

# NCERT Solutions For Class 8 SCIENCE CH-18

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### NCERT TEXTBOOK EXERCISES

**Q.1. What are the different ways in which water gets contaminated?**

**Answer.** Water gets contaminated in following ways:

- (i) Many industries discharge harmful chemicals into rivers and streams.
- (ii) Chemical fertilisers, pesticides and weedicides used in agriculture dissolve in water and are washed away into water bodies from the fields.
- (iii) Throwing of untreated sewage directly into rivers.
- (iv) Many industries release hot water into rivers.

**Q.2. At an individual level, how can you help to reduce air pollution?**

**Answer.** At individual level we can do following things to reduce air pollution:

- (i) Use CNG and unleaded petrol instead of ordinary petrol and diesel.
- (ii) Use public transport as far as possible.
- (iii) Generate awareness about air pollution among the members of our family and friends.
- (iv) We can plant trees and nurture the ones already present in the neighbourhood.

**Q.3. A Clear, transparent water is always fit for drinking. Comment.**

**Answer.** No, water which looks clean may still have disease-carrying microorganisms and dissolved impurities. Hence, it is not always fit for drinking, so it is essential to purify water before drinking, say for example by boiling process.

**Q.4. You are a member of the municipal body of your town.**

**Make a list of measures that would help your town to ensure the supply of clean water to all its residents.**

**Answer.** Following are some of the measures that would help our town to ensure the supply of clear water to all its residents:

- (i) Make the supply system leak proof as a lot of drinking water is being wasted through the leakages.
- (ii) Proper cleaning of the water tank time to time.
- (iii) Chlorine tablets should be made available.
- (iv) The water supply pipes should not come in contact with the sewage pipes.

**Q. 5. Explain the differences between pure air and polluted air.**

**Answer.** Air is a mixture of gases.

Pure air contains about 78% (by volume) nitrogen, 21% oxygen and small but definite amount of carbon dioxide, argon, methane, ozone, water vapour etc.

When the air is contaminated by unwanted substances which have a harmful effect on both the living and non-living components it is called polluted air.

**Q.6. Explain circumstances leading to acid rain. How does acid rain affect us?**

**Answer.** Pollutants like sulphur dioxide and nitrogen dioxide react with the water vapour present in the atmosphere to form sulphuric acid and nitric acid. These come down with the rain, making the rain acidic. This is called acid rain. Acid rain affects us in many ways, e.g.,

- (i) Acid rain removes basic nutrients such as calcium from the soil.
- (ii) Acid rain increases corrosion of metals.
- (iii) Acid rain damages buildings and sculptural materials.
- (iv) The low pH of acid rain water changes the rate of metabolism of organisms.
- (v) Acid rain causes damage to fresh water life, e.g., decrease in fish population of lakes. ,
- (vi) Acid mists cause direct damage to leaves of plants.

**Q.7. Which of the following is not a greenhouse gas?**

- (a) Carbon dioxide
- (b) Sulphur dioxide
- (c) Methane
- (d) Nitrogen

**Answer.**

- (d) Nitrogen

**Q.8. Describe the 'Greenhouse Effect' in your own words.**

**Answer.** In a greenhouse (in a nursery or elsewhere) sun's heat from the sun is allowed to get in but is not allowed to get out. The trapped heat warms the greenhouse. The trapping of the radiations by the earth's atmosphere performs a similar function. The trapped radiations further warm the earth. This effect of atmosphere is called greenhouse effect. Without this process life would not have been possible on earth because of the low temperatures.

CO<sub>2</sub> is one of the gases responsible for this effect. Other gases like methane, nitrous oxide, water vapour also contribute to this effect. They are also called greenhouse gases.

**Q.9.Prepare a brief speech on global warming. You have to deliver the speech in your class.**

**Answer.** Do yourself (See point no. 10 “Points to Remember”).

**Q.10.Describe the threat to the beauty of the Taj Mahal.**

**Answer.** Over the past 2 decades, India’s most famous tourist attraction, Taj Mahal located at Agra, has become a matter of concern. Experts have warned that air pollution is discolouring its white marble. So it is not only living organisms that get affected by polluted air but are also the non-living things like buildings, monuments and statues which are going to be affected.

