

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



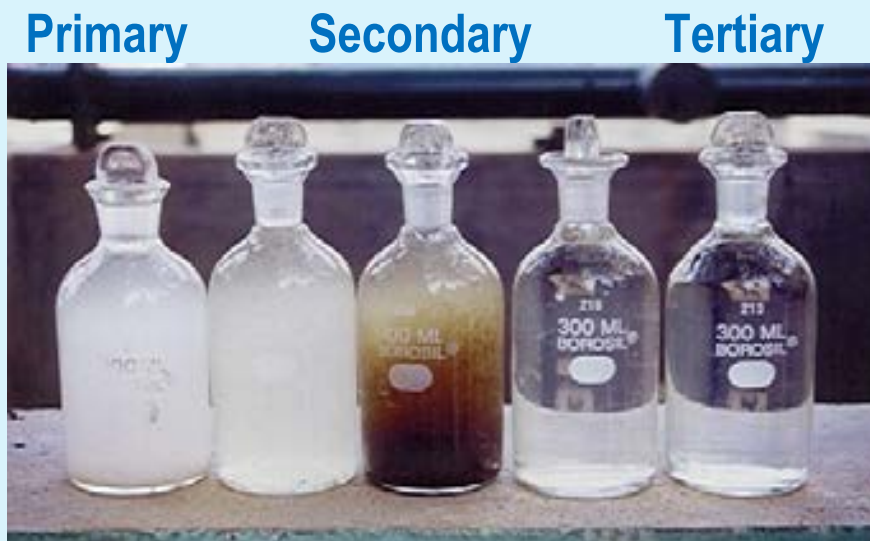
## What is sewage treatment?

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?

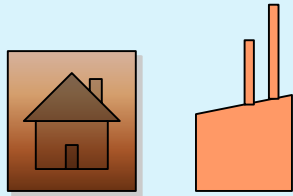
- To protect: *Environment*  
*Ground/Surface Water*
- To adhere to local and international Regulations
- To reduce the spread of diseases caused by pathogenic organisms present in sewage.

