

Sustainability  
Agriculture &

# Let's Go Green!

Sustainable  
living  
Project



Saskatchewan

## 4-H MOTTO

Learn to do by doing.

## 4-H PLEDGE

I pledge

My HEAD to clearer thinking,  
My HEART to greater loyalty,  
My HANDS to larger service,  
My HEALTH to better living,  
For my club, my community and my country.

## 4-H GRACE

(Tune of Auld Lang Syne)

We thank thee, Lord, for blessings great  
On this, our own fair land.  
Teach us to serve thee joyfully,  
With head, heart, health and hand.

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Saskatchewan



Agriculture and  
Agri-Food Canada

Agriculture et  
Agroalimentaire Canada



AGRICULTURE COUNCIL  
OF SASKATCHEWAN INC.

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# Introduction

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This guide sets out a series of activities for you to undertake. By doing them, you will be applying the information presented in the reference book, assessing your greenness, testing ideas and contributing to being green.

One of the requirements for Achievement Day is to keep a list of tips that you can share with others. As we go through the guide, some ideas will be shared but you will be able to collect many more. At the end of each unit, try to come up with at least three per topic. Some topics will be easier than others. Think about ones that you can share with your family, your school and your community.

You don't need to do all the activities, but do at least one per unit. You might even want to do more. The more you do, the more you will learn about being green.

At the end of units are some online resources. Some are further information that you might be interested in, further instructions on how to do something or recipes to consider. Others are websites with quizzes and games.

Search engines, like Google or Altavista, are great tools for locating websites devoted for the topic for which you are searching. Be wary of the source of information; there's a lot of garbage on the Internet which may be untrue or incorrect.

The Internet is a great resource for information, facts, figures, quizzes and games related to this project. If you are using the Internet, follow these guidelines:

1. If you post online, NEVER attach any personal information such as names, addresses, phone numbers, date of birth, what school you attend, etc.
2. ALWAYS remember the person you are communicating with may not be the person they claim to be.
3. When using social media sites like Facebook, set your online profile to private. That way, the only people who will be able to see your profile will be those that you approve.
4. Do not give your passwords to anyone but your parent or guardian.
5. Never meet anyone in person that you just met on social media sites.
6. If anything happens online that makes you feel scared or uncomfortable, ALWAYS tell your parent or guardian. Report any inappropriate comments or messages if they violate the terms of service for that site.

When you are using equipment such as saws and hammers, be careful. If you are unsure how to use a piece of equipment, ask. Alternatively, have an adult help you.

Finally, some of the activities will be outdoors. When you go on field trips to natural areas or participate in restoration projects, be prepared.

- Take water, food and sunscreen.
- Dress for the weather. Check the weather forecast; take a rain jacket if rain is predicted and a hat if it is going to be sunny.
- Have suitable footwear; don't wear your nice shoes when boots would more appropriate.
- Always tell someone, preferably an adult, where you are going, when you are leaving and when you should be back.
- Be respectful of wild places. Tread lightly, take only photos, leave only footprints, kill only time. In fact, try not to leave any trace that you were there. Walk and talk softly as not to disturb wildlife and other visitors. Leave the area in the same or better condition than you found it.

## Unit One: The Situation

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In this section, we will be looking at our environmental impact. We will establish a benchmark of where we are, that is, how green we are. Throughout the project, you might want to return to these assessments and see if you, your family, your school and/or your community has improved.

### Activity One

### *Test Your Knowledge*

As we start this 4-H project, it is fun to check to see how much we know. Try this quiz. The answers are on the bottom of the page – but don't look at them until you have done the quiz!

|  |      |       |
|--|------|-------|
| 1. Only one gas causes the greenhouse effect.                                | True | False |
| 2. Name as many gases as you can that are part of the greenhouse gases.      |      |       |
| 3. Methane can get into our atmosphere from rice fields.                     | True | False |
| 4. Carbon dioxide gets into our atmosphere when we ride our bikes to school. | True | False |
| 5. Saving electricity will help stop global warming.                         | True | False |
| 6. Greenhouse gases are heating up our planet!                               | True | False |
| 7. Carbon dioxide can last up to 1,000 years in our atmosphere.              | True | False |
| 8. Trees and green plants can help heal our atmosphere.                      | True | False |

How many did you get right? \_\_\_\_\_

#### Answers

1. F, 2. Water vapour, methane, carbon dioxide, nitrous oxide, and ozone, 3. T, 4. F, 5. T, 6. T, 7. T, 8. T

**Activity Two**

**Assessments – How Green are We?**

As discussed in the reference book, our impact on our environment can be measured a number of ways. Simple questionnaires, like the one below, give us an indication. Elaborate computer versions are also available and can track how we are doing.

**How Green is Your Community?**

| Question  | Score<br>Yes=1; No=2 |
|---|----------------------|
| 1. Does your community have a recycling program?                              |                      |
| 2. Can you recycle at your school?  |                      |
| 3. Does your community have wind turbines or solar panels on building?        |                      |
| 4. Does your community have garbage receptacles?                              |                      |
| 5. Does your community have a transit system (buses or trains)?               |                      |
| 6. Do kids in your community walk or take a bus to school?                    |                      |
| 7. Is your sky clear of pollution (i.e., no smoke or exhaust hanging around)? |                      |
| 8. Does your community have many trees?                                       |                      |
| 9. Do homes in your community have flower and vegetable gardens?              |                      |
| 10. Does anyone in your community compost?                                    |                      |

Add up your score.

What did you score? \_\_\_\_\_

If your score is 10-12, you live a green community. Congratulations!

If your score was 13-16, your community is pretty good but there's room for improvement.

If your score was 17-20, your community has lots of room for improvement!



**How Green are You?**

| <b>Questions</b>  | <b>Score</b> |
|---|--------------|
| 1. How many showers are taken in your house in one day?<br>2 or less = 2 points; 3-5 = 4 points; 6 or more = 6 points |              |
| 2. How many loads of laundry does your family do each week?<br>2 or less = 2 points; 3-5 more = 6 points              |              |
| 3. Is your toaster plugged in, even when you are not using it?<br>yes = 2 points; no = 1 point                        |              |
| 4. Does your home have an air conditioner?<br>yes = 2 points; no = 1 point  |              |
| 5. Do you recycle?<br>yes = 1 point; no = 3 points  |              |
| 6. Do you compost?<br>yes = 1 point; no = 3 points  |              |
| 7. Do any of your taps or hoses leak?<br>yes = 3 points; no = 1 point   |              |
| 8. Does anyone in your home leave lights on in rooms even when no one is there?<br>yes = 3 points; no = 1 point       |              |
| 9. Is your computer turned off when not in use?<br>Yes = 1 point; no = 2 points                                       |              |
| 10. How many bags of garbage do you throw out each week?<br>1 = 1 point; 2-3 = 3 points; 4 or more = 5 points         |              |
| <b>Total</b>  |              |

Add up your score.

What is your score? \_\_\_\_\_

If your score was 12, congratulations! You and your family are as green as Kermit the Frog.

If your score was 13-18, you and your family are fairly green.

If your score was 19-27, you and your family have some work to do.

If your score was 28-30, you and your family have some improvement to do.

### Simplified Ecological Footprint Calculator

| Questions  | Score |
|--|-------|
| 1. How many showers do you have a day, and how long are they?<br>For a less than 5-minute shower, score 3; for 5–10 minute shower, score 6; for more than 10-minute shower, score 9. Multiply by the number of showers you take a day. |       |
| 2. How many plates of food do you eat every day?<br>Score one point if you have one plate for each of the three meals, add point for each plate beyond that.   |       |
| 3. How much of your 'stuff' do you use every day?<br>Score one point for every thing you use your 'stuff'; that's every time you use a video game, basketball, iPods, cell phone, everything!  |       |
| 4. How many times a week do you go shopping?<br>It doesn't matter if you bought anything; how many times were you in a store or buying online? Score one point each time you went shopping.  |       |
| 5. Do you live in a house or an apartment?<br>1 point for an apartment, 2 for a small house, 3 for a large house. If you have more than 1 (e.g. a cabin) be sure to count that too.  |       |
| 6. How many times do you ride in a car or bus a day?<br>Score one point each time you ride in a vehicle.   |       |
| 7. How many times do you ride your bike or walk a day?<br>Subtract one point for each time you ride or walk.   | Minus |
| <b>Total</b>   |       |

Add up your score. What is your score? \_\_\_\_\_

If you scored 1-5 points, you have an ecological footprint of one.

If you scored 6-10 points, you have an ecological footprint of two.

If you scored 11-15 points, you have an ecological footprint of three.

If you scored 16-20 points, you have an ecological footprint of four.

If you scored 21-25 points, you have an ecological footprint of five.

If you scored 26-30 points or more, you have an ecological footprint of six!

### Activity Three


## Calculate your Footprint Online

There are numerous websites that we can use to plug in numbers, or answer questions that calculate our CO<sub>2</sub> emissions. Most of these are from other countries and have different conditions than we have in Canada. Nonetheless, they give us an indication on the impact we are having. Some even give us an indication that if we improve on say, turning out the lights when we leave a room, what the benefit would be.



### Check some of these out!

#### *Ecological Footprint Quiz from the Centre for Sustainable Economy*


This online application asks you questions in four different areas: carbon, housing, food and goods and services. It estimates the area of land and ocean required to support your consumption of energy, housing, food, goods and services and assimilate your wastes. As you change the default answers to reflect your particular situation, you can watch your footprint in terms of global hectares change.  <http://www.myfootprint.org/>

#### *Best Foot Forward – Sustainability Consultants*


This is a simple calculator from a consulting company based in the United Kingdom. By changing some of the options, you can watch the estimates of your global footprint grow or shrink.

