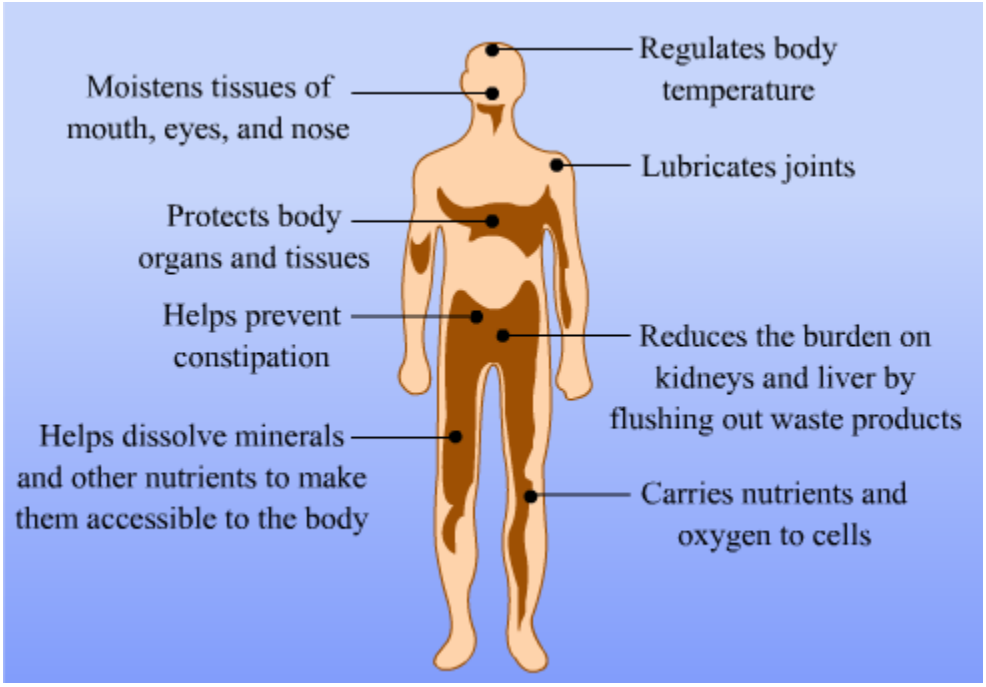
Water

Importance of Water

About 60% of our body is made up of water. Water plays an important role in various vital processes that are carried out by our body. All cellular processes take place in water medium. Read the given graphic to understand the importance of water in our body.



Importance of Water

Water and other life forms

- Aquatic animals live in water. Water is thus central to their lives. Although terrestrial animals live on land, they do need fresh water for carrying out various life processes such as excretion of waste products. Terrestrial life forms require fresh water because their bodies cannot tolerate or get rid of the high amounts of dissolved salts in saline water.

- The availability of water plays an important role in deciding the number of individuals of each species that will be able to survive in a particular area, and also the sustainability of life in the region. The availability of water also decides the diversity of life in that place.

Now you know why the number of animals found in rainforests is high and the number of animals inhabiting deserts is very low!

Fresh water is utilized by humans for consumption. The Municipal Corporation supplies water to our homes. In rural areas, people collect water from different water sources such as wells and ponds to meet their day-to-day requirements.

Know More

Conserving water

One way by which we can help reduce the demand for water is to conserve water round the year.

We can conserve water:

1. By turning off the tap while brushing.
2. By not using more water than what is required while bathing.
3. By closing the tap while washing utensils.
4. By washing vehicles using a mug and a bucket of water and not with a hosepipe.
5. By storing rainwater in tanks or other storage areas for future use.

Uses of Water

Water is very useful in our day to day life. Let's see some uses of water:

1. It is used for drinking.
2. For washing purposes we use water.
3. It is used in fields for irrigation.
4. For bathing we use water.
5. Today, water is also used for generation of electricity.

Sources of Water

Do you know that on an average an individual consumes about 2.9 litres of water everyday?

Water is required not only for drinking but also for many other purposes in our day-to-day lives.

Irrigation in agriculture, industrial processes, domestic purposes such as cooking and cleaning are some of the major uses of water.

What are the sources of water?

We know that water is available from various sources. Some of the common sources of water are ponds, lakes, rivers, wells, and reservoirs.

The water that we use in our homes is supplied from these sources. In villages, people directly use water from the ponds, rivers, lakes, canals, reservoirs etc.

