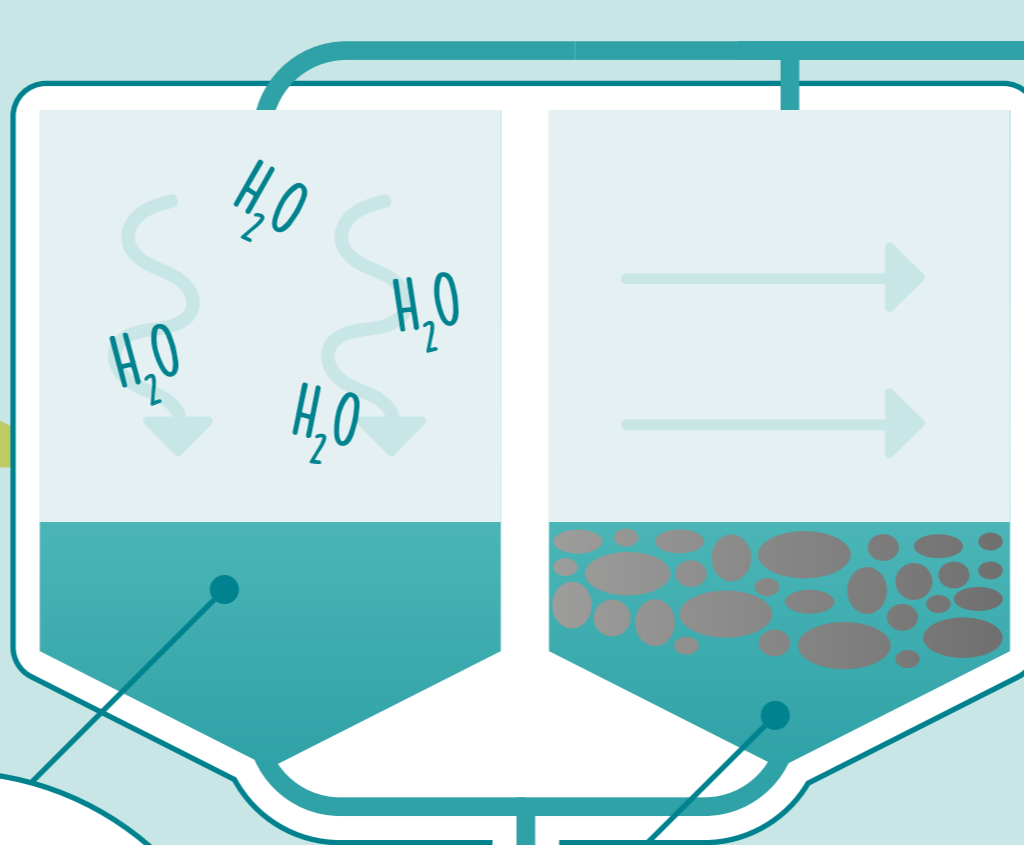




HOUSES

Wastewater comes from water used in the home, in businesses and factories and from rain falling on roofs or the roads and pavements.



BIOLOGICAL TREATMENT

There is now water that has a lot of invisible dirt which needs to be removed. Billions of bacteria are then used to **break the waste down into harmless substances** by either holding the water in large tanks and pumping in air continuously to help the bacteria grow and thrive (activated sludge) or by passing the water over beds of special stones which are home to **biofilms** of waste-eating bacteria.

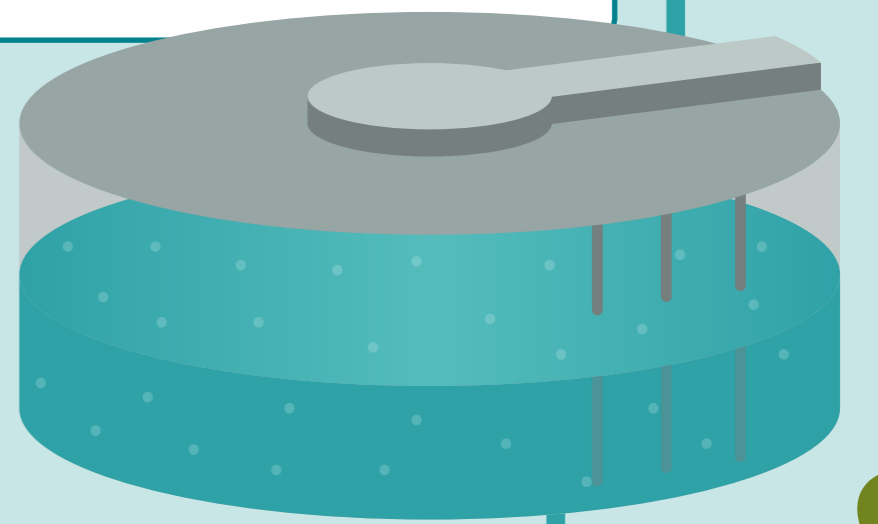
SCREENING

Lots of things get into the sewers that shouldn't. All must be removed during the first stage of treatment, along with the gravel and debris washed in from the roads.