 <http://www.bestfootforward.com/resources/ecological-footprint/>


#### *The CO<sub>2</sub> Calculator – Urban Environmental Management*

This calculator looks solely at the use of electrical appliances and automobiles and the resulting CO<sub>2</sub>. It is based on the situation in Japan but shows how the impact that appliances we use everyday have on the environment. By playing around with various measures, we can see which appliances tend to have larger impacts.  <http://www.gdrc.org/uem/co2-cal/co2-calculator.html>

#### *A Student's Guide to Global Climate Change – United States Environmental Protection Agency (EPA)*

This calculator shows the amount of CO<sub>2</sub> that can be prevented from entering the atmosphere if you undertake certain actions. It measures what you do already and what you could save if you change some of your habits and behaviours.  <http://www.epa.gov/climatechange/kids/calc/index.html>

#### Zero Footprint Youth Calculator

This simple calculator has you answer questions on the general categories of travel, food, housing, goods and wastes to calculate CO<sub>2</sub> emissions. It also gives you the opportunity to commit to goals to reduce CO<sub>2</sub> and compare yourself to other participants. This site even provides an opportunity to join a discussion forum.  [www.zerofootprintkids.com](http://www.zerofootprintkids.com)

**Activity Four*****Demonstrating the Greenhouse Effect*****What you need:**

- Thermometer
- Plastic bag
- Tape

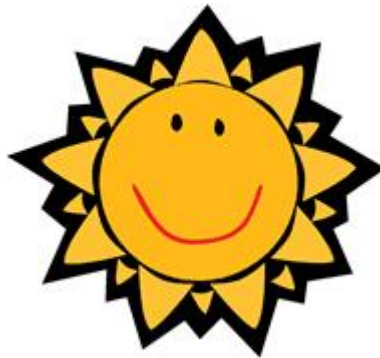
**What to do:**

- Take a thermometer and lay it outside in a nice sunny place for five minutes.
- Read the temperature and record.
- Take a clear plastic bag. Puff out the bag so it has a lot of air inside it. Put in the thermometer and then seal the bag with tape and leave it in the sun for five minutes.
- Read the thermometer – did the temperature go higher?

| Activity                                   | Temperature Reading |
|--|---------------------|
| Thermometer sitting in sun                 |                     |
| Thermometer sitting in inflated bag in sun |                     |

**What you found out:**

The temperature goes higher when the thermometer is in the bag because the layers of plastic trap the heat from the sun inside. This is the same way that greenhouse gases trap the heat from the sun in our atmosphere, making our planet warmer.



### Activity Five

## Green Tips – The Situation

Record at least three tips that you learned in this unit and that you can share with others.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

### Online Resources

A resource for going green – [www.carbondiet.ca](http://www.carbondiet.ca)

A billion acts of green – <http://www.earthday.org/takeaction/>

### Games and Activities

[www.epa.gov/climatechange/kids/index.html](http://www.epa.gov/climatechange/kids/index.html)

[http://www.ecokids.ca/pub/games\\_activities/climate\\_change/index.cfm](http://www.ecokids.ca/pub/games_activities/climate_change/index.cfm)

## Unit 2: Energy Conservation

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### Activity 1

### Energy Assessment

See how you do in terms of energy conservation.

| Question   | Answers (circle your answer)   |
|--|--|
| 1. How many gadgets (such as game players, iPods, cell phones, etc.) that you use require frequent recharging?                       | <ul style="list-style-type: none"> <li>a. None</li> <li>b. 1</li> <li>c. 2-3</li> <li>d. 4 or more</li> </ul>  |
| 2. How often do you walk or bike somewhere instead of riding in a car?   | <ul style="list-style-type: none"> <li>a. Never</li> <li>b. Once a month</li> <li>c. Once a week</li> <li>d. Daily</li> </ul>  |
| 3. How many items at home are always plugged in and operating (such as your cable box/PVR, computer, refrigerator, washing machine)? | <ul style="list-style-type: none"> <li>a. None</li> <li>b. 1</li> <li>c. 2-3</li> <li>d. 4 or more</li> </ul>  |
| 4. How many items at home have standby lights that are always on (such as coffee maker, TV, DVD, game console)?                      | <ul style="list-style-type: none"> <li>a. None</li> <li>b. 1</li> <li>c. 2-3</li> <li>d. 4 or more</li> </ul>  |
| 5. When you look in your refrigerator, how long do you have it open?   | <ul style="list-style-type: none"> <li>a. Not long, I quickly get what I want and shut the door.</li> <li>b. I often have to stand and look for what I want which takes some time.</li> <li>c. While I stand and look for what I want, I forget what I'm doing.</li> <li>d. I leave it open in case I need to get something else.</li> </ul> |
| 6. How good would you say you are about turning off lights when you are the last person to leave a room?                             | <ul style="list-style-type: none"> <li>a. I rarely or never turn off lights.</li> <li>b. Sometimes I turn off lights.</li> <li>c. I turn off lights most of the time.</li> <li>d. I always turn off lights.</li> </ul>   |

|   |  |
|---|--|
| 7. On average, how long are the showers you take?   | <ul style="list-style-type: none"> <li>a. 3 minutes or less</li> <li>b. 4-6 minutes</li> <li>c. 7-10 minutes</li> <li>d. longer than 10 minutes</li> </ul>   |
| 8. When the air conditioner is on at home, at what temperature is the thermostat set?     | <ul style="list-style-type: none"> <li>a. 18°C (66°F) or lower</li> <li>b. 19-21°C (67-70°F)</li> <li>c. 22-24°C (71-75°F)</li> <li>d. 25°C (76°F) or higher</li> <li>e. We don't have an air conditioner</li> </ul> |
| 9. When the heat is on at home, at what temperature is the thermostat set?                | <ul style="list-style-type: none"> <li>a. 23°C (74°F) or higher</li> <li>b. 21-22°C (70-73°F)</li> <li>c. 19-20°C (66-69°F)</li> <li>d. 18°C (65°F) or lower</li> </ul>  |
| 10. How many energy efficient products or appliances do you or your parents have at home? | <ul style="list-style-type: none"> <li>a. None</li> <li>b. 1</li> <li>c. 2-3</li> <li>d. 4 or more</li> </ul>  |
| 11. How many times a day do you think to yourself, "I'm using energy by doing this"?      | <ul style="list-style-type: none"> <li>a. Never</li> <li>b. Once or twice a day</li> <li>c. 3-4 times a day</li> <li>d. 5 times or more</li> </ul>   |
| 12. How many vehicles (cars and trucks) do your family own?                               | <ul style="list-style-type: none"> <li>a. 1</li> <li>b. 2</li> <li>c. 3</li> <li>d. 4</li> </ul>   |

### Scoring

For Questions 1, 3, 4, 5, 7 and 12: a=1, b=2, c=3, d=4

For Questions 2, 6, 8, 9, 10 and 11: a=4, b=3, c=2, d=1

What was your score? \_\_\_\_\_

If you scored 12-18, you are power smart! Congratulations!

If you scored 19-29, you are power savvy but need some work.

If you scored 30-39, you have lots of opportunity to improve.

If you scored 40-48, you need a lot of work!

## Activity Two

### *How Much Does it Cost to Run My Gadgets?*

By doing some simple mathematic calculations, you can find out what it costs to operate your favourite electronic gadgets, like your iPod, cell phone or game console. From there, you can figure out what that contributes in terms CO<sub>2</sub> emissions generally. Note the difference between emissions produced by coal-fired plants and hydropower.

#### **Step One**

Determine the wattage the device uses – The easy way is to read the labels on the device; wattage is commonly indicated on a majority of electronic devices. Or, if you have a plug load analyzer that reads wattage, you can measure the wattage used. These devices are typically available at hardware stores or your local electrical utility provider.

#### **Step Two**

Convert watts of your device to kilowatts by multiplying wattage by 0.001.

$$\mathbf{W \times (0.001) = kW}$$

#### **Step Three**

Determine daily usage – Multiply the kilowatts by the number of hours the device is powered on per day.

$$\mathbf{kW \times Hrs = \text{daily usage}}$$

#### **Step Four**

Determine daily cost of usage – Multiply the daily usage number by the cost of energy from your local power utility. The cost is generally given per kilowatt hours (kWh).

$$\mathbf{(kW \times Hrs) \times \$ \text{ per kWh} = \text{daily cost of energy}}$$

#### **Step Five**

Calculate the cost per week, per month and per year.

$$\mathbf{\text{Week} - \text{daily cost of energy} \times 7 \text{ days} = \text{weekly cost of energy to power device}}$$

$$\mathbf{\text{Month} - \text{daily cost of energy} \times 30 \text{ days} = \text{monthly cost of energy to power device}}$$

$$\mathbf{\text{Year} - \text{daily cost of energy} \times 365 \text{ days} = \text{yearly cost of energy to power device}}$$

#### **Step Six**

Calculate CO<sub>2</sub> produced daily.

This will depend on the source of your utility's power. If they burn coal, it will range from 800 to 1,150 grams for each kilowatt hour; if they use hydroelectric power, it will be 4 grams for each kilowatt hour. If you don't know the source, you can calculate a range.

Go back to Step Three for your daily usage, and calculate grams of CO<sub>2</sub> produced.

For coal powered: kWh per day x 1150 grams CO<sub>2</sub> per kWh = daily production of CO<sub>2</sub> in grams



For hydro: kWh per day x 4 grams per kWh = daily production of CO<sub>2</sub> in grams

**Step 7**

Calculate CO<sub>2</sub> produced weekly, monthly, yearly.

Using the daily CO<sub>2</sub> calculation from Step 6, multiply it by the number days.

