



Lake Conservation & Awareness



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Water is
critical for
all living
things.



Without water,
there can be no life





“Every year, more people die from the consequences of unsafe water than from all forms of violence, including war”



Significance of the topic

- Clean, safe and adequate water is vital to survival of all living organisms
- India's Rivers, Lakes and Ground water receive millions of litres of sewage, industrial and agricultural wastes
- Water pollution is one of the most important environmental issue



One of the fundamental duties of Indian citizen is to “protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures.



What is a lake

A lake is a large area of water surrounded by land
Any body of standing water with minimum water depth of 3m and covers an area of 10 hectares, smaller ones are called ponds



Benefits of lake



- We all wish to enjoy the beauty and diversity of India's water bodies.
- Source of water and livelihood to most of the population.
- Support large proportion of our biodiversity
- Provide breeding and nesting grounds to huge population of birds migrated specially from siberia



- Based on salinity → freshwater, brackish /saline
- Based on nutrient → oligotrophic (less nutrient), mesotrophic and eutrophic
 - Most of the lakes in India are mesotrophic and eutrophic
- The natural lakes are classified into many categories based on their formation like tectonic, volcanic, glacial etc



Lakes in Karnataka

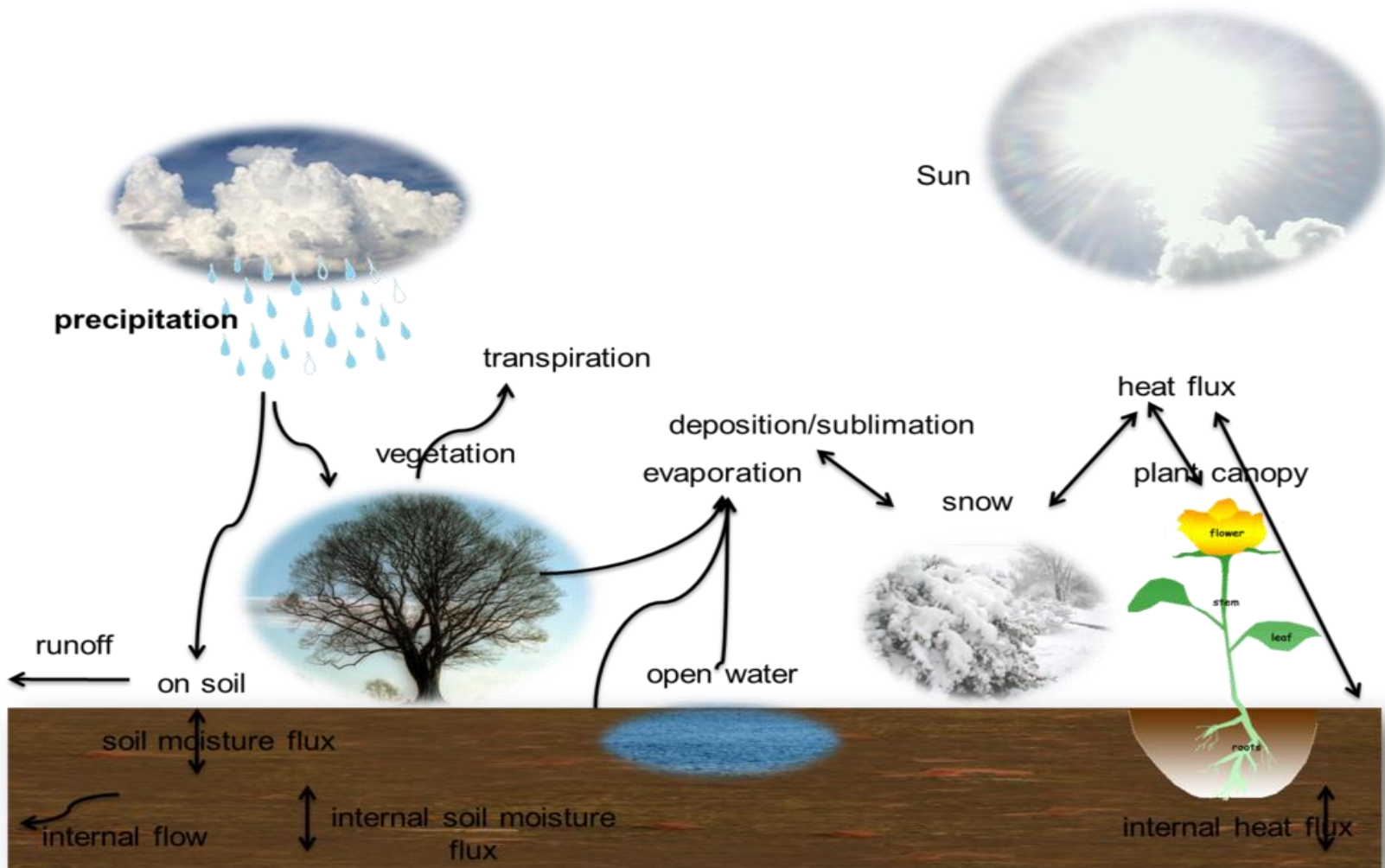
- There are more than 36,000 lakes in Karnataka. The Rural Development and Panchayat Raj Department owns 33,000 small lakes while the rest are under Minor Irrigation department.
- There are 1998 lakes in Tumkur district alone.
- Shanthisagar is the largest lakes in karnataka