Is water in icebergs salty?

The water in icebergs is not salty, rather it is fresh water. This can be explained by the principle of freezing. Iceberg is the solidified form of water. During the process of solidification the water molecules come close to one another and get packed tightly. This leaves no space for the molecules of salt.

Where does the water in these ponds, lakes, rivers, and wells come from?

Recall a picture of the globe. The area covered by the land is very small as compared to the area covered by water. Water covers two-third (2/3) of the total surface area of the world.

Interestingly, did you know that some of the water from the oceans and seas evaporates and is the primary source of rain? Rainwater feeds into the ponds, lakes, rivers, and wells etc, which in turn are the main sources of water for us.

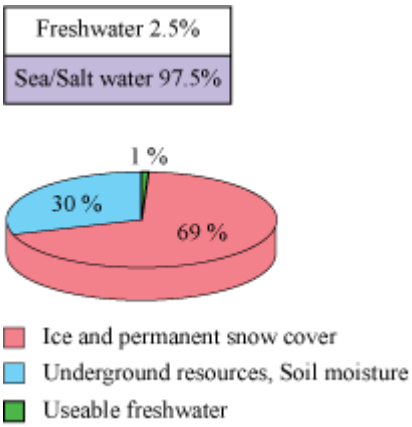
You may be familiar with instances of the taps in your house running dry for days at a stretch, on account of a shortage of water in your city. We know that there are places in this country where the shortage of water is so severe that people stand in long queues to fetch a few buckets of water! In the villages people have to fetch water from very far distances.

There are numerous fights over water. Marches and protests, against the unavailability of this valuable resource, are fairly common. All these problems are due to the limited availability of fresh water as a resource.

Interestingly, did you know that another name for our planet is '**Blue planet'?** This is because our planet appears to be blue in color when seen from the outer space. This color is because a vast area on Earth is covered with water.

You may know that about 71% of the total surface area of the Earth is covered with water that is contained in the oceans, seas, lakes, rivers, ponds, etc. The remaining 29% is the land surface area. If such a large area is covered with water, then **why is there a scarcity of water?**

Water on the Earth is found in the oceans, seas, lakes, ice caps, rivers, ponds, under the ground, and also in the atmosphere as vapor. The oceans and seas alone account for about 97.5 % of the total water found on the surface of the Earth. This water from the oceans and seas is not suitable for human consumption as it is salty. The remaining 2.5 % is fresh water and is found trapped in the ice caps, glaciers, ponds, lakes, rivers and underground water that is suitable for use.



Source of fresh water	**Percentage**
Ice and glaciers	69%
Ground water	30%
Surface water	1%

We basically use both surface water and ground water. We obtain ground water by using wells and tube wells.

This is the reason why we face scarcity of water.

Let us perform an activity to understand the amounts of water available in different forms

Collect the items listed below

- A test tube
- A ladle or dropper of 5 ml capacity
- A beaker of 500 ml or larger capacity
- A bucket with a capacity of more than 20 litres
- A small beaker of 150 ml capacity

1. Pour 20 litres of water in a bucket.

These twenty litres of water represents the total water available on Earth.

2.When 100 ladles of water from this bucket is removed it amounts to 500 ml of water. (100 ladles of 5 ml capacity each)

This 500 ml of water in the beaker represents the fresh water available on the Earth.

3.When 30 ladles of water from this beaker is transferred to another beaker, it amounts to 150 ml of water. (30 ladles of 5 ml capacity each)

This 150 ml or 30 ladles full of water represents the usable ground water.

4.When a quarter or $\frac{1}{4}\text{th}$ of this 150 ml of water is removed into another beaker, it amounts to 37.5 ml or 7.5 ladles of water. (A quarter of 150 ml means $\frac{150}{4} = 37.5 \text{ ml}$ of water, i.e. 7.5 ladles of water)

This 37.5 ml or 7.5 ladles represents the water in all lakes, rivers, ponds etc of the world.

