youth )



**SHAN**  
(Student Health  
Action Network)



**Ministry of  
Environment  
and Forests**



**World Health  
Organisation**



## ENVIRO

"Healthy environments for children"

"Shape the future of life"



World Health Organization  
Regional Office for South-East Asia  
India

SEA-EH-547

# Manual for the Educational PC Game on Children's Environmental Health



World Health Organization  
Regional office for South-East Asia  
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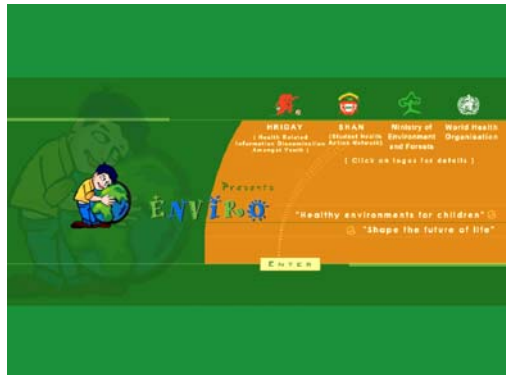
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**ENVIRO** is a CD game to sensitize children about the environment. It is an info pack on various environmental issues presented in an enjoyable and challenging way that follows the play way principle of learning.

The game intends to make the children understand various environmental problems and also make them aware of possible solutions.

It addresses the main environmental factors that affect health in the three settings where children live, learn and play: Home, School and Community.



In most cases, the player needs to identify wrong doings and by clicking on them, obtains the correct response either in shape of a written comment on the screen, or in the shape of a fact sheet, which is printable. The latter is also done

to allow teachers use this resource as teaching materials.



The following pages will show some of the screens used in the game, along with parts of the texts that are linked to the different settings.

ENVIRO was developed in 2004 for WHO by HRIDAY SHAN, an Indian NGO working with schoolchildren in 220 schools in New Delhi, India. Weblink to HRIDAY SHAN: <http://www.hriday-shan.org/>

## Examples of the information provided in the HOME SETTING: LIVING ROOM

“The opening screen in the home environment displays a typical urban households drawing room. The room is buzzing with activity. You as a guardian of the environment have to point out the activities negatively influencing the environment. Every negative action picked up will award you points. This could either be followed by an information sheet that also queries you at the end or by a questionnaire. You get bonus points by correctly answering these questions. Don't go over board.... not everything in this house is wrong! Some of the actions are neutral to the environment and clicking on them will deduct your points from these. In case you are bored in the house you are free to go to the school whenever you like!

So go ahead and enjoy being the GUARDIAN OF YOUR ENVIRONMENT!”

### Action children eating chips

Junk food is a slang word for foods with limited nutritional value. Foods that are high in salt, sugar, fat or calories and low in nutrient content can be classified as junk food. Food can be classified as energy dense and nutrient low.

Energy levels are based on the calories provided by the food on digestion. Nutrient levels are based on the content of protein, vitamins and minerals which can be used for nourishing the body by helping in its growth and maintenance.



Food like soft drinks and sweets are 'energy dense, since they are high in 'empty calories. These can not be used for building the body but can be converted to fat. Foods like: cereals, milk, dals and fruit are 'nutrient dense because they provide nourishment along with energy. Choose nutrient dense foods whenever you can.

**Smart Food**

**Why YES**

Whole Fruits	Contain Fibre that helps your body to get rid of waste and also makes you feel full. Fibre is found in fruits and vegetables and whole grain cereal.
Milk	Contains calcium, which helps to build strong teeth and bones.
Yogurt	The live culture in yogurt 'acidophilus helps the body to fight intestine and yeast infections.
Banana	Contain potassium and helps to prevent ulcers.
Water	The best liquid to drink because it purifies your bloodstream and clean your cells and tissues.

