

## How can a community prolong the life of its landfill?

### Objectives

- Students will understand that landfills need upkeep and have a life span
- Students will understand some processes and consequences of garbage disposal
- Students will find ways to increase the life span of a landfill (personally and as a community)

### Lesson 1

#### Materials

Photos of landfill                      Assortment of garbage      OR pictures of assorted  
Garbage

#### Instructional Procedures

- 1) Play music video "Love to Love You Landfills" (YouTube <http://www.youtube.com/watch?v=GTodmU1mc48>)
- 2) Show students the display of "garbage". Explain these items are examples of "solid waste". Every community must have means or procedures to deal with solid waste materials. Household waste is just one source of material that is found in the "waste stream". What else may make its way into the "waste stream"? (construction waste, tires, paint, etc.)
- 3) Discuss how your community manages waste. (back alley collection, recycling programs, composting, landfill, etc.)
- 4) Show pictures of the Prince Albert landfill. Allow some discussion of their impressions of landfills. What do they notice about the photos of the landfill? (There are some piles of sorted materials.) This is to get the students thinking about the processes that a landfill uses to divert the waste materials.
- 5) Have students complete the worksheet individually or in small groups.
  - a) Why should materials be sorted before they reach the landfill?
  - b) What do you think happens to the materials that are sorted?
  - c) What do you think happens to waste material that is already mixed together (ex. household waste)?

- 6) Bringing students back to group, discuss answers.
- a) The materials need to be sorted so they can be recycled and, in the process, diverted from landfills.
  - b) The materials are sold or distributed to recyclers.
  - c) Material that is already mixed together is a problem and very little can be done with it. This is the material that is filling up the landfills. It would be extremely expensive and time consuming to attempt to sort through the material.

\* Teacher Note \* Students may bring up the concept of decomposition in the landfill. Explain to students that most things will decompose if given enough time. You may choose to share "decomposition rate.doc" to show the extremely slow decomposition rates of common garbage material. In Saskatchewan, landfills are fairly dry and garbage takes a long time to break down. The materials that do break down produce air pollution (methane) and/or water pollution (leachate).

## Lesson 2

### Instructional Procedures

- 1) Review last lesson's findings, especially the idea that our household garbage is what is causing the landfills to fill up.
- 2) Watch the video "On the Road to Zero Waste: Nova Scotia" (approx 30 min)  
<http://americanhealthstudies.org/videos.html>  
This video is at least 10 years old. The first part (4 min 43) deals with the concept of zero waste, the rest talks about how Nova Scotia is working towards zero waste. Some of the companies no longer exist, you may choose to watch only the first part.
- 3) Discuss the idea of zero waste. It is based on the idea of reducing the amount of raw materials we use, reusing as much as we can, and composting what we can to reduce the amount of waste we produce. The idea is that everything can be reused and nothing or almost nothing needs to go to waste. From a manufacturer's standpoint it means closing the raw materials loop - using raw materials to produce a product and using the product to produce more raw material.
- 4) Return to the list of "garbage" from Lesson 1. How could the students use the practices of reducing, reusing, recycling and composting to keep each item from making its way into a landfill and in turn contribute to the zero waste initiative?
- 5) As a class, find examples of each solid waste management practice. For example - Reducing: using canvas bags for groceries rather than plastic; Reusing: using plastic containers (such as margarine or sour cream) for storage in the home; Recycling: collecting glass items to be recycled; Composting: collecting organic material for compost
- 6) How can these practices increase the lifespan of a landfill or help towards the zero waste initiative? What can you personally do to help? What can your community do?
- 7) A) Make a poster showing alternatives to "throwing out" garbage to increase the longevity of a landfill or to promote the zero waste initiative. These can be posted where other students in the school can view them.

B) Write a "letter to the editor" to an imaginary paper newspaper, pretending to respond a fictional headline that your community landfill will soon be full and the community needs to find another site. This should include the students' opinions about solid waste management, the zero waste initiative and as many facts as they know to support their statements.

### **Additional Ideas/Resources**

[http://www.scire.com/recycle/what\\_plan/pdfs/complete\\_waste1.pdf](http://www.scire.com/recycle/what_plan/pdfs/complete_waste1.pdf) -graphing idea for waste stream

<http://www.ciwmb.ca.gov/Schools/WasteReduce/Composition.htm> - school waste stream

## Prolonging Landfill Life – Decomposition Rates

Estimated Decomposition Rates of Certain Items	
Garbage Item	Estimated Decomposition Time in a Landfill
Aluminum can	200 - 400 years
Banana	3 - 5 weeks
Cigarette butt	2 - 5 years
Glass bottle	500 years
Milk carton	5 years
Paper bag	2 - 4 weeks
Plastic drink rings	450 years
Plastic jug	450 years
Styrofoam cup	never
Tin can	100 years
Plastic bag	10 - 20 years
Rubber sole of shoe	50 - 80 years

## Prolonging Landfill Life – Lesson 1 Worksheet



8) Why should material be sorted before it reaches a landfill?