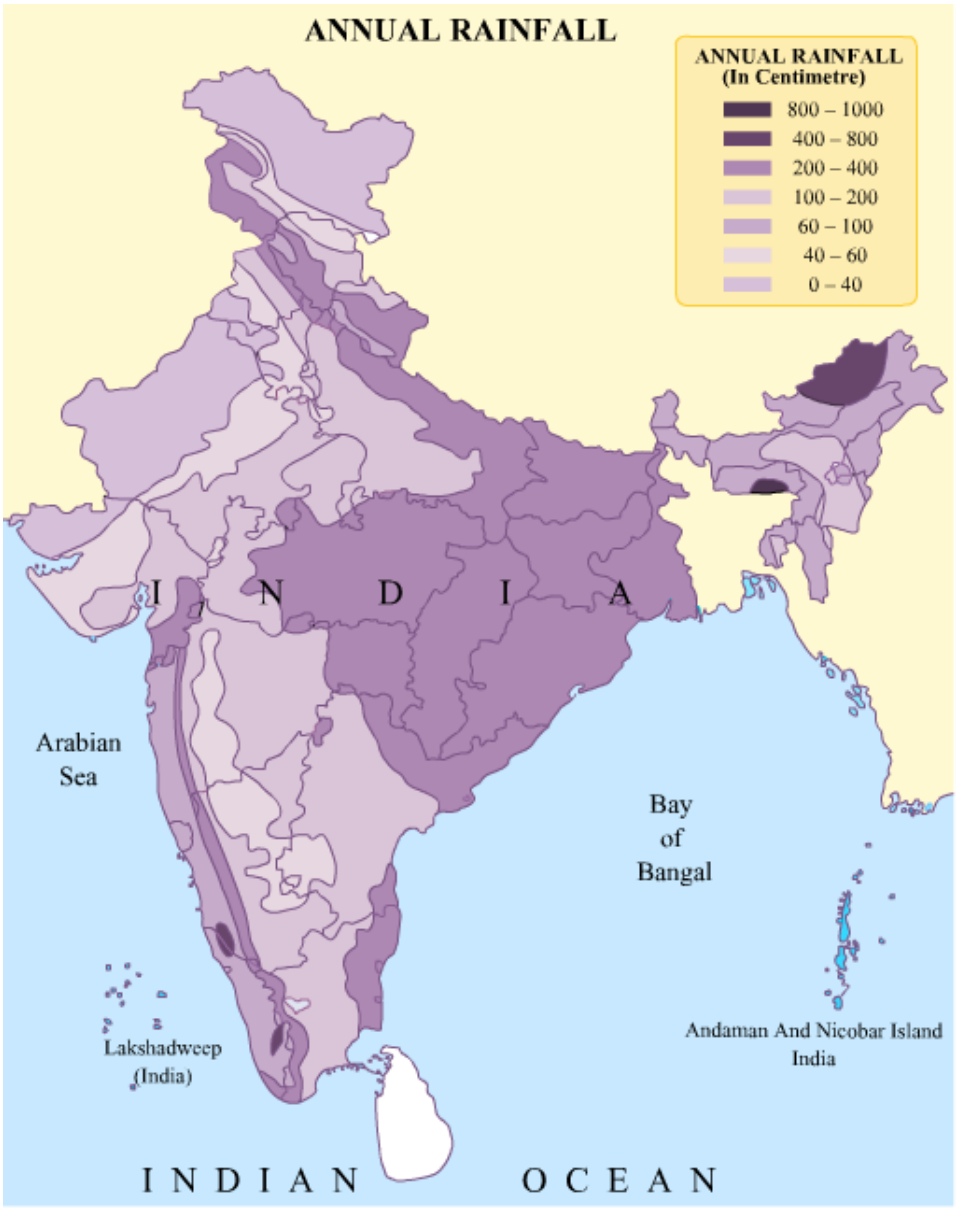
Thus, the quantity of usable water that is available on the Earth's surface is very small in comparison to the total available water on Earth. Therefore, water is indeed a limited resource and should be conserved.

Distribution of Water in India

In India, water availability is greatly dependent on the seasonal monsoons. The distribution of rain water varies in different parts of the country. Some regions such as the north eastern states and the Western Ghats receive excess rainfall while regions of western India such as the Thar desert of Rajasthan do not receive adequate rainfall.

This uneven distribution of rain causes floods in some areas and droughts in the parts where there is scanty rainfall.

The given map shows the average annual rainfall received by the different parts of India.



Physical States of Water

Water is found in solid, liquid, and gaseous states in the environment. In the solid state, it is found in the form of ice, and as a liquid, it exists as water. It is present as water vapour in the gaseous state.