**Junk Food**

**Why NOT**

Cakes and Cookies	Contains too much sugar and not enough vitamins and minerals
Colas	Have lots of sugar and few nutrients, may contain 'caffeine' an addictive drug.
Ice-cream	Has nutrients but is full of sugar and fats.
Potato chips	Although made from potatoes, they are deep fried and are high in salt and fat.

The Battle now is between Health food and Junk food,  
 All that tastes good is not healthy. Make the right choices for your health.  
 Weblink to WHO Food Safety: <http://www.who.int/foodsafety/en/>.

**Action child sweeping the floor**

**Child Labor**

Children have the right to education

Children have a right to secure health

Children have the right to sufficient and nutritious food, clean water and a clean environment

Children have the right to protection against danger, exploitation and discrimination

These are some of the rights stated in the UN Convention on the Right of the Child from November 20, 1989. Most countries worldwide have ratified the Convention.

Article 24 of the Constitution of India prohibits employment of children below 14 years of age in factories, mines and hazardous occupations. On November 28, 2001 Lok Sabha passed the Constitutional Amendment Bill to make education for children in the range of 6-14 years of age a fundamental right.

Children working in industries such as beedi making, carpet weaving, match factories, explosives, fire works, and construction sites are more vulnerable to dangers and diseases, such as asthma and bronchitis, as compared to adults. This affects their physical development and reduces their life expectancy. This is very much the case for children working in rural settings, especially when they are exposed to pesticides

Children working are withdrawn from schools and their access to education is limited. This affects their mental capacities.

Definitely, child employment should be discouraged!

Weblink to UNICEF: <http://www.unicef.org/sowc04/index.html>.

## Examples of the information provided in HOME SETTING: KITCHEN

### Action closing the tap

Today, over two billion people, one third of all humanity, have no access to pure drinking water. By 2025, more than 2.8 billion people living in 48 countries will face water stress or water scarcity, based on the recent revised United Nations population projections.

Why not take few steps from today itself to save this Precious commodity by adopting the following ways-

Turn tap off while brushing teeth saves 5-10 liters of water

- Turn off the tap while washing hands or clothes save 8-15 liters!
- Don't use drinking water for washing vehicles, bathing animals and gardening or other non vital purposes.
- See that there are no leaking taps in your home, school and neighborhood. Get a plumber to come and seal all leaks.
- Encourage the set up of a rain water harvesting system at your house and indeed in colony by using the roof to collect water and then transferring the water into an underground tank for recharging the water table in your area. By this you will be making up for the amount of water that would have been lost by running off into storm water drains in the area your house is on. Thus you will be replenishing the clean water of the water table that can be used again by you. This is known as water harvesting.

It has to be a joint effort and we have to ensure everybodys contribution.

Weblink to WHO Water, Sanitation and Health:

[http://www.who.int/water\\_sanitation\\_health/en/](http://www.who.int/water_sanitation_health/en/).

Weblink to Sullabh International:

<http://www.sulabhinternational.org/pg05.htm>.





## Action fumes in the kitchen

Indoor air pollution is a concern where energy efficiency improvements sometimes makes the house relatively air tight thereby reducing ventilation and raising indoor pollutant levels.

The greatest threat of indoor pollution exists where the people continue to rely on traditional fuels, such as coal, wood and cowdung, for cooking and heating. Burning such fuels produces large amounts of smoke and other air pollutants in the confined space of home, a perfect recipe for high exposures.

Exposure to indoor air pollution from dirty fuels leads to four major categories of illness. These are:

- acute respiratory infections (ARI) in children
- chronic obstructive pulmonary disease (COPD), such as asthma and bronchitis;
- lung cancer and
- pregnancy related problems.

The range of household products that contribute to indoor air pollution are varied: phosphate detergents, spot removers and dry cleaning fluids, oven cleaners, furniture and floor polish, paints, air fresheners, pesticides in moth repellants. But also some, hobby materials: photography, metalwork, clay and stone, paper-mâché, and glues that contain harmful chemical substances, contribute to indoor air pollution.