Water cycle

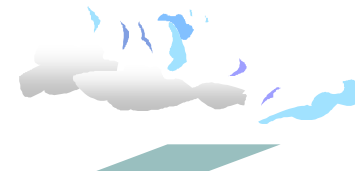
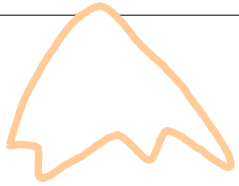


- Water never leaves the Earth. It is constantly being cycled through the atmosphere, ocean, and land. This process, known as the **water cycle**, is driven by energy from the sun. The water cycle is crucial to the existence of life on our planet.



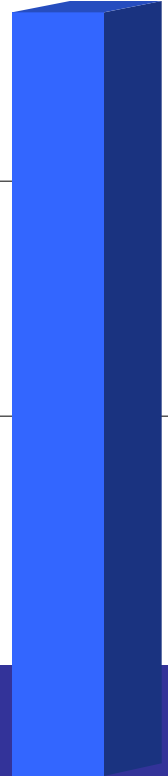
Distribution of Water Reservoirs

Ice Caps and Glaciers
1.725%



Atmosphere
0.01%

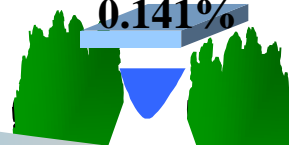