Physical Properties of Water

- Water is a colourless, tasteless, and transparent liquid. It also has no smell.
- Boiling point of pure water is 100°C at 760 mm of Hg pressure. However, boiling point of water increases due to increase in pressure and presence of dissolved impurities.
- Pure water freezes at 0°C at 760 mm of Hg pressure. However, freezing point of water decreases due to increase in pressure and presence of dissolved impurities.
- The state of water changes on heating or cooling. On heating, the state of water changes from liquid state to gaseous state (vapour). Similarly, on cooling, the state of water changes from liquid state to solid state (ice).
- Pure water is a bad conductor of heat and electricity.
- Water absorbs a fixed amount of heat. It has been found that 1 g of water always absorbs 4.2 J (=1 Calorie) of heat energy when heated through 1°C. This fixed amount of heat energy is called specific heat capacity. Specific heat capacity is the fixed amount of heat energy required to raise the temperature of 1 g of water by 1°C.

Water undergoes different processes in the environment and is found in different states during these processes. This cyclic process through which water circulates in the environment is called the **water cycle**.

By now, you know the steps involved in a water cycle. Now, let us look at each step.

Evaporation

Have you observed that when the floor is wiped with water, the water dries up in some time? The roads and buildings that become wet after rainfall, dry up soon after. You may have also observed that the water level in a container reduces when it is kept in it for a long time.

Where is all this water disappearing?

The process whereby water disappears into air is called **evaporation**. During evaporation, liquid water is converted into gaseous water vapour.

How does evaporation occur? What are the factors that affect evaporation? Let us understand.

Wet two handkerchiefs and squeeze out the water. Dry one of it outside in the sun and the other inside a room. Observe the time taken for both of them to dry. Do they take the same amount of time?

The handkerchief that was put out to dry in the sun dries up faster than the one inside the room. This is because the heat from the sun speeds up the time taken for evaporation. Thus, ***heat is essential for evaporation.***

Then how did the handkerchief inside the room dry?

This is because the heat from the sun also heated the air inside the room, although indirectly. This warm air converted the water on the handkerchief into vapor. Since direct sunlight did not reach the room, the handkerchief took longer to dry.

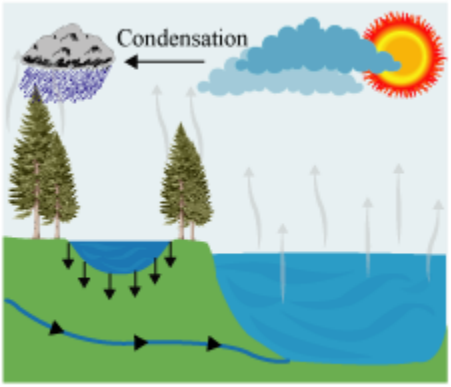
When water is poured over plants kept in pots, it is absorbed by the plant roots. Water is essential for plant growth. The plant utilizes the required quantities of water and the excess water is lost by the surface of the leaves as vapor through the process of ***transpiration.***

Thus, we can say that evaporation and transpiration are the processes by which water is converted into water vapor.

Since sunlight falls on all the water bodies such as oceans, seas, lakes, ponds, and rivers, water is being continuously converted to water vapor. Where does all this water vapor go? Does it disappear forever?

Condensation

As water vapor moves higher up, it cools down and forms water droplets through the process of **condensation**. Many water droplets join together to form clouds.



Precipitation

The water vapour that condenses as clouds falls down as rainfall, snow, or hail by the process of precipitation.

When clouds are large and laden with water, the water begins to fall as **rainfall.**

This rain enters the rivers, ponds, lakes, and other water bodies.

Some of the rainwater that falls on the ground enters the soil and adds to the **groundwater.** The returning of rain water into large water bodies and groundwater is known as **run off**.

This groundwater can be a source of water for the lakes. It can be drawn out using hand pumps and tube wells and utilized. The overuse of groundwater, however, can reduce its availability, thereby increasing water scarcity. When the land surface is covered with concrete, the amount of rainwater that can enter the soil drastically reduces, leading to a further decrease in the availability of ground water.

Thus, we now understand that water enters the atmosphere as water vapor by the processes of evaporation and transpiration. Water vapor condenses to form clouds and falls as rain. Rain water again runs off to large water bodies such as rivers, lakes, oceans, or groundwater.

Rajat wanted to observe the various processes that cause a change in the state of water in the environment. Let us try and mimic the processes.