## Sequence of Treatment...



# Primary Treatment

## Pretreatment Process



Communities/  
Industries waste  
water

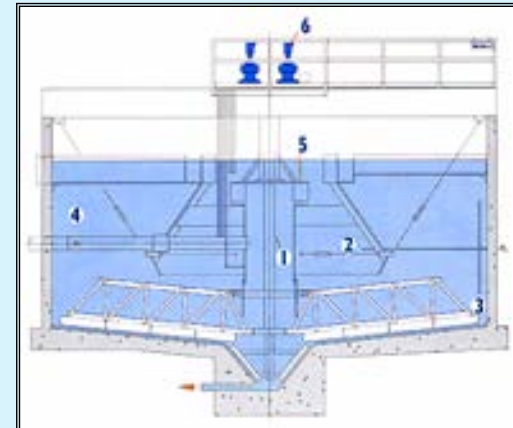
**RAW  
SEWAGE**

Physical Treatment

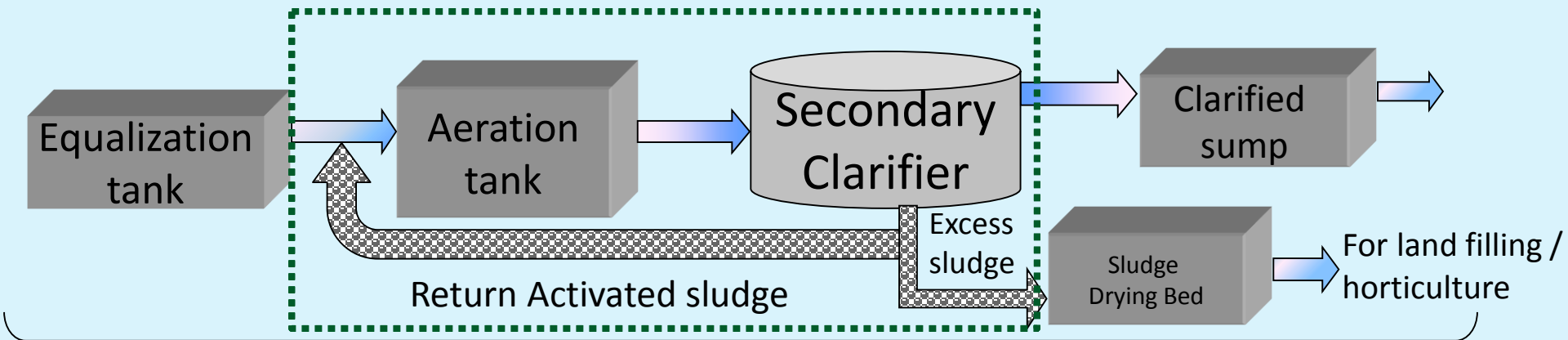
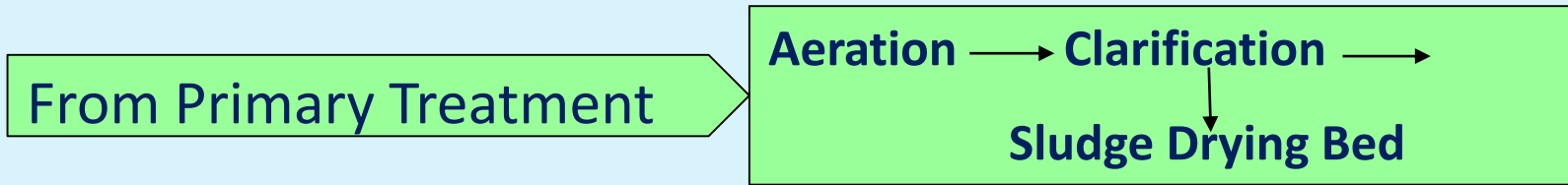
- Screening
- Grit removal
- Skimming