Oceans
97%



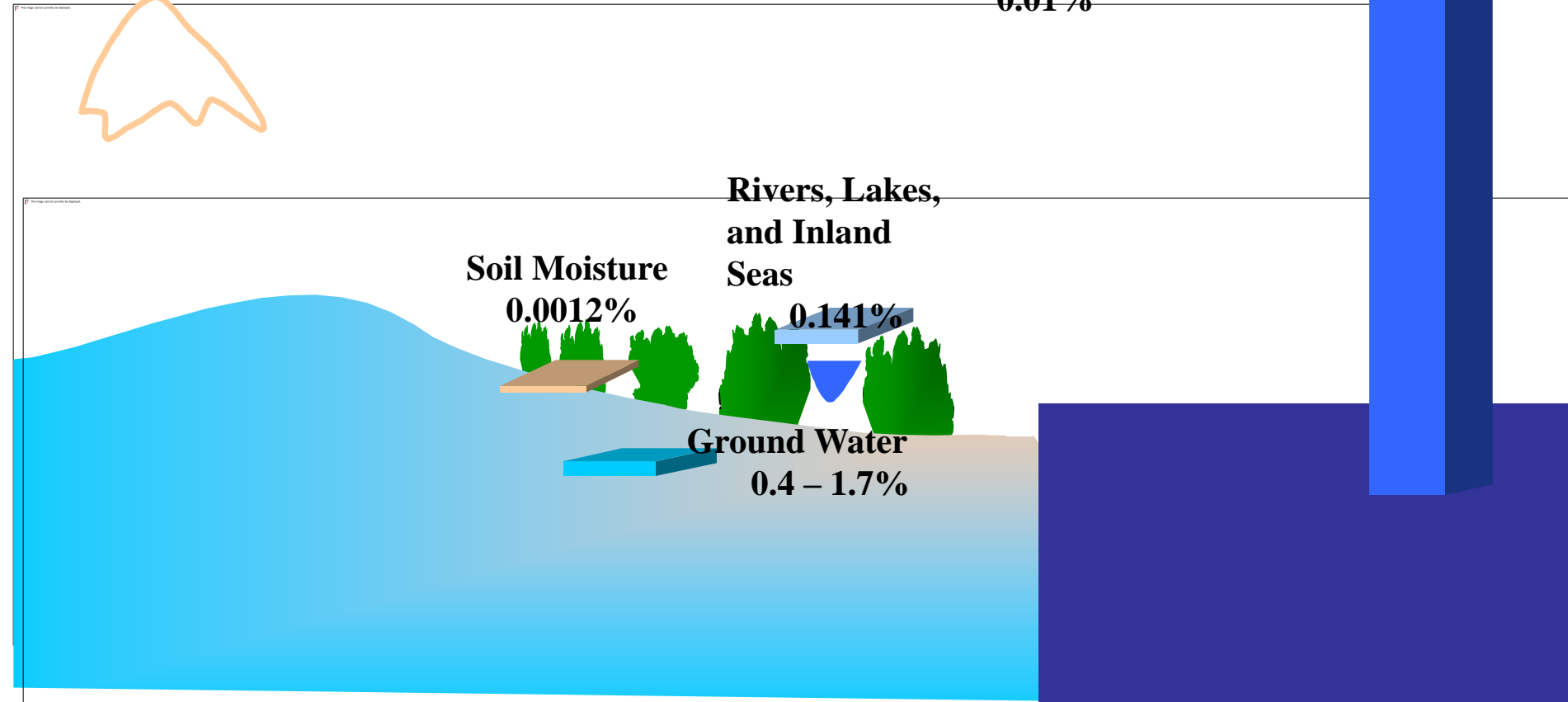
Soil Moisture
0.0012%



**Rivers, Lakes,
and Inland
Seas**
0.141%



Ground Water
0.4 – 1.7%



*How much water is available
for drinking?*





**Assume a bucket
(100liters) of water is
world water**

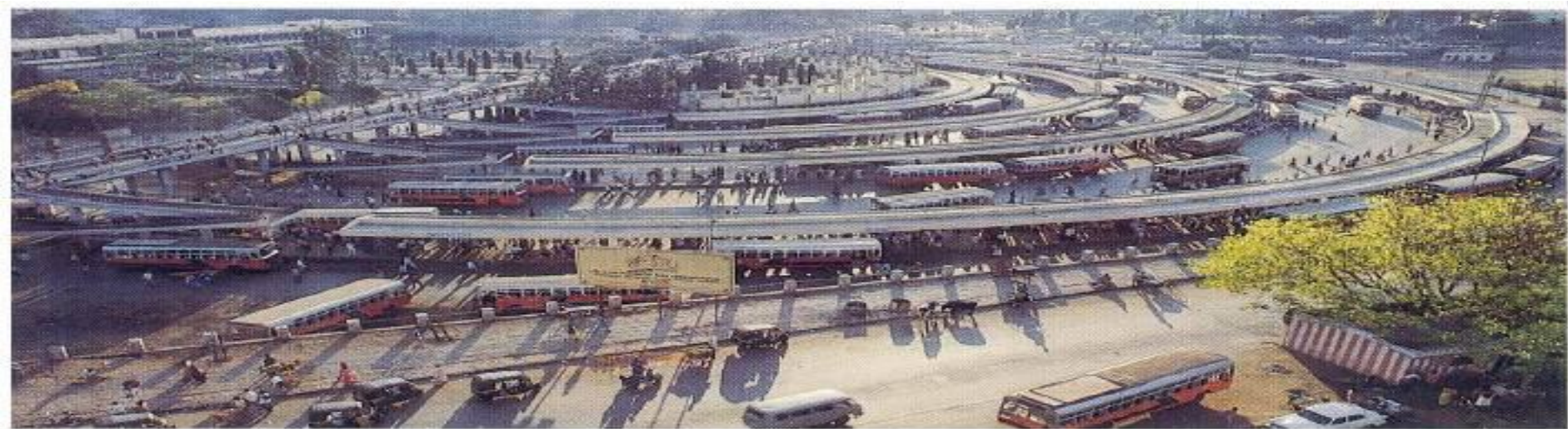


**Actual water available for
use is JUST a tea spoon**





- Many lakes are lost
 - due to urbanization & expansion: encroachment and construction activities
 - Eutrophication
 - Siltation



