UN Sustainable Development Goals Cards 9 to 18 years Teacher Notes

The Institution of Chemical Engineers wants to provide teachers with access to educational and careers resources to showcase the range of career options in chemical engineering through DiscoverChemEng. Chemical engineers play a pivotal role in how we live, working across every industry, across the globe, linking sectors together to help address the United Nation's Sustainable Development Goals (UN SDGs).

This activity is aimed at pupils aged 9 -18 years, spanning older pupils in primary education and secondary education/high school/sixth form.

Learning objectives
Pupils have the opportunity to: ✓ learn about some of the UN SDGs ✓ relate UN SDGs to careers opportunities to engineer a sustainable world
Curriculum links
Science Personal, social, health and economic (PSHE) Citizenship and decision-making Careers

Timing

This can be run in one session taking around 20-25 minutes depending on your class, how many ideas and questions are generated and available time.

Preparation

This video can be shown to the class to give an outline of what chemical engineers and process engineers do
How chemical engineers can reimagine the future for everyone

1. Cards can be printed double-sided and cut out, on A4 or A3 paper/card.
2. Lay the cards face down on a table so the number of points is showing. Or the images can be shown on a screen and used as talking points, as an alternative.
3. Use the It's time to... poster or Chemical engineers will... poster as prompts as the images correspond to those on most of the cards. These can be shown on a screen or printed.

Task

1. Pupils choose a card (the smaller the number of points the easier the answer). This could be in pairs or small groups.
2. Pupils describe what they see on the card and then describe how they think it relates to the work of chemical and process engineers.
3. Teacher notes are provided on the next page to help explain the images.
4. You could award merit points, or similar, to the pupils that engage well with the activity and generate ideas.
5. Extension activities could include finding out about the UN Sustainable Development Goals with targeted activities for different ages.

5 points

This picture shows a child in poverty without access to food and medicines
Chemical engineers strive to make the world more equitable by enabling access to cheaper medicines.
Chemical engineers are working on more sustainable food production, enabling crops to grow in areas where farming has been challenging (for instance through bioengineering or fertilisers)

3 points

Sustainable food production using less land, water and energy.
Similar answers to above – and picture is perhaps easier to understand.

5 points

You may not recognize this - a water treatment plant from above.
Chemical engineers treat water sources making effluent/waste water safer.
Chemical engineers deliver clean water to our taps.

2 points

Chemical engineers treat water sources making effluent/waste water safer.
Chemical engineers deliver clean water to our taps.

3 points

Chemical engineers are exploring green energy solutions and need to find ways to store renewable energy.
Pupils may be able to relate this to topics studied in science.

5 points

Chemical engineers are optimizing processes to reduce waste and to recycle.
Finding more sustainable ways to manufacture fast moving consumer goods.

3 points

Chemical engineers are finding ways to recycle plastics and other materials and convert them into other products.

2 points

Chemical engineers make medicines at scale.
Support global distribution.
For example, the covid vaccines in the last few years.

5 points

Chemical engineers work in teams and collaborate with many other job roles and professions to engineer a sustainable world.

3 points

Chemical engineers are finding ways to reduce carbon emissions to net zero by 2050.
Carbon capture.
Fossil fuel alternatives.
Hydrogen fuel switching.
Pupils may be able to relate this to topics studied in science.

2 points

Chemical engineers are finding ways to reduce carbon emissions to net zero by 2050.
Carbon capture.
Fossil fuel alternatives.
Hydrogen fuel switching.
Pupils may be able to relate this to topics studied in science.

2 points

Alternative fuels for transport.
Chemical engineers are finding ways to reduce carbon emissions to net zero by 2050.
Carbon capture.
Fossil fuel alternatives.
Hydrogen fuel switching.
Pupils may be able to relate this to topics studied in science.

Please send any comments about this resource to DiscoverChemEng@icheme.org