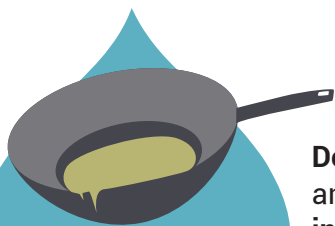




sewage
and purification

PUPIL BROCHURE
1st GRADE SECONDARY SCHOOLS

small but valuable rules to love the environment!



Did you know that..

one litre of oil can pollute 1 million litres of water.

Do not throw oils and cooking fats in the drain of sink.

Use biologically biodegradable detergents and keep the dosage as low as possible.



Did you know that..

chemical detergents dumped into rivers and seas contain substances derived from oil, sulphur, phosphorous and nitrogen that can contribute to reducing oxygen in the water and actually 'suffocate' fish.



Did you know that..

10% of the waste on the beach and in the sea comes from our toilets at home.

Do not use the toilet as a dustbin, throwing away solid waste or toxic substances such as Q-tips, medicines, etc.

Water from our home to the sea



71%
OF WATER

THE EARTH is a strange planet: it is called Earth but **71% is covered by water** of which 97% is salty, 2% is frozen in the form of glaciers and **only 1% is available as drinking water for humans.**

Remember, therefore, not to waste or pollute water: **it is our most precious commodity!**

THE SEWERAGE NETWORK is an underground pipe system that collects and diverts harmful rainwater and waste water, conveying it to treatment plants and once 'cleaned' to the sea or river. **It is essential to ensure a healthier and more enjoyable life for humans.**



...BUT NOT FOR EVERYONE!

- In developing countries **95% of water** used in human activities is discharged into rivers or **into the sea without any treatment.**
- Worldwide, about **1.8 billion people**, which means about 30 times those living in Italy, **use water sources that are contaminated** by feces.

waste water

Waste water (or dirty water), is **contaminated by different types of organic and inorganic substances** as a result of domestic, agricultural or industrial use; these can become hazardous to our health and the environment.

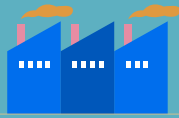
CLEAN WATERS

stormwater: rain, snow, hail, etc.



INDUSTRIAL WATERS

water discharged from installations: in which commercial activities or the production of goods are carried out.



WASTE WATERS

soapy waters: showers, tubs and washing machines

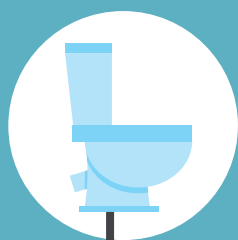


SEWAGE WATERS

waters with organic solid elements: wc



the journey of dirty water: what happens when I pull the flush



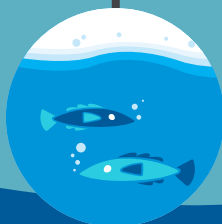
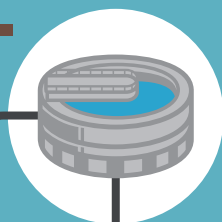
SEWER

Collection and transport from civil and industry waste to the treatment plant



DEPURATION

Treatment of water coming from sewerage networks for pollutant load reduction



DID YOU KNOW THAT...

