

أرامكو السعودية
Saudi Aramco



Recycling and Reuse Wastewater

by

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Outline



- Introduction
- Primary treatment
- Secondary treatment (Activated Sludge Process)
- Tertiary treatment
- Conclusion

Introduction



What is sewage treatment?

The ART and SCIENCE of purifying and reclaiming contaminated water, rejected from communities and commercial establishments for safe disposal to environment or reuse.

Why treat sewage?

- To protect: *Environment*
Ground/Surface Water
- To adhere to local and international Regulations
- To reduce the spread of diseases caused by pathogenic organisms present in sewage.

Sequence of Treatment...

Primary

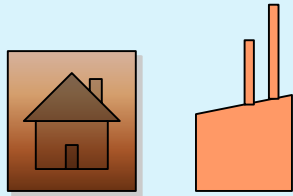
Secondary

Tertiary



Primary Treatment

Pretreatment Process



Communities/
Industries waste
water

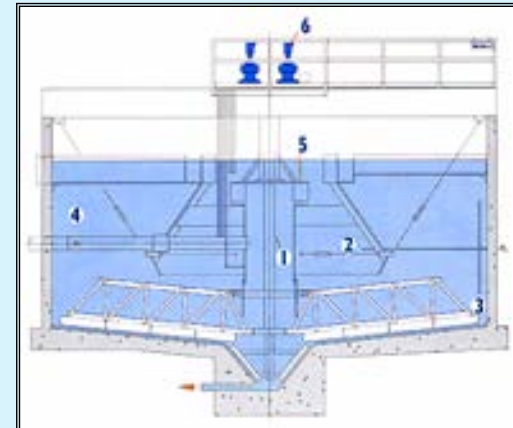
**RAW
SEWAGE**

Physical Treatment

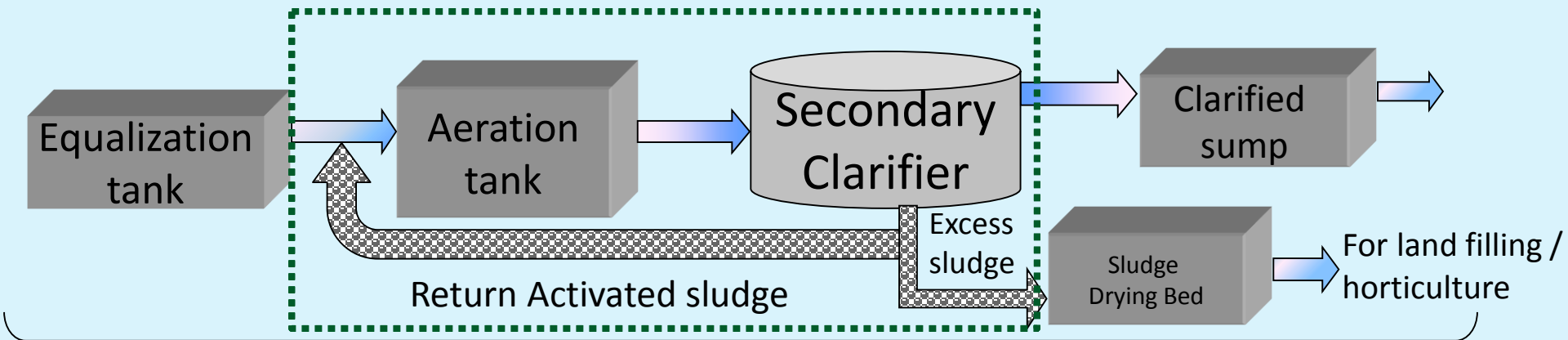
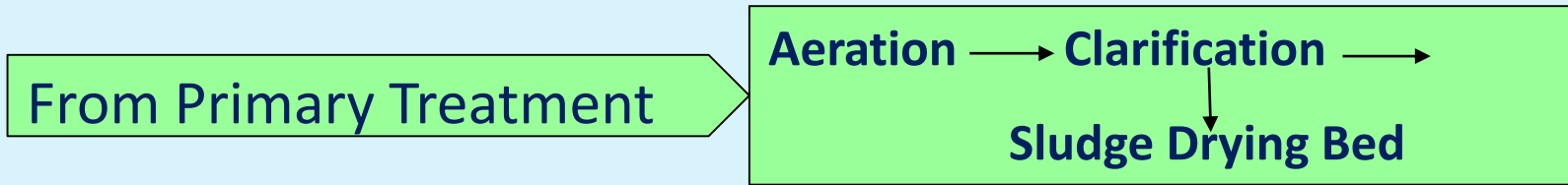
- Screening
- Grit removal
- Skimming

