

Sustainability in commercial laundering processes

Module 1
Usage of water

Chapter 5 a
**Waste water treatment
Ways of waste water discharge**

- Waste water treatment
 - general
 - methods (reference to 1-5)

- Ways of waste water discharge

- General requirements for waste water discharge

- Limiting values (purpose)

- Municipal wastewater treatment plant, general construction



After finishing this chapter, you will

- know and be able to name different ways of waste water discharge
- know general requirements for waste water discharge and be able to explain the main reasons for the requirements
- know the most important waste water limiting values and recognize their reasonability
- know the general construction of a municipal wastewater treatment plant

Ways of waste water discharge



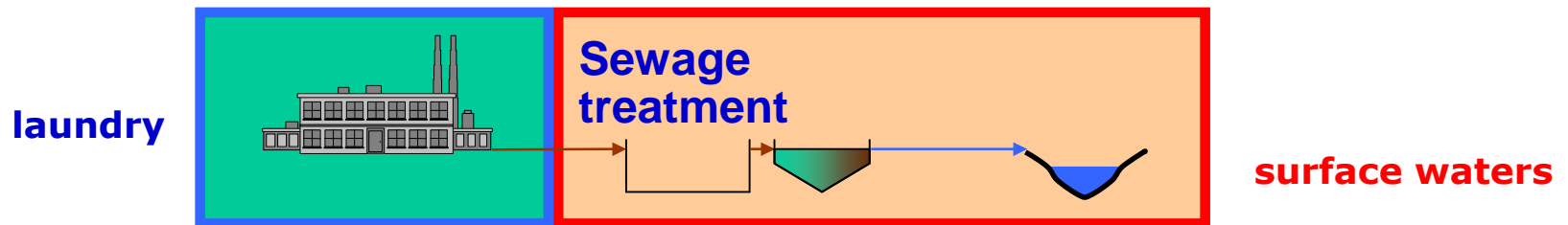
Leonardo da Vinci

There are two possibilities of waste water discharge

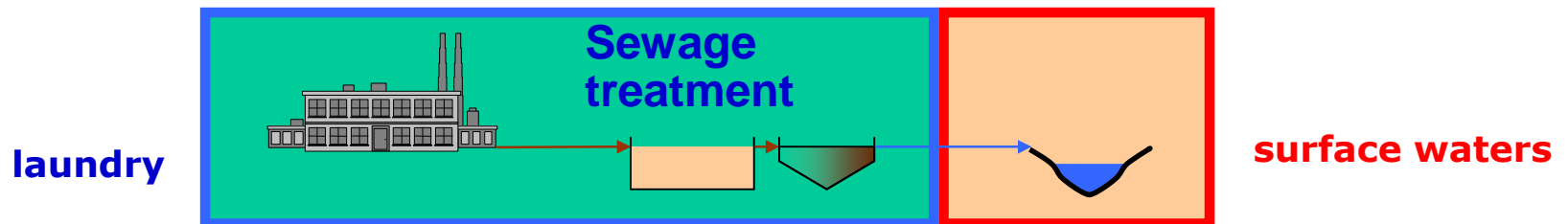
- into surface waters (direct discharge)
- into municipal sewage systems (indirect discharge)

Ways of wastewater discharge

- **Indirect discharge**
via municipal sewage treatment plant into surface waters



