



Science Unit: *Plastics*

Lesson 1: *Field Trip - Vancouver Landfill*

School year:	2008/2009
Developed for:	Tyee Elementary School, Vancouver School District
Developed by:	Linda Hanson (scientist), Debbie Adams and Sharon Ghuman (teachers)
Grade level:	Presented to grades 4, 5, & 6; appropriate for grades 1 – 7 with age appropriate modifications.
Duration of lesson:	Approximately 3 hours including travel time. The tour itself is approximately 1 hour in length.
Location:	5400 72 nd St., Delta V4K 3N2
Notes:	Tours are free of charge but should be scheduled in advance. Groups provide their own transportation for the tour (i.e. school bus). The tour guide will meet you at the landfill entrance and board the bus. The bus will be used to travel around the landfill. More information is available by calling 604 940-3212 or at http://vancouver.ca/engsvcs/solidwaste/landfill/index.htm Washroom facilities are limited. A single public washroom is located in the administration building at the entrance to the Landfill.

Objectives

1. Discover what happens to our garbage, recycling and yard waste once it leaves our homes.
2. Learn about the economic and environmental implications of landfills.

Background Information

This fieldtrip will allow students to see how much garbage (i.e. solid waste) we as a society produce. They will also learn about the economic and environmental costs associated with managing solid waste. In addition, the fieldtrip will correct popular misconceptions surrounding what happens to (or fails to happen to) the solid waste that the landfill receives. For example, it is a common misconception that “someone” checks the solid waste as it is received and removes any recyclable/compostable material before the remainder is buried in the landfill. This is not the case. Garbage is automatically unloaded from huge container trucks directly onto the active face of the landfill and buried.

The Vancouver Landfill has been in operation for over 40 years and receives approximately 40% of the solid waste generated in the Greater Vancouver Regional District. The facilities include recycling, composting, and solid waste management. The tour introduces students to the residential drop-off and recycling area, landfill gas flare station, yard trimmings composting facility and the landfill active face. The tour also discusses landfill gas utilization, leachate control, on-going research at the landfill and bird control. Trained hawks are used to keep seagulls and other birds away from the active face of the landfill. The active face is the area of the landfill where solid waste is currently being deposited and buried. Decomposition within the landfill is not encouraged but it does occur and results in the production of landfill gas (mainly a mixture of methane and carbon dioxide) deep within the landfill. Landfill gas is flammable and consequently the landfill must be vented to prevent a potentially dangerous build-up of gas. Many landfills simply burn off the gas at a flare station. However, the Vancouver Landfill collects the landfill gas and pipes it to a nearby green house. The greenhouse uses the landfill gas to generate heat and electricity.



Vocabulary

<u>Active face</u>	The area of the landfill where solid waste is actively being deposited and buried.
<u>Landfill gas</u>	Gas produced within the landfill as a result of bacterial decomposition. Mainly a mixture of methane and carbon dioxide.

In the Classroom

Introductory Discussion

1. Before the fieldtrip explore the students' knowledge and perceptions of landfills and solid waste. Use questions to stimulate a brief classroom discussion. This discussion can also occur on the bus on route to the landfill.
 - How much garbage do you (or your household) create in a day? In a week? In a year?
 - How much garbage does the school or the city produce in a year?
 - What do you think happens to all of that garbage? Where does it go?
 - What is a landfill? What happens there? Is garbage sorted? Is it composted? What do you think it looks like?
2. Briefly describe safety guidelines.
 - Students will remain on the bus for the duration of the fieldtrip.
 - The roads around the landfill can be bumpy so remind students to remain seated at all times.

Closure Discussion

1. Were you surprised at the size of the landfill?
2. What were you most surprised to see at/in the landfill?
3. What type of garbage did you see most often?
4. What happens when the landfill gets full?
5. What can you do to reduce the amount of garbage you send to the landfill?

Extension of Lesson Plan

1. Have the students record their impressions of the landfill as journal entries.
2. Have students create a list of ways to reduce the amount of garbage they produce as individuals, as a household, as a class and as a school.