Bangalore City Bus Stand, once Dharmambudhi Tank



The KGA Golf Course stands on what was once the Challaghatta Tank



The Koramangala Tank is today a sports complex



GARVIBAVI PALYA NEAR HOSUR ROAD



HOSUR ROAD FLOODED IN BANGALORE



HOUSE IN JP NAGAR BANGALORE



TRAFFIC JAM DUE TO HEAVY RAINS



**SUBWAY BETWEEN MAJESTIC
AND RAILWAY STATION**



RISING WATER LEVEL AND VEHICLES



Reclamation of lakes for various developmental activities has resulted in the loss of interconnectivity in Bangalore district leading to higher instances of floods even during the normal rainfall. Analyses of Bellandur and Ulsoor drainage network showed that the network is lost due to conversion of Chelgatta tank into a golf course. Similarly the drainage network between Madivala and Bellandur revealed of encroachment and conversion that has resulted in the loss of connectivity between Yelchenhalli kere and Madivala

Physical Pollution



Chemical Pollution

- Pesticides
- Industrial discharges
- Acids, salts and toxic metals.
- Nutrients: nitrates and phosphates from soaps and detergents

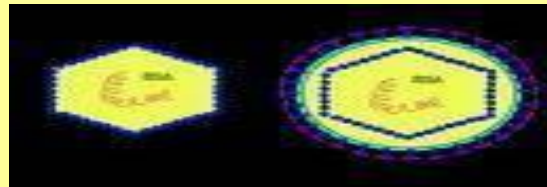
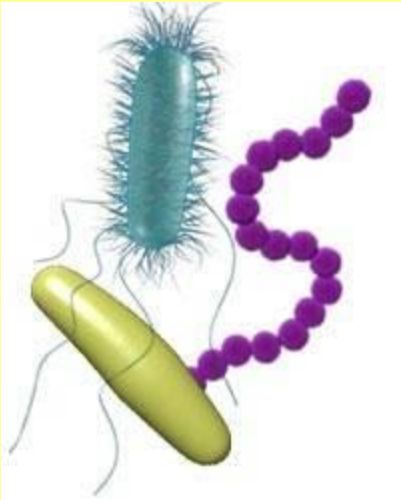


Biological Pollution

Bacteria

Virus

Protozoa



The various ways in which man pollutes water ☹️

Untreated or inadequately treated municipal sewage

An example of Point source of pollution



Yamuna, when it leaves Delhi, resembles a sewer full of the city's wastes. A few hundred kms downstream is Agra, where this 'sewer' is the main municipal drinking water source.

eutrophication

The various ways in which man pollutes water ☹️

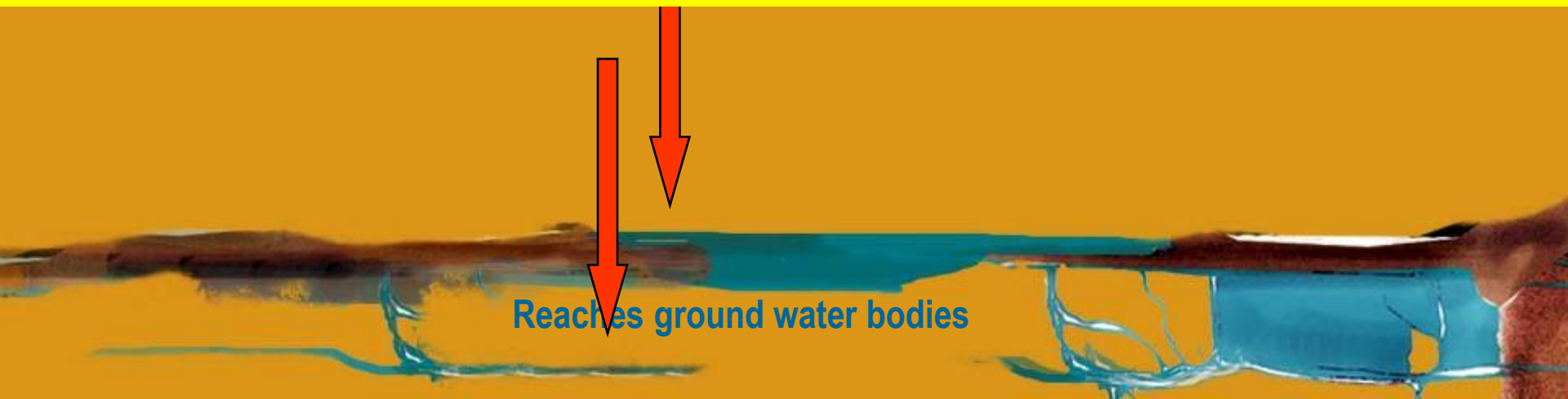
Untreated or inadequately treated municipal sewage

An example of Point source of pollution



Untreated sewage seeps in and contaminates groundwater aquifers

Such aquifers show a higher than acceptable level of nitrate content



The various ways in which man pollutes water ☹️

Dumping garbage in surface water bodies



When garbage is dumped in a landfill, toxic chemicals leach into the soil and groundwater.

