



SILVER AWARD

ORAL REHYDRATION THERAPIES



Typically 30 hours of project work
Recommended for 14-16 year olds



**Practical
project**

Learn about the causes and consequences of diarrhoea and dehydration

#chemistry

#health

#medicine



HOW TO RUN CREST USING THIS ACTIVITY

Entering your project without a teacher or facilitator? No problem! You can enter your work yourself by following this link: www.crestawards.org/sign-in

Looking for some support? Find a mentor by contacting your local STEM Ambassador hub: <https://www.stem.org.uk/stem-ambassadors/local-stem-ambassador-hubs>

To use their project to achieve a CREST Silver Award your students will need to:

- **Develop and lead the project**
- **Complete a minimum of 30 hours of project work**
- **Consider the broader impact of their project and demonstrate an innovative approach**
- **Write a project report or portfolio of evidence**
- **Reflect on their work during the project using a student profile form**

Preparation

Ready to get going with CREST? Sign up for a CREST account here: www.crestawards.org/sign-in

Create a new Silver Award project with the name(s) of the student(s) and the title of the project. If you don't have the details yet, you can fill these in later!

Run the project

We have some super handy workbooks and profiles for your students to use when running a CREST Award. You can download these when you create your CREST account by following the link above.

Encourage your students to use the Silver student guide to plan and carry out their project. Each student involved in the project should complete their own profile form.

You don't want all their good work to go to waste, so be sure they keep a record of all their amazing progress. Keeping a regular project diary will save them precious time when writing their final project report.

Make sure you consider safety and risks!

Reflection

So, your students have been hard at work and completed their CREST project, but don't let this be the end of their learning. At the end of the project, each student should complete a Gold profile form and communicate their project. This is a chance for them to reflect on all the interesting things they've learnt and the invaluable skills they have used.

Students working in a group can either submit a joint report or separate reports, but they must each complete a profile form.

Use the CREST criteria on the profile form to help the students check that they have included everything in their report.

Enter your project for a CREST Gold Award

Hard work deserves a reward! Celebrate and certify your student's achievements by entering their project for a CREST Silver Award. Simply:

Log in to your CREST account at www.crestawards.org/sign-in

Select your project and upload the profile form per student, project report and other evidence, such as pictures and diagrams.

Finally, complete the delivery and payment details for assessment and to order your snazzy certificates.

Congratulations on submitting for CREST Silver!

What next?

Is university on the horizon for your students? They can use their project to help demonstrate their newly found STEM skills and knowledge in UCAS personal statements.

The scientific discovery doesn't need to end here. Students can have a go at the next level up - CREST Gold.

Don't keep all the fun to yourselves, encourage others to take part in CREST projects and share the wonder of science. For free ideas on how to get started, see www.crestawards.org

STUDENT BRIEF

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Oral rehydration therapies

In this project, you will research the causes and consequences of diarrhoea and dehydration. You will find out about the different treatments available for dehydration and design some experiments to compare commercial and homemade oral rehydration salts.

Getting Started

You should start this project with some research. Find out about the causes and consequences of diarrhoea and its effect on infant mortality worldwide.

Comparing oral re-hydration salts: Choose some commercially available oral re-hydration salts, such as Diarolyte, find out what they contain and compare them with the homemade formula recommended by the WHO. Most oral re-hydration salts contain glucose and salt. Make up samples of the WHO formula and the commercial ORS and devise experiments to test that they contain these ingredients and to compare the contents of the different samples.

Can you use your measurements to compare the amount of salt and glucose in each sample? If not can you improve your measurements so that you can?

The results: Present the results of your tests on the samples of ORS. Make comments about the use of the WHO formula in areas where high infant mortality rates are due to dehydration caused by diarrhoea. What are the advantages and disadvantages of the WHO formula and commercially available ORS when trying to reduce worldwide infant mortality?

Things to think about

You should find out about re-hydration therapy and oral rehydration salts (ORS) including the World Health Organisation (WHO) formula for a homemade ORS.

You might want to use the Benedict's test to check for glucose.

Pure water is an electrical insulator but becomes a conductor when salts like sodium chloride are dissolved in it. You could use a battery and an ammeter to set up a circuit to check the electrical conductivity of your samples of ORS. You could compare your measurements with the electrical conductivity of distilled / de-ionised water and with salt solutions that you have made up yourself.

Useful Resources

You should try to ask a doctor or pharmacist for advice and information on re-hydration therapies and you could contact an organisation involved in overseas aid aimed at reducing infant mortality due to diarrhoea and dehydration



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Health and Safety

A science project work is both dynamic and exciting but can also carry some risk. To avoid any accidents, make sure you stick to the following health and safety guidelines before getting started:

- find out if any of the materials, equipment or methods are hazardous;
- assess the risks (think about what could go wrong and how serious it might be);
- decide what you need to do to reduce any risks (such as wearing personal protective equipment, knowing how to deal with emergencies and so on);
- make sure your teacher agrees with your plan and risk assessment.

Are there any hazards in the chemicals, equipment or procedures you will use? How can you reduce the risks from them?

Remember!

Science isn't just about data. The most successful projects will demonstrate good communication skills and show original ideas that address a real-world problem.

Look at the world around you and consider all the innovative ways that you could address the challenge. Even if things go wrong, use this to show what you have learned. Don't forget to use the student profile form to help structure your project.