**Week – daily CO<sub>2</sub> emission x 7 days = weekly CO<sub>2</sub> emissions in grams**

**Month – daily CO<sub>2</sub> emission x 30 days = monthly CO<sub>2</sub> emissions in grams**

**Year – daily CO<sub>2</sub> emission x 365 days = yearly CO<sub>2</sub> emissions in grams**

For the monthly and yearly amounts, you may wish to convert grams into kilograms by multiplying it by 0.001.

| Step | Calculation  | Result  |
|------|--|---------|
| 1    | Wattage of device  | W       |
| 2    | Convert watts to kilowatts – Wattage of device x 0.001 = kW  | kW      |
| 3    | Daily usage in kilowatt hours – Number of hours used x kW= kWh   | kWh     |
| 4    | Cost of daily usage in dollars – kWh x \$ per kWh = \$   | \$ /kWh |
| 5    | Weekly Cost in dollars – \$/day x 7 days/week = \$   | \$ /kWh |
|      | Monthly Cost in dollars – \$/day x 30 days/month = \$  | \$ /kWh |
|      | Yearly Cost in dollars – \$/day x 365 days/year = \$   | \$ /kWh |
| 6    | Daily CO <sub>2</sub> emissions in grams from coal-fired power plants<br>kWh/day x 1150 g/kWh = g of CO <sub>2</sub> /day  | G       |
|      | Daily CO <sub>2</sub> emissions in grams from hydropower<br>kWh/day x 4 g/kWh = g of CO <sub>2</sub> /day  | G       |
| 7    | Weekly CO <sub>2</sub> emissions in grams from coal-fired power plants<br>g of CO <sub>2</sub> /day x 7 days/week = g of CO <sub>2</sub> /week                       | G       |
|      | Weekly CO <sub>2</sub> emissions in grams from hydropower<br>g of CO <sub>2</sub> /day x 7 days/week = g of CO <sub>2</sub> /week                                    | G       |
|      | Monthly CO <sub>2</sub> emissions in grams from coal-fired power plants<br>g of CO <sub>2</sub> /day x 30 days/month x 0.001 grams/kg = kg of CO <sub>2</sub> /month | Kg      |
|      | Monthly CO <sub>2</sub> emissions in grams from coal-fired power plants<br>g of CO <sub>2</sub> /day x 30 days/month x 0.001 grams/kg = kg of CO <sub>2</sub> /month | Kg      |
|      | Yearly CO <sub>2</sub> emissions in grams from coal-fired power plants<br>g of CO <sub>2</sub> /day x 365 days/year x 0.001 grams/kg = kg of CO <sub>2</sub> /year   | Kg      |
|      | Yearly CO <sub>2</sub> emissions in grams from hydropower<br>g of CO <sub>2</sub> /day x 365 days/year x 0.001 grams/kg = kg of CO <sub>2</sub> /year                | kg      |

### Activity Three

## *Energy Audits, or How to be an Energy Sleuth*

A home energy audit is a great way to identify areas where your house is losing energy – and then you can take steps to fix the problems. An audit can be done by a professional certified home energy auditor who will use high-tech gadgets to do a room-by-room examination of your home and find every opportunity to save energy and money. Here, we are going to focus on air leaks, as locating air leaks in your home and fixing them is the single most important thing you can do to reduce your energy consumption. The U.S. Department of Energy estimates up to 30 per cent of your heat or air conditioning is lost through air leaks. The fewer drafts you have, the more efficiently you'll be able to heat and cool your home, and the more comfortable your home will be.



While you're inspecting your home, take notes on the opportunities you discover and mark them with painter's tape. A form has been provided for you. Fill out the first two columns and the third one if you know how to resolve the problem. The rest of the columns will be filled out in the next activity.

1. Undertake a visual inspection outside your house. Look for areas where two different building materials meet including:
  - All exterior corners
  - Outdoor water faucets
  - Where siding and chimneys meet
  - Where the foundation and the siding meet

Check the exterior caulking around doors and windows, and see whether exterior storm doors and primary doors seal tightly.

2. Undertake a visual inspection inside your house. Check around the following areas for any cracks and gaps that could cause air leaks:
  - Electrical outlets
  - Switch plates
  - Door and window frames
  - Plumbing fixtures and pipes
  - Electrical wires
  - Baseboards
  - Weather-stripping around doors
  - Fireplace dampers
  - Attic hatches

- Ceiling fixtures
- Wall- or window-mounted air conditioners
- Cable TV and phone lines
- Where dryer vents pass through walls
- Vents and fans

Check to see if the caulking and weather-stripping are applied properly, leaving no gaps or cracks, and are in good condition. Check for indoor air leaks, such as gaps along the baseboard or edge of the flooring and at junctures of the walls and ceiling.

Inspect windows and doors for air leaks. See if you can rattle them, since movement means possible air leaks. If you can see daylight around a door or window frame, then the door or window leaks. Check the storm windows to see if they fit and are not broken.

Look for dirty spots on your ceiling paint and carpet, which may indicate air leaks at interior wall/ceiling joints and wall/floor joists, and caulk them.

3. Undertake a building pressurization test. This will help you locate leaks as this test increases infiltration through cracks and leaks, making them easier to detect:
  - Choose a cool windy day for this test as it is easier to feel the cold air rushing in, although some leaks are so big they can be detected anytime.
  - Turn off all combustion appliances such as gas burning furnaces and water heaters.
  - Shut all windows, exterior doors and fireplace flues.
  - Turn on all exhaust fans that blow air outside, such as bathroom fans or stove vents, or use a large window fan to suck the air out of the rooms.
  - Light an incense stick and run it along the most common places for air leaks carefully avoiding drapes, curtains or anything flammable. Wherever the smoke wavers or is sucked out of or blown into the room, there's a draft. If the smoke drifts up in almost a straight line, you have no air leaks. You can also use a damp hand to locate leaks; any drafts will feel cool to your hand.

Other air leak detection methods include the following:

- Shine a flashlight at night over all potential gaps while a partner observes the house from outside. Large cracks will show up as rays of light. Note that this is not a good way to detect small cracks.
- Shut a door or window on a piece of paper. If you can pull the paper out without tearing it, you're losing energy.




## Activity Four


### Putting your Energy Audit to Work

So now you should have a good list of leaks and drafts that need to be addressed. What materials do you use for resolve the issues?

#### *Caulk and Weather-stripping*

To address the drafts, you can use caulk (also referred to as 'caulking') or weatherstripping. *Caulk* is a flexible material used to seal air leaks through cracks, gaps or joints less than quarter-inch wide between stationary building components and materials. For some gaps, you can use expanding spray foam. For components that move like doors and opening windows, weatherstripping is the appropriate material.

Caulking compounds vary in strength, properties and prices. Water-based caulk can be cleaned with water, while solvent-based compounds require a solvent for cleanup. See the table in the link below for information about common caulking compounds; this will also give you some good advice in applying caulking:  <http://energy.gov/energysaver/articles/caulking>

Alternatively, check out this excellent publication from Natural Resources Canada, called *Keeping the Heat In*.  <http://oee.nrcan.gc.ca/publications/residential/8584>

When deciding how much caulking to purchase, consider that you'll probably need a half-cartridge per window or door and four cartridges for the foundation sill of an average home. Caulking compounds can also be found in aerosol cans, squeeze tubes and ropes for small jobs or special applications.

*Weatherstripping* is as varied as caulking. For selecting and using weatherstripping, check out:

 <http://energy.gov/energysaver/articles/weatherstripping>

 <http://oee.nrcan.gc.ca/publications/residential/8584>

#### **Other drafts and leaks**

*Electrical outlets and switch plates* – to help stop air leaks here, foam gaskets are available. They are inexpensive and easy to fit.

*Old windows and doors* – you may also wish to consider replacing your old windows and doors with newer, high-performance ones. If new factory-made doors or windows are too costly, you can install low-cost plastic sheets over the windows, particularly for the winter. Cover single-pane windows with storm windows or replace them with more efficient triple-pane low-emissivity windows.



*Kitchen exhaust fan* – cover your fan to stop air leaks when not in use.



Here are some tips and advice for the use of some of the materials:

### **Tips for Caulking**

To caulk, read and follow the instructions on the compound cartridge. Caulking can be tricky, so here are some tips to make it easier:

- The best time to apply caulking is during dry weather when the outdoor temperature is above 5°C. Low humidity is important during application to prevent cracks from swelling with moisture. Warm temperatures are also necessary so the caulking will set properly and adhere to the surfaces.
- For good adhesion, all areas to be caulked should be clean and dry. Remove any old caulking and paint by using a putty knife, large screwdriver, stiff brush or special solvent.
- Hold the caulking gun at a forty-five degree angle for get deep into the crack. You know you've got the right angle when the caulking is immediately forced into the crack as it comes out of the tube.
- Apply caulking in one straight continuous stream if possible. Avoid stops and starts.
- Make sure the caulking sticks to both sides of a crack or seam.
- To avoid applying too much caulking compound, release the trigger before pulling away the gun.
- If caulking oozes out of a crack, use a putty knife to push it back in.
- Be generous. Don't skimp. If the caulking shrinks, reapply it to form a smooth bead that will seal the crack completely.

### Tips for Weatherstripping

Weatherstripping supplies and techniques range from simple to the technical. To install, consult the instructions on the weatherstripping package. Here are some tips:

- Consider the area to be weatherstripped and choose a type of weatherstripping that will withstand the friction, weather, temperature changes and wear and tear associated with its location. For example, when applied to a door bottom or threshold, weatherstripping could drag on carpet or erode due to foot traffic. Weatherstripping in a window sash must accommodate the sliding of panes, up and down, sideways or out. The weatherstripping you choose should seal well when the door or window is closed but allow it to open freely.
- Choose a product for each specific location. Felt and open-cell foams tend to be inexpensive, susceptible to weather, visible and inefficient at blocking airflow. However, the ease of applying these materials may make them valuable in low-traffic areas. Vinyl, which is slightly more expensive, holds up well and resists moisture. Metals (bronze, copper, stainless steel and aluminum) last for years and are affordable.
- Apply weatherstripping to clean, dry surfaces in temperatures above 4° C.
- Before making a cut, measure the area to be weatherstripped twice before making a cut.
- Apply weatherstripping snugly against both surfaces. The material should compress when the window or door is shut.
- When weatherstripping doors:
  - Make sure to choose the appropriate door sweeps and thresholds for the bottom of the doors.
  - Make sure that weatherstripping is thick enough to press tightly between the door and the doorjamb when the door closes, but without making it difficult to shut.
  - Weather-strip the entire doorjamb, applying one continuous strip along each side and making sure the weatherstripping meets tightly at the corners.
- For air sealing windows, apply weatherstripping between the sash and the frame. The weatherstripping shouldn't interfere with the operation of the window.



## Activity Five

### *Energy in Transportation*

About 85 per cent of households own a car, and more than half of those have two or more motor vehicles. Close to 60 per cent of automobile trips are taken for short distances that could be comfortably made by walking and biking. We need to keep in mind every kilometre we drive consumes fuel, costs us money and produces greenhouse gas emissions. So the less we drive, the lighter our impact, the smaller our footprint.





Unfortunately, our society seems to be addicted to automobiles; our cities have been built to accommodate cars rather than people. Just as we have days dedicated to issues like turning out the lights and buying nothing, maybe we should have a day to turn off the car.

We are going to track our fuel use and subsequent CO<sub>2</sub> emissions over the course of a week. However, first we need to know our vehicle's fuel efficiency, or fuel economy rating.