The harmful components in many household and personal care products can cause dizziness, nausea, allergic reactions, and eye, skin and respiratory tract irritation; some can cause cancer. When you use these products, make sure that you are in an area with adequate ventilation.

There are four basic rules to follow when using hazardous household products;

- Whenever possible, avoid using hazardous household products. Use nontoxic alternatives instead.
- When purchasing household products, buy only as much as you need; do not buy bulk quantities. Store hazardous products and materials separately and carefully.
- Dispose of hazardous products carefully.
- Always read the product label and follow manufacturer instructions so as to minimize exposure when using hazardous products.

A recent report of WHO asserts 'the rule of 1000 which states that a pollutant released indoor is one thousand times more likely to reach the lungs than a pollutant released outdoors.

## Questionnaire for HOME SETTING: SURROUNDINGS

- Over the years, air pollution has increased rapidly and become a major problem in urban areas all over the world. The contributor to this increase is
  - Burning of leaves
  - Vehicles
  - Burning of fuel wood
  - Small scale industries
- Exposure to indoor air pollution from dirty fuels leads to
  - Respiratory diseases like asthma and bronchitis
  - Skin cancer
  - Tuberculosis
  - Jaundice
- Steps that Delhi Government had to take to check the pollution levels in the city include
  - Ban on burning of leaves and promotion of use of CNG for vehicles.
  - Closure of all industries in the city.
  - Ban on use of coal, wood for cooking purposes.
  - Ban on use of LPG.
- If a child starts working for a living at an early age it will
  - Impair the child's physical development
  - Impair the child's mental development
  - Enhance the child's overall development
  - Both (a) and (b)
- World Environment Day is celebrated every year on
  - March 8
  - June 5
  - April 10
  - December 1





Time 65

Spot the Negative Actions: Neutral: 2 Negative: 1

Score 700

Negative: 1



Home : Surroundings
Living Room Kitchen Surroundings
Exit

6. The theme of year 2002 World Environment Day was
  - (a) Protect Environment
  - (b) Give Earth a chance
  - (c) Save Earth
  - (d) Protect our Earth
  
7. Car pooling is
  - (a) An interesting computer game
  - (b) Washing of your fathers car
  - (c) People sharing a car to go to a common destination
  - (d) Discarding old cars in a dump
  
8. Hazardous waste, when dumped into the open or on contact with other items, can cause harm to the health and environment. The two characteristics that make a product hazardous are
  - (a) It's freshness and fragrance
  - (b) It's flammability and toxicity
  - (c) It's foul smell and flammability
  - (d) It's texture and toxicity
  
9. The regular intake of junk food is
  - (a) Appetite stimulating
  - (b) A factor behind deterioration of mental growth in children
  - (c) Leading to obesity problems
  - (d) Both (b) and (c)
  
10. A number of sports goods are made from wood. Which tree in North India almost exclusively supplies wood for making cricket bats?
  - (a) Eucalyptus
  - (b) Willow
  - (c) Teak
  - (d) Walnut

11. One should adopt healthy habits to protect water from contamination at
- (a) Home, school & work place
  - (b) Home only
  - (c) School and work place
  - (d) Public places
12. Fruits and vegetables should be consumed
- (a) Directly without washing
  - (b) After washing thoroughly under running water
  - (c) After wiping with a paper napkin
  - (d) After washing with an antiseptic solution
13. Various pesticides sprayed on food items may lead to
- (a) Birth defects and cancer
  - (b) Diarrhoea and dysentery
  - (c) Caries of teeth
  - (d) Irritation of nose
14. Inadequate hygiene in food preparation increases the incidence of
- (a) Asthma
  - (b) Diarrhoeal disease
  - (c) Lung cancer
  - (d) Skin disease
15. Food may get contaminated due to presence of
- (a) Bacterial chemicals
  - (b) Natural toxins in foods of plants origin
  - (c) Natural toxins in foods of animals origin
  - (d) All of the above

