

Waste Water Tour Activity

When you flush the toilet the dirty water flows along pipes called sewers to a Welsh Water Waste Water Treatment Works where it is treated. Our sewer pipes are long enough to reach from Wales to Australia and back!

Write an explanation text explaining the stages of cleaning waste water. These photographs and headings will help you...

How does Welsh Water clean our Waste Water?

Introduction – What is Waste Water? What did we put in our sludge?

The Inlet Channels



- Welsh Water take Waste Water from 1, 250, 000 houses and 76,000 businesses
- 833 sewage treatment works
- Water piped into the treatment works
- Grit falls to the bottom
- Inlets can be alternated in order to clean
- Both can be used if high volume of waste water or rain.

Screening



- Waste water flows through metal sieve
- 6mm holes in
- Removes large, floating objects such as paper, wood, cans and plastics which could block pipes or damage equipment
- Last year, Welsh Water removed 1.3 million cotton buds and tonnes of nappies and wet wipes from our network
- Paper/plastic is then shredded, squashed and collected by rotary arms in the macerator as the water is squeezed out
- This is taken to a land fill
- Water squeezed out onto treatment.

Primary Tanks 4 TANKS



- Fine, solid particles settle out of the sewage, fall to the bottom of tank
- Form sludge – called sedimentation
- 4 metres deep
- Metal bridge which stretches the radius of the tank moves very slowly
- 40 minutes to complete the circle
- Attached scrapers push the sludge into centre of the tank
- Sludge is collected - used to make electricity in Cardiff Bay - methane which is burnt and converted to electricity.

Activated Sludge 4 TANKS



- Water piped from the Primary Tanks
- 6 metres deep
- Negative buoyancy – everything sinks
- air is introduced to help good bacteria break down solid particles
- Oxygen makes the bacteria work harder at cleaning the water
- Culture of bacteria (activated sludge) feeds on the sewage and then multiplies breaking down ammonia and other chemicals
- The air the bacteria need is pumped in under pressure by surface aerators and fine bubble diffusers
- Probes – constant temperature, o₂ level.

Final Settlement Tanks 4 TANKS



- Final settling tanks
- Similar to the Primary Tanks
- 4 metres deep
- The bridge has 'hoovers' which suck up remaining sludge
- 40 minutes to complete the circle
- Sludge collected.

Returned to the River



- Water returned into river
- Comes in 30mg per l ammonia
- Target is 7mg per l
- Ours is under 1mg per l on exit into river
- 4 – 6 hours altogether.