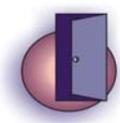


Teaching –learning module compiled by the PARSEL consortium
 as part of an EC FP6 funded project (SAS6-CT-2006-042922-PARSEL) on
 Popularity and Relevance of Science Education for scientific Literacy

Are We Overusing Plastics?

A grade 10-11 science (chemistry) module on Thermoplastics and Thermoset plastics
 and their Recycling



Abstract

Plastics have invaded our lives to such an extent that it is almost impossible to think of life without them. Since plastics do not decompose as easily as other materials, their excessive use has created a problem of disposal of discarded products like plastics bags and bottles. As a result, plastics are slowly becoming a potential danger to the environment. But there is the problem of the disposal of plastic waste.

Sections included		
1.	Student activities (for students)	Describes the scenario in more detail and the tasks the students should perform
2.	Teaching guide	Suggests a teaching approach
3.	Assessment	Gives suggested formative assessment strategies
4.	Teacher notes	Provides additional information about plastics and student worksheets

Developer: Dharam Parkash, Chacha Nehru Bhawan
Edited by: Jack Holbrook, Amitabha Mukherjee and Vijaya S. Varma
 Institution: International Council of Associations for Science Education (ICASE)
 Country: India



Overall Objectives/Competencies: The students are expected to:

- Decide, based on sound arguments, whether the public have a social responsibility to discard plastics more wisely, or whether we should ban the use of certain types of plastics.
- Devise tests to distinguish between various plastics.
- Co-operate as a member of a group in carrying out the experiments and in undertaking discussions on whether the public have a responsibility to discard plastics more wisely.
- Communicate orally in an appropriately scientific manner and in writing in creating a report.
- Explain thermoplastic and thermosetting plastics and their preparation by addition and condensation polymerisation.
- Describe moulding processes for shaping plastics.
- Explain the recycling processes for plastic waste.

Curriculum content: recycling of plastics, types of plastics, polymerisation, thermoplastics, thermoset plastics, formation of plastics.

Kind of activity: devising and carryout experimental tests on plastics; group work on making a justified decision after calculations have been successful performed.

Anticipated time: 4 lessons plus a visit to a recycling factory.

Prior knowledge expected: Covalent bonding using single, double and triple bonds.

This unique teaching-learning material is intended to guide the teacher towards promoting students' scientific literacy by recognising learning in 4 domains – intellectual development, the process and nature of science, personal development and social development.

Its uniqueness extends to an approach to science lessons which is designed to be popular and relevant. For this the approach is intentionally from society to science and attempts to specifically meet student learning needs.

This uniqueness is specifically exhibited by:

1. a society related and issue-based title (supported in the student guide by a scenario);
2. student-centred emphasis on scientific problem solving, encompassing the learning of a range of educational and scientific goals;
3. including socio-scientific decision making to relate the science acquired to societal needs for responsible citizenship.

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