

DISSOLVING OLD T-SHIRTS

This lesson introduces students to the concept of chemical recycling, applying it specifically to the textile industry

LESSON OBJECTIVES

Students will be able to:

- Understand what 'chemical recycling' is
 - Understand how 'chemical recycling' can be applied to used textiles
 - Think about what other products could be recycled chemically
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SUMMARY OF TASKS

PART 1 – INTRODUCTION AND VIDEO

- Intro question for the class: What do you think of when you hear 'chemical recycling'?
- Give a brief introduction from the 'Dissolving Old T-shirts' fact sheet
- Ask students questions from the front, write answers on the board:
 - What might be some differences between chemical recycling and mechanical recycling?
 - What alternative methods can you think of for recycling old clothes?
- Watch '*Chemical Textile Recycling*' video¹ (13 mins) which looks at a British company investigating chemical textile recycling. Afterwards, ask students what they thought about the video

PART 2 – DISCUSSION AND ACTIVITY

- Split students into groups to discuss and write down their ideas on the following questions:
 - What might be the pros and cons of using chemicals to recycle textiles?
 - Besides clothing, what other products might be candidates for a 'chemical recycling' process, and how might that work?
- During the discussion you may wish to go around the class and aid weaker learners by giving some prompts or ideas
- Come back together as a class and ask groups to share some of their ideas with everyone

RESOURCES/ EQUIPMENT

- 'Dissolving Old T-shirts' fact sheet

HOMEWORK/ EXTRA ACTIVITIES

- Ask students to research and compare different methods of recycling textiles, giving their opinion on which is the most promising

¹<https://www.youtube.com/watch?v=DklhA3W4iiU&t=47s>

FACT SHEET: DISSOLVING OLD T-SHIRTS

FACT SHEETS HAVE BEEN DESIGNED FOR TEACHER USE TO AID CREATING OF TEACHING RESOURCES, OR THEY ARE FREE TO BE REPURPOSED FOR STUDENT USE.

The current trend sees the amount of waste clothing and textiles increasing. According to a report by the Ellen MacArthur Foundation in 2017, approximately one garbage truck of textiles is landfilled or burned every second. This is not only polluting the environment, but making so many clothes is using up valuable natural resources.

Chemical textile recycling is a method of breaking down old or unwanted textiles at the end of their life into their constituent chemical materials. These can then be used to make new and equally high-quality textiles, instead of using up natural resources. For example, instead of turning an old T-shirt into a rag or insulation, it can be broken down into its raw materials and then made into another T-shirt! Most clothes are made from cotton or polyester, or blends of the two. Chemical recycling usually works by dissolving one of the components and then filtering in order to separate it from anything else in the clothes, such as colour dyes. The dissolved component can then be recovered and used to make new clothing.

Some of the challenges for the chemical recycling of textiles include:

- Collecting and sorting the old clothing by fabric type before chemical treatment
- Reducing the cost to compete with clothing from natural resources
- Getting brands and manufacturers to change their supply chains

The cost of chemical recycling should decrease as technology improves and as scale increases. Collecting, labelling and changing supply chains would require more systemic change – which can be influenced by government and consumers like us!

ADDITIONAL RESOURCES AND REFERENCES

- <https://fashionforgood.com/>
- <https://medium.com/fashion-for-good/chemical-recycling-the-solution-to-fashions-ugly-waste-problem-324289f3457e>
- <https://www.chemistryworld.com/features/recycling-clothing-the-chemical-way/4010988.article>