---

---

---

---

9) What do you think happens to the materials that are sorted?

---

---

---

---

10) What do you think happens to waste material that is already mixed together?  
Example: household waste

---

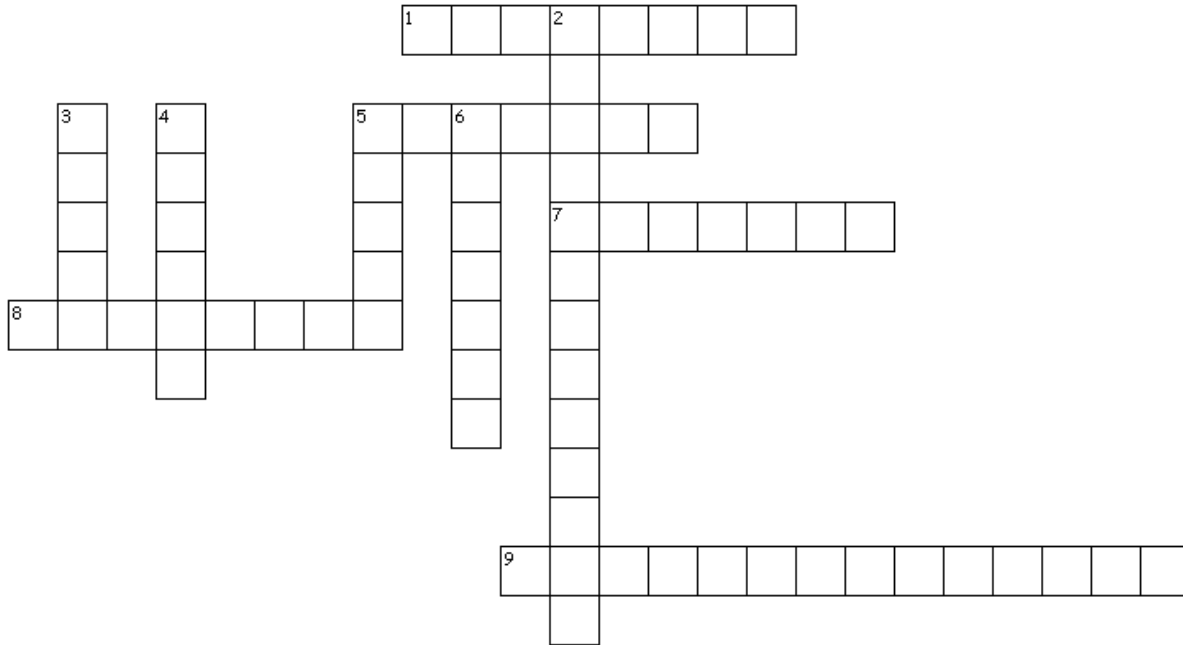
---

---

---



## Prolonging Landfill Life - Crossword



### Across

- 1. a system in which waste is buried between layers of soil
- 5. to put an item through a process that renders it reusable
- 7. gas produced from landfill
- 8. water pollution from landfills
- 9. material from homes that "thrown out"

### Down

- 2. the chemical process of decay
- 3. refuse from humans
- 4. to produce less waste ex. Using a plastic container rather than a sandwich bag for snacks in a lunch
- 5. to use an item again
- 6. a process in which organic materials are broken down

### Word Bank

leachate	methane	landfill	household waste	recycle
reuse	reduce	compost	waste	decomposition

## Prolonging Landfill Life - Wordfind

l v n w p p x c g t v r j x z g w x s a  
 l e a c h a t e u n e l c y c e r v e i  
 i b y r f q x g i e t f f r s c o n w r  
 u a g n r j f a m m j s z s k m o y b w  
 n w w j c y n b y e s i o d e i e t m k  
 z o g q h q m r q g j l g p t j v q h a  
 w t i j w p f a m a a o a c m y q a l w  
 i p c t f q u g g n o j e n o o j k o d  
 p z b c i h f r o a k l a f d h c m j v  
 a r g h o t k z j m l p s b o f e f r e  
 g a s s e s s k w o g y m i d t i p w n  
 u g m i o t m o c a p s t n h r s l y h  
 z w w r u g e u p n s r q a l e s k l g  
 c p t f x f f s n m e t n f i u y r l k  
 x o s v a k y d j v o e e s f s b t u w  
 r f s k l x c d o t u c a u e e v t a o  
 s v y l w w h c e x o d e a s j k b f d  
 e t l t o e e p d b y u p d p d t n y n  
 k k c z s r u o d w s p o d a l h i n o  
 c k z f l v q t t q k c p h n x l h k k

### Word Bank

collection	waste	sort
compost	reuse	recycle
decomposition	recover	methane
garbage	management	lifespan
gasses	leachate	landfill