#### **Calculating Fuel Economy Rating**

You can figure out your fuel economy rating a couple of different ways:

1. You could look it up online at:  <http://www.fueleconomy.gov/feg/findacar.shtml>. But since this is an American website, the fuel efficiency ratings are reported as miles per gallon (mpg). In Canada, we use litres per 100 kilometres (l/100km). To convert, you can:
  - a) Do an elaborate equation of converting gallons to litres, taking the reciprocal (that is, we want to report it as litres per 100 kilometres, not kilometres per litre), and then convert miles to kilometres ( <http://www.wikihow.com/Convert-MPG-to-Liters-per-100km>).
  - b) Simply divide 235.214 by the number of miles per gallon.
2. You could look at your vehicle specifically:
  - a) Fill the vehicle's gas tank completely and write down the vehicle's odometer reading in kilometres.
  - b) When it's time to refuel, fill the tank completely and record the number of litres it took to fill the tank and the vehicle's new odometer reading.
  - c) Subtract the new odometer reading from the previous one and come up with the distance travelled.
  - d) Divide the number of litres it took to fill the tank by the distance (km) travelled.
  - e) Multiply this value by 100. The result is the vehicle's fuel consumption of litres per 100 kilometres for that driving period.

### Calculating Fuel Use and CO<sub>2</sub> Emissions

Keep track of the number of kilometres you or your parents drive. Once you know the fuel efficiency or the fuel economy rating (as above) you can calculate how many litres you or your parents used that day. From there you can calculate CO<sub>2</sub> emissions. For every litre of gasoline used, about 2.3 kilogram of CO<sub>2</sub> are produced; for every litre of diesel fuel, about 2.7 kilogram of CO<sub>2</sub> are produced. At the end of the week, check for opportunities to break the car habit, and lower your emissions. Sometimes it means that we need to be a little more organized, or get up a few minutes earlier. But it is the green thing to do.

| <b>Day of the Week</b> | <b>Kilometres driven</b> | <b>Fuel used in litres</b><br>kilometres x fuel efficiency<br>(litres/100 kilometres) | <b>CO<sub>2</sub> emissions in kilograms</b><br>litres x 2.3 kilograms/litre<br>(for gasoline) |
|------------------------|--------------------------|---|--|
| <b>Monday</b>          |                          |   |  |
| <b>Tuesday</b>         |                          |   |  |
| <b>Wednesday</b>       |                          |   |  |
| <b>Thursday</b>        |                          |   |  |
| <b>Friday</b>          |                          |   |  |
| <b>Saturday</b>        |                          |   |  |
| <b>Sunday</b>          |                          |   |  |

You can participate on an online fuel calculator on this site:

 <http://oee.nrcan.gc.ca/transportation/tools/fuel-calculator/index.cfm?attr=8>

## Activity Six

### *Trip Planning*

If you are planning a driving trip, you might want to look at this site:

 <http://www.fueleconomy.gov/trip/default.aspx>

Here you can put in your vehicle information and get your fuel efficiency and then put in your starting point and destination to find out distances (in miles), fuel (in American gallons) and cost, using American prices. Compare making the trip with different vehicles that your family might own. Or try comparing the fuel use and cost between a small fuel-efficient car and a larger SUV.

List some of your findings below:

## Activity Seven

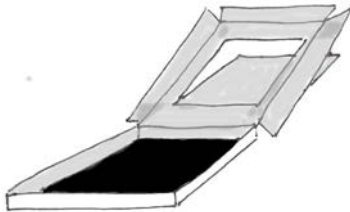
# Alternative Energy – Solar Power Ovens

### What you need

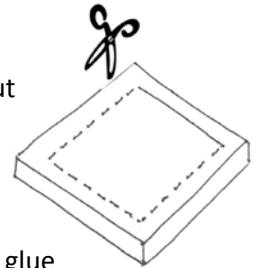
- Large pizza box
- Aluminium foil – several feet
- Black construction paper – 2 sheets
- Plastic wrap – 3 feet
- Stick or piece of dowel
- Marker
- Scissors
- Ruler
- Tape
- Glue

### What to do

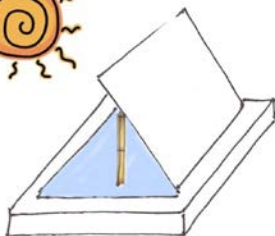
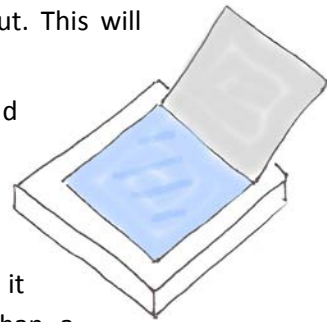
1. Assemble the pizza box.
2. Close the box. On the lid, draw a square that takes up most of the lid. Cut along three edges of the square, leaving the fourth side nearest the hinge of the box **UNCUT**. This will create a 'door' when folded back.



3. Place foil shiny side up over all the **INSIDE** surfaces of the box. You can glue the foil down, or fold over the edge of the box.
4. Place black construction paper on the bottom of the box, over top the aluminium foil. Black attracts the heat.



5. Glue foil to the inside of this 'door' with the shiny side out. This will become a reflector that reflects the sunshine into your oven.
6. Seal the opening created by your door with plastic wrap and secure it with tape. This plastic will keep the heat inside your oven.



Your oven is ready to use. Solar ovens can reach about 200°C, but it will take longer to cook items than a conventional oven. Keep an eye on the sun and make sure your oven is always in direct sunlight.

### **Using Your Solar Oven to Cook S'mores**

1. Place two graham crackers on the black construction paper.
2. On one cracker, set a square of chocolate and on the other place a large marshmallow.
3. Take your oven outside and position it so that it is getting the most sun possible.
4. Use your stick or dowel to prop open the door so that the sun bounces off your reflector onto your plastic wrap opening.
5. Keep your oven in the sun and cook until the chocolate and marshmallow have melted.

## Activity Eight

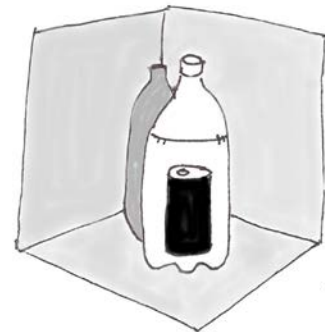
# Solar Hot Water Heater

### What you need

- 2 litre clear plastic pop bottle
- 335 ml aluminum pop can
- Black paint
- Corrugated cardboard box approx. 40 cm x 40 cm x 40 cm
- Aluminum foil or reflective plastic from inside chip bags
- Scissors
- Knife
- Glue
- Tape
- Thermometer

### What to do

1. Cut the top off the plastic pop bottle, 2.5 centimetres (1 inch) below where it becomes straight.
2. Cut four tabs 1.2 centimetres (1/2 inch) wide x 2.5 centimetres (1 inch) long into the top.
3. Paint the aluminum can with black paint.
4. Put the can filled with water into the plastic bottle bottom and insert top with tabs folded out.
5. To make the reflector, start with your corrugated cardboard box.
6. Cut off the top and two sides of the box. Cover the two remaining sides and bottom with aluminum foil or potato chip bags with silver coating facing out (use glue and tape to adhere to cardboard).
7. Place bottle on reflector and place in sun. Keep bottle shadow centered on back of solar panel.
8. Leave for the better part of a sunny day and then use the thermometer to check how hot your water is. Be careful as it can get quite hot!



**Activity Nine**

***Green Tips – Energy Conservation***

Record at least three tips that you learned in this unit and that you can share with others.

1. \_\_\_\_\_

2. \_\_\_\_\_

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10. \_\_\_\_\_

 **Online Resources**

National Geographic Great Energy Challenge

[www.greatenergychallenge.com](http://www.greatenergychallenge.com)

Shell Canadian Geographic Energy Diet Challenge

<http://energydiet.canadiangeographic.ca>

Solar energy video

<http://video.nationalgeographic.com/video/player/environment/energy-environment/solar-power.html>

Wind power

[www.eia.doe.gov/kids/energy.cfm?pages=wind\\_home-basics](http://www.eia.doe.gov/kids/energy.cfm?pages=wind_home-basics)

<http://magma.nationalgeographic.com/ngexplorer/pioneer/0809/articles/mainarticle.html>

Games, Activities, Quizzes and Cool Facts

[www.eere.energy.gov/kids/](http://www.eere.energy.gov/kids/)

[http://www.ecokids.ca/pub/games\\_activities/energy/index.cfm](http://www.ecokids.ca/pub/games_activities/energy/index.cfm)

[www.alliantenergykids.com/007011](http://www.alliantenergykids.com/007011)



## Unit 3: Waste

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### Activity 1

### *Garbage Audit*

Numerous groups, including cities to see how well their waste reduction and recycling programs are working, do waste audits. Let's look at your garbage and do a garbage audit. You can do this at home, school or your club meetings. It is messy business but by looking at what is in our garbage, we can see what the opportunities are to improve.



#### What you need

- Bags of garbage – it is useful to know how many days of garbage is in a bag
- Drop sheet, tarp or even old plastic shower curtain
- Gloves (latex or nitrile gloves are recommended)
- Garbage bags
- Weigh scales (optional)

#### What to do

- Put on the gloves.
- Weigh each bag and record (optional).
- Lay out the drop sheet, tarp or shower curtain on the floor.
- Dump a bag of garbage onto the drop sheet.
- CAREFULLY start to go through the garbage. If you see anything sharp or dangerous, DO NOT pick it up. Leave it alone and ask an adult what to do.
- Sort by pulling out everything you think should have been either recycled or reused. Put everything that could have been recycled to the left of the pile of garbage and keep the actual waste to the right.
- Sort the recyclable materials into separate piles of paper, yard or food waste, glass, plastic and rubber.
- Put each of these piles into separate garbage bags.
- Reweigh the bag with the actual garbage and record (optional).
- Recycle and reuse.

**What you found out**

- How many bags did you fill with stuff that could have been recycled?

- If you weighed the full garbage bags, what is the difference in weight at the beginning and at the end (actual waste)?

- If you know how many days each of the original bags of garbage represents, then you can calculate how much garbage you can divert by using the 'R's over a week. How much garbage could you recycle?

- What other 'R's could be been used to reduce the actual waste?

**Activity Two*****The 'R's of Being Green***

Let's look at the opportunities available to reduce our waste. Some like recycling are easier to implement than others like re-thinking. Let's come up with ideas on what we can individually do.