The various ways in which man pollutes water ☹️



Over **10 million people** bathe in the Ganga daily!



Washing and bathing introduces phosphates and other chemicals into water

The various ways in which man pollutes water

Agriculture

An example of Non- Point source of pollution



Pesticides
Fertilizers

dissolve in irrigation water or rainwater.

They contaminate surface water and groundwater with pollutants like nitrates, phosphates, and non degradable synthetic organic pollutants.

Agriculture is a major source of groundwater contamination.

The various ways in which man pollutes water ☹️

Industry

An example of Point source of pollution

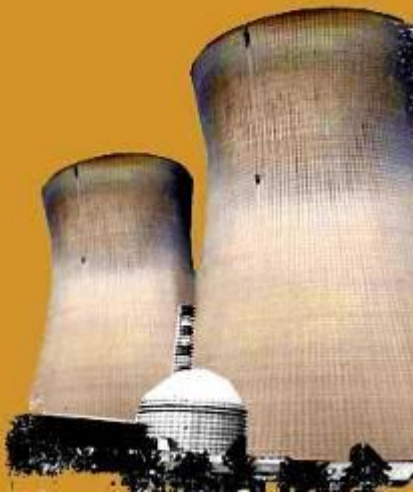


Agro industries (sugar, food processing, pulp and paper, distilleries) – their wastes have high concentration of dissolved organic matter.

Chemical Industries – If their wastes are not treated properly, the chemicals can destroy our soil and water resources.

Petroleum refining – water used in the process needs to be separated from all the oil before releasing it into nature.....but is that done?

Minamata disease



The various ways in which man pollutes water ☹️

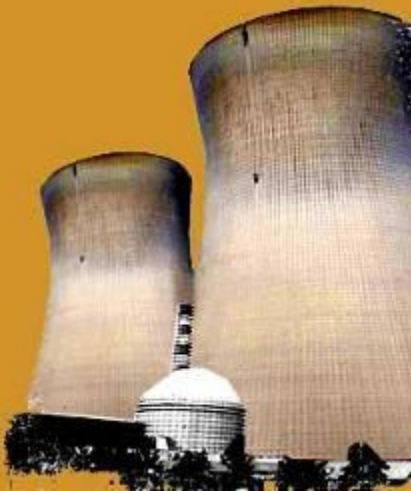
Industry

An example of Point source of pollution



Thermal power plants – water is needed to cool the process.

The water gets hot and when it's released into a larger water body, it upsets the ecology by modifying the delicate temperature balance.



This is called 'Thermal pollution'