The industries located in and around Agra like rubber processing, automobiles, chemicals and especially, the Mathura Oil Refinery have been responsible for producing pollutants like sulphur dioxide and nitrogen dioxide. These gases react with the water vapour present in the atmosphere to form sulphuric acid and nitric acid. These come down with the rain, making the rain acidic. This is called acid rain. Acid rain has resulted in corrosion of the marble of the monument. The phenomenon is also called “Marble cancer”. Suspended particulate matter, such as the soot particle emitted by the Mathura oil refinery, has contributed to the yellowing of the marble.

The Supreme Court has taken several steps to save the Taj Mahal. It has issued orders for the industries to either switch to cleaner fuels like CNG (Compressed Natural Gas) and LPG (Liquefied Petroleum Gas). Moreover, the automobiles should switch over to unleaded petrol in the Taj Mahal Zone.

**Q.11.Why does the increased level of nutrients in the water affect the survival of aquatic organisms?**

**Answer.** Chemicals used as fertilizers in agriculture dissolve in water and are washed into water bodies from the field. The excessive quantities of chemicals like nitrates and phosphates which are present in fertilisers act as nutrients for algae to flourish. Once these algae die, they serve as food for decomposers like bacteria. They use up a lot of oxygen. This results in a decrease in the oxygen level which is harmful for the survival of other organisms.

### ADDITIONAL IMPORTANT QUESTIONS

#### 18.1 AIR POLLUTION

**Q. 1. What is air pollution?**

**Answer.** The presence of harmful gases and other undesirable constituents, in the air resulting from human activities, increasing traffic, growing cities and industrialisation is called air pollution.

**Q. 2. Why is the study of atmosphere important to us?**

**Answer.** The study of atmosphere is important because it helps us to make weather forecasts. Atmosphere also plays an important part for the sustenance of life on earth. Thus, it is important to study atmosphere from time to time and take preservative steps, if necessary.

#### 18.2 HOW DOES AIR GET POLLUTED?

**Q. 1. Mention the various causes of air pollution.**

**Answer.** Causes of Air Pollution: The contamination of air is by the following pollutants:

(i) Carbon monoxide — released due to incomplete combustion of diesel, petrol and wood.

(ii) Carbon dioxide — released from the combustion of fossil fuels.

(iii) Nitrogen oxides — released from burning of fuels.

(iv) Sulphur dioxide — released from industries.

(v) Lead — released from exhaust of automobiles and use of hair dye products and paints.

(vi) Suspended Particulate Matter (SPM) — particles of smoke, dust and other substance suspended in air.

**Q. 2. What are the causes of indoor air pollution? How to prevent or minimise it?**

**Answer.** Indoor air pollution means the pollution of air due to human activities inside home. The use of paints, aerosols, acids for cleaning toilets, sprays and deodorants, carpet cleaners, objects made from recycled plastics etc. produces vapours which are quite harmful for our health. Indoor pollution can be minimised by flushing fresh air after the use of above activities.

**Answer.**

**Answer.** Fossil fuels such as coal, wood, petroleum oil, natural gas are burnt to provide a source of energy. Their combustion not only produces energy and carbon dioxide but other poisonous gases like carbon monoxide, sulphur dioxide, oxides of nitrogen and smoke particles. Thus a lot of atmospheric pollution is caused by burning of fossil fuels.

**Q. 4. Which of the following substances, when present in air, cause air pollution? Water vapour, carbon monoxide, lead, CO<sub>2</sub>, SO<sub>2</sub>, CFCs, nitrogen, oxygen.**

**Answer.** The substances that cause air pollution are: carbon monoxide, lead, CO<sub>2</sub>, SO<sub>2</sub>, CFCs, water vapour.

