

Submitted by: M. Zubair Khan

Submitted TO: Engr. Nadeen ullah

ID: 7677

Department: Civil Engineering

Subject: waste water
Engineering

Assignment # 01

Iqra National University
Peshawar.

Q.1 what is wastewater Engineering? Briefly describe its application in safeguarding the environment?

Ans * we are concerned with the quality and availability of environment resources and with the waste streams that impact them

Principles to improve the ~~water quality~~ ^{environment} ~~of water~~ by applied technologies that will maintain or improve environmental quality

Q.2

waste water Engineering is the Engineering in which concerned to the quality and availability of water to the community. they are applied different teching such as treatment plant which able the wastewater For drinking purpose.

* we are facing different problem for the availability of ~~our~~ useable water

Because if no one follow the rules & laws of environment to discharge the wastewater to the canal, river any where, every one careless about it and this reason wastewater is increased day by day & useable water decreased.

- Safeguarding our environment by follow the laws of environment. we are bounded do not discharge wastewater directly. Avoiding the excessive use of water.
- Also provided Treatment plant For the community to improve the wastewater For useable.

Q Briefly describe the relationship of wastewater generation with water supply of a locality

Ans Relationship of wastewater generation with water supply of a locality is directly proportional
wastewater \propto water supply

It means that water used in domestic and Industrial area which produce wastewater in large amount definitely water supply are required are large amount. Larger population area required large amount of supply of water and ~~preture~~ wastewater are large amount so the large amount of treatment plant are required for this large wastewater.

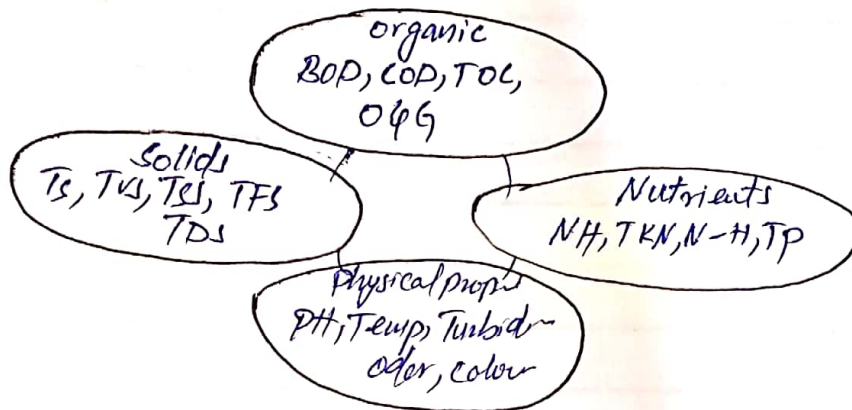
This relation are also depend on climate mean (winter or summer)

- Industries waste are approximately same in winter & summer
- But domestic wastewater are comparably low in winter as compare to summer and water supply is lower in winter as compare to summer

Q3

What is the importance of wastewater characterization?
 Wastewater characterization is important because industries wastewater is different from domestic wastewater. So that reason identify each of them and treated them accordingly.

For example there may be the following matter



So find out each of them and treated that accordingly to the wastewater quantity & quality and toxic ingredients.

Q.9: Enlist physical, chemical and biological characteristics of waste water?

Physical	Chemical	Biological
Color	<u>Organic</u>	Animals Animals
Odor	Carbohydrates	Plants
Solids	Fats, oils and grease	Eubacteria
Temperature	Pesticides	Archaeobacteria
Density	Phenols	Viruses
Color Turbidity	Proteins	Fungi
	Priority pollutants	Algal
	Surfactants	Protozoa
	volatile organic compounds	Pathogenic microorganism group.
	<u>Inorganic</u>	
	Alkalinity	
	chlorides	
	Heavy metals	
	Nitrogen	
	Phosphorous	
	<u>Gases</u>	
	Hydrogen sulfide	
	Methane	
	Oxygen	

Q5 : what are advantages & disadvantages of combined and separate sewerage systems. which sewerage system will you recommend for a new

Combined sewerage system :- Combined sewer systems only have one pipe. Sanitary sewage from inside houses and businesses flushes and drains to the pipe. when it rains, stormwater flows into the same pipe and mixes with raw sewage.

* Advantages of combined sewer system

- 1) The cleaning of sewers is easy as they are large in size.
- 2) The maintenance cost is less.
- 3) The stormwater reduces the strength of sewage by dilution.
- 4) The self-cleaning velocity is easily achieved.
- 5) This system requires only one set of the sewer. Thus it becomes economical.

* Disadvantage

- 1) The load on the treatment plant become high.
- 2) The stormwater is unnecessarily polluted.
- 3) The sewers are large in diameter.
- 4) This system proves to be uneconomical when pumping is required for the lifting of sewage.
- 5) During a heavy storm, the combined sewer may be over flow which may create trouble for the people.

Separate Sewer Systems:

Separate sewer systems have two separate pipes. One pipe carries stormwater (rain water) from storm drain to local streams.

Pollution and trash in stormwater flows to local streams with little or no treatment.

A second pipe carries sanitary sewage to the wastewater treatment facility.

* Advantages

- 1) The load on treatment plant is less as only sewage is carried to the plant.
- 2) The size of sewer is small, thus economical.
- 3) When pumping is required, the system proves to be economical.
- 4) Natural / storm water is not unnecessarily polluted by sewage.

* Disadvantages:

- 1) Cleaning of sewer is difficult due to their small size.
- 2) The self cleaning velocity is not easily obtained.
- 3) The storm sewers come in operation in rainy season only. They may be choked in dry season by garbage.
- 4) Maintenance cost is high.
- 5) Sewage sewers are provided below storm sewer which causes greater depth and pumping at waste water treatment plant.

- I will recommended separate sewerage system because in rainy season the rain water is contaminated due to the ~~town~~ sanitary wastewater.
- Load on the treatment plant are less as compare to combined that's way it economical also
- The rain water are further use for irrigation with out treatment and also use for drinking water after treatment
- Separate sewerage system the rain water overflow in rainy season in case so they donot dirt the road and path of the town and city