Over the next month, what will you do for each of the 'R's?

| <b>The 'R's of Being Green</b> | <b>What I can do</b> |
|--------------------------------|----------------------|
| <b>Re-think</b>                |                      |
| <b>Refuse</b>                  |                      |
| <b>Reduce</b>                  |                      |
| <b>Reuse</b>                   |                      |
| <b>Repair</b>                  |                      |
| <b>Recycle</b>                 |                      |

### Activity Three

## Making Paper

By creating paper from old paper, you will be reducing, reusing and recycling – reducing the amount of new paper you need, reusing an existing product and recycling the paper fibres. Depending on what you make with your paper pulp, you might also be rethinking.

#### What you need

- Scrap paper – approximately 6 sheets; try using junk mail, but don't use the glossy stuff
- Warm water – 1.2 l (5 cups)
- Cornstarch – 45 ml (3 Tbsp)
- Bucket – an ice cream pail would work
- Large spoon
- Metal strainer
- Bowl
- Wire whisk or blender
- 1 old newspaper
- Heavy book

#### What to do

1. Rip up your paper into tiny pieces. Keep in mind that the smaller the pieces, the faster the papermaking process.
2. Fill your bucket with the warm water and drop all paper pieces into the water.
3. Stir the paper into the water, making sure every piece is completely soaked.
4. Soak paper for about 20 minutes.
5. Scoop all the paper into the metal strainer. Be careful not to push down on it.
6. Put the wet paper into a bowl and mash it with a whisk, stirring hard until the paper looks like oatmeal. Alternatively, put it in a blender and mix until pulpy.
7. Put three tablespoons of cornstarch in the bowl and add some hot water. Stir again until the mixture is mushy.
8. Lay out a sheet of newspaper, a little bigger than you want your paper to be.
9. Strain the paper mixture again and spoon it onto a sheet of newspaper.
10. Using your hand, press the mixture into a thick sheet. If you find any holes, pinch them closed with your fingers.
11. Place another piece of newspaper on top of the paper mixture. Place a book or a heavy object on top of the newspaper to flatten your paper.
12. Remove the heavy object and the top sheet of the newspaper.
13. Let the paper dry, probably overnight.
14. Once fully dried, use it for a letter, or a card.

## Activity Four

### Repurpose

This activity is focused on reusing or repurposing what might have been waste. The opportunities here are endless from making a bird feeder from a grapefruit peel to making a pair of earrings from a computer motherboard to transforming a pallet to a coffee table. You can gain inspiration from the many clever and creative people who post their ideas and projects on the Internet. Try searching under “repurposed crafts” or “recycled crafts”. Alternatively, you could join social networking-based websites such as Pinterest or StumbleUpon. **Caution: Both searching for ideas and making the crafts can be habit forming!**

#### Websites

Clever Uses for Common Household Items

<http://www.ways2gogreen.com/CleverReusesForCommonHouseholdItems1.html>

50+ Repurposed Project Ideas

<http://savedbylovecreations.com/2012/02/50-great-repurposing-ideas.html>

25 Things to do with Empty Plastic Bottles

<http://www.bystephanielynn.com/2012/04/25-things-to-do-with-empty-plastic.html#>

59 Crafts and Projects using Recycled, Repurposed, and Upcycled Cans

<http://www.bystephanielynn.com/2011/09/50-crafts-and-projects-using-recycled.html>

Recycled Crafts

<http://www.craftbits.com/recycled-crafts>

Pinterest

[www.pinterest.com](http://www.pinterest.com)

StumbleUpon

[www.stumbleupon.com](http://www.stumbleupon.com)

## Activity Five

### Shopping Bag

One thing that we can refuse and reduce is the number of plastic bags we use. One way to escape the plastic bag cycle is to take our own bags to the store. This activity has two options – you can do both, or just one.

#### Option 1

Purchase a canvas shopping bag and decorate it.

#### Option 2

Repurpose a T-shirt into a shopping bag.

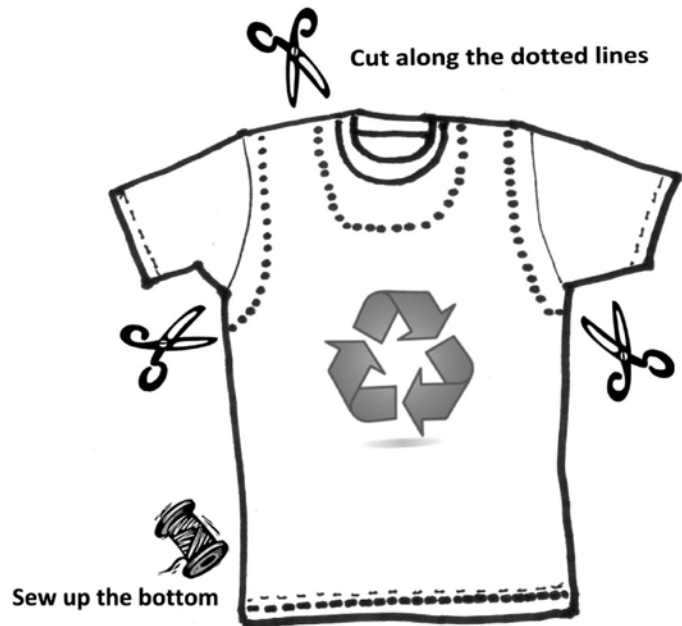
#### What you need

Old T-shirt, scissors, thread, needle (or sewing machine).

#### What to do

- Lay out your T-shirt.
- Cut off the neck binding and the sleeves.
- Turn it inside out and sew up the bottom hem.
- To make it stronger, turn right side out and sew again.

Viola – a repurposed shopping bag!



#### Option 3

Repurpose a pillowcase into a shopping bag.

#### What you need

Pillowcase, scissors, thread, needle.

#### What to do

- Lay out a pillowcase.
- Cut corners to create a handle.
- Sew the handle together.

**Activity Six**

## *The Story of Stuff*

Watch the movie called *The Story of Stuff* (21:25).

<http://www.storyofstuff.org/movies-all/story-of-stuff/>

Or read the script

<http://www.storyofstuff.org/2011/03/14/story-of-stuff/>



**Discussion**

Would this apply to us in Canada?

What might have been overstated?

What do you think is accurate?

**Activity Five**

***Green Tips – Waste Reduction***

Record at least three tips that you learned in this unit and that you can share with others.

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9. \_\_\_\_\_

10. \_\_\_\_\_



## Online Resources

The Recycle Council of British Columbia

<http://rcbc.bc.ca/>

The Recycle Council of Alberta

<http://www.recycle.ab.ca/>

The Saskatchewan Waste Reduction Council

<http://www.saskwastereduction.ca/>

Green Action Centre – Manitoba

<http://www.greenactioncentre.ca/>

The Recycle Council of Ontario

<https://www.rco.on.ca/home>

Clean Nova Scotia

<http://clean.ns.ca/>

Recycling Guide (UK)

<http://www.recycling-guide.org.uk/>

Reusing Things: 100 Ideas of How to Reuse Commonly Thrown Away Items

<http://www.motherearthnews.com/modern-homesteading/reusing-things-zmaz76mazhar.aspx>

Games, Activities and Quizzes

[www.meetthegreens.org](http://www.meetthegreens.org)

<http://www.recyclezone.org.uk/>

<http://www.sortitout.ca/>

<http://www.epa.gov/recyclecity/index.htm>

[http://www.ecokids.ca/pub/games\\_activities/waste/index.cfm](http://www.ecokids.ca/pub/games_activities/waste/index.cfm)

[http://pbskids.org/eekoworld/index.html?load=garbage\\_recycling](http://pbskids.org/eekoworld/index.html?load=garbage_recycling)

## Unit 4: Water Conservation

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### Activity One

### *Home water audit*

How much water do you use? Do this online assessment.

 <http://www.wateruseitwisely.com/100-ways-to-conserve/home-water-audit.php>

What did you score? \_\_\_\_\_

What did you find out?



## Activity Two

### *Food Colouring Toilet Test*

As we learned from the resource guide, 70 per cent of the water we use in our homes is used in the bathroom, and toilets are the single biggest user. Let's check to see if our toilets are leaking unnecessarily.

#### What you need

- Food colouring – 10 drops

#### What to do

- Remove cover of toilet tank and add 10 drops of food colouring into tank.
- Watch the toilet bowl for about three minutes. DO NOT FLUSH.

#### What you found out

Did the water in the bowl turn colour?

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If the water turned colour that means your toilet is leaking and potentially wasting litres of water everyday. By fixing the leak, you can save water and if you pay for water, you will save money too!

### Activity Three

## Test your Showerhead

#### What you need

- Bucket – marked in one gallon (3.8 litres) increments
- Stopwatch or timer

#### What to do

- Place the bucket under your showerhead.
- Turn on the shower at the normal water pressure you use to have a shower.
- Time how many seconds it takes to fill the bucket to the one gallon (3.8 litres) mark.

#### What you found out

If it takes less than 20 seconds to reach the one gallon mark, you could benefit from a low-flow showerhead.

#### What is that?

Aerating low-flow showerheads are one of the most cost-effective water conservation measures. These showerheads reduce the flow rate of water by mixing air with the water, forming a misty spray. Older showerheads have a flow rate of 20 litres (4.6 gallons) per minute, where the more efficient ones are less than 9.5 litres (2.1 gallons) per minute.



Aerators are also available for faucets; typically, new kitchen faucets come equipped with aerators that restrict flow rates to 8.3 litres (1.8 gallons) per minute, while new bathroom faucets have ones that restrict flow rates from 5.7 to 1.9 litres (1.2 to 0.4 gallons per minute). Some aerators even come with shut-off valves that allow you to stop the flow of water without affecting the temperature.

#### Questions

So if you take a five-minute shower in a shower than had an older showerhead that used 20 litres per minute, how many litres would you be using?

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What if it had a new showerhead that used 9.5 litres per minute?

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How many litres of water would you save over the course of a year?

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**Activity Four**

***Green Tips – Water Conservation***

Record at least three tips that you learned in this unit and that you can share with others.

