

SER No	CONTENT
	<p style="text-align: center;"><b><u>LESSON PLAN</u></b></p> <p style="text-align: center;"><b><u>LESSON PLAN: E 4</u></b></p> <p style="text-align: center;"><b><u>POLLUTION CONTROL – WATER, SOIL, AIR AND NOISE</u></b></p> <p>Period - One Type - Lecture Code - E 4 Term - II (SD/SW)</p> <hr/> <p><b><u>Training Aids</u></b></p> <p>1. Computer, Projector, Pointer. Black Board&amp; Chalk</p> <p><b><u>Time Plan</u></b></p> <p>2. (a) Introduction - 05 Mins (b) Types Causes of Pollution - 10 Mins (c) Causes &amp; Effects of Pollution - 10 Mins (d) Control Measures - 10 Mins (e) Conclusion - 05 Mins</p> <p><b><u>INTRODUCTION</u></b></p> <p>3. Pollution means imbalance in the atmosphere caused by pollutants. Air gets polluted with the smoke from homes, factories and vehicles. Water gets polluted by city and factory wastes. Loud noises cause sound pollution. Pollution in fact, spreads diseases and makes life uncomfortable on earth. Man has played a very crucial role in destroying the very essence of life i.e. destruction of forests due to excessive urbanization. Due to increase in population and industrialization, the forests have been exploited for wood from trees and land space. Unscrupulous felling of trees has led to the destruction of the forest cover. Hence the air purifier i.e. the trees which give us oxygen to survive have been depleted. Depletion of greenery and forests and the pollution of the earth's atmosphere have led to reduction of the protective ozone layer and increase in global warming.</p> <p><b><u>AIM</u></b></p> <p>4. To acquaint the cadets about Types of Pollution and its Control Measures.</p> <p><b><u>PREVIEW</u></b></p> <p>5. The lecture will be conducted in following parts:-</p> <p>(a) Part I - Types of Pollution. (b) Part II - Causes and Effects of Pollution. (c) Part III - Control Measures.</p>

(a)	<p><b><u>PART I : TYPES OF POLLUTION</u></b></p> <p>6. <b>Soil Pollution.</b> Today's industrialised society produces a huge amount of garbage, the disposal of such wastes is a major problem, especially in the urban centers. Non-biodegradable wastes such as polythene bags, which cannot be decomposed by natural agents like bacteria have become a menace to the environment besides being health hazards. Use of chemical fertilizers and pesticides containing harmful substances contaminates the soil. Soil may become deficient in nutrients due to excessive cultivation or if the same crop is grown repeatedly on the same plot.</p> <p>7. <b><u>Water Pollution.</u></b> Waste-water from our homes, hospitals and factories is usually discharged in to the water bodies. Such water contains excreta, disease-causing micro-organisms and harmful chemicals. It makes water unfit for drinking and may even kill aquatic plants and animals. Harmful substances seeping through earth rainwater contaminate groundwater. Plant nutrients derived from fertilizers and organic wastes like dead bodies thrown into water sometimes cause excessive growth of weeds. Many aquatic organisms die as a result of oil spills from tankers. Leaking pipelines also pollute water organisms. Many species of birds and fish die from contact with oil as it makes feathers and gills inactive.</p> <p>8. <b><u>Air Pollution.</u></b> Air pollution is caused mainly by harmful substances emitted into the atmosphere by industries and automobiles. It causes respiratory diseases and affects the skin and eyes. Some of the gases emitted by industries dissolve in rainwater to produce acid rain, which can damage vegetation. Atmospheric ozone which protects us from harmful ultra-violet rays is depleted due to release of certain carbon compounds called chlorofluorocarbons (CFCs) into the atmosphere. This also increases the risk of skin cancer and eye damage in humans.</p> <p>9. <b><u>Sound Pollution.</u></b> Sound produced from motor vehicles, trains, aero planes, factories, sound during religious and political public meetings, noise produced by the masses and other living creatures also plays an important role in producing sound pollution. It also affects the health of human beings. Loud sound affects the human heart, create auditory problems and causes mental stress.</p>
(b)	<p><b><u>PART II : CAUSES AND EFFECTS OF POLLUTION</u></b></p> <p><b><u>Causes</u></b></p> <p>10. <b><u>Soil &amp; Water Pollution.</u></b></p> <p>(a) <b>Discharge of Domestic Waste.</b></p> <p>Discharge of untreated domestic wastes like human excreta, urine, washing of kitchen and laundry wastes directly into reservoirs of water courses. The problem is particularly true of un sewerred small towns or cities situated close to the flowing rivers.</p>

**(b) Discharge of Industrial Waste.**

Industrial wastes comprise of organic and inorganic chemical substances in minute or colloidal suspension which undergo microbial decomposition resulting in products odoriferous or unacceptable in tastes or appearance and are harmful to human beings.