Did you know that when rainwater flows on the ground, it washes away the valuable top soil? When this top soil is lost, plants cannot grow. This process is called soil erosion.

Water is found in many different states and these states keep changing depending on the temperature and other environmental conditions.

More to perform, observe, and learn

We can observe the processes that occur in the environment in our everyday lives. Do you notice that when water is placed in ice trays and kept in a freezer, it changes into solid ice cubes? Further, when water is heated in a pan, it changes into gaseous vapors. You may also have observed that on heating water in a container that is covered with a lid, the water vapour cools down after some time to form droplets of water under the lid! When a glass filled with icy cold water is kept on the table, in normal temperatures, small droplets of water are formed over the external surface of the glass.

Physical Properties of Water

A molecule of water is made by the combination of two hydrogen atoms and one oxygen atom.

Do you know that on an average, an individual consumes about 2.9 litres of water every day?

Water is required not only for drinking but also for many other purposes in our day-to-day lives.

Irrigation in agriculture, industrial processes, domestic purposes such as cooking and cleaning are some of the major uses of water.

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What happens when some crystals of copper sulphate are heated?

The crystals turn white. **Do you know why?**

This because crystals of copper sulphate contain water and this water is removed on heating. As a result, the salt turns white. This water is called **water of crystallisation**.

Do you know what water of crystallisation is?

Water of crystallisation is the fixed number of water molecules present in one formula unit of copper sulphate.

Hydrated copper sulphate has the chemical formula $CuSO_4.5H_2O$. That is, one formula unit of copper sulphate contains five water molecules. Therefore, water of crystallisation of copper sulphate is 5. Similarly, the water of crystallisation of calcium sulphate ($CaSO_4.2H_2O$) is 2.

Anomalous expansion of water

Water shows abnormal behaviour when heated or cooled between 4°C and 0°C. If water is cooled below 4°C, then it expands instead of contracting. This abnormal behaviour of water is called **anomalous expansion of water**.

Water as a solvent

Water is said to be a **universal solvent**. It can dissolve almost all kinds of substances (solid, liquid, or gas) in it to different extent.

The substances which dissolve rapidly in water are called soluble substances. Examples include sugar, common salt, etc.

On the other hand, the substances which do not dissolve or dissolve to very little extent are called insoluble substances. Examples include stones, plastic, glass, etc.

The respiration and survival of aquatic lives are possible only because of presence of dissolved oxygen in water. Moreover, carbon dioxide gas dissolved in water helps water plants in producing food.

Do you know that the water in the Dead Sea contains 23% to 25% salt. The salt is mainly potassium chloride, magnesium chloride, calcium chloride and calcium bromide. No aquatic life can survive in that much saline water.

Solutions

Whenever we talk about solutions, we instantly think of liquids. **But is it necessary that all solutions are liquids?**

No. A solution is simply a homogeneous mixture of two or more substances. We can also have solid solutions and gaseous solutions. Alloy is an example of a solid solution while air is a gaseous solution.

The only condition that has to be fulfilled for a mixture to be called a solution is that it should have homogeneity at particle level. For example, when sugar is dissolved in water, a solution is obtained because sugar particles are evenly present throughout the solution. As a result, all parts of a sugar solution taste the same.

A solution has two components, namely, the solvent and the solute.

- **Solvent** is that part of the solution in which the other component is dissolved. In other words, solvent is that component of a mixture that is present in large amounts.
- **Solute** is that part of the solution that is dissolved in the solution. This is present in a lesser quantity as compared to the solvent. Also, more than one solute can be present in a solution.

Some common examples of solutions are:

- **Solution of salt in water:** Salt is the solute and water is the solvent.
- **Solution of iodine in alcohol:** Iodine is the solute and alcohol is the solvent. It is also called ‘tincture of iodine’.
- **Vinegar:** Acetic acid is the solute and water is the solvent.
- **Soda water:** CO_2 is the solute and water is the solvent.
- **Air:** N_2 is the solvent and the other gases are the solutes.

Properties of a solution:

- It is a homogeneous mixture of solutes and solvents.
- The solute particles in a solution are extremely small in size. They are less than 1 nm (10^{-9} m) in diameter.
- Solute particles are not visible to the naked eye.
- As a result of the small size of the solute particles, a solution does not scatter light.
- Solute particles being small in size get dissolved in the solvent. Hence, the solute cannot be separated from the solution by filtration.
- Solute particles do not settle down when left undisturbed.

