

Scooper heroes

Background

The European Union sets limits on how much bacteria can be in water that we swim and paddle in. By measuring how much bacteria is in the water we can tell how clean it is. We measure the Faecal Indicator Organisms (FIOs) in the water. This indicates the level of bacteria in the water. The five top sources of pollution of our bathing waters are shown in the diagram below. Levels of bacteria tend to be much higher after heavy rain.

Rainwater washes animal waste from towns and rural areas into surface water drains and rivers. Poor water quality can also be caused by misconnected plumbing where foul water such as from bathrooms or washing machines enters the surface water drains, and from poorly maintained cesspits and septic tanks. In areas with below average sunshine water quality tends to be lower as the sun's ultraviolet (UV) rays kill fewer of the bacteria in the water.

Dog, bird and other animal poo can affect bathing water as it often contains high levels of bacteria - much higher than treated human poo. 'Poo' is produced by the body to get rid of waste that it doesn't need. This is the same for animals.

Word buster: Faecal indicator organisms (FIOs) are bacteria which naturally occur in the gut (tummy) of humans and other warm-blooded animals. If they are found in water they indicate that the water has been contaminated with poo or 'faeces'. We test whether the FIOs have come from humans or which animals and work out where it has come from so we can try and stop it from getting in the water. Bacteria and viruses from poo can make people ill and we don't want that to happen.

Aims

- Children understand the impact human and animal poo can have on water quality
- Children know what can be done to reduce the chances of poo getting into seas, lakes and rivers.
- Children know NOT to touch or pick up poo as it contains bacteria and understand why they should always wash their hands before eating.

Curriculum links

- **Science** children explore examples of human impact (both positive and negative) on environments, for example, the positive effect of dog owners picking up dog poo with a bag and putting it in the bin not leaving it on the ground, and the negative effects of it being washed into rivers and seas.
- **Art & Design** how design can get people's attention
- **English** using persuasive language to change people's habits
- **Citizenship** making sure children who have a dog at home understand why it's important their family picks up their dog's poo with a bag and puts it in the bin; why not to feed the birds at the beach



Blackpool beach

Where pollution comes from



- 1. Source: pollution from sewage**
During very wet weather sewers can become full and, under strict conditions, overflow into rivers or seas. If this didn't happen houses and businesses would be flooded.
- 2. Source: water draining from farms and farmland**
Manure (poo) from livestock or poorly stored slurry can wash into rivers and streams and flow to the sea.
- 3. Source: animals and birds on or near beaches**
Dog, bird and other animal poo can affect bathing water as it often contains high levels of bacteria - much higher than treated human waste – see 'whose poo?' activity.
- 4. Source: water draining from populated areas**
Water draining from cities, towns and villages following heavy rain can contain pollution, including animal and bird poo.
- 5. Source: domestic sewage**
Misconnected drains – drains that aren't connected to the right system – and poorly located and maintained septic tanks can pollute surface water systems.

Reducing pollution...

1. How can we reduce the amount of water getting into the drainage system and potentially overflowing? What can you do at home and school / out and about to reduce the amount of water you use? Turn taps off when cleaning teeth; use rain water to water your garden / wash the car; take a shower instead of a bath.

2. What do you think farmers can do to stop pollution getting into seas, lakes and rivers?

- Keep yards / tracks / buildings clean to stop dirt and poo being washed away during heavy rain
- Keep clean and dirty water separate so the space in the slurry store is not used up too quickly. Having a roof on the slurry store helps with this.
- Buffer strips (areas of land left at the margins of fields) especially near ditches and water courses are useful. They trap sediment, and mean water and any potential pollutants can soak away rather than run off into watercourses. Make sure arable fields are as flat as possible so more rain is soaked into the field instead of running off sloping fields into the river
- Use fences and provide drinking water troughs so that cattle (and their poo!) are kept away from rivers and ditches.

Word buster: 'slurry store' also known as a slurry pit or slurry tank is a structure or container or a lined pit that farmers use to store all the waste they collect on the farm. Animal poo, waste water from cleaning farm buildings and other unusable organic matter, such as hay is stored in order to convert it into fertilizer that can eventually be reused on their lands to help crops to grow.

3. How can we reduce the amount of animal poo getting into the rivers, lakes and seas? Don't feed the birds, pick up and bin your dog and horse poo.

4. What can we do if we don't live by the sea? You don't have to live by the sea to help cleaner seas! Reduce the amount of water you use at home; clean up after your dog; make a fat trap to use at home.

5. **Be a waste warrior!** Tell a grown up if you spot pollution happening so they can call the Environment Agency incident hotline on 0800 80 70 60 (24-hour service) to report:

- damage or danger to the natural environment
- pollution to water or land
- poaching or illegal fishing
- dead fish or fish gasping for air
- watercourses blocked by a vehicle or fallen tree causing risk of flooding
- illegal dumping of hazardous waste or large amounts of industrial waste
- incidents at Environment Agency-regulated waste sites
- illegal removals from watercourses
- unusual changes in river flow
- collapsed or badly damaged river or canal banks



Whose poo?

Water draining from farm land and animals and birds on or near beaches are some of the main sources of pollution that can affect water quality. Water samples are taken to check how clean bathing waters are. Animal poo contains high levels of bacteria. Which animal's poo has the highest levels of bacteria? Put the following in order starting with highest level of bacteria:

- Dog
- Bird (seagull)
- Sheep
- Person
- Donkey / cow
- Rabbit¹



How does poo affect bathing water quality and how might their poo end up on the beach?

Person _____

Dog _____

Sheep _____

Rabbit _____

Donkey _____

Bird _____

More great stuff...

<http://binged.it/1hGIAIb> Environment Agency videos about water sampling

¹ Correct order starting with the most potent is: 1. Sheep 2. Donkey / cow 3. Bird (seagull) 4. Human 5. Dog 6. Rabbit

Be a scooper hero!

Design a poster that persuades people to pick up their dog's poo with a bag (be a scooper hero!) and put it in the bin so it doesn't get washed into seas, lakes and rivers when it rains.