LAST SETTLEMENT

The almost-clean water goes through one final stage of treatment, which allows any last **remaining waste particles to be removed**, usually done by passing the water through a tank (called a humus tank).



DISINFECTION STAGE

INDUSTRY

Wastewater from businesses and factories is referred to as "industrial water," which is used for fabricating, processing, washing, diluting, cooling, or transporting a product. There are often separate considerations, e.g., industrial contaminants that are tightly regulated, and microbes can play a part in remediation. Waste streams are often treated/pre-treated separately. Also includes consideration of Legionella in water cooling systems.



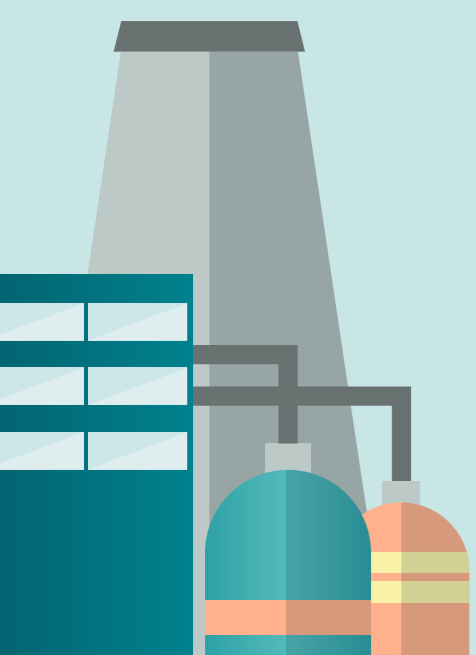
PRIMARY SETTLEMENT

All of the other 'big' dirt is then removed by pumping the water into large, deep tanks called sedimentation tanks. Here, heavy particles of solid waste sink to the bottom to form a layer of sludge, which is taken away for treatment, after which **farmers can use it as fertiliser**.



RELEASE OF CLEAN WATERS INTO RIVERS/THE SEA

Unless the effluent is to be discharged to a sensitive environment which requires further treatment, the water is **returned to rivers or the sea** where it is ready to go through the cycle all over again.



There are **7,078 SEWAGE TREATMENT WORKS** in England and Wales

[MIT](#)

There are **10,814 SEWAGE TREATMENT WORKS** and community septic tanks in Scotland and Northern Ireland

[DIT](#)

Wastewater Treatment: Access to clean water and wastewater treatment amounts to

\$117BN MARKET [NBIC Research Fellows](#)

Biofilms exert a major impact on human and animal health, pose food safety challenges, disrupt production from oil and gas wells and contaminate drinking water supplies, but they can be beneficial in other areas such as wastewater treatment processes [NBIC](#)



The water treatment market was estimated to be worth **\$262BN GLOBALLY IN 2015** increasing to **\$313BN PER ANNUM BY 2018** [NBIC](#)



The water treatment market is dominated by municipal wastewater treatment (92%) with only

8% FOR INDUSTRIAL WASTEWATER [NBIC](#)



1.1 TO 1.8 BILLION people globally lack access to safe water [DIT](#)

GLOBALLY, 44% OF HOUSEHOLD WASTEWATER is not safely treated [UNWATER](#)



Water companies process sewage and then use what is left to generate clean energy. Many companies use this to help power treatment plants [Water UK](#)

[Water UK](#), which represents the UK water industry: **BETWEEN 2020 TO 2025**

water companies are investing **£7.1 BILLION** to protect and improve the environment. Of this, £3.1 billion is being invested specifically in storm overflow improvements



98% of urban and rural households connect to the UK's sewerage service [DEFRA](#)

Most of the remainder are served by small private treatment works, cesspits or septic tanks



UK research councils fund £120 million on public sector water research...

AROUND 60 UK UNIVERSITIES CARRY OUT RESEARCH ON WATER [DIT](#)

Our estimate is that UK expenditure for wastewater treatment is in the region of **£5BN** [NBIC](#)



Safely reused wastewater is grossly undervalued as a potentially affordable and sustainable source of water, energy, nutrients and other recoverable materials [UNWATER](#)