Solubility

The amount of a solute present in its saturated solution at a given temperature is called the solubility of the solute at that temperature.

For example, if 30 g of a substance dissolves in 100 g of water at 25°C, then the solubility of the substance is 30 g/ 100 g of water at 25°C.

Mathematically, solubility of a substance is given by,

$$\text{Solubility of solute} = \frac{\text{Weight of solute (in g)}}{\text{Weight of solvent (water) (in g)}} \times 100$$

With an increase in the temperature of a solution, the solubility increases. This can be easily demonstrated as shown in the following animation.

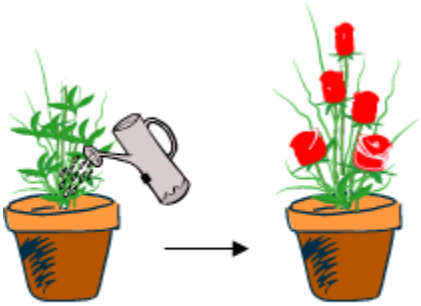
We use water for several purposes

- Domestic purposes such as drinking, washing, cooking, gardening etc.
- Personal hygiene such as brushing, shaving, bathing etc.
- Recreation or water sports, fountains, decorations, etc.

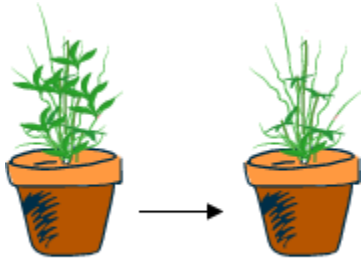
Can you recall more and add to the list?

Water is very important as it is utilized in many activities. Water is not only required by human beings for their various needs but is also required by plants and animals for their survival and growth.

Let us understand more. John and Stalin plant two rose plants in their homes. John waters his plant everyday but Stalin does not. After a few days, Stalin's rose plant sheds its leaves and dries up while John's rose plant is healthy and has flowers.



John's plant



Stalin's plant.

Do you know why Stalin's plant looses its leaves? This is because water is essential for the growth of plants.

We know that water is essential for many activities in our homes.

Consider a family of four comprising two adults (the parents) and two children (Amit and Amrita). Let us try and list their normal activities and the amount of water utilized respectively.

Family members	Activities	Approximate water utilized(in buckets)
Father	Personal hygiene	2
	Car wash	1
Mother	Personal hygiene	2
	Cooking	1
	Cleaning	2
Amit	Personal hygiene	2
Amrita	Personal hygiene	2
		Total:12

(Note: Although water is also utilized for many other purposes, for the sake of convenience only a few activities have been taken into account.)

Thus, we see that a family of four members utilizes approximately 12 buckets of water for its everyday activities, on a normal day.

If about 20 families live in an area, then the amount of water utilized would increase to 20 × 12 = 240 buckets per day (considering four to be the average number of members per family).

Can you now imagine how much water is required by all the people living in the world?

Do you know how much usable water is available on the Earth?

Ocean and seawater contribute about 97.5% of the total water available on the Earth and the remaining 2.5% is fresh water.

You will be surprised to know that out of this 2.5% fresh water, 69% of it is frozen in the form of ice-caps in the Polar Regions. About 30% percent of it is found as underground water and only the remaining 1% is available as water in the lakes, ponds, and rivers!

With the increase in population, there is an increase in the agricultural and industrial activities, recreation etc which has further led to an increase in the amount of water utilized by humans.

Water resources are limited and it is decreasing everyday. Therefore, it is very important for all of us to understand that water is precious and needs to be conserved.

Management of water resources in order to increase the efficiency with which it is utilized and decrease the wastage is known as conservation.

A few steps that can help in the conservation of water are

- Careful utilization of water by preventing the spilling, over use and wastage of water. Keeping the taps running while we are washing or brushing leads to a lot wastage of water and should be avoided.
- Rainwater harvesting, that involves collecting and storing the rain water for further use, should be practiced.

Water Pollution

*The addition of harmful substances to water, as a result of which its physical, chemical, and biological properties get altered, is called **water pollution**. The substances that*

pollute water are called water pollutants. Sewage, toxic chemicals, silt etc. are examples of water pollutants.

What effect does water pollution have on living organisms? Let us explore the effects of various water pollutants on living organisms.