**Q. 5. Name the main air polluting gases.**

**Answer.** Sulphur dioxide, carbon monoxide and nitrogen oxides are the chief air polluting gases.

**Q. 6. What will happen if the ozone cover of the atmosphere is removed?**

**Answer.** Radiations of short wavelength (UV radiations) emanated by the Sun shall penetrate deep into our body and we shall die of diseases like skin cancer.

**Q. 7. What are aerosols? How are these dangerous?**

**Answer.** The solid particles or liquid droplets in air are called aerosols. These can enter the buildings like gases and are more dangerous because of their great sticking power to materials.

**18.3 CASE STUDY—THE TAJ MAHAL**

**Q. 1. Define acidic gases. Give examples. Can you observe its effect on newly constructed building made of marble?**

**Answer.** Those gases which combine with water and form acids are called acidic gases. For example, sulphur dioxide (SO<sub>2</sub>) and nitrogen dioxide (NO<sub>2</sub>).

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**Mrs. Bramble is amazed to think that she has brought such a prodigy as Harold into the world.**

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**Effect on Buildings Made of Marble:** Marble is actually 'chemical carbonate'. The polluted air containing SO<sub>2</sub> and NO<sub>2</sub> produce acid rain. The acid so obtained is quite dilute and reacts with calcium carbonate stone very slowly and thus the damage caused would be noticed after a long time. Thus the effects of acidic gases on newly constructed marble buildings will be seen after a long time.

**Q. 2. What is acid rain?**

**Answer.** When atmospheric pollutants like sulphur dioxide and nitrogen dioxide react with water vapour present in atmosphere, it forms sulphuric acid and nitric acid. The acids drop down with rain, making the rain acidic. This is called acid rain.

**18.4 GREENHOUSE EFFECT**

**Q. 1. Which radiations are absorbed by ozone?**

**Answer.** Ultraviolet radiations.

**Q. 2, Which radiations are absorbed by CO<sub>2</sub>?**

**Answer.** Infrared radiations.

**Q. 3. What is greenhouse effect? State its significance for us.**

**Answer.** The concentration of carbon dioxide in the atmosphere is increasing due to the current global trend of deforestation and increasing combustion of fossil fuels. A part of the sunlight incident on the earth is reflected back in the form of infrared light. This infrared light is absorbed by the carbon dioxide molecules. Hence the envelope of CO<sub>2</sub> of the atmospheric air would be able to trap larger proportion of the infrared light if the concentration of CO<sub>2</sub> is increased, thereby heating the atmosphere. This heating of the atmosphere due to the absorption of infrared radiations by CO<sub>2</sub> molecules is called the greenhouse effect. This will ultimately increase earth's temperature and may cause melting of glacier and thereby flooding the coastal plains.

**Q. 4. What are greenhouse gases? How do these affect our environment? What do you suggest to control the effect of greenhouse gases?**

**Answer.** Carbon dioxide, water vapour, methane, nitrous oxide and the chlorofluoro-carbons (CFCs) are called greenhouse gases. The increased presence of these gases in the environment causes global warming. Burning of fossil fuels such as coal, oil and the natural gas is the main source of greenhouse gases. Therefore, to minimise greenhouse effect or to monitor global warming, burning of fossil fuels should be controlled.

**Q. 5. State why a car parked in the sunshine with its windows closed is found much more hot inside than outside?**

**Answer.** The inside of a car with its windows closed is hotter than outside due to greenhouse effect. The window panes absorb infrared radiations of the sun making inside hotter because heat rays are absorbed by glass easily and are not allowed to reflect back.

**18.5 WHAT CAN BE DONE?**

**Q. 1. Suggest the steps to control air pollution.**

**Answer.** Controlling of air pollution:

- (i) Change to less polluting forms of power generation, such as solar energy.
- (ii) Lead-free fuel such as Compressed Natural Gas (CNG) should be used for running cars, buses and trucks.
- (iii) Smoke precipitators should be installed at the top of chimney in all industries.
- (iv) Grow more trees.
- (v) Use of aerosols should be minimised.