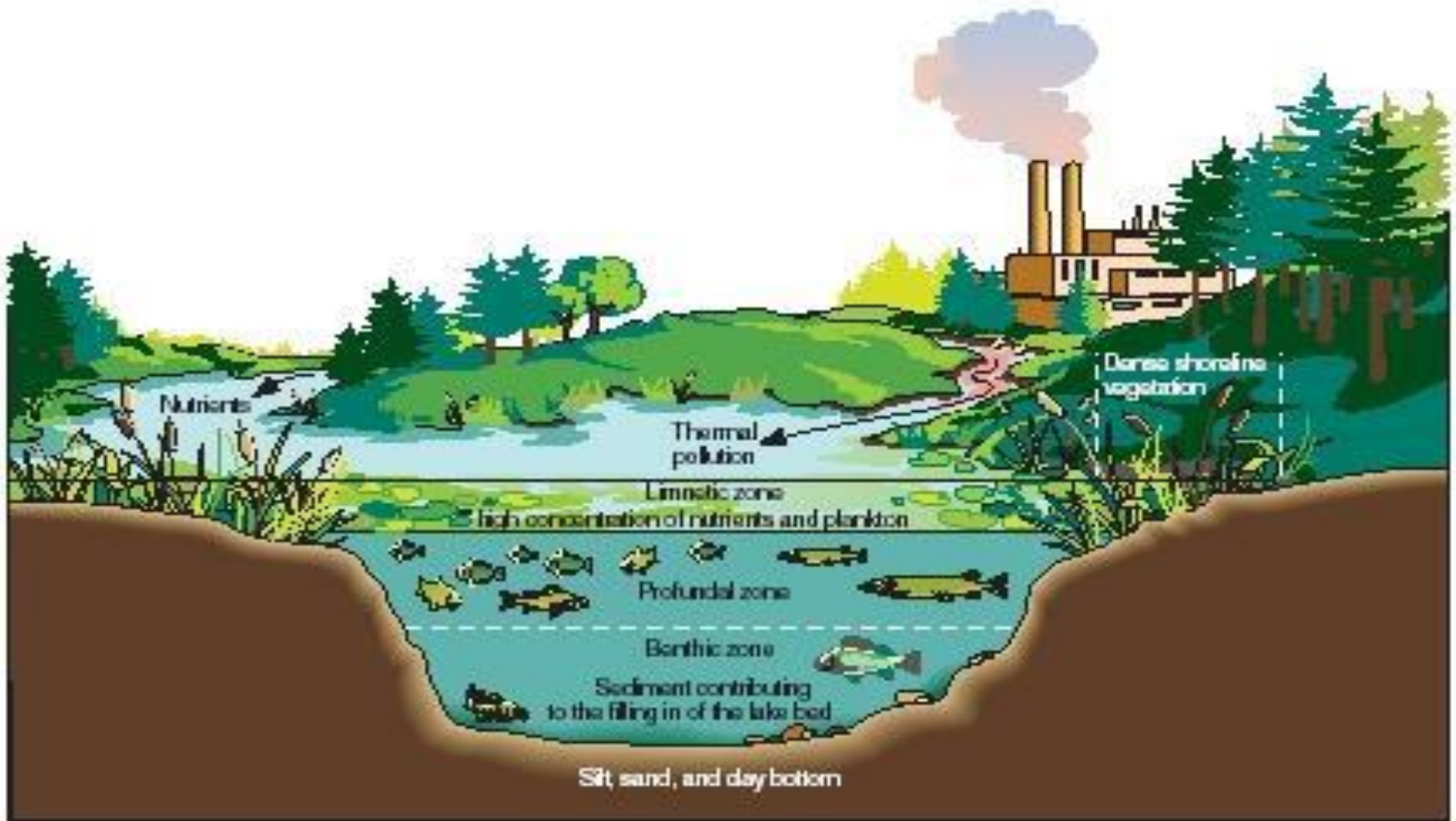
Does Man Pollute Water?

This is what a young person like you has to say:

“ If you had a bottle of life-preserving fluid on which your life depended, would you pour into it all your sewage and rubbish, along with any other poisonous chemicals you could find? And yet, that is exactly what we are doing to our water supply – all over the world.”



Eutrophication in Lakes



Vengalahnakere, Bangalore



Rear side of the Lake - showing Massive Water Hyacinth growth

Vengalahnakere, Bangalore



Level of Water Increasing with Incremental Rainfall

Ganesh Visarjan





Effects



- Plaster of Paris (POP) is not a naturally occurring material and contains gypsum, sulphur, phosphorus and magnesium. The idols take several months to dissolve in water and in the process poison the waters of lake, ponds and rivers.
- The chemical paints used to decorate the Ganesh idol contain mercury, lead, cadmium and carbon and this increases the acidity and heavy metal content in the water.



- Several accessories used during the Ganesh Puja like Thermocole, plastic flowers, cloth, incense, camphor and numerous other materials are dumped carelessly adding more strain to the already polluted rivers and lakes.
- Careless dumping of Ganesh idols in water bodies blocks the natural flow of water. This results in stagnation and breeding of mosquitoes and other harmful pests



- The polluted water causes several diseases including skin diseases.
- The pollution from Ganesh Chaturthi idols also damages the ecosystem, kills fishes and water plants.
- In many areas, the same polluted water gets pumped into homes



Alternatives



- Use eco-friendly clay idols painted with natural colors.
- Use permanent idols made of stone and perform a symbolic immersion and reuse the idol each year.
- Avoid public water bodies to immerse the idols, instead immerse idol in bucket or tub.







Conservation & Restoration

- Once upon a time Bangalore was called “city of Lakes” because numerous tanks were constructed by Kempegowda.
- These lakes improved the aesthetics

1973 → 379

1996 → 246

Today → 81



WEEDS REMOVAL IN PROGRESS



WEEDS ROTATION FOR COMPOSTING

**VIEW OF
THE LAKE
DURING
RESTORATION**

Dept. of Ecology and Environment,
Govt. of Karnataka &
Lake Development Authority,
Bangalore.