Water pollutants:

There are three main categories of water pollutants:

Biological pollutants: Biological pollutants make the water unfit for consumption and are responsible for causing various kinds of diseases, for example, algae, bacteria, fungi, etc.

Inorganic pollutants: These include suspended particles like dust, sand, soil etc.

Organic pollutants: These include weedicides, pesticides, fertilizers, sewage etc.

Do you know that water pollution can occur either through natural reasons or man made reasons?
Natural reasons of water pollution include the presence of aquatic weeds, decomposing matter, mud/sludge, algae or nematodes. Presence of these components in water bodies makes them unfit for human consumption.

Man made reasons of water pollution include industrial wastes, pesticides etc. Lets study them in detail.

Industrial waste

In the absence of proper treatment facilities for industrial wastes, most of these wastes are directly dumped into the rivers. The industrial wastes from oil refineries, chemical factories, sugar mills, and fertilizer plants carry toxic substances such as arsenic, lead, mercury, and fluoride. These substances cause toxicity in plants and animals.

They also pollute the soil by increasing its acidity, decreasing its fertility, and affecting the growth of worms which are beneficial for the soil.

Pesticides and fertilizers

We know that fertilizers and pesticides are the farmer's friends as they help in killing the pests and weeds and increasing the fertility of the soil. **However, do you know that they also have a significant negative impact on the water bodies?** The chemicals that are contained in these pesticides and fertilizers get dissolved in the water and eventually

get washed away to the water bodies. They also seep into the ground and pollute the ground water.

On entering the water bodies, these pesticides and fertilizers increase the nutrient content of the soil as they contain various nutrients. This accelerates the growth of algae in the water bodies. You may have observed that some water bodies appear green in colour. This is because of the excessive growth of algae in water. **Does this excessive algal growth have any effect on the living organisms present in the water body?** The answer is a yes.

When these algae die, they are decomposed by the action of micro-organisms that are present in water. Consequently, the number of these micro-organisms in water bodies increases. Since they consume a large quantity of oxygen that is present in the water, it leads to a decrease in the levels of oxygen. The absence of oxygen eventually leads to the death of the living organisms.

Sewage

Sewage is waste water that contains faecal matter, urine, food wastes, detergents, and other solid substances. Sewage contains many disease-causing pathogens such as bacteria, fungi, viruses, and parasites. When drinking water gets contaminated with sewage water, these harmful organisms enter the bodies of the living organisms and cause several diseases. Some of the diseases caused by the drinking of contaminated water and the names of the respective causal organisms are listed in the given table.

Name of the disease	Causal organism
Cholera	Bacteria
Typhoid	Bacteria
Diarrhoea	Bacteria
Hepatitis	Virus
Amoebic dysentery	Protozoan

Several bacteria are present in the faeces of mammals. If the water is contaminated with faeces, then these bacteria function as indicator organisms for the quality of water i.e., the number of these faecal bacteria indicates the extent to which the water is contaminated by faecal matter.

Release of Superheated Water

The release of superheated water from some industries and nuclear power plants causes thermal pollution of the water bodies.

It results in the increase in temperature of ambient water that reduces dissolved oxygen content of water bodies. The abrupt change in the temperature of water body can kill the fish and other organisms adapted to particular temperature range.

Release of Waste and Oil from Refineries

The wastes and oil released from the refineries mainly in the seas and oceans cause marine pollution. The released oil penetrates into the plumage of birds and fur of mammals. This reduces their insulating ability and makes them more vulnerable to temperature fluctuations.

Methods of preventing water pollution

- Industrial waste must be chemically treated to remove harmful substances before dumping into the water bodies
- Disposal of human and animal excreta into water should be avoided
- Sewage water must be treated before releasing into the rivers
- Dumping of dead bodies, carcasses and other wastes into the water must be stopped
- Aquatic animals like tortoise and some special types of fishes help in purifying water, therefore they are termed as natural purifier of water

Some Interesting Facts:

- According to the Central Pollution Control Board, about 3,684 million litres of sewage is produced in Delhi in a single day.

- *Escherichia coli* bacterium, which is present in the faeces of humans and other living organisms, is used as an indicator organism for water contaminated with faeces.

Conservation and Purification of Water

Water is a precious resource and we need to conserve it. **How can the conservation and purification of water be carried out?** Let us explore the various methods that can be adopted to save water.