**Q. 2. Who organised "say no to crackers" Campaign?**

**Answer.** Childrens from different school organised the campaign "Say no to crackers".

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**Q. 3. What are the ways to minimise pollution caused by use of petrol and diesel.**

**Answer.**

- (i) By supplying sufficient air so that unburnt carbon particles and carbon monoxide is almost absent.
- (ii) By using platinum catalyst to perform complete oxidation of unburnt particles and gases.

**Q. 4. What steps do you suggest for minimising the air pollution around you?**

**Answer.**

- (i) Use of plastic bags should be banned.
- (ii) Recycling plants for paper, tree, leaves etc. should be set up at convenient places.
- (iii) Diesel or petrol run vehicles should be changed to CNG at affordable cost, simultaneously have to increasing CNG filling facilities.
- (iv) Smoking should be discreet.
- (v) Use of aerosols should be minimised. ,
- (vi) Plantation of trees at available space should be encouraged.

## **18.6 WATER POLLUTION**

**Q. 1. What do you mean by water pollution?**

**Answer.** Destruction of purity of water by the addition of harmful substances in it, is called pollution of water. Such an impure water is called polluted water. The substances responsible for the pollution of water are called pollutants.

**Q. 2. “Hot water can also be a pollutant” explain How?**

**Answer.** Hot water is usually water from power plants and industries. It is released into rivers. It raises the temperature of the water body. It adversely affects the animals and plants living in it.

## **18.7 HOW DOES WATER GET POLLUTED?**

**Q. 1. Identify the sources of water pollution in your neighbourhood.**

**Answer.** Sources of water pollution in neighbourhood area are:

- (i) Sewage water from houses.
- (ii) Gutter water when mixed with drinking water causes pollution.
- (iii) Human excreta also causes water pollution.
- (iv) Cow dung etc., cause water pollution and cause various diseases.

**Q. 2. What are some of the industries that pollute water?**

**Answer.** Chemical, textile, leather, dyestuff pesticides, fertilizers and paint factories throw out various harmful chemicals which pollute water.

## **18.8 WHAT IS POTABLE WATER AND HOW IS WATER PURIFIED?**

**Q. 1. Define the terms:**

**(i) Polluted water (ii) Potable water.**

**Answer.**

- (i) Polluted Water: Water often gets mixed with unwanted materials and living organisms. Such a water is called polluted water.
- (ii) Potable Water: The water suitable for drinking is called potable water, which is free from all the impurities present in it.

**Q. 2. How is the water purified for drinking purposes?**

**Answer.** Water obtained from different sources are not pure. It needs purification before being supplied for drinking purposes. Water is first pumped from a source such as river or lake and is collected in a reservoir. The water is then cleaned by allowing it to filter through layers of gravel and sand it. It removes the dirt from water. Then water is treated with some chemicals like chlorine to kill the germs. The water is then supplied to localities where it is to be

used for drinking purposes (Fig. 18.1).

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**Mrs. Bramble is amazed to think that she has brought such a prodigy as Harold into the world.**

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**Q. 3. What is the role of the Effluent Treatment Plants in cities?**

**Answer.** This Effluent Treatment plant filters out undissolved materials.

**Q. 4. Define the term “Chlorination.”**

**Answer.** It is a commonly used chemical method for purifying water. It is done by adding chlorine tablets or bleaching powder to the water.

**18.9 WHAT CAN BE DONE?**

**Q. 1. How Water pollution can be controlled?**

**Answer.**

1. Laws of industrial units should be strictly implemented so that polluted water is not disposed off directly into rivers and lakes.
2. Water treatment plants should be installed in all industrial areas.

**Q. 2. At our individual level, what can we do to overcome the scarcity of drinking water.**

**Answer.** At our individual levels we should consciously save water and not waste it.

**OBJECTIVE TYPE QUESTIONS**

**Q. 1. Fill in the blanks with the appropriate words:**

- (i) Air contains the highest percentage of.....
- (ii) Most of the atmospheric air is contained in the atmospheric layer called.....
- (iii) Stratosphere layer of the atmosphere protects us from .....
- (iv) An odd combination of smoke and fog is called.....
- (v) The solid or liquid particles dispersed in air are called.....