**(c) Discharge of Agricultural Waste.**

The agricultural wastes are primarily due to barnyard drainage or washing of chemical fertilizers, insecticides, pesticides and herbicides into surface or ground water sources with the impetus on agricultural development. The increasing use of such chemicals without forethought of health hazard involved is bound to accentuate the pollution problems.

**11. Air Pollution.**

(a) Smoke is produced due to incomplete combustion of coal in industrial plants, locomotives, furnaces etc. About 45% of smoke comes from industrial plants alone.

(b) Dust, salt particle from oceans, pollens, spores, rust etc remain suspended in air and is affected by large air movement, dispersing them into vast areas.

(c) Gaseous impurities from chemical manufacturing industries like sulphur dioxide, benzyl, carbon monoxide acid vapour, fumes etc often combine with the aqueous vapour of the air and then intermingle with the smoke already present in the air.

(d) Chloro Fluoro Carbons (CFCs) used in air conditioning is responsible for depletion of ozone layer of atmosphere.

(e) Automobile exhaust gases in particular, exhaust from trucks and buses, contain products of incomplete combustion, carbon monoxide, hydrogen, methane and unburnt carbon.

**12. Sound Pollution.** This has increased manifold over the years due to following :-

(a) Increase in number of vehicles on the road, excessive use of horns, increase in number of aircraft in the air.

(b) Use of Loudspeakers of extremely high wattage at night.

(c) Excessive use of fire crackers.

(d) Increase in ultrasonic and electromagnetic sound waves from mobile towers.

**Effects of Pollution**

**13. Soil & Water Pollution.**

(a) The principal effect of pollution is to deplete the excessive organic load, the dissolved oxygen content of receiving water to a point that stream becomes incapable of exercising the self purification process. The de-oxygenation may be sufficient to destroy practically all the aquatic life.

(b) Pollution of stream by causing suspended solids to deposit on the stream bed causing silting,

and the organic matter undergoing purification with the solid matters buoyed up by gas rising to the top thus resulting in floating masses of sludge.

(c) Use of polluted water downstream by communities for their daily requirements may cause the sporadic outbreaks of water borne diseases.

(d) Polluted waters are also difficult to be treated and it is found that treatment plants have to incur increased costs in handling such waters.

(e) Agricultural soil becomes unfit for agriculture due to, excessive poisonous chemicals.

(f) Crop produced in contaminated soil or soil irrigated with contaminated water is unfit for human consumption. If consumed, it has short term as well as long-term serious health effects.

#### **14. Air Pollution.**

(a) Occurrence of diseases like silicosis (respiratory disease), rickets, dental caries.

(b) Deterioration of health in the form of nausea, headache, loss of appetite and irritation due to high sulphur dioxide content in air.

(c) The incidence of cancer is being increasingly related with the smoke and fumes from industrial plants.

(d) Smoke severely interferes with normal course of sunshine and visibility resulting in the possibility of untoward accidents.

(e) Due to sound pollution from mobile towers, many birds have like the sparrow have vanished from the cities, disturbing the ecological balance.

#### **Measures to Control Pollution**

15. Measures to control pollution include the following:-

(a) To develop consciousness among common people to control all pollution. Plant more and more trees.

(b) The use of loud horns or mindless blowing of horns by motor vehicles should be banned.

(c) The water bodies should not be used as waste reservoirs.

(d) Various sources of drinking water, and water resources should be well protected so that dirty water does not enter these water bodies.

(e) Environmental education should be made compulsory in all educational institutions.

(f) Excessive use of pesticides and insecticides should be avoided.

(g) In all towns and cities there should be proper arrangement of dustbins to collect garbage being produced in the houses.

(h) In the factories strict precaution should be instituted to avoid pollution of various types.

(j) Running of old and pollution emitting vehicle should be banned.

(k) The pollution control Administrative Authorities must have independent powers to implement their decisions.

### **Role of the NCC Cadets in Curbing the Menace of Pollution**

16. NCC being one of the largest youth organisations has to play a significant role towards the pollution control. A youth can guide and contribute by educating others about the dangers of pollution. We have to respect our environment and natural resources and not pollute the same. Rivers and water bodies must be kept clean as water is an essential resource and it cannot be wasted. In fact every drop has to be saved. Cadets can visit villages and guide the farmers regarding the use of natural manure instead of chemical fertilizer produced after generating industrial waste.

### **CONCLUSION**

17. In order to stop the pollution menace, we need to take help from every individual in society. It is the duty of every NCC cadet, to contribute towards this end through personal example and by educating others about various constitutional rights on the subject of pollution.