

## Session 04

### Chemical Flows

This session focused to analysis and documentation of the chemical process flows lays the ground work for inventorying of chemicals and establishing chemical management system framework as well as losses in your company. This also makes it easier to later identify and document hazard/risks related to entire range of production processes, products, non-product outputs (NPO) activities of your company as well as plan and monitor your improvement measures.

The implementation of this session will require about 1 hour and 25 minutes.

#### **Learning outcomes**

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

1. identify Non-Product Outputs
2. Analyse and document chemical flows of a facility
3. identify and document hazard/risks of chemicals and processes.
4. monitor improvement measures

#### **Training materials required**

<b>Presentations</b>	<b>Handouts/Worksheets</b>	<b>Reading</b>
04_Chemical Flows	Workbook: Session 4	REMC Company Handbook – sections 2.1

#### **Session plan**

<b>Time in min</b>	<b>Content/Activity</b>	<b>Reference/Material</b>
5	Introduction <ul style="list-style-type: none"><li>• Present learning outcomes and overview of the session</li></ul>	<i>Present 04_Chemical Flows slides 1 – 3</i>
15	Presentation - Identification of non-product output <ul style="list-style-type: none"><li>• Explain the concept of non-product outputs in the process</li><li>• Realise different Non-product output that comes during production</li></ul>	<i>Present 04_Chemical Flows slides, slide 5-11</i>
20	Exercises <ul style="list-style-type: none"><li>▪ Prepare group of 5-6 participants; ask groups to exercise on the following topics:<ul style="list-style-type: none"><li>▪ What problems can occur if you do not know the chemical flow in your facility? - Brainstorm as a group and make notes in your workbook.</li><li>▪ Work in pairs and identify potential cost savings from the NPO examples shown on the pictures on workbook.</li><li>▪ Ask to present the findings of each group to the planum</li></ul></li></ul>	<i>Work book session 4</i>

Time in min	Content/Activity	Reference/Material
20	Presentation - Analysis and documentation of material chemical flows in your company, <ul style="list-style-type: none"> <li>• Outline the importance of documentation of material chemical flows in your company,</li> <li>• Explain how mapping the flow of chemicals of a facility</li> <li>• Explain methodologies to develop chemicals flow mapping of a facility</li> </ul>	<i>Present 04_Chemical Flows, slides 14-27</i>
20	Group exercise - Provide beautiful color case study to the participants <ul style="list-style-type: none"> <li>• Ask the participants to complete the task as a group to: Identify the location and flows of chemicals and chemical (containing) waste.</li> <li>• Document the process flow.</li> <li>• Identify possible NPOs.</li> <li>• Ask each group to present the findings to the planum (imagine factory management) – one process flow diagram, one eco-map</li> </ul>	<i>Work book session 4</i>
5	Closing <ul style="list-style-type: none"> <li>• Q&amp;A</li> <li>• Summarise key points of the session</li> </ul>	<i>Present 04_Chemical Flows slides 1 – 3, slides 35-36</i>