16. Use of following has been banned because of adverse environmental effects
- (a) Polythene bags
  - (b) Paper bags
  - (c) Cloth bags
  - (d) All of the above
17. The '3 R mantra of eco friendly activities is
- (a) Refurbish, reuse, redo
  - (b) Rebate, recycle, redo
  - (c) Reduce, reuse, recycle
  - (d) Reuse, rebate, rejuvenate
18. Certain items in household waste are also hazardous to health. These are
- (a) Butter and cheese packets
  - (b) Old papers and magazines
  - (c) Used batteries and shoe polish
  - (d) Pickle and jam bottles
19. The natural process of decomposition of organic waste which yields manure is
- (a) Incineration
  - (b) Composting
  - (c) Landfills
  - (d) Dumping
20. In India, the most commonly ingested dangerous household product is
- (a) Kerosene
  - (b) Paper residue
  - (c) Detergent powder
  - (d) Cloth fibre

# Examples of the information provided in the SCHOOL SETTING: ENTRANCE

## Topic Road Safety

Every day you go to the school to get education, But it is also important that you take care of yourself while on your way to school and back. Keep in mind the following safety rules and follow them without fail!

### (1) While Walking to School

- Always walk on the footpath only. On roads without footpath, walk on the extreme right hand side of the roads. Do not rush or run on the road.
- Cross only at Zebra crossings, traffic signals, subways, foot over-bridges.
- At the signal lights, cross only on a clear green signal. If an intersection is controlled by a policeman, traffic warden or RSP cadet, cross only when he signals you to do so.
- When crossing between vehicles parked on the side of the road, remember that you are not visible to the moving traffic (because the parked vehicles may be higher than you). Stop as you appear from behind the vehicle and look for a safe gap before crossing. Remember, drivers need plenty of time to see you and to slow down and stop.
- While crossing wide roads that have central islands, always cross in two stages. Cross to the central Island, stop, and cross when the next section is clear.
- Never cross a road at a corner, as the motorist taking the turn will not be able to see you on time.
- Running across the road is a bad idea, as you may slip and fall.





Its time to go to the school.... Don't look so bored! We are taking you to the school environment- the place where you spend most of your childhood, make lifelong friends but yet seldom think about cleaning and respecting school property. So go in and make positive changes and see the difference.



## (2) While going by bus

- Leave home well in time, so that you won't have to run to catch the bus.
- At the bus stand, always follow the queue. Board the bus only after it has come to the proper stop, without rushing in or pushing others.
- While in the bus, shouting or making a noise is definitely bad manners. Such behavior can also distract the driver.
- Do not board or alight at a bus stop other than the one decided by the school. Never board and alight at a red light crossing or unauthorized bus stop.
- Always hold onto the handrail if standing in a moving bus, especially on sharp turns. (Try not to stand in moving bus).
- Do not sit, stand or travel on the footboard of the bus.
- Do not put any part of your body outside a moving or stationary bus.
- Always adhere to the bus safety rules.

For more information log on to <http://www.delhitrafficpolice.nic.in>.

Include WHO website on Road Safety:

<http://www.who.int/world-health-day/2004/en>.

## Road Safety Guidelines for Parents

- (1) Parents are equally responsible for the safety of their children during school journeys.
- (2) They must ensure that the mode of transport arranged by school or by themselves is absolutely safe.
- (3) Parents must play the role of vigilant observers. They should note own violations committed by school buses and immediately report to the authorities.

- (4) Parents must participate in P.T.A. meetings and discuss the safety aspects.
- (5) While taking their children to school themselves, they should take proper care of their safety.
- (6) Parents must ensure that the children acquire the right knowledge and skills for safe use of roads. They should teach their children the basic rules of the road, how to walk and cross the road, how to alight and board a bus etc.
- (7) Parents should not allow their minor children to drive.
- (8) Parents must also ensure that the right attitude for a law abiding citizen is imparted to their children by the family.
- (9) Children are very good observers and therefore, parents must set an example by meticulously observing even small traffic rules.