- Lakes are nearest accessible fresh water resource
- Hence, we need to restore and conserve lakes



Legal Provisions



- The Water (Prevention and Control of Pollution) Act, 1974
 - The PCBs established under the Water Act, control sewage and industrial effluent discharges in the water bodies by approving, rejecting or conditioning applications for consent to discharge
- The Water (Prevention and Control of Pollution) Cess Act of 1977
- The Environment (Protection) Act, 1986 (EPA)
- National Environment Policy, 2004



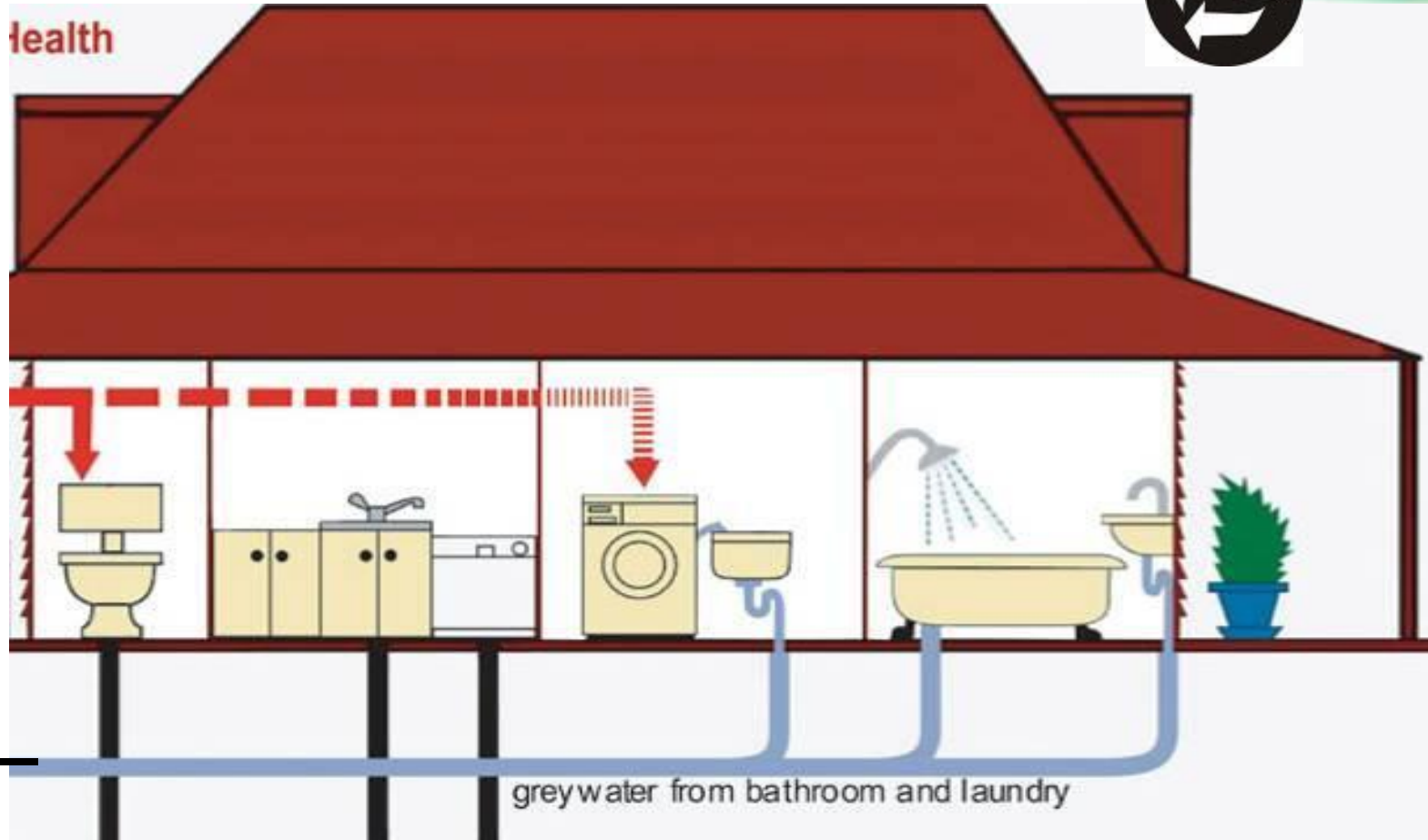
- National Lake Conservation Plan
 - Construction of STP's and ETP's
 - Diverting/treating sewage to generate alternative; sources of raw water and prevent contamination of underground aquifers from wastewater.
 - Improving urban sanitation and health conditions especially for the weaker sections living close to the lakes.
 - Utilizing the lakes for the purpose of education and tourism