1. \_\_\_\_\_

2. \_\_\_\_\_

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 **Online Resources**

[www.ecokids.ca/pub/eco\\_info/topics/water/water/index.cfm](http://www.ecokids.ca/pub/eco_info/topics/water/water/index.cfm)

<http://www.monolake.org/about/waterconservation>

<http://wateruseitwisely.com/100-ways-to-conserve/indoor-tips/index.php>

<http://www.naturecanada.ca/water.html>

Clean water projects around the world – and how to help

[www.cleanwaterfortheworld.org/](http://www.cleanwaterfortheworld.org/)

Info on water and water pollution

[www.water-pollution.org.uk/](http://www.water-pollution.org.uk/)

Information on Ocean pollution

<http://www.savemyoceans.com/plastics.php>

Information on 5 Gyres

[www.5gyres.org](http://www.5gyres.org)

Games, Activities, Quizzes

[http://www.ecokids.ca/pub/eco\\_info/topics/water/water/index.cfm](http://www.ecokids.ca/pub/eco_info/topics/water/water/index.cfm)

<http://www.epa.gov/watersense/kids/games.html>

<http://www.wateruseitwisely.com/kids/>

<http://www.thewaterpage.com/water-conservation-kids.htm>

[http://water.epa.gov/learn/kids/drinkingwater/kids\\_9-12.cfm](http://water.epa.gov/learn/kids/drinkingwater/kids_9-12.cfm)

[http://pbskids.org/eekoworld/index.html?load=air\\_water](http://pbskids.org/eekoworld/index.html?load=air_water)

# Unit Five: Air Quality

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## Activity One

### *Test your Air*

#### What you need

- White recipe cards
- Vaseline

#### What to do

- Set aside one white recipe card – this will be your control or benchmark.
- Smear Vaseline on at least three other white recipe cards.
- Place the cards in different places – your room, the garage, the kitchen, the bathroom – in areas where they will not be disturbed.
- Check your cards every couple of days, comparing it to the plain white card, your control.
- Record your results on the chart on the next page.

#### What you found out

What gets stuck to the Vaseline is what you have been breathing!

#### Discussion

What could be done to address some of the issues with air quality in your home?



**Observation Record**

| Location of Card | Observations |
|------------------|--------------|
|                  | Day 2        |
|                  | Day 4        |
|                  | Day 6        |
|                  | Day 2        |
|                  | Day 4        |
|                  | Day 6        |
|                  | Day 2        |
|                  | Day 4        |
|                  | Day 6        |
|                  | Day 2        |
|                  | Day 4        |
|                  | Day 6        |



## Activity Two

### *Creating Green Cleaners*

Almost every time we use a commercial cleaner, we are introducing volatile organic compounds into the air. To be greener, and potentially healthier, we could purchase certified green cleaners, or we could make our own!

You will need measuring spoons, measuring cup, funnel and spray bottle or container (plastic or glass) with a tightly fitting lid.



#### **Glass Cleaner**

##### **What you need**

- 125 mL (1/2 cup) vinegar
- 15 mL (1 tablespoon) cornstarch
- 500 mL (2 cups) water

##### **What to do**

Carefully pour all ingredients into a spray bottle. Shake bottle gently to mix ingredients. Your glass cleaner is ready to use. For extra shine, wipe dry with a sheet of crumpled newspaper or a coffee filter.

#### **All Purpose Cleaner**

##### **What you need**

- 15 mL (1 tablespoon) baking soda
- 25 mL (2 tablespoon) vinegar
- 500 mL (2 cups) water

##### **What to do**

Combine all ingredients in a spray bottle. Shake until all the baking soda has dissolved.

#### **Bathtub Scrub Cleaner**

##### **What you need**

125 mL (1/2 cup) baking soda  
Approx 50 mL (1/4 cup) liquid detergent

##### **What to do**

With a spoon, mix enough liquid detergent into the baking soda to make a texture like frosting. Once mixed, it is ready to use. Keep covered in a plastic or glass container with a tight fitting lid.

### Activity Three

## *Understanding Acid Rain*

Sometimes it is hard to imagine what happens with acid rain. This activity is to help understand the causes and effects of acid rain.

#### What you need

- 125 mL (1/2 cup) lemon juice
- 125 mL (1/2 cup) unscented nail polish remover
- Chalk – thinner sticks are better
- Green leaves – picked as close to ground as possible
- 2 clear bowls or glasses

#### What to do

- Fill one glass or bowl with lemon juice; put the leaves in ensuring they are fully covered.
- Fill the second glass with nail polish remover, put in the chalk and watch closely.

#### What you found out

What colour are your leaves now?

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What happened when you put the chalk in the nail polish remover?

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Did bubbles form and the chalk began to fall apart?

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#### Discussion:

Both the lemon juice and nail polish remover are much stronger than acid rain, and the changes happen quickly. Actual acid rain takes years to cause damage like this. The leaves represent what happens to the trees and the chalk represents stone, which makes up our buildings and streets. Over years, acid rain will do a lot of damage to our forests, plants, towns and cities.

### Activity Four

## *Understanding Acid Rain, Part Two*

#### What you will need

- Two small plants
- Clean water
- Vinegar

#### What to do

- Put your small plants in pots and let them get established.
- In a couple of weeks, instead of watering one plant with clean water, water it with vinegar.
- Watch and record what happens to the plant over the next few weeks.



#### My Results

#### What you found out

The vinegar is a mild acid. Although it is stronger than acid rain, it has the same affect.

**Activity Five**

***Green Tips – Air Quality***

Record at least three tips that you learned in this unit and that you can share with others.

1. \_\_\_\_\_

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9. \_\_\_\_\_

10. \_\_\_\_\_

 **Online Resources**

Houseplants that help clean the air

<http://www.sustainablebabysteps.com/types-of-houseplants.html>

Games, Activities, Quizzes

<http://www.clean-air-kids.org.uk/Games/index.html>

[http://pbskids.org/eekoworld/index.html?load=air\\_water](http://pbskids.org/eekoworld/index.html?load=air_water)

[www.smogcity2.org](http://www.smogcity2.org)

<http://www.clean-air-kids.org.uk/Games/index.html>

[www.epa.gov/acidrain/education/site\\_students/index.html](http://www.epa.gov/acidrain/education/site_students/index.html)

[http://www.ecokids.ca/pub/games\\_activities/water/index.cfm](http://www.ecokids.ca/pub/games_activities/water/index.cfm)

## Unit Six: Food Production

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### Activity One

### *Where is our food coming from?*

In today's world, we get food coming to our stores from all over the world. Many stores will display the country of origin, or even the province or region, for fruit and vegetables. Packaged food will list where the product is made, but not necessarily where the ingredients are grown. Be careful with the wording 'Made in Canada' and 'Product of Canada', which mean two different things. Product of Canada indicates that 98% of the ingredients were grown in Canada; Made in Canada means that the product was manufactured here but the ingredients could be from somewhere else. A maple leaf symbol is reserved for products of Canada only.

Pick a day and determine where your food has come from in that day.

| Meal      | Food Item | Origin |
|-----------|-----------|--------|
| Breakfast |           |        |
| Lunch     |           |        |
| Supper    |           |        |
| Snacks    |           |        |

## Activity Two

### *Grow a Food Plant*

Whether you have a garden or not, you can still grow plants for food. Next to eating your own produce, starting plants from seeds is one of the most rewarding gardening activities. Some plants do not transplant well; others are fine. In fact, we need to start seedlings for plants like tomatoes and bell peppers indoors in Canada since our season is so short. We can purchase seedlings from the store but it is rewarding to grow from seed.

In this activity, we are going to start seeds that we can either grow in gardens or keep in pots. Choose a food plant you would like to grow. If you don't have a garden into which you can transplant seedlings, check your reference guide for plants that grow well in pots. Keep in mind that some plants don't like their roots disturbed so don't like to be transplanted. These include many of the root crops like carrots, beets, turnips and parsnips. Corn, beans and peas are also finicky about transplanting and grow better when you direct-seed them into the garden.

#### **What you need:**

- Seeds
- Plant pot – 2-inch pot is good to start seeds
- Soil – seed starting mix is the best
- Water

#### **What to do:**

Fill your pot with soil. Poke a hole in the middle (about 2 centimetres deep), place a seed in the hole and cover with soil. Once your seeds are planted, set your pot in a warm place. Some seeds need light to germinate, others just need warmth. Keep your soil damp, not wet. A spray bottle is good for watering as the soil and seed don't get disturbed by water poured on it.

Happy growing!



### Activity Three

## Make a Garden

### Building a Raised Bed

#### Planning Your Raised Beds:

**Size** – The length of your bed will depend on your site. If you go to the trouble of building a raised bed, build it as long as you can to get the most out of it. The width of your bed should be no wider than 1.2 metres (4 feet) across. This makes it easy to reach the centre of the bed from either side, so you can avoid stepping on the bed and compacting the soil. The height of your bed will depend on your site – if you have good soil beneath, the roots will go down as deep as needed so you need beds that are only 15 centimetres (6 inches) high. The most common height is 28 centimetres (11 inches), which is the height of two stacked 2x6 boards. Be sure to use cross supports for any beds that are taller than 45 centimetres (18 inches), or longer than 1.8 metres (6 feet).

#### What you need

**Lumber** – Naturally rot-resistant wood like cedar is the best lumber to use but can be expensive. You can use cedar 2x4 boards for the sides, 2x6, 2x4 or 2x8 boards if this is what you have available. For the corner posts, use 4x4s, cut to 25 centimetres (10 inches) longer than the desired height of the bed. If your bed is going to be longer than 2.4 m (8 feet), you'll need extra posts to put in mid-span to prevent bowing and to provide a place to secure the cross-supports.



**Fasteners** – Use 88 millimetre (3.5 inch) #10 coated deck screws to fasten the wood together – six screws for each corner and two for each mid-span post. If you are using cross-supports, get a few 25 millimetre (1 inch) stainless screws.

**Cross Supports** – Buy several lengths of 12 millimetre (1/2 inch) aluminum flat stock. This is available at most hardware stores, usually in 2.4 metre (8 foot) lengths. It is very easy to cut with a hacksaw and to drill for the screws.

#### Tools

Hand saw, square, carpenter's level, mallet (or sledge), screwdriver, hacksaw, drill.

#### What to do:

1. First, clear the area where the bed will be located.
2. Cut and assemble basic frame.
  - Using a carpenter's square, mark the ends and saw boards to the desired length.
  - Put two screws in each corner to hold it together for now.
  - On each end, set level on frame and place blocks beneath it to keep it level, or dig into ground.



