

Session 22

Waste water treatment plants

Insufficient treatment of waste water from ETP leads to nonconformance with land of laws. Barrier to access to market, meet buyers code of conducts. Consequently, manufacturing facilities face fine, lose orders from buyers, unable to maintain running orders from buyers. It may lead to shut down the facility.

The implementation of this session will require about 1 hour and 45 minutes.

Learning outcomes

At the end of this session, the participants will be able to

1. understand of waste water treatment plant (WWTP) designs, treatment technologies and the sequence of treatments.
2. map of these technologies against the chemicals and processes involved in WPU and the control measures to undertake.

Training materials required

Presentations	Handouts/Worksheets	Reading
PPT 22_ Waste water treatment plants	Workbook session 22	REMC Company Handbook – sections 6.9

Session plan

Time in min	Content/Activity	Reference/Material
5	Introduction <ul style="list-style-type: none">• Present learning outcomes and overview of the session	<i>PPT 22_ Waste water treatment plants</i> <i>Slides 1-3</i>
35	Presentation - WW Treatment Plants: Present and discuss <ul style="list-style-type: none">• Different treatment principles• Waste water treatment processes• Different unit operations of WW Treatment Plants and ZLD• Link between WWTP and substitution of hazardous chemicals• Different methods for WWTP performance testing Exercise - Role play: Ask for two volunteers from the groups and invite them in front. One of them plays as a ETP manager and another one play HR colleague role. ETP manager let HR colleague understand the below issue. How wastewater treatment links to the protection of the environment and substitution of hazardous chemicals.	<i>PPT 22_ Waste water treatment plants</i> <i>slides 4-18</i> Workbook session 22

Time in min	Content/Activity	Reference/Material
10	Presentation - Pre-Treatment: Present and discuss <ul style="list-style-type: none"> • different pretreatment stages of WWTP • Units and equipment's for pre-treatment stages 	PPT 22_ Waste water treatment plants slides 19-32
10	Presentation - Primary treatment: Present and discuss <ul style="list-style-type: none"> • Purpose of primary treatment • Techniques and control measure of primary treatment 	PPT 22_ Waste water treatment plants slides 33-36
10	Presentation - Secondary Treatment: Present and discuss <ul style="list-style-type: none"> • Purpose of secondary treatment • Steps of biological treatment 	PPT 22_ Waste water treatment plants slides 37-44
10	Presentation - Tertiary treatment: Present and discuss <ul style="list-style-type: none"> • Purpose and treatment steps • Control measures 	PPT 22_ Waste water treatment plants slides 45-49
30	Group exercise: Use workbook session 22 <ul style="list-style-type: none"> • Discuss the technology available in your company or that you have come across. • Discuss your experiences with the group. • What were the advantages and disadvantages of the technology you used Ask the groups to share their findings.	PPT 22_ Waste water treatment plants slides 50 Workbook session 22
5	Closing <ul style="list-style-type: none"> • Q&A • Summaries key points of the session 	PPT 22_ Waste water treatment plants slides 51-52