Primary Treatment

- Clarification
- Settling
- Floatation



# Secondary treatment



Surface Aerators



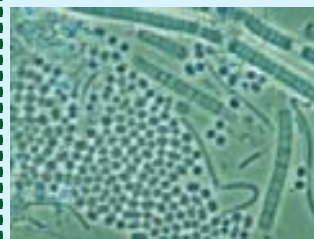
Secondary clarifier



Sludge drying beds



Diffuser Aerators



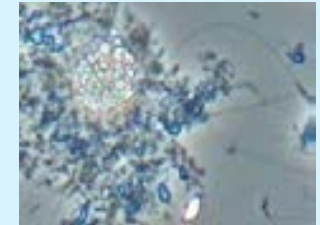
Bacteria



Protozoa



Fibres/Particles

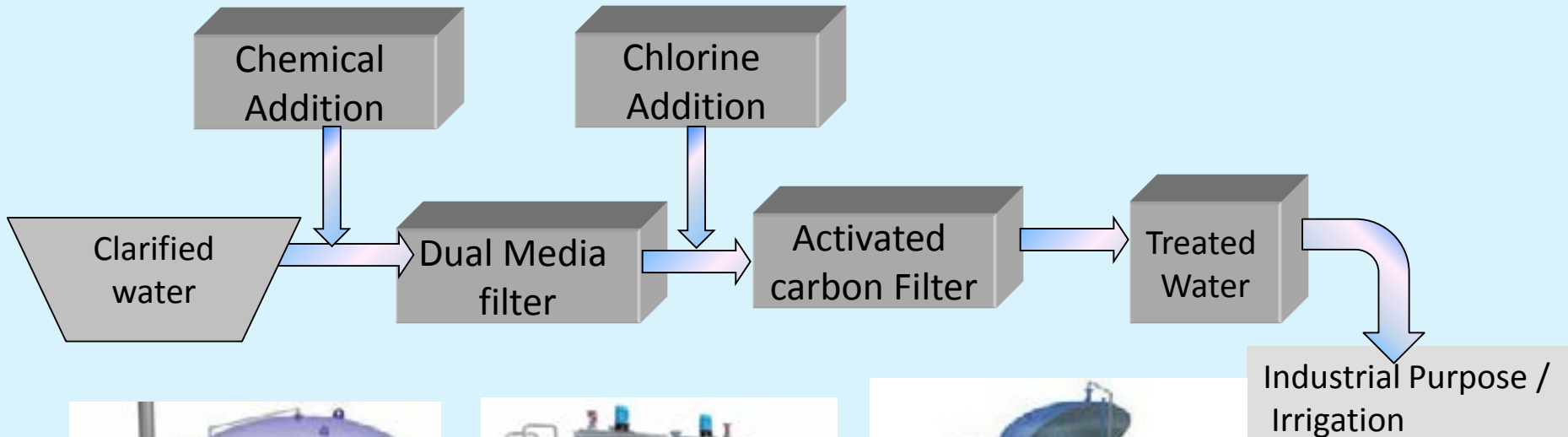


Precipitated Salts

# Tertiary treatment



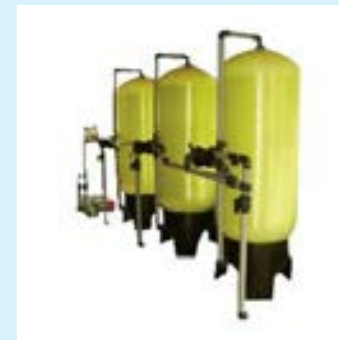
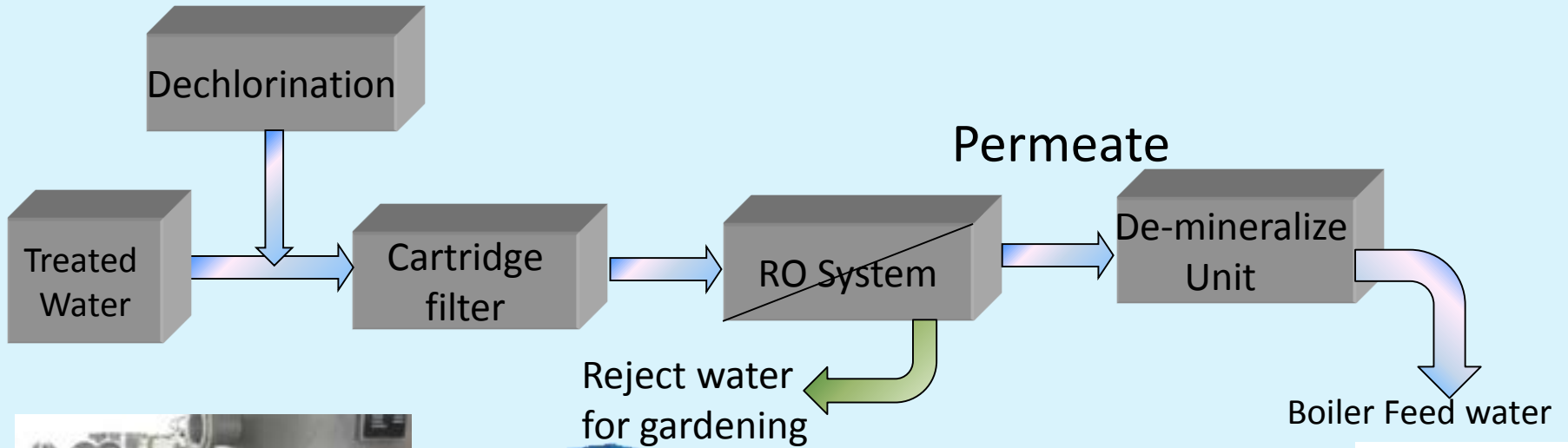
## Filtration (Sand Media, Dual Media, Activated carbon)



# Tertiary treatment (contd...)



## Filtration (UF/ RO/DM)





# Conclusion

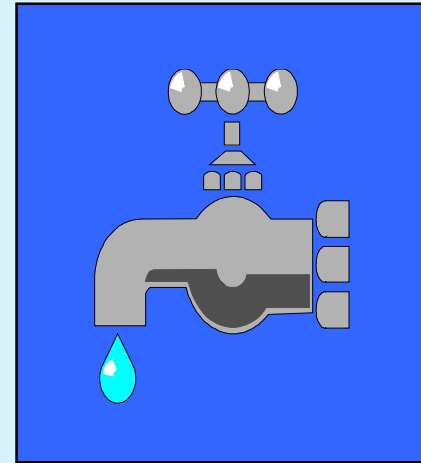
Several waste water treatment facilities, using the above processes, are operating successfully.







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







# Thank You