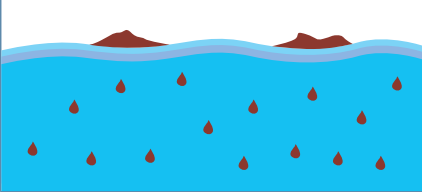
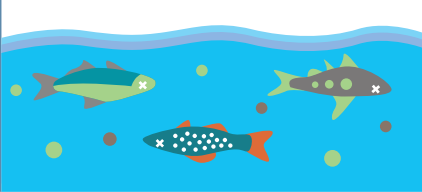
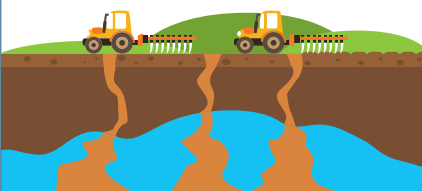
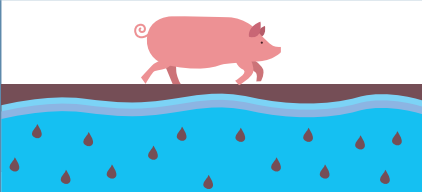
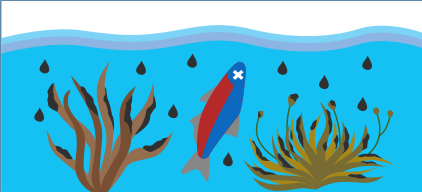
- **Worldwide** + 2.5 billion people have no sanitary facilities
- **In Italy alone**, 2 million tonnes of human faeces are produced

RETURN

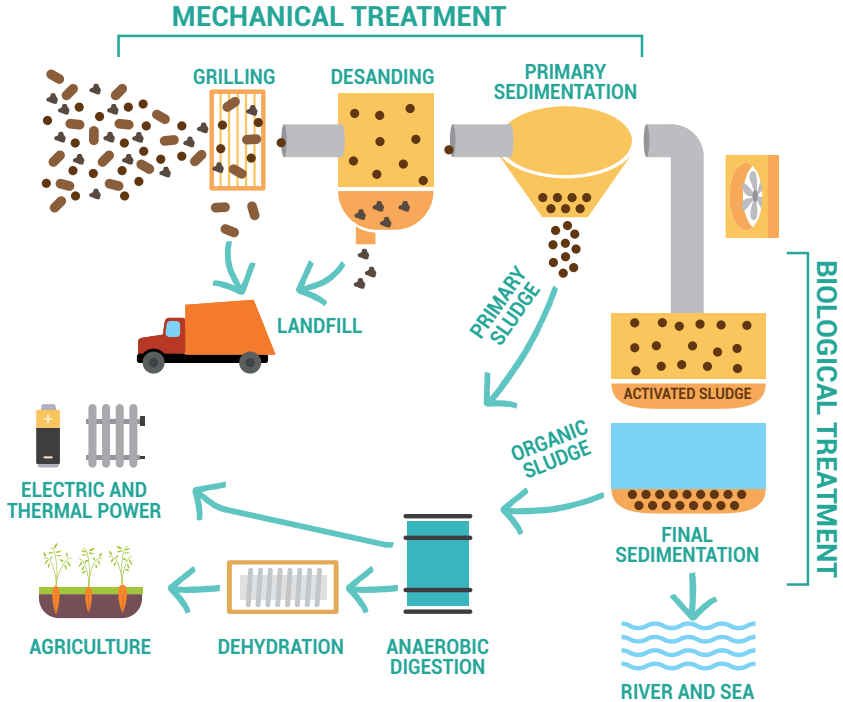
Entry in environment of clean water

but...

why do we have to clean up water?

	CAUSE	EFFECT
DOMESTIC POLLUTION	detergents and household cleaning products can pollute rivers and seas	
INDUSTRIAL POLLUTION	chemicals used during processing kill fish and damage the environment	
AGRICULTURAL POLLUTION	excessive use of chemical fertilisers and pesticides penetrate the soil and pollute groundwater	
ANIMAL HUSBANDRY POLLUTION	sewage from washing of stables, henhouses and pigsties ends up in streams, rivers and the sea	
ENVIRONMENTAL DISASTERS	for example, if an oil tanker sinks at sea, it causes severe damage to algae and fish	

hurray for purification plants!



add a place at the table!

There are special bacteria (micro-organisms) that eat pollutants and transform them into harmless elements. This process generates 'activated sludge'!



VORTEX



NEMATODES



PARAMECIUM



CILIOPHORUS
PROTOZOA



CILIATE
PROTOZOA



FLAGELLATED
PROTOZOA



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