Community Participation And Public Awareness Programmes For Lakes Conservation



Reuse and Recycle Water





Water from bathtubs, laundry and sinks can be used for toilet flush

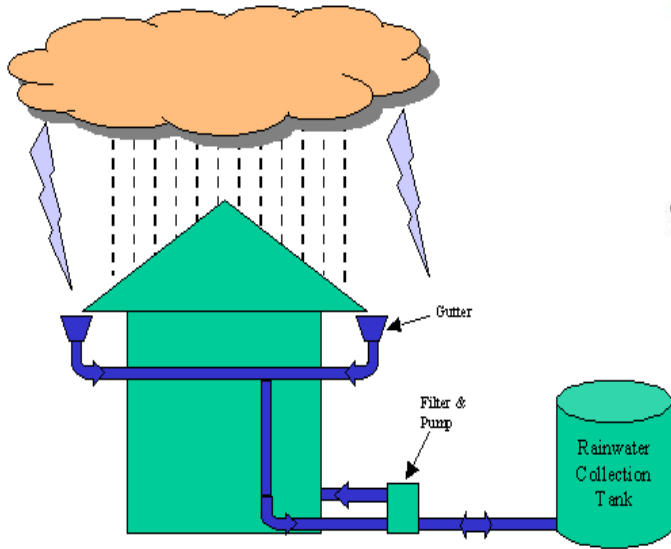




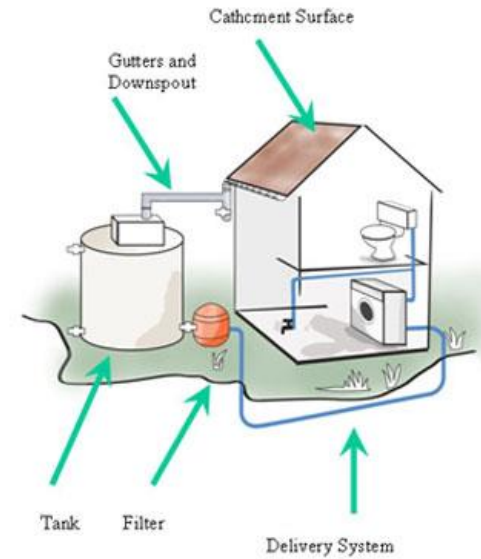
Water from the kitchen sinks can be used for gardening



Rain water Harvesting



Rainwater Collection Overview





What You Should do now ?



Save Water at Home&School

Water Saving Tips

- Open tap for 5 min wastes 6 BIG buckets of water



What you should do:

- Do Not Play with water
- Use **ONLY** when required



Water Saving Tips

One drop per second
wastes 25 litres of water
per day

What you should do:

Report Leakage to your father
or mother



Water Saving Tips

Running tap for Brushing teeth, washing hands wastes 2 BIG buckets of water



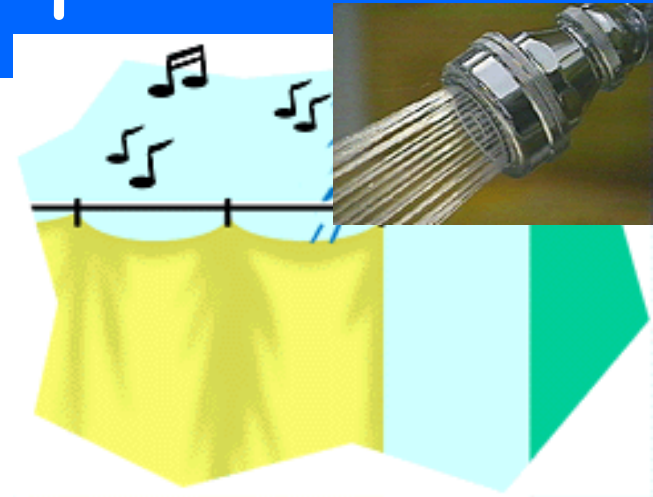
What you should do:

- ❖ Use mug or cup
- ❖ Close tap while brushing teeth



Water Saving Tips

- Bath in shower for 10 min
wastes 5 BIG buckets of water



What you should do:

- ❖ Wet down
- ❖ shower off
- ❖ soap up
- ❖ rinse off again
- ❖ Use bucket of water



Water Saving Tips

- Wash dishes & vegetables in a vessel of water
- Reuse water from washing of vegetables
 - Watering plants



Water Saving Tips

- Running hose for water plants for 5 min wastes 7 BIG buckets of water



What you should do:

- ❖ Use water can, bucket, sprinkler







Water Conservation Pledge

I promise to do my best to save water in my home and at school.

I also promise to help others by telling them about ways to conserve water. I will do my best to be a **water conservation citizen**.