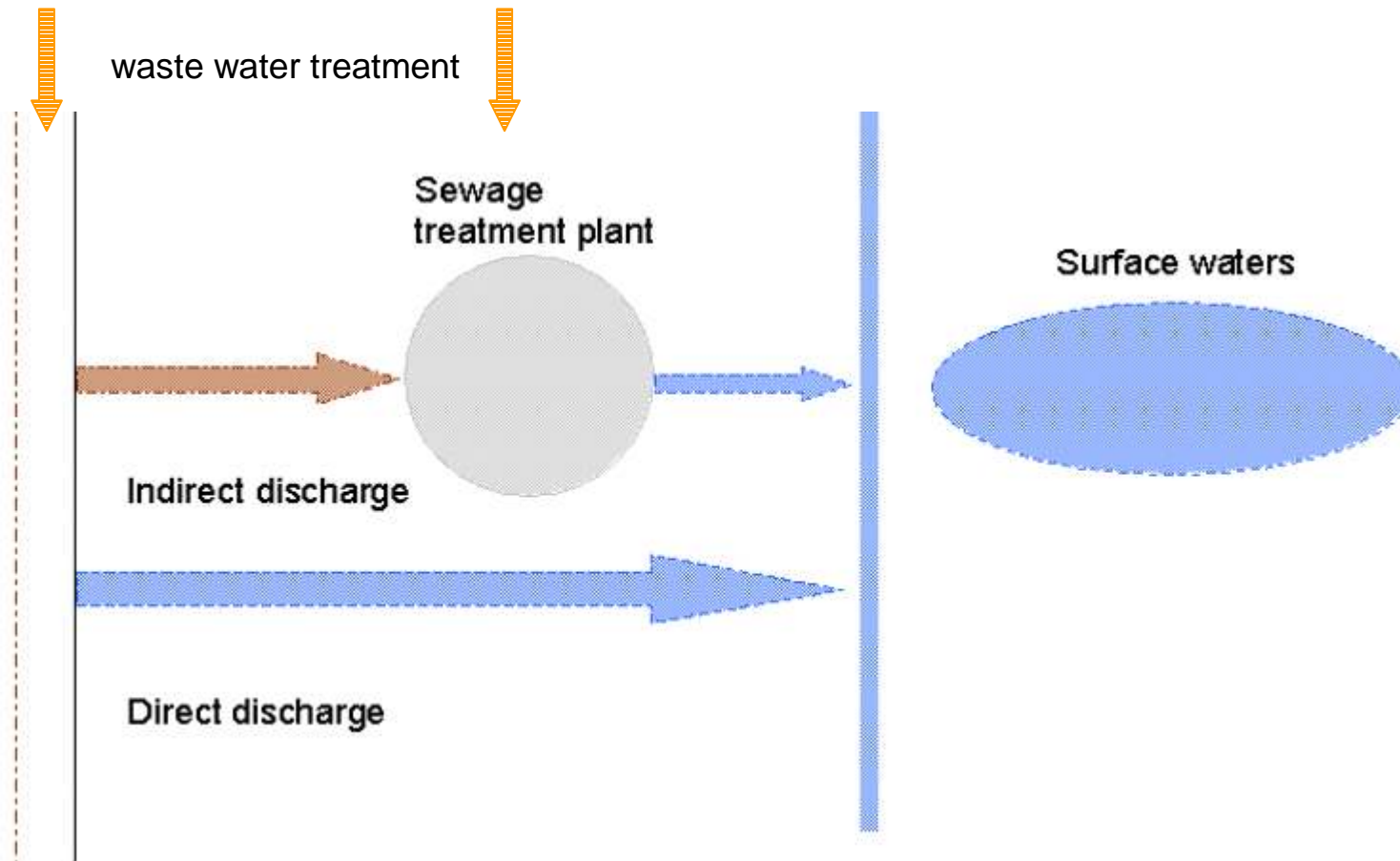
- **Direct discharge**
via own treatment plant into surface waters



Ways of waste water discharge



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- Concerning requirements for waste water discharge, there is a variety of limiting values
- Most important of them occur in the respective regulations of most of the European countries
- Way of discharge (direct/indirect) determines the scope of the particular regulations
- Water quality has to fulfil certain criteria
 - In order to ensure the biological balance in sewage treatment plants and surface waters



Reasons for wastewater limiting values

- **To protect the ecobalance in sewage treatment plants as well as in surface waters**
- **Health and safety of sewage treatment plant staff**
- **Political reasons (municipal waste water fee system)**



The most important waste water parameters are

- pH
- Maximum temperature
- Heavy metals
- AOX
- COD, BOD
- Nitrogen (less significant for laundry)
- Settleable solids

The parameters are explained detailed in the glossary (1-7)

Limiting values (purpose)

- pH
 - general requirement which is important for the discharge into municipal sewage systems
 - pipes might be destroyed

- Temperature
 - issue as well in several countries
 - together with pH, higher temperature leads to corroded pipes
 - reproduction of bacteria in sewage system may lead to gas-generation, maybe explosions