Water can be conserved by following the simple principle of reduce, reuse, and recycle. This can be practiced easily at homes. Some examples are

- Reusing the waste water from the kitchen (water that has been used to wash vegetables etc.) to water the plants in the garden
- Turning the tap off while brushing or shaving

- Checking for leaky taps and fixing them up
- Rain water harvesting
- Using improved farming and irrigation techniques
- Preventing pollution of water
- Conserving and replenishing ground water
- Proper removal of silt from water bodies
- Preventing cutting of trees
- Recycling and reusing water

Thus, we can reduce the total amount of water consumed by us by recycling and reusing most of the waste water for other purposes.

What about the waste water that is released from industries? Can it be recycled and reused too? The waste water from industries first needs to be treated in sewage treatment plants. This water can then be used for growing plants and other industrial purposes.

Some Interesting Facts:

- Leaking taps can lead to the wastage of thousands of litres of water in a single day.
- Drip irrigation is a method of irrigation that helps in the maximum conservation and utilization of water.

Purification of water

Do you know what potable water is? *Potable water is the water that is safe for drinking.* Although the water may look clean on mere observation, it may contain disease-carrying micro-organisms. In order to prevent the occurrence of diseases, this water has to be cleaned and only then can it be used safely for drinking. **What are some of the methods that can be used to purify water?** The methods for obtaining potable water can be divided into two groups: physical methods and chemical methods. Let us discuss them in detail.

Physical methods

- **Sedimentation**: It is a process in which suspended particles are allowed to settle down in water.
- **Filtration:** It is one of the common methods used for removing impurities from water. A simple filter paper can be used to obtain clean water. Candle type filter that is commonly used in households is also based on the principle of filtration.
- **Boiling:** Boiling the water helps in killing the germs present in water.

Chemical Methods

- **Chlorination:** Adding chlorine to water is one of the most commonly used methods of purifying water. Chlorine, when used in the prescribed amount, kills the germs present in water and makes it safe for consumption. You may have observed that tap water sometimes appears milky. **Do you know why?** This is because it contains chlorine.
- **Ozonisation**: It is a process of treatment of water with ozone. Due to great oxidation power, ozone acts as a powerful disinfectant.
- Adding bleaching powder also helps in purifying water.

Water Purifiers:

Water is purified at homes using a domestic water purifier. They have microporous filters and activated charcoal along with a source of UV radiations.
Insoluble impurities, such as sand, etc. are removed by the filters and microbes are killed by UV radiations. Organic impurities and undesirable odour are removed by activated charcoal.

Consequences of Excess And Scarce Rainfall

We have all experienced rainfall. Some of us might have also enjoyed playing in the rain.

Rainfall is important for life as

- It brings down the temperature in hot regions
- Increases the level of water in the water bodies
- Prepares the land for sowing in agricultural regions etc.

Rainfall is not constant across all regions. The duration, the season and the amount of rainfall varies from one region to another. Some regions receive rainfall throughout the year, while other regions do not receive sufficient rainfall even during the rainy seasons.

We see that during heavy rains the normal day-to-day life gets affected. You might have been disappointed when you had to miss your outdoor games during the rains. You might have also observed how the overflowing of rainwater leads to a blockage of traffic on the roads.

What would happen if there is an excess of rainfall in a certain region?

Some of the effects of heavy rainfall are

- In agricultural lands, it affects the crops as these get submerged under water

- It affects animals as they may get washed away with water. Sometimes, these animals may also get trapped on lands that are surrounded with water and may die.

- Increase in the level of water in ponds, lakes, and other water bodies may lead to overflowing of water. This may cause villages, towns and cities to submerge, thereby resulting in damages to both life and property.

A rise in the normal water levels in water bodies like lakes, rivers, ponds etc. in certain areas, as a result of heavy rainfall over a long period, causes a lot of damage to life and property. Such situations are called floods.

Now that you know what would happen during heavy rainfall, imagine what would happen if there was no rainfall

We often hear our parents telling us not to waste water. We see people storing water in pots, containers, tanks etc. We observe that plants die when there is insufficient water.

Let us list some of the consequences of a region receiving poor rainfall

- In agricultural lands, crop production would be adversely affected

- Water is important for animals therefore animal life would be affected

- There would be a decrease in the water levels in ponds, lakes, and other water bodies. This may lead to a shortage of water even for day-to-day activities.

The environmental condition where shortage of rainfall affects life is called a drought.