

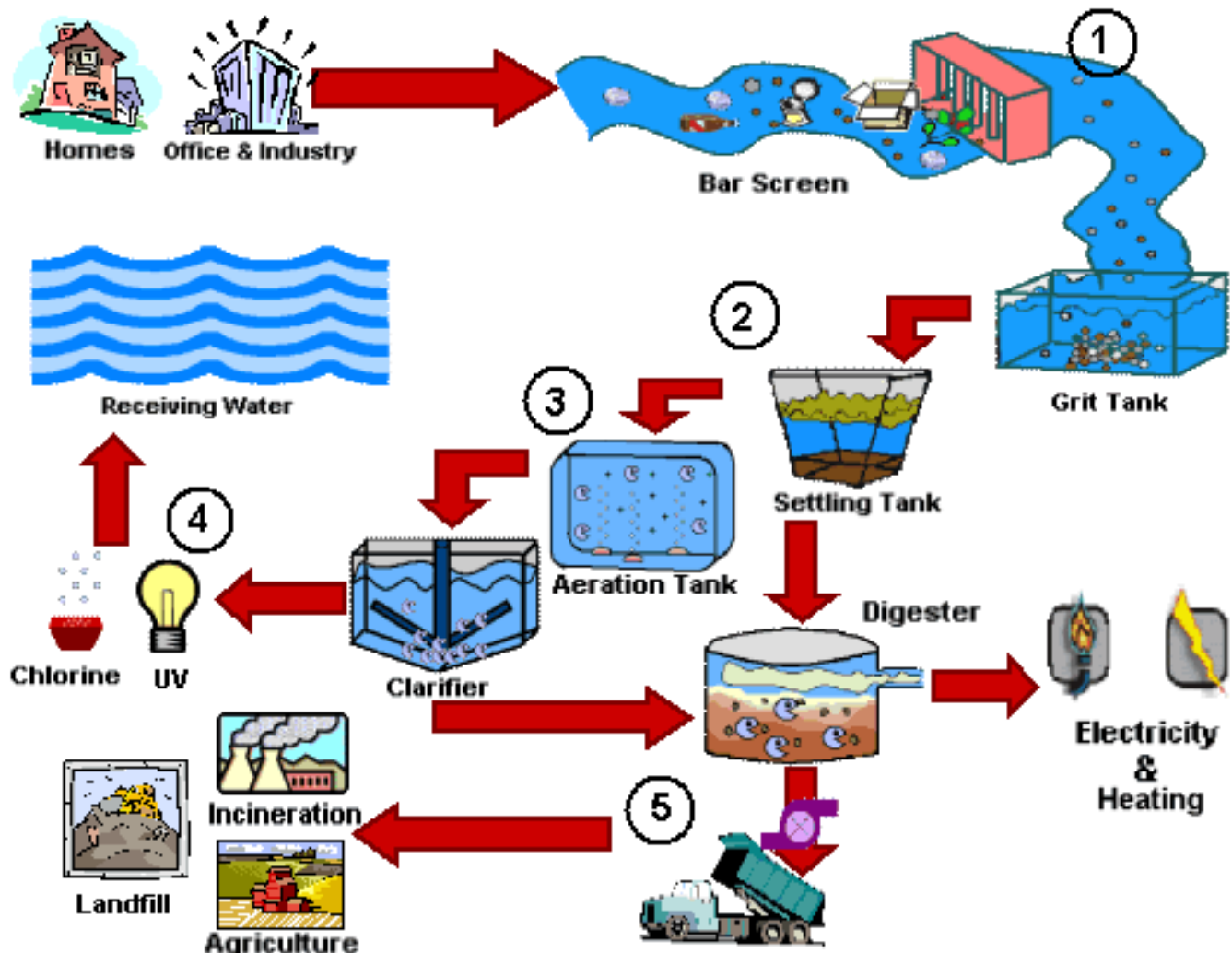
SEWAGE – A Messy Mechanical Mixture

In the middle ages, people did not know that sewage had so many toxins and carried so much disease so they did not treat their sewage. They just threw it into the streets and it ran into the river or lake by the city – where they got their drinking water... Millions of people died until they realized that they had to treat the sewage or poison themselves. Still today, many countries do not have proper sewage treatment and people get sick (and some die).

Today, in developed countries we have safe water because we treat our sewage before we put it into our environment. Below is a picture of the way many cities deal with their sewage. Since sewage is a mechanical mixture, we can separate it and treat it.

For each stage, describe what is done.

HOW IT WORKS



ANSWERS

1 – Bar Screen

Larger items (bottles boxes and branches) are removed by bars or screens.

2 – Grit tank/settling tank

Rock, glass pieces, brick and heavy objects are removed by settling in tanks and bigger tanks allow smaller pieces to settle out since the fluid settles more.

3 – Aeration Tank

These tanks have a lot of active living bacteria in the tanks that eat up the organics in the sewage. Air is pumped through the water to keep the bacteria living and eating and thereby cleaning the sewage.

4 – Chlorine or Ultraviolet treatment

In order to kill all bacteria viruses and other toxins, the water is treated with either chlorine or ultraviolet light which damages cells so they die or cannot reproduce and then they die off and cannot poison other biological life.

5 – Sludge Removal

The sludge is removed from the bottom of the settling tanks and the clarifying tanks. The gas that comes off the water is used to generate heat or electricity and then the sludge is used either for Agricultural fertilizer, incinerated or put into a landfill.

Questions

1. What happens in the Aeration tank that gets rid of biological matter?

The bacteria eats the biological matter and generates carbon dioxide and methane gas.

2. Why is chlorine or ultraviolet light used before the water is put into the environment?

It kills all the living toxins like bacteria and viruses that can make you sick.

3. What is done with the Sludge? (Three uses)

Used on farms as agricultural fertilizer

Used in Incinerators to generate electricity or heat

Put in landfills