Remember safety of children must be the foremost priority of every parent. For more information log on to <http://www.delhitrafficpolice.nic.in>.

WHO website on Road Safety: <http://www.who.int/world-health-day/2004/en/>.

### **Road Safety Guidelines for Teachers**

It is the responsibility of school authorities and the teachers to ensure the safety of school children and also to impart the necessary knowledge, skills and attitude to be a safe road user.

- (1) Teachers should help develop a responsible attitude towards road use
- (2) Teachers should impart essential knowledge on roads and traffic to school children, by:
  - Making them familiar with the rules of road and their importance.
  - By explaining them the causes of accidents involving pedestrians, cyclists and children.
  - Telling them about the cause and extent of pollution due to traffic.
- (3) Children come to school in various modes of transport. Teachers should ensure that:

- The children enter and leave the school safely.
  - There is no conflict between pedestrians and vehicles.
  - The vehicles including school buses are parked safely and properly.
- (4) Children should be supervised and taken care of at the time of alighting and boarding the school bus.
  - (5) Every school bus must be accompanied by a teacher for controlling the children and the bus driver.
  - (6) The teacher should arrange for an alternate bus and keep the children together at one place if the school bus fails to arrive or if there is any problem.
  - (7) There should be regular checking of school buses to ensure compliance with mandatory safety requirements.
  - (8) If any school bus or any conveyance, by which children come to school, violates traffic rules, the teachers should inform about it to Traffic Police Control Room.

## Examples of the information provided in the SCHOOL SETTING: PLAY GROUND

### Topic Acid Rain

The problem of acid rain probably originated during the 1730's at the height of the industrial revolution. It was discovered in the 1950's and started being noticed in the 1960's.

Acid rain is rainfall that has been acidified. Rain is acidified by oxides of sulfur and nitrogen. Acid rain is formed when pollutants called oxides of sulphur and nitrogen, contained in power plant smoke, factory smoke, and car exhaust, react with the moisture in the atmosphere. Dry deposition, such as soot and ash, sleet, hail, snow, smog and low-level ozone are forms that acid rain can take.

Acid rain is caused by industrial emission from factories, vehicles that burn gasoline, home fire giving off smoke and some fairly minor natural causes, which are volcanoes, swamps and rotting plants.

Problems caused by acid rain

Can cause buildings, statues and bridges to deteriorate faster than usual. The Taj Mahal in India, Lincoln Memorial and Michaelangelo's statues of Marcus Aurelius have started deteriorating because of acid rain.

- Harms lakes, rivers and streams and disrupts lakes ecosystem and kills wildlife in affected lakes, rivers and streams
- Damages soil and the tree roots in it.
- Harms people when they breathe in smog

We can do things to help solve the acid rain problem. We can cut back on car use by walking, cycling, using public transport or carpooling. We can also help by turning off electrical devices not in use such as television, lights and computers.

A small change taken by you today can make a big difference in the near future. Include website of UNEP:

<http://www.rrcap.unep.org/projects/acid/sec6.cfm>.



## Topic Global Warming and Greenhouse Effect

Earth has warmed by about 1°F over the past 100 years. Why? How?

Well, scientists are not exactly sure. The earth could be getting warmer on its own, but many of the world's leading climate scientists think that things people, you and I, do are helping to make the earth warmer by *increasing the concentration of green house gases*.

