

Unit C1 - Revision Lesson 3 Acids and electrolysis				
Specification learning outcomes	HSW statements	Exemplar teaching activities	Main differentiation	Resource sheets
<p>0.1 Recall the formulae of elements and simple compounds in the unit.</p> <p>0.2 Represent chemical reactions by word equations <b>H</b> and simple balanced equations.</p> <p><b>H</b> 0.3 Write balanced equations including the use of state symbols (s), (l), (g) and (aq) for a wide range of reactions in this unit.</p> <p>0.4 Assess practical work for risks and suggest suitable precautions for a range of practical scenarios for reactions in this unit.</p> <p>0.5 Demonstrate an understanding that hazard symbols used on containers: a) indicate the dangers associated with the contents, b) inform people about safe working procedures with these substances in the laboratory.</p> <p>3.1 Recall that hydrochloric acid is produced in the stomach in order to: a) help digestion b) kill bacteria.</p> <p>3.2 Describe indigestion remedies as containing substances that neutralise excess stomach acid.</p> <p>3.3 Investigate the effectiveness of different indigestion remedies.</p> <p>3.4 Recall that acids are neutralised by: a) metal oxides, b) metal hydroxides, c) metal carbonates to produce salts (no details of salt preparation techniques or ions are required).</p> <p>3.5 Recall that: a) hydrochloric acid produces chloride salts, b) nitric acid produces nitrate salts, c) sulfuric acid produces sulfate salts.</p> <p>3.6 Describe electrolysis as a process in which electrical energy, from a d.c. supply, decomposes compounds, by</p>	<p>HSW 5, 6, 7, 8, 10, 11, 12</p>	<p><u>The theme of this lesson is acids and electrolysis.</u></p> <p><b>Starter:</b> <i>Acids and alkalis brainstorm.</i> Ask students to write down as many facts about acids, alkalis and neutralisation as they can. Students should do the first part individually for a couple of minutes and then work in small groups to organise their ideas in a more systematic way (e.g. as lists of acidic or alkaline substances or how to tell if a substance is an acid or an alkali). A spokesperson for each group should then share with the class how their group has organised the information and what information they know.</p> <p><b>Main:</b> <i>Acids and indigestion.</i> Worksheet C1.10c enables students to revise acids and indigestion as well as providing the opportunity to practice some word equations. <i>Investigating indigestion remedies.</i> Remind students of the investigation or experiment they did which looked at different indigestion remedies. Ask them what variables they had to control in the experiment and how they controlled them. <i>Neutralisation questions.</i> Worksheet C1.12c contains questions that will help students to revise neutralisation and to practice word equations. <i>Electrolysis questions.</i> Worksheet C1.14c provides students with the opportunity to revise electrolysis of seawater, uses of chlorine and testing for chlorine gas. This would be a good point to discuss the risks of using chlorine on a large and small scale. This could be linked to any practical work which students may have done on the electrolysis of hydrochloric acid. Students should also be reminded that the electrolysis of water yields oxygen and hydrogen.</p> <p><b>Plenary:</b> <i>Writing questions.</i> Give the students a list of the key words from this topic and ask them to write questions to which the words are the answers. Give them five minutes for the task, and then ask for two or three different questions for each word.</p> <p><b>Homework:</b> Worksheets C1.15a (for students requiring extra support) and C1.15b (for those working at a higher level) contain questions on how to test for the different gases in this chapter.</p>	<p><b>Stretch:</b> Students should complete the word equations and give balanced symbol equations for the reactions on worksheet C1.10c. They may need to be given the relevant formulae. Students should use worksheet C1.12d instead of C1.12c in order to practice balancing equations. Students should complete worksheet C1.14d rather than C1.14c.</p> <p><b>Support:</b> Students may need help with word equations so some of these could be done as a class initially. It may be of benefit to remind students what products and reactants are.</p>	<p>Worksheet C1.10c Worksheet C1.12c Worksheet C1.12d Worksheet C1.14c Worksheet C1.14d Worksheet C1.15a Worksheet C1.15b</p>

<p>considering the electrolysis of dilute hydrochloric acid to produce hydrogen and chlorine (explanations of the reactions at the electrodes are not required).</p> <p><i>3.7 Investigate the electrolysis of dilute hydrochloric acid.</i></p> <p><b>3.8</b> Describe the chemical test for hydrogen.</p> <p><b>3.9</b> Describe the chemical test for chlorine.</p> <p><b>3.10</b> Recall that chlorine can be obtained from sea water by electrolysis (explanations of the reactions at the electrodes are not required).</p> <p><b>3.11</b> Describe chlorine as a toxic gas and that this leads to potential hazards associated with its large-scale manufacture.</p> <p><b>3.12</b> Describe the use of chlorine in the manufacture of bleach and of the polymer poly(chloroethene) (PVC).</p> <p><b>3.13</b> Recall that water can be decomposed by electrolysis to form hydrogen and oxygen.</p> <p><b>3.14</b> Describe the chemical test for oxygen.</p>				
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