

Waist Deep in Waste – Necessity or Irresponsibility?

Developers: Jack Holbrook

Institute: ICASE

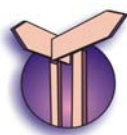
Country: UK

Subject: Chemistry

Grade level: 10-11

Overall Objectives/Competencies: The students are expected to:

- Decide, with justification, the most appropriate way to deal with plastic waste.
 - Classify plastics as thermoplastic or thermosetting.
 - Design and carry out an experiment to test gases liberated when plastics are heated and identifying the products formed.
 - Carry out a survey and analyse, organise and critically evaluate findings.
 - Cooperate by discussing meaningfully, listen to others opinions, and reach consensus in a group.
 - Communicate effectively using language skills and appropriate visual aids and present the findings from the survey in a meaningful way to the class
 - Explain the term plastics and the classification into thermoplastic and thermosetting.
-



Students' Guide

Scenario

Since the beginning of time, the disposal of waste has been a problem. Even at the simplest level, all living things create waste. To reduce the amount of waste being produced, and to manage it effectively are both desirable and obtainable goals.

In early times, solid domestic waste was simply disposed of by transporting and dumping it outside the city. The dumps were not too far away, as transporting waste was, and still is, expensive. The dramatic growth in the size of large cities like Johannesburg over the past 45 years has resulted in people living within 500 m of large rubbish dumps.



How do you think this affects the communities living in the immediate area?

Our “throw-away society” produces more and more waste per person each year. Currently, we place our rubbish on the verge in bins or bags, pay our monthly rates and it is collected weekly. *Out of site, out of mind!* A large percentage of this waste is made of plastic. Should we do something to reduce this ?



Your Tasks

1. Conduct a survey in your suburb to establish how much plastic is thrown away per month.

In your group of 4, design your survey.

Include a minimum of 6 questions that ensure the aim of the task is fulfilled.

It is recommended that you concentrate on plastic bags, plastic containers or plastic goods either used in the kitchen or bathroom

Each group member should interview at least 15 families.

After completing your interviews, your group should:

analyse, organise and critically evaluate your findings;

prepare to present these findings to your class orally using appropriate visual aids to enhance your presentation.

2. a) Carry out an experiment to investigate the various plastics thrown away so as to try to identify the plastic material and to classify it as thermoplastic or thermosetting

See student handout 1.

b) To design an experiment to determine the nature of the products formed when two given plastic samples are heated and hence decide whether the burning of plastics is a hazard

See student handout 2.

3. Decide how we should best handle plastic waste

In groups of 5, participate in a role-playing exercise, to decide how to handle plastic waste. (See Student Handout 3 and the accompanying information.) You will need to reach consensus as a group, on your final decision.