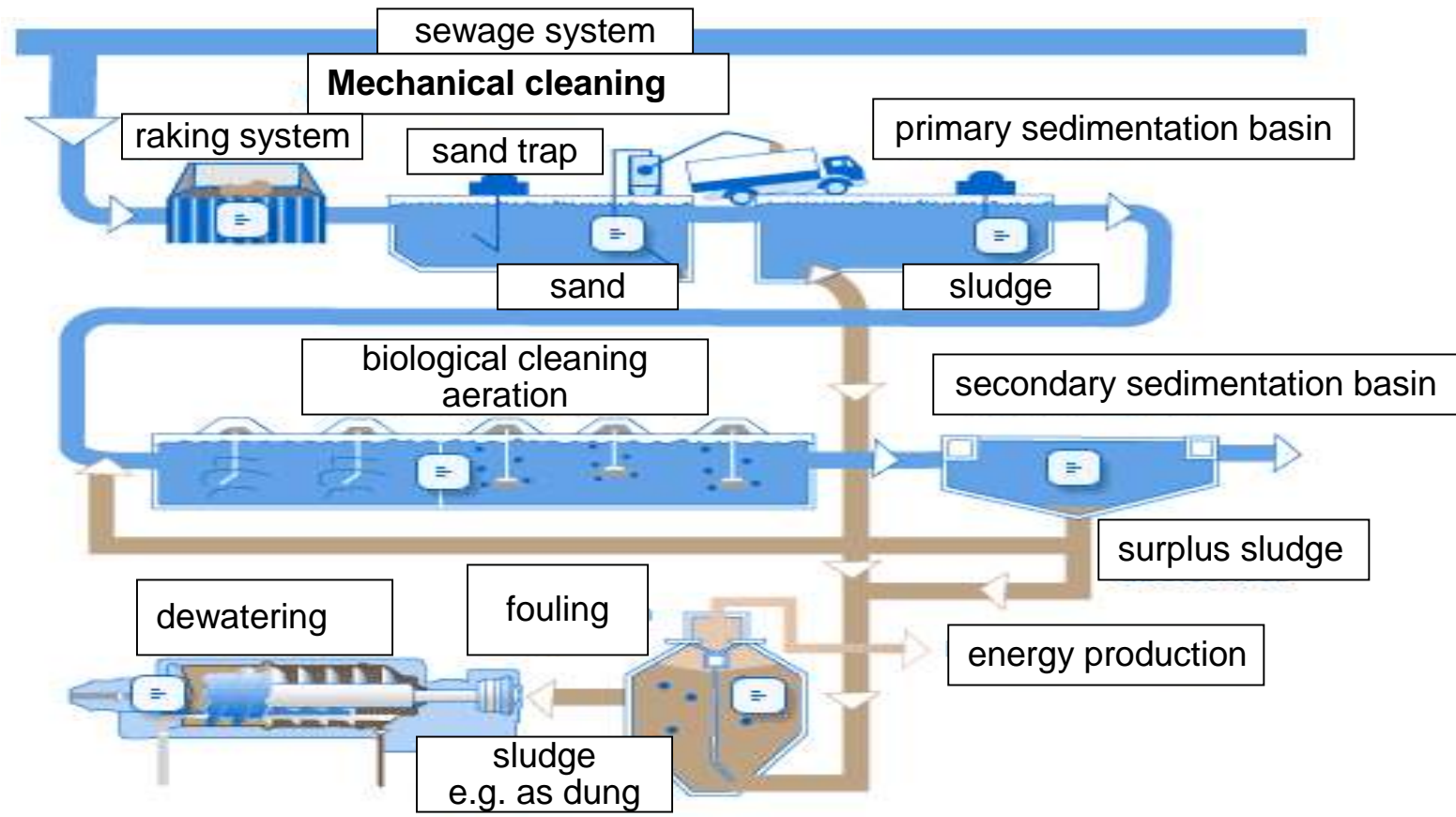
- Heavy metals
 - limiting values can differ by a factor 100 in several country-specific requirements
 - limiting heavy metals is important to protect the environment. heavy metals in groundwater accumulate in the food chain



General construction

- **Primary treatment (mechanical treatment)**
 - removal of large objects
 - sand and grid removal
- **Secondary treatment (biological treatment)**
 - oxidation bed (oxidising bed) or aeration system
 - post precipitation
- **Tertiary treatment (chemical treatment)**
 - e.g. phosphorus-Elimination

Municipal wastewater treatment plant



source: RWE 