The greenhouse effect is the rise in temperature that the Earth experiences because certain gases in the atmosphere (water vapor, carbon dioxide, nitrous oxide and methane) trap energy from the sun. Without these gases, heat would escape back into space and Earth's average temperature would be about 60degree F colder. Because of how they warm our world, these gases are referred to as greenhouse gases. These gases in the atmosphere behave much like the glass panes in a greenhouse. Sunlight enters the Earth's atmosphere, passing through the blanket of greenhouse gases. As it reaches the Earths' surface, land, water and biosphere absorb the sunlight's energy. Once absorbed, this energy is sent back into the atmosphere. Some of the energy passes back into space, but much of it remains trapped in the atmosphere by the greenhouse gases, causing our world to heat up.

The greenhouse effect is important. Without the greenhouse effect, the Earth would not be warm enough for humans to live. But if the greenhouse effect becomes stronger, *it would make the world become like a car parked in the sun-HOT!* Even a little extra warming may cause problems for humans, plants and animals.

*What problems?*

Increase in overall temperature of the earth would cause:

- Melting of glaciers
- Ice in Antarctica and Greenland would melt and break up.
- This ice would fall into the sea as a result the sea level would rise which would threaten the obliteration of island and coastal communities
- Sea level rise will also occur due to warmer, thus in itself expanding, seawaters
- As seawater rises, it will irremediably mix with groundwater posing a massive problem of salinized water

- A more vigorous hydrological cycle that may increase the severity of floods and droughts and cause more extreme rainfall events
- Ecological change that could threaten agricultural productivity and the survival of natural forests
- Change in climate patterns causing a shift in infectious diseases profiles in different areas.

Global warming may be a big problem.

What are we doing to cause the release of green house gases:

- (1) Burning fossil fuels (petrol, diesel, coal)
  - in automobiles
  - for generation of electricity which releases CO<sub>2</sub> and nitric oxides
- (2) Cutting down trees which absorb carbon dioxide.

Here are some few steps you can take to help make the planet a better place to live-

- Read about the environment and various environmental problems
- Save Electricity by turning off the lights, television, computers, and stereos when you are through with them.
- Even at public places switch off the lights and fans.
- Bike, bus and walk, you can save energy by sometimes taking the bus, riding a bike or walking.
- Planting trees is fun and great way to reduce greenhouse gases
- Talk with your family and friends about global warming
- Be a member of school's eco club, read and think of innovative ways to help protect the environment

More ideas on what YOU and your friends can do to reduce climate change at <http://www.co2.org/>.

Weblink to EPA, USA:

<http://yosemite.epa.gov/oar/globalwarming.nsf/content/index.html>.

Weblink to UNEP, get some fact sheets:

<http://www.unep.ch/conventions/info/ccinfokit/Infokit%20-%202001.htm>.



## Topic Water Conservation

Cherrapunji was famous as it received the heaviest rainfall in the world, i.e. the largest volume of water in the world. It still receives very heavy rainfall, but is experiencing acute water shortage. This is mainly the result of extensive deforestation and non-adoption of proper methods of conserving rainwater.

River Ruparel in Rajasthan, on the other hand, is an example of proper water conservation. It lies in an area that does not receive even half the rainfall received by Cherrapunji, but through proper management and conservation has more water available than Cherrapunji. Over the years rising population, growing industrialization and expanding agriculture have pushed up the demand for water. Efforts have been made to collect water by building dams and reservoirs and creating ground water structures such as wells. Some countries have also tried to recycle and desalinate water.

Rainwater harvesting essentially means collecting rainwater on the roof of buildings and storing it underground for later use. Not only does this recharging arrest groundwater depletion, it also raises the declining water table and can help augment water supply. Rainwater harvesting and artificial recharging are becoming very important issues. It is essential to improve groundwater decline and groundwater levels, arrest sea water ingress, i.e. prevent the sea from moving further land ward, and conserve surface water run-off during the rainy season and urban waste water.

Some of the benefits of rainwater harvesting are as follows

- Increases water availability
- Checks the declining water table
- Is environment friendly
- Improves the quality of groundwater through dilution mainly of fluoride, nitrate, and salinity
- Prevents soil erosion and flooding especially in the urban areas.

