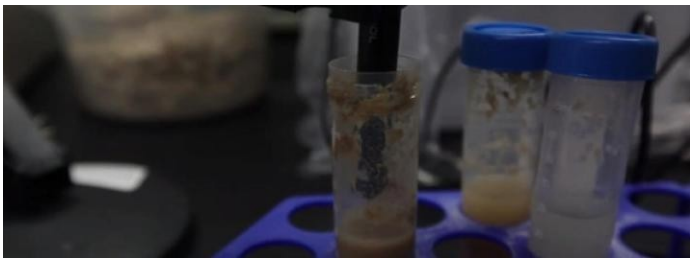
Summary

Bioethanol from waste paper



Target age

Age 14 and over

Level of difficulty

☐ Easy X Medium ☐ High

Key words:

Recycling, *Paper*, *Waste*, *Ethanol*, *Fuel*

Abstract of the activity:

Bioethanol (C_2H_5OH) is an alcohol coming mainly from biomass, exploitable as an environmentally compatible fuel that can partially be used in place of fossil fuels. Currently, a mixture of gasoline and bioethanol is commercially available, the E85, composed of 85% ethanol.

In this experiment, waste paper will be used as raw material for the production of ethanol through the digestion with a safe commercial enzyme and fermentation with regular grocery store yeast. Ethanol will be then monitored through the use of either an ethanol sensor or a dye that, reacting selectively with alcohol, will change colour revealing its presence.

Learning Goals

- Be aware of the global warming
- Learning about bioethanol
- Learning how to produce ethanol from waste paper
- Learning about the preciousness of waste and how it can be resource

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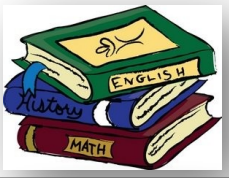
Summary

Specific Abilities - *At the end of the activity the student will be able to:*

- Use vials and pipettes
- Apply the methods and verify their efficiency though systems
- Be critical about the evaluation of lab results



Cross-curricula Links

- Ecology/Environment
- Biology
- Chemistry

Prerequisites - *Knowledge and skills necessary for carrying out the activity*

- Laboratory techniques (weighting, use a blender)

Time requirement

☐1 h (first day) + ☐ 2 h (the second day)

Instruments: *blender, thermal plate, vials*

Learning and Teaching Support Materials - What you can find in the toolkit:

1. Lab Procedure (Module 1)
2. Students' Cards (Module 1)
3. Tutorial Video
4. Ppt presentation for preparing a lesson with tutorial videos
5. Evaluation questions

RM Ambassadors

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