3. Drive in corner posts and screw boards onto them.
  - Cut post piece longer than you will need. Consider sawing a point on bottom.
  - Set the first points in the corner of the frame and drive the post into the ground a few inches.
  - Screw frame to post, using two screws per side.
  - Set the other posts in place and fasten sides the same way.
4. Once you have added the boards needed to get the height you want, saw post tops flush with sides.
5. Add cross-bracing if required.
  - If your bed is longer than 2.4 metres (8 feet), or taller than 45 centimetres (18 inches), it's a good idea to use cross bracing. This will prevent the bed from bowing outwards in the center of the span.
  - Use a hacksaw to cut the aluminum flat stock to the exact width of the bed. Drill a hole in each end, and use a 2.5 centimetres (1 inch) stainless screw to attach the cross-brace to the posts at either side of the span.
6. Top the bed with soil – it's ready for planting.
  - Use your best garden soil to top off the bed.
  - Add soil amendments such as peat, lime, rock phosphate and organic fertilizer, as needed. Spray the soil with a fine spray, and top it off again because the water will lower the soil level a bit.

### Lasagne Gardening

You can make a lasagne garden at any time of year. Fall is the optimal time for many gardeners because of the amount of organic materials such as fallen leaves and general yard waste from cleaning up the rest of the yard and garden. You can let the lasagne garden sit and break down all winter. By spring, it will be ready to plant in with a minimum of effort. In addition, fall rains and winter snow will keep the materials in your lasagne garden moist, which will help them break down faster.



### What do to

1. Select your garden space.
2. Lay either brown corrugated cardboard or three to five layers of newspaper directly on top of the grass or weeds.
3. Wet this layer down to keep everything in place and start the decomposition process.
4. Just as with an edible lasagne, add alternating layers of “browns” such as fall leaves, shredded newspaper, peat and pine needles with layers of “greens” such as vegetable scraps, garden trimmings and grass clippings. Try to make your “brown” layers be about twice as deep as your “green” layers.

5. After each layer, dampen it so that it is like a squeezed sponge, but not wet.
6. Continue layering until your bed is 60 centimetres (two feet) in height. You'll be amazed at how much this will shrink down in a few short weeks.

If this is done in the fall, by spring, the lasagne should be 'cooked' into nice crumbly black soil, ready to plant. If you choose to make a garden this way in spring or summer, you will need to add layers of finished compost, peat or topsoil and top with three or four inches of finished compost or topsoil, and plant. The bed will settle some over the season as the layers underneath decompose.

## Activity Four

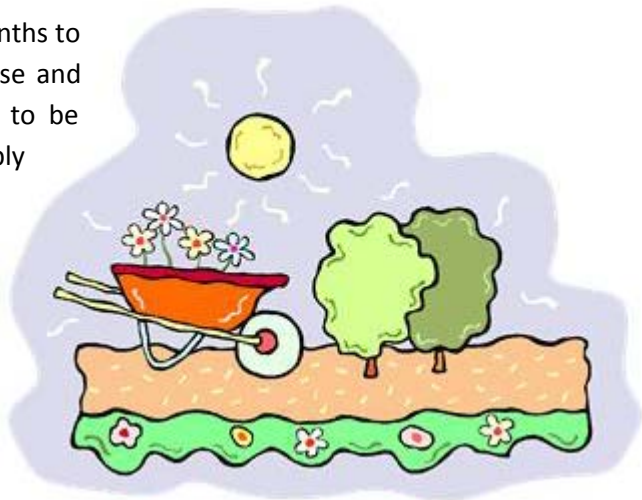
# Build a Compost

## Traditional compost

### What to do

1. Select site for composter. Try to situate it in a dry, shady or partly shady spot near a water source and preferably out of sight.
2. Choose a composting system – you can use a pile, box or bin. A pile is great for leaves and grass clippings and it can be given some structure with chicken wire or snow fencing. A box provides structure; a three-box system is useful to move compost through the composting cycle, from newly decomposing, to decomposing to finished compost. Finally, there is a plastic bin with a closed top. These can be turning units, stacking bins and bins with flip tops that are good to keep rodents out of food wastes.
3. Ideally, make your compost heap at least one metre wide and one metre deep by one metre tall (one cubic metre). If your compost system is smaller, you need to manage it well.
4. Cover the floor of your composter with a layer of small branches. This will allow for air movement and drainage.
5. Alternate wet/green wastes like kitchen scraps with dry waste like yard material. You should have three parts browns to one part greens. Add some “finished” compost, garden soil or a compost starter to the pile to help speed up the start of the composting process. As materials breakdown, the pile will get warm and on cold days, you may even see some steam.

The composting process can take from two months to two years, depending on the materials you use and the effort you put into it. Compost is ready to be used when it is dark and rich in colour, crumbly and has an “earthy” smell. When your compost is ready, apply it to your garden and lawn. It increases the soil’s organic matter content and its moisture-holding capacity, improves soil porosity and helps to control soil erosion, enhances plant and flower growth and helps plants develop a sound root structure.



### Here are some tips:

- The composting process works best when the pieces are small. Weeds and trimmings should be shredded.

- Don't add thick layers of any one kind of waste. Grass should not be more than 6 centimetres deep, leaves up to 15 centimetres deep (cut, chop or dry and crumble them). Mix grass clippings with dry, coarse material such as leaves to prevent compacting.
- The composter contents should be moist like a wrung-out sponge. If the contents are too dry, it will take overly long to compost; if too wet, the contents may begin to smell.
- Turn or mix the compost every couple of weeks, or each time you add new material. This adds that important air for the composting organisms.
- Empty the composter in the fall to make plenty of room to collect material over the winter.
- Composting can be done in the winter. The breakdown process slows down or stops when the pile is frozen, but it will start up again in the spring. Thorough turning in the spring will reactivate the pile.
- Compost should not be used as potting soil for houseplants because it may still contain vegetable and grass seeds.

### **Materials You Can Compost**

Brown material provides carbon and includes:

- Aged (dried) hay
- Sawdust
- Dried grasses
- Cardboard
- Paper
- Straw
- Wood ash (not coal ash)
- Newspaper
- Shredded documents
- Toilet paper and paper towel rolls
- Chipped wood
- Cardboard egg cartons

Green material provides nitrogen and includes:

- Grass clippings (herbicide and pesticide-free)
- Green plants and shrub leaves
- Animal manure (from herbivores such as rabbits, goats, alpacas, sheep, cows and horses)
- Kelp/seaweed
- Aquarium water
- Alfalfa meal
- Alfalfa hay
- Coffee grounds

## Troubleshooting Your Compost

| Problem                                    | Cause                 | Solution  |
|--|-----------------------|---|
| Rotten egg smell                           | Insufficient air      | Turn pile and incorporate coarse browns (sawdust, leaves)                       |
|  | Too much moisture     | Add more browns; if really wet, spread it in the sun and add dry material       |
| Ammonia smell                              | Too much nitrogen     | Incorporate coarse browns (sawdust, leaves)                                     |
| Pile does not heat up or decomposes slowly | Pile too small        | Add more organic matter   |
|  | Insufficient moisture | Turn pile and add water   |
|  | Lack of nitrogen      | Incorporate food waste, grass clippings or manure (chicken, rabbit, cow, horse) |
|  | Not enough air        | Turn pile   |
|  | Cold weather          | Increase pile size or insulate with straw or a tarp                             |

## Vermiculture – Worm Composting

You can store your worms a number of different ways – you can use a wooden box, metal tub or plastic basin. The key is good air circulation as this is the secret to an odour-free bin. The bin should be from 45 centimetres (18 inches) to 60 centimetres (24 inches) deep. Composting worms will not go further down than that and if the bin is too deep, the bedding will mat down and will develop a smell if it starts to decompose anaerobically (without oxygen). The bin should also have the greatest surface area possible so the air will circulate better and you'll have more places to bury your waste.

### Calculate your size:

1. The size of bin depends on the size of your household and the amount of food waste you produce in an average week. You can allow just under 2,000 square centimetres, or two square feet, of surface for each person. So if you're a family of three to six people, try a bin that has a surface area of least than 6,000 square centimetres (6 square feet) or a bin that 60 centimetres x 90 centimetres (2 feet x 3 feet). You might need to adjust these dimensions based on how often people eat out, can or freeze produce or discard leftovers.
2. Weigh your kitchen scraps for a couple of weeks and allow 500 square centimetres for 250 grams, or one square foot for each pound, of scraps per week. So if your household creates an average of 1.8 kilograms (four pounds) of food waste each week, a 60 centimetres x 60 centimetres (2 feet x 2 feet) bin should be adequate.

Try a stacked bin worm composter. Red wigglers always migrate upwards, towards the food, leaving their castings to fall below them. Therefore, a multiple stacking system of connected worm bins or

trays that are slightly tapered to allow the bins to nest, one within the other is easy to maintain. Worm castings (the compost) are collected in the lower bins and worm food (kitchen or garden scraps) is consumed in the upper levels. When a lower bin is nearly full of castings it is emptied and rotated to the top and so on.

For a simple home worm farm, three 45-litre (12 gallon) containers that are 40 metres (15 inches) deep would be adequate. You can go smaller if you want, or for processing a greater amount of waste such as from large gardens or stables, bigger bins with more tiers can be set up quite easily. Common plastic storage bins, sold for general household use at hardware stores, supermarkets and camping goods outlets make great worm bins. They are usually tapered allowing for partial nesting and they come with a lid. Choose ones that are opaque or lined with foil as most worms (especially red worms) have no eyes and will shy away from light. A lid will also prevent the compost from drying out, or you can take it off if it gets too wet. You can tell when it is too wet – the worms start trying to leave.

In a plastic storage tub, approximately 45 litres (12 gallons) in size 53 centimetres x 30.5 centimetres x 38 centimetres (21 inches x 12 inches x 15 inches), can support more than 1,000 worms comfortably without overcrowding. The larger you make the container, the more worms it can sustain.

