

## Student risk assessment worksheet

This resource accompanies the article **How to teach risk assessment**, part of the **Teaching science skills series** in *Education in Chemistry* which can be viewed at: [rsc.li/401QNui](https://rsc.li/401QNui)

### Learning objectives

- 1 Recognising hazards and evaluating risks in practical work
- 2 Identifying appropriate control measures to keep yourself and others safe

### Introduction

Making a soluble salt is a practical experiment included in all 14–16 curriculums and this experiment provides a natural opportunity for learners to look at risk assessment in more detail.

Although it may seem straightforward, every year a high number of incidents and accidents stemming from this experiment are reported.

Our core practical video **Preparing a soluble salt** [rsc.li/3pmV9sw](https://rsc.li/3pmV9sw) shows a method for making salt that differs from the 'standard' approach to make it safer. You could ask your learners to watch the video, looking out for and noting down anything to do with health and safety before asking them to complete the task.

### Scaffolding

Two printable student risk assessment worksheets have been provided. One has been partially completed with the hazards listed out to offer guidance for learners to start from. The second is a blank template offering more challenge or, as a follow-up task, for use with an alternative salt or an alternative experiment.

### How to use the resource

This could be completed as a homework activity before or after they have carried out the practical experiment. It would also work as an activity in class with learners working together in groups or run as a whole class discussion.

Provide each learner or group with the partially completed or blank template.

The CLEAPSS student safety sheets are accessible to all and contain all the information required to complete the risk assessment. They can be accessed from [science.cleapss.org.uk/Resources/Student-Safety-Sheets/](https://science.cleapss.org.uk/Resources/Student-Safety-Sheets/).

Prior to the lesson you may wish to print out the relevant sheets:

- SSS022 Sulfuric acid
- SSS040 Copper and its compounds

For further information on risk assessment, please see the CLEAPPS student risk assessment document, [science.cleapss.org.uk/resource/SSS096-Risk-assessment.pdf](https://science.cleapss.org.uk/resource/SSS096-Risk-assessment.pdf).

## Answers

An example answer is provided on the next pages.

## Student risk assessment: example answer

**Name of salt being prepared:** copper sulfate

*Complete the sentences*

A **hazard** is anything which could cause harm, eg concentrated sulfuric acid, a bag on the floor or **hot tripod, Bunsen flame (or any other hazard)**.

A **risk** is the chance or probability of harm actually happening and the severity of that harm.

Hazardous substance or procedure	Hazard	Precautions/control measures to reduce risk
1.4 M Sulfuric acid – see SSS022	Irritant – it may harm the eyes and skin	Wear safety glasses Use small amounts
Copper oxide (solid) – see SSS040	Corrosive, irritant, dangerous to the environment Can cause serious damage to the eyes, skin irritant, harmful if swallowed/inhaled Toxic to aquatic life	Wear safety glasses Use small amounts Do not touch Do not wash waste down the sink
Copper sulfate (solution and solid) – see SSS040	Corrosive, irritant, dangerous to the environment Can cause serious damage to the eyes, skin irritant, harmful if swallowed/inhaled Toxic to aquatic life	Wear safety glasses Do not take the copper sulfate crystals out of the lab Wash hands at the end of the lesson During the evaporating stage do not allow the solution to boil dry Dispose of with care

Hazardous substance or procedure	Hazard	Precautions/control measures to reduce risk
Heating the sulfuric acid at the start and reacting it with copper oxide	Spillage Reactants getting too hot and boiling over	Carry out in a water bath – boil the water in a kettle
Evaporating the solution to form a saturated solution of copper sulfate	Spitting Decomposition of copper sulfate crystals	Wear eye protection Carry out in a conical flask so any spitting will hit the inside of the flask Use anti-bumping granules Pay close attention and only heat for specified time Control the Bunsen flame and do not allow the solution to boil dry
Pouring hot copper sulfate solution into an evaporating basin	Burn from touching hot apparatus Danger of spillage	Use an insulated glove to pick up the conical flask or allow to cool before transferring Pay close attention