### CATCH THE WATER WHERE IT DROPS

Weblink to World Water Day at <http://www.worldwaterday.org/>.

## Questionnaire for school: BACK GATE

1. Composting is the best method of disposal of organic solid waste. Where was the country's first aerobic composting plant set up in 1992?
  - (a) Delhi
  - (b) Mumbai
  - (c) Kolkatta
  - (d) Chennai
2. Water pollution has an adverse affect on both the environment and health. What are the main sources of water pollution in India?
  - (a) Municipal sewage
  - (b) Bathing
  - (c) Industrial discharge
  - (d) Both (a) and (c)
3. Landfills are the sites for the disposal of solid waste. While building a landfill it is very essential to take one of the following factors into consideration
  - (a) Below the ground water level
  - (b) Above the ground water level
  - (c) Ground water source
  - (d) None of the above
4. Of the following burning fossil fuels, which is considered to be the cleanest?
  - (a) Coal
  - (b) Natural gas
  - (c) Oil
  - (d) None of the above
5. Leaded petrol is the most widespread through easily preventable, source of urban air pollution in the world. According to WHO, 15-18 million children in developing countries are already suffering from permanent brain damage due to lead poisoning. Why is tetra-ethyl lead added to petrol
  - (a) It prevents engine knocking
  - (b) Reduces vehicular emissions
  - (c) Increase life of motor tyres
  - (d) None of the above



**ENVIRO** Time 13 Score 1600  
 Spot the Negative Actions: Neutral: 0 Negative: 1

School : Back Gate Entrance Play Ground Back Gate Exit

6. Name a photochemical oxidant formed in the presence of sunlight that is a major pollutant of air.
  - (a) Ozone
  - (b) Nitrogen oxide
  - (c) Sulphur dioxide
  - (d) Ammonia
  
7. The following pollutant is not contained in the vehicular exhaust emissions
  - (a) Lead
  - (b) Ammonia
  - (c) Carbon monoxide
  - (d) Particulate matter
  
8. From 1947 to 1997, the waste-water discharge by industries grew by about ..... times.
  - (a) 43
  - (b) 100
  - (c) 30
  - (d) 53
  
9. The state's and citizens' responsibilities for environmental protection is enshrined in the constitution of India in the following two articles
  - (a) 38G and 58A
  - (b) 55B and 51D
  - (c) 48A and 51G
  - (d) 59B and 12D
  
10. Which is the first state to implement the path-breaking proposal that environment should be included as a separate subject in schools?
  - (a) Delhi
  - (b) Maharashtra
  - (c) Kerala
  - (d) Tamil Nadu

“We now go to an area which is neither his nor yours or mine! Yet, it is OURS and matters the most: THE COMMUNITY.

The onus is on us to save the environment. We need to conserve our natural resources, the life around us i.e. plants and animals. We have to progress but not at the cost of polluting the air we breathe: the water we drink and the food we eat.

We should be properly equipped to face and fight natural and man-made calamities. As responsible citizens of the future, you have to preserve and protect the environment at all levels.

Locate your player – “Enviro Truck” Identify environmental negative action. Move the player with “Arrow” key to the identified negative action.

Pick up the identified negative action object with “Space bar” key

Drop the Identified action to the appropriate corner place with “Space bar” key Or Pick the Identified corrective action object from appropriate with “Space bar” key.”



## Examples of the information provided in the COMMUNITY SETTING: FOREST

India has a land mass of near to 329 million hectares of which only 63 million hectares are under forest cover. This estimate is from 1997 and the forests of our country are under constant onslaught from various directions.

