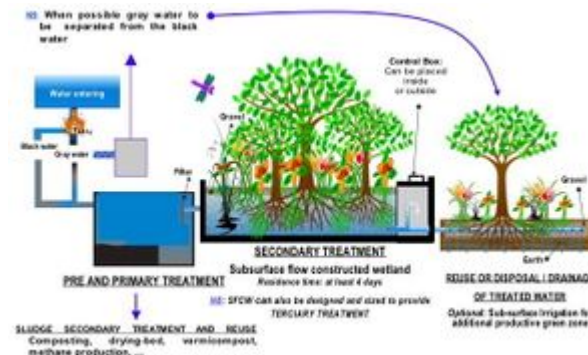




Large sewage works in Germany



Process flow diagram for a typical treatment plant via subsurface flow constructed wetlands (SFCW)

Sewage treatment is the process of dealing with **sewage** so that it does not cause harm to people or to rivers. Sewage flows in **sewers** from houses and **factories**. When it arrives at a sewage treatment works it passes through many stages. Larger works often have more stages than a smaller works.

Large objects are removed using **screens**. The sewage then flows through a **tank** so **sand** can fall out. Large objects and sand might damage **machines** in later stages.

Fats and solids are removed in the most important stage. Sewage stays in a *first* tank until solids fall to the bottom. Fat also floats to the top. Fat and solids stay when the water leaves.

Water leaving the most important stage may be cleaned by **bacteria** and other very small animals and plants in the *second* important stage. These bacteria use **oxygen** from the air to eat **chemicals** from the sewage.

Cleaning bacteria may live in a small pond in simple works with enough land to build a pond. Larger works use machines to help the bacteria find the chemicals. Some works have **rocks** or pieces of **plastic** for the bacteria to grow on. Water is pumped over the rocks or plastic.

Clumps of bacteria grow while eating the chemicals from the water. The cleaned water stays in a *second* tank until these clumps of bacteria fall to the bottom. The clumps of bacteria stay when the cleaned water leaves.

Other works don't have rocks and plastics for the bacteria to live on. These works blow [air](#) through the water to mix it with clumps of bacteria. Some of the bacteria falling to the bottom of the *second* tank are pumped back to the mixing tank so there are enough bacteria to create a thick brown mixture.

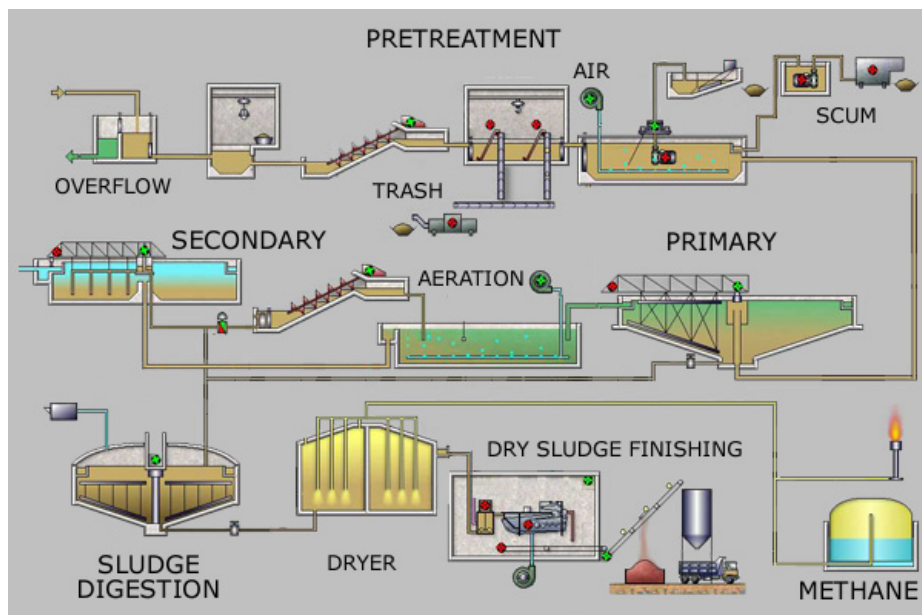
Clean water on the top of the *second* tank or pond can then flow to a river or the sea but it may also need further treatment to make it cleaner. Some works try to kill bacteria that might make people sick. Some works use chemical [poisons](#) to kill these bacteria. Other works use the kind of light that causes a [sunburn](#).

[Solids](#) from the *first* and *second* tanks can be used to make [methane](#) gas and fertiliser for farmers fields.

Images for kids



Wastewater treatment plant in [Massachusetts](#), United States



Simplified process flow diagram for a typical large-scale treatment plant



Primary treatment tanks in Oregon, USA.



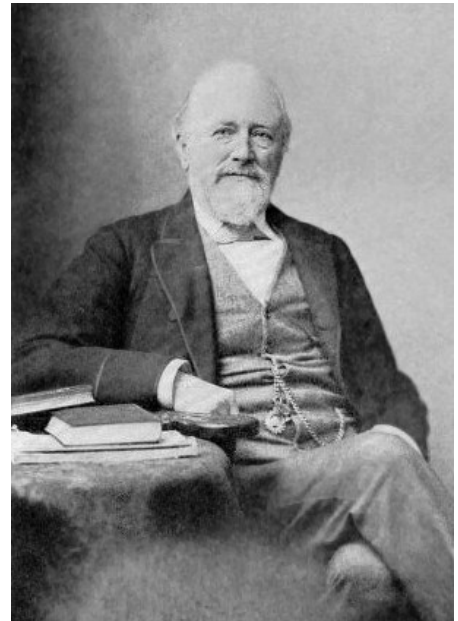
Secondary clarifier at a rural treatment plant.



A sewage treatment plant and lagoon in [Everett, Washington](#), United States.



The outlet of the Karlsruhe sewage treatment plant flows into the Alb.



Sir Edward Frankland, a distinguished chemist, who demonstrated the possibility of chemically treating sewage in the 1870s.



The [Great Stink](#) of 1858 stimulated research into the problem of sewage treatment.

In this caricature in [The Times](#), [Michael Faraday](#) reports to [Father Thames](#) on the state of the river.