**Q. 2. Match the following items given in Column ‘A’ with that in Column ‘B’:**

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**Mrs. Bramble is amazed to think that she has brought such a prodigy as Harold into the world.**

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**Q. 3. State whether the statements given below are True or False:**

- (i) Carbon mono-oxide is a poisonous gas.
- (iii) CFCs are not used in air conditioners.
- (iii) Infrared radiations are absorbed by oxygen,
- (iv) Ultra violets radiation are absorbed by ozone.
- (v) SO<sub>2</sub>, CO, and Nitrogen oxides are polluting gases.

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**Q.4. Choose the correct option in the following questions:**

(i) Which gas is the major pollutant of air?

- (a) Carbon monoxide (b) Nitrogen  
(c) Oxygen (d) Propane

(ii) The increase in concentration of which gas results in Global Warming?

- (a) Sulphur dioxide (b) Nitrogen  
(c) Carbon dioxide (d) Methane

(iii) In which year Ganga Action Plan was launched?

- (a) 1980 (b) 1984  
(c) 1982 (d) 1985

(iv) What radiations are absorbed by  $\text{CO}_2$ ?

- (a) Ultrared radiations (b) Infrared radiations  
(c) Ultraviolet radiations (d) None of these

(v) Which element is present in the exhaust of automobiles?

- (a) Lead (b) Calcium  
(c) Chromium (d) Magnesium

(vi) Most of the atmospheric air is contained in which layer of atmosphere?

- (a) Stratosphere (b) Troposphere  
(c) Exosphere (d) Mesosphere

(vii) The solid or liquid particles dispersed in the air are called

- (a) oxides (b) acids  
(c) hydrocarbons (d) aerosols

(viii) Which type of pollution has resulted in discolouring of Taj Mahal?

- (a) Air pollution (b) Ultraviolet rays  
(c) Acid rain (d) Infrared radiations

(ix) The major causes of air pollution include

- (a) burning of coal and petroleum (b) afforestation  
(c) deforestation (d) recycling of paper

(x) Bhopal tragedy was caused due to

- (a) air pollution (b) emission of poisonous gas  
(c) water pollution (d) leakage of poisonous gas

(xi) Which of the following contents is most harmful to aquatic animals?

- (a) Heavy metal ions (b) Sodium ions  
(c) Potassium ions (d) Chloride ions

(xii) Water containing high salt concentration can be purified by

- (a) boiling (b) UV irradiation  
(c) filtration (d) reverse osmosis

(xiii) Which of the following is a non-biodegradable pollutant?

- (a) Sulphur dioxide (b) DDT  
(c) Nitrogen oxide (d) Hydrogen oxide

(xiv) Which of the following is major source of water pollution?

- (a) Industrial wastes (b) Untreated sewage  
(c) Use of fertilisers (d) Toxic metals

(xv) Which of the following techniques of irrigation should be used to save water?

- (a) Water wheel (b) Canal irrigation  
(c) Drip irrigation (d) Lift irrigation

## ANSWERS

**Q. 1. Fill in the blanks:**

(i) nitrogen (ii) troposphere

(iii) ultraviolet radiations (iv) smog

(v) aerosols.

**Q. 2. Match the items under Column 'A' with Column 'B':**

<b>Mrs. Bramble is amazed to think that she has brought such a prodigy as Harold into the world.</b>

**Q. 3. True or False:**

- (i) True (ii) False (iii) False (iv) True
- (v) True.

**4. Choose the correct option:**

- (i) (a) (ii) (c) (iii) (d) (iv) (c)
- (v) (a) (vi) (c) (vii) (d) (viii) (c)
- (ix) (a) (x) (d) (xi) (a) (xii) (d)
- (xiii) (b) (xiv) (b) (xv) (c).