Primary Treatment

- Clarification
- Settling
- Floatation



Secondary treatment



Surface Aerators



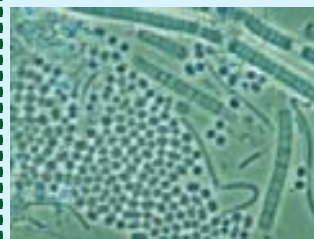
Secondary clarifier



Sludge drying beds



Diffuser Aerators



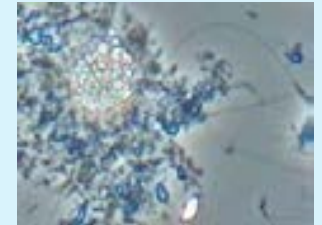
Bacteria



Protozoa



Fibres/Particles

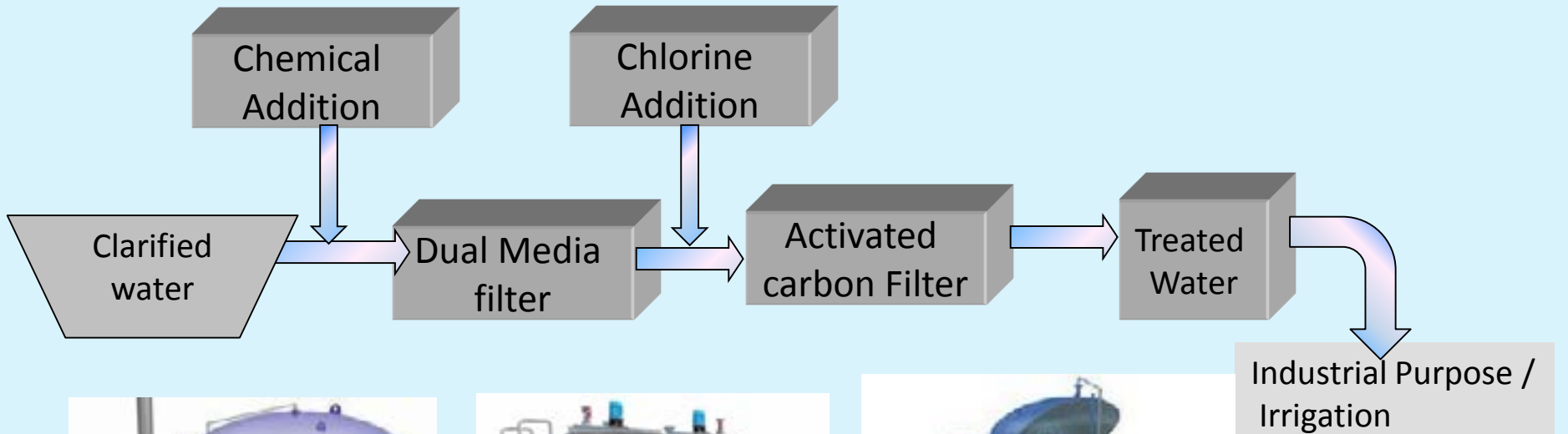


Precipitated Salts

Tertiary treatment

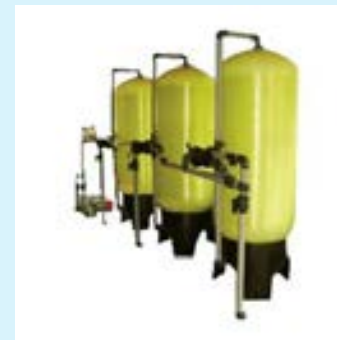
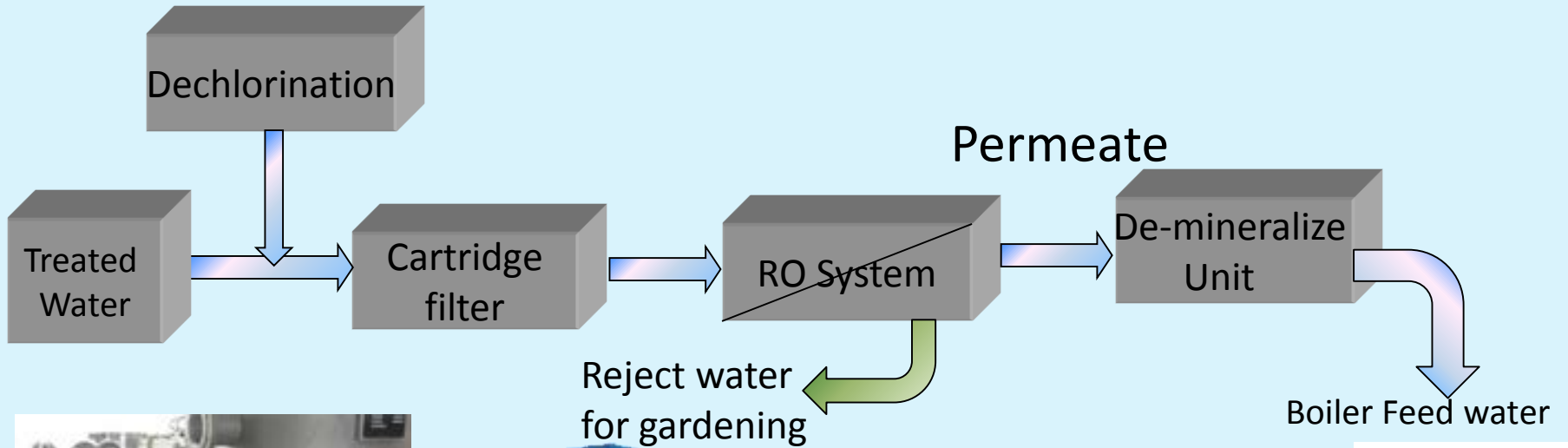


Filtration (Sand Media, Dual Media, Activated carbon)



Tertiary treatment (contd...)

Filtration (UF/ RO/DM)





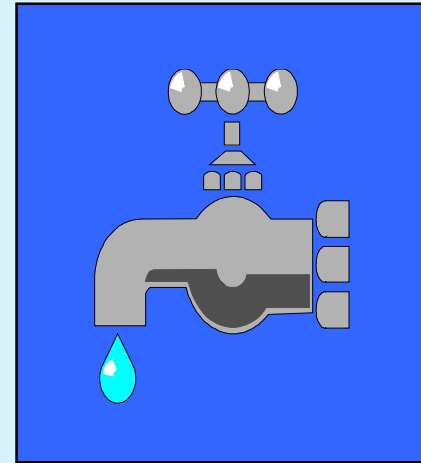
Conclusion

Several waste water treatment facilities, using the above processes, are operating successfully.





**“Water is a
Valuable and
Limited
Resource”**







Thank You