Deforestation is an active and ongoing process. There are a multitude of reasons for deforestation but some of the major ones are

- Logging
- Grazing of cattle
- Demand for wood for the paper industry, fire wood, packaging, matchwood

Effects of deforestation

- Climate change
- Soil erosion and land slides
- Floods
- Loss of minor forest produce for the local people
- Loss of habitat and decrease in biodiversity

Read about the Chipko movement at

<http://www.unu.edu/unupress/unupbooks/80a03e/80A03E08.htm>. an exciting period in the history of forest conservation, when the peasants of the Tehri-Garhwal region prevented felling of trees. Eventually it led to the institution of a 15 year moratorium against felling of trees in the Uttarakhand Himalaya and slowed the march of commercial forestry.

Alarmed at the rapid loss of forests and the environmental degradation. The Forest (conservation) Act of 1980 was passed and was amended in 1988. It requires for the permission of the central government before any state deserves a reserved forest and uses forest land for non forest purposes, assigns forest land to a private person or corporation, or clears land for reforestation.

Along with the loss in forests the population of animals in the forests have also been dwindling and some are on the verge of extinction. The government has enacted the wildlife protection act and have instituted country wide projects to protect animals like the tiger. (Project Tiger)

## Examples of the information provided in the COMMUNITY SETTING: INDUSTRIAL

### Topic Air Pollution

Air is the ocean we breathe. Air is 99.9% nitrogen, oxygen, water vapour and inert gases. However it is also becoming the cause of death and disease due to its pollution. A stupendous 51,779 people are estimated to have died prematurely, in 36 Indian cities as against 40,351 people in 1991, due to air pollution. According to WHO New Delhi is among the worlds top ten most polluted cities.

Air pollutants are mainly divided in to noxious gases and particulate matter. Noxious gases include

- sulfur dioxide
- carbon monoxide
- nitrogen oxides
- chemical vapours

Particulate matter is divided into suspended particulate matter (SPM) and Respirable particulate matter (RSPM) and is made up of dust, carbon, lead.

- Sources of air pollution are
- Vehicular exhaust
- Industry
- Thermal power plants

### Topic Smog

Originally, the term “smog” referred to a mixture of smoke and fog in the air. Today, “smog” describes a noxious mixture of air pollutants: including gases and fine particles -that can often be seen as a brownish-yellow or greyish-white haze.

The two key components of smog are particulate matter and ground-level ozone. Nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC), react in the presence of light, to produce ground-level ozone.

Fire works, like the ones lit during diwali, are also related to the formation of ozone and contributes to the post diwali haze seen every year. Smog is a health hazard as it is highly irritating to the eyes and lungs as well as impedes visibility and can lead to road accidents.

Health effects of air pollution:

- Short term-irritation to the eyes, nose and throat
- bronchitis and pneumonia
- asthma Long term-chronic respiratory disease
- lung cancer
- heart disease

## Topic Diesel versus CNG

**Steps taken by the Delhi government to reduce air pollution: Conversion of all buses and autos to CNG. By doing this the diesel exhausts from these vehicles have been eliminated.**

Diesel exhaust is comprised of very fine particles of carbon and a mixture of toxic gases. It is classified diesel exhaust as a probable human carcinogen CNG is mainly methane and on combustion gives out 90% less of CO and particulate matter and over 50% reduction of NO<sub>x</sub> relative to commercial diesel engines. Also there is much less benzene and other toxic organic emissions than diesel.

**Replacing normal petrol with unleaded petrol:** This has reduced the levels of lead in the air. Lead is known to have many adverse effects on health such as – anaemia, impaired mental function headache and hypertension and kidney problems. Lead exposure is most serious for young children because they absorb lead more easily than adults and are more susceptible to its harmful effects. Even low level exposure may harm the intellectual development, behaviour, size and hearing of infants.



Ban on burning of leaves as it releases particulate matter and carbon dioxide.

Enactment and amendment of the Air (prevention and control of pollution) act of 1981: If they are found to be flouting the rules the board has the power to shut down the industry or cut off the industries electricity and water supply.

What can you do?

- Make sure that your family car has it's pollution check regularly
- Conserve electricity as generation of electricity is a huge source of air pollution.
- Use unleaded fuels.
- Cut down on fire crackers.

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