



WATER SUPPLY AND WASTE WATER MANAGEMENT

Lecture # 01



Introduction: *Water*

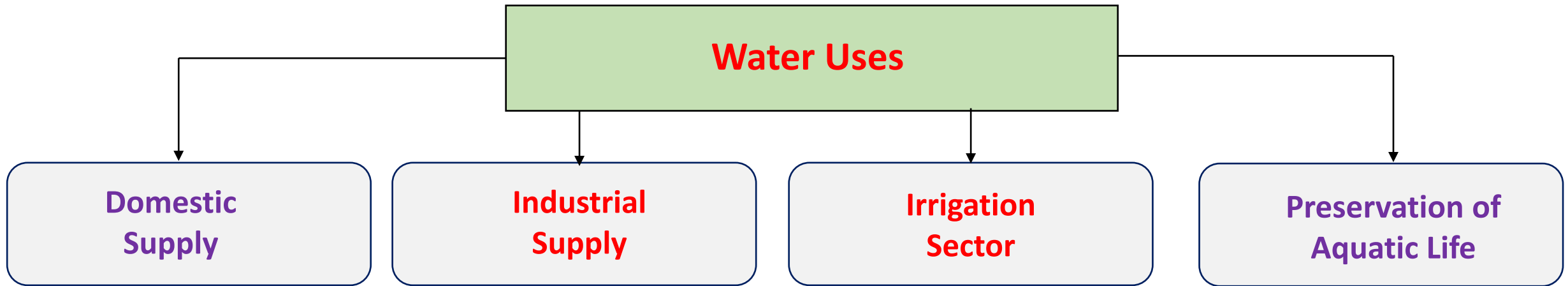
Water requirements

The following are the requirements of water:

1. It should be free from bacteria.
2. It should be colourless.
3. It should be tasty, odour free and cool.
4. It should not corrode pipes.
5. It should have dissolved oxygen and free from carbonic acid so that it may remain fresh.



Introduction: *Water*





Introduction: *Water*

Characteristics of Water

water can be checked and analysed by studying and testing their physical, chemical, and microscopical characteristic.

characteristics of water:

1. Physical :

- i. colour
- ii. Taste and odours
- iii. Temperature
- iv. Turbidity

3. Biological

2. Chemical:

- i. Total solids and SS
- ii. pH value
- iii. Hardness of water
- iv. chloride content
- v. Nitrogen content

Introduction: *Wastewater*

Wastewater : is simply that part of the water supply to the community or to the industry which has been used for different purposes and has been mixed with solids either suspended or dissolved.

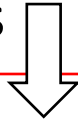
Wastewater is 99.9% water and 0.1% solids. The main task in treating the wastewater is simply to remove most or all of this 0.1% of solids.



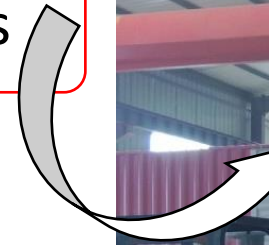
Introduction: *Wastewater Sources*



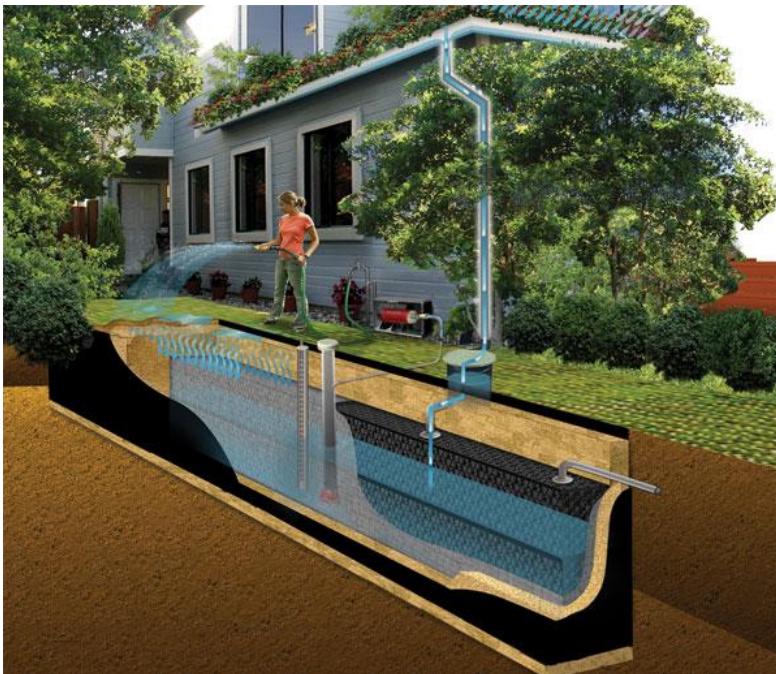
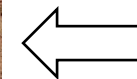
Homes/Houses



Commercial Places



Industries





Introduction: *Wastewater*

Type of wastewater from household

Type of Wastewater	Source of wastewater
Gray water	Washing water from the kitchen, bathroom, laundry (without faeces and urine)
Black water	Water from flush toilet (faeces and urine with flush water)
Yellow water	Urine from separated toilets and urinals
Brown water	Black water without urine or yellow water



Introduction: *Wastewater*

Characteristics of Wastewater

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2. Chemical:

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- iv. chloride content
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3. Microscopical:

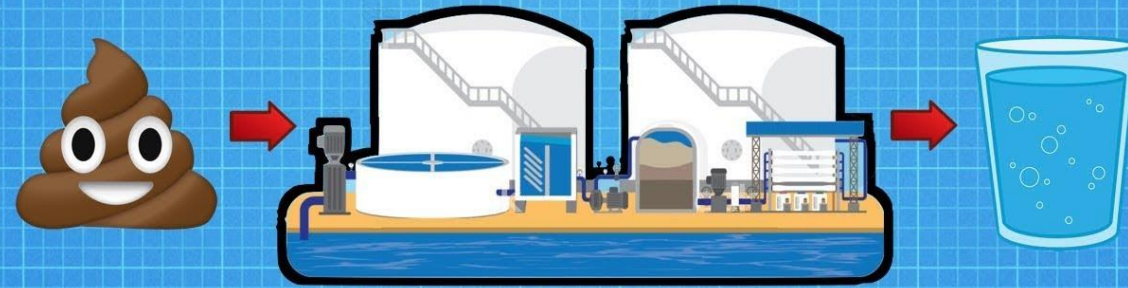


Wastewater: *Treatment*



Why Treatment
of WW is
Necessary?

WASTEWATER TREATMENT



- ▮ Usually refer to sewage treatment, or domestic wastewater treatment
- ▮ process of removing contaminants from wastewater, both runoff and domestic

Wastewater: *Treatment Purpose*



Collection

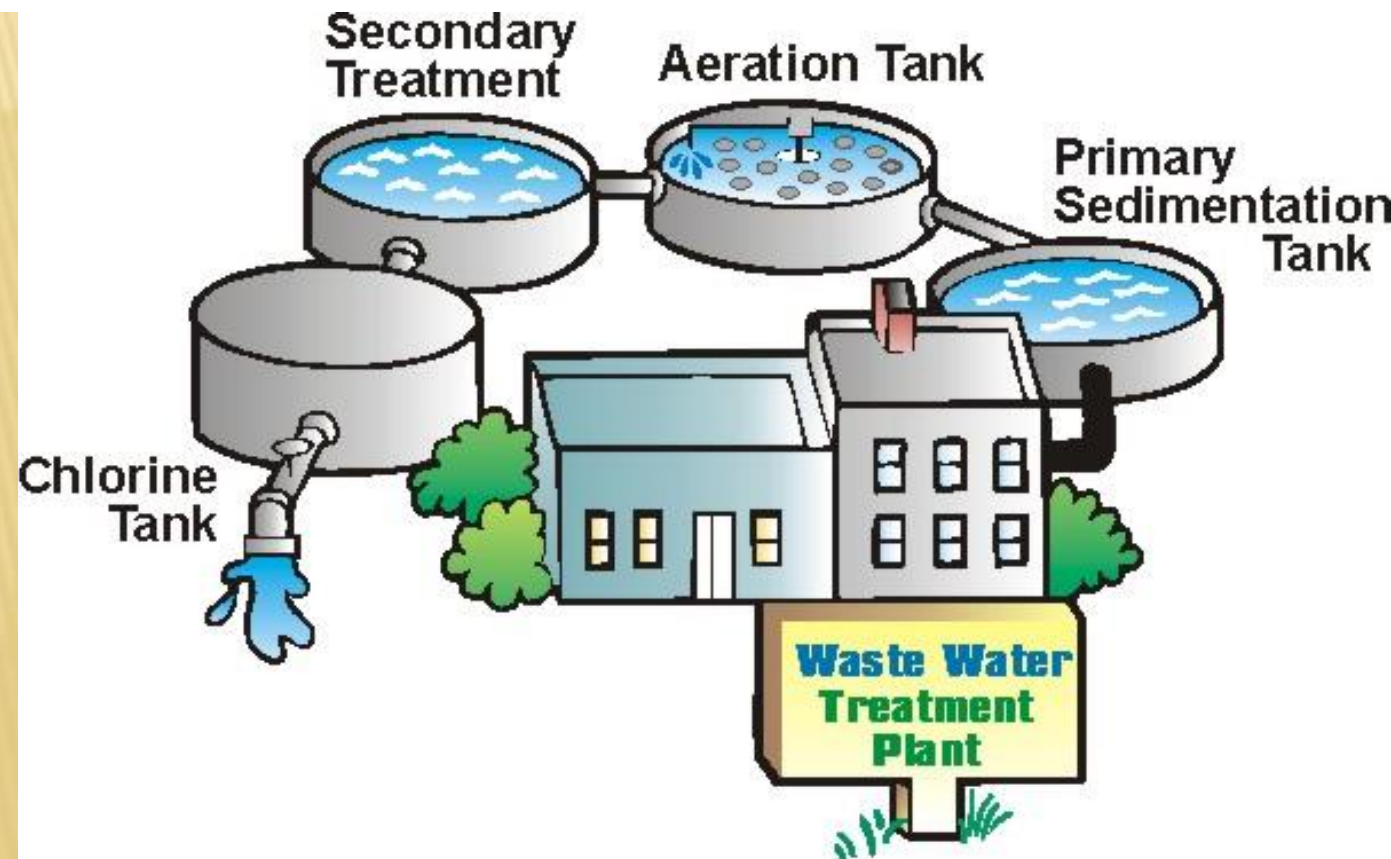
collected and transported via a network of pipes and pump stations to a municipal treatment plant

- ▮ To produce waste stream (effluent)
- ▮ To produce solid waste (sludge)
- ▮ To discharge or reuse them back into the environment

Goal

Wastewater: *Treatment*

- Primary
 - solids are separated
- Secondary
 - dissolved biological matter is converted into a solid mass by using water-borne bacteria
 - 95% of the suspended molecules should be removed
- Tertiary
 - biological solids are neutralized then disposed, and treated water may be disinfected chemically or physically



THANK YOU