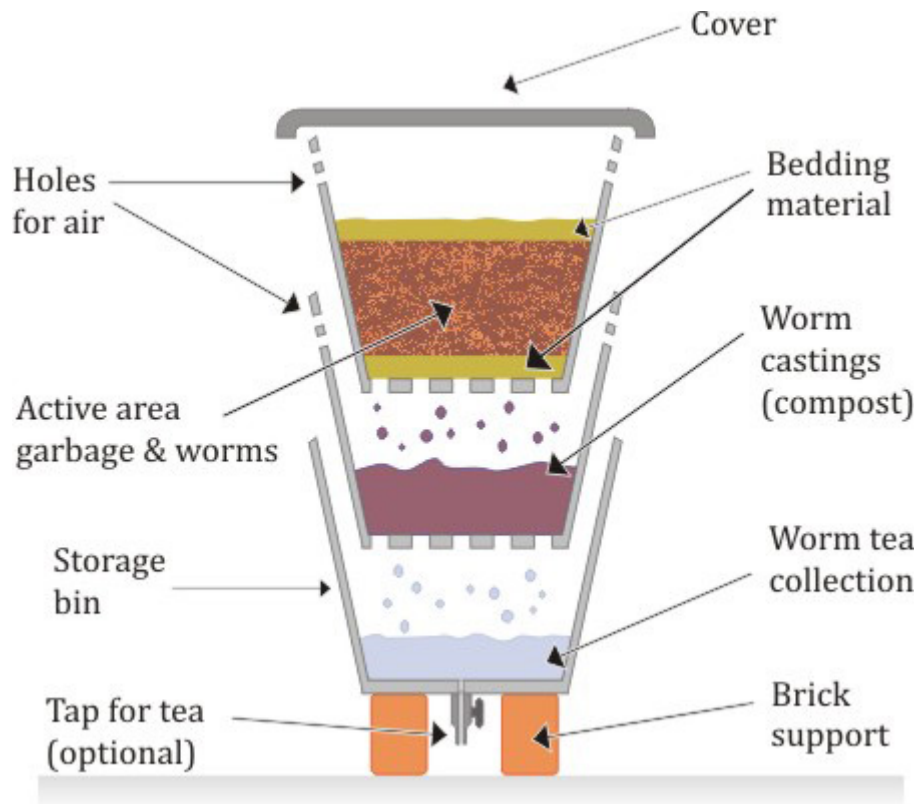
### Instructions for Creating Stacked Worm Composter



Photograph used with permission from [www.working-worms.com](http://www.working-worms.com)

## What you need

- 3 – 45 litre storage bins
- 12 millimetre (1/2 inch) plastic barrel or irrigation tap
- 4 bricks
- 4 packers or spacers approximately 15-20 centimetres (6-8 inches) high (sealed glass jars or wooden blocks)
- 4 packers or space approximately 10 centimetres (4 inches) high
- Strips of mosquito netting or shade cloth
- Drill and drill bits – 15 millimetres (3/8 inch) and 6 millimetres (1/4 inch)



## Cross sectional diagram of Three Bin Composter

Courtesy of [www.working-worms.com](http://www.working-worms.com)

## What to do

### Step 1: Create sump bin

In the first or bottom storage container, known as the sump bin, install a tap by drilling a 15 millimetre (3/8 inch) hole in the side of the bin. Locate it in the centre, just above the base. Insert a 12 millimetre (1/2 inch) cheap plastic barrel or irrigation tap (with washers) into your hole and tighten fast with lock nuts. To make sure you get a good seal, test by filling the container with tap water. This container will collect the leachate, or “worm tea” that will drip

down from the composting bins above. Worm tea is a valuable liquid organic fertilizer, which can be diluted and used directly on your plants.

**Step 2: Create drainage in worm bins**

On the base of the next two bins, drill a series of 6 millimetre (1/4 inch) holes spaced approximately 50 millimetres (two inches) apart. This will allow drainage and the upward migration of the compost worms.

**Step 3: Create aeration in worm bins**

Drill two rows of 6 millimetre (1/4 inch) holes, 50 millimetres (two inch) apart in a continuous band 10 centimetres (four inches) below the top rim of the bin. It is not essential to drill holes in the lid that will cover the upper bin. Enough air should enter through the sides.

**Step 4: Choose a Spot**

Situate the bin in a place that is easy to get to, and where worms won't be subjected to temperature extremes. Worms like temperatures ranging from 12-25° C (55-77° F). Do not put it in direct sunlight; keep in a shady cool area during summer and on a sunny patio in winter. Basements, heated garages or breezeways are usually good sites.

**Step 5: Start Stacking**

Set the lower or sump bin on bricks or blocks. This will allow you to tap off the fluid from sump bin.

**Step 6: Keep Stacking**

Place shorter packers or spacers (sealed food jars or wooden blocks) in each corner of the sump bin. Nest the first worm bin. Add the taller packers or spacers to the first worm bin and place the second worm bin on top of that. These spacers help to maintain a working space for the worms and for accumulation of compost. The packers also prevent the tapered worm bins from jamming together.

**Step 7: 'Caulk' the Bins**

To prevent "nasty bugs" from squeezing in between the bins, you should close or caulk the small gap between them with strips of shade cloth, or mosquito netting.

**Step 8: Make a Bed**

Use light, fluffy biodegradable materials free from pesticides or chemicals. Shred or tear newsprint or computer paper into strips, the thinner the better. Thick strips mat down, dry out too fast and make it difficult to bury scraps. Do not use colour comics and glossy advertisements. You can also use shredded cardboard, straw, dry grass or some similar material. This provides a source of fibre to the worms and keeps the bin well ventilated. Sprinkle a handful of dirt on top and thoroughly moisten. Allow the water to soak in for at least a day before adding worms.



**Step 9: Put your Worms to Bed**

Estimate 450 gram (1 pound) of worms for every 0.09 square metre (1 square foot) of surface area. So for a 45-litre bin, so you will need 800 grams of worms. Once your worms are in, start feeding after a few days. That many worms will need roughly 3.2 kilograms of scraps per week, or just under 500 grams per day. The best worms are redworms (*Eisenia foetida* or *Lumbricus rubellus*), also known as red wiggler, manure worm, red hybrid, striped worm or fish worm. It is capable of reproducing quickly in captivity, while chomping copious quantities of food waste.

**Step 10: Feed those Worms**

Dig your kitchen scraps into the bedding material, ensuring that the food is covered with bedding to discourage pests. Keep the lid closed and never allow it to dry out. Sprinkle water over the bedding periodically if not enough moisture is coming from the food scraps. If it becomes too wet (you will know by the moisture on the lid and the fact that the worms will be leaving town), keep the lid off and allow it to dry out a bit.

**Step 11: Get the Balance**

You might need to reduce the amount of food waste in the bin until the population increases. This doesn't take long as breeding worms can lay two or three cocoons per week that will hatch in 21 days, with each cocoon hatching two or three worms that will mature in 60 to 90 days. A worm population eventually stabilizes at levels that can be supported by the food scraps added, and by the availability of room to move and breed. Too much food can start to smell or attract flies.

**Step 12: Keep Feeding**

When the top bin has been fully productive for a while, the worms will multiply and worm castings compost will start accumulating both in the top bin and in the middle bin. When the compost builds up in the middle bin, empty it. Stop feeding into the top bin and swap over the upper two bins by putting now-empty compost bin to the top of the stack, with feeding bin now in the middle. Set up this new top bin with clean bedding, a small amount of the old castings and immediately start feeding your kitchen scraps into it. The worms will naturally migrate upwards towards the new food source, leaving the lower bin with only a few stragglers and ready for the harvesting of your compost within about three weeks after the swap.

**Step 13: And Repeat**

All you need to do is keep repeating the process of alternating the top two bins on a regular basis, taking out the compost, whenever it accumulates, and tapping off the worm tea in the sump bin from time to time.

**Step 14: Enjoy the Fruits of Their Labour**

Use both products in your garden and grow delicious fully organic vegetables and gorgeous flowers. Sit back and enjoy – your worms are doing most of the work anyway.

### Worm Food

- Peels and other vegetable waste: worms find most any fruit or vegetable yummy. Rinse off banana peels because they readily attract fruit flies.
- Coffee grounds and tea leaves: the worms will even chew up the coffee filters and tea bags but not the tea bag tag or the metal staple, so take it off.
- Egg shells: Crush with a rolling pin before adding to the bin for smoother compost later.
- Plate scraps or spoiled food: If you want to add what's rotten, bury small portions deep in the bedding and cover well to discourage fruit flies.
- Don't add meat or bones – they are the first to smell.
- Never add dog or cat feces, used kitty litter or non-biodegradable items such as rubber bands, aluminum foil, bottle caps or glass.

### Trouble shooting

| Problem              | Cause  | Solution   |
|----------------------|--|--|
| Smell                | Too much food, wrong type of food, food not buried | Reduce the amount of food and make sure it is buried |
| Worms are escaping   | Too wet  | Leave the lid open to let it dry out                 |
| Gnats or small flies | Too much food                                      | Back off the feeding                                 |

**Activity Five*****Make Your Own "Pesticides"***

Try your hand at making some natural and safe ways to controlling insects that may be infecting your plants in your garden.

You will need measuring spoons, measuring cup, funnel and spray bottles.

**Simple Soap Spray**

For controlling wide variety of garden pests, including aphids, scale, mites and thrips.

**What you need**

- 15 millilitres (1 tablespoon) dishwashing soap
- 4 litres water

**What to do**

Mix together and spray the mixture on the pests.

**How it works**

The soap dissolves the outer coating or shell of the insects, eventually killing them.

**Garlic Oil Spray**

For whiteflies, aphids and most beetles.

**What you need**

- 3-4 cloves minced garlic
- 10 millilitres (2 teaspoons) mineral oil
- 500 millilitres (2 cups) water
- 5 millilitres (1 teaspoon) biodegradable dish soap

**What to do**

Put the garlic in the oil and let the mixture sit overnight. Strain the garlic out of the oil. Add the oil to the water and then add dish soap. Store in a bottle or jar, and dilute the mixture when you use it (30 millilitres mixture to 500 millilitres of water). Caution: don't apply this spray on a sunny day, because the oils can cause foliage to burn.

**How it works**

The compounds in garlic (namely, diallyl disulfide and diallyl trisulfide) are irritating or deadly to many insects. The oil and soap help the mixture stick to plant leaves.

## Baking Soda Spray for Powdery Mildew

### What you need

- 15 millilitres (1 tablespoon) baking soda
- 15 millilitres (1 tablespoon) vegetable oil
- 15 millilitres (1 tablespoon) dish soap
- 4 litres water

### What to do

Mix together and spray it on the foliage of susceptible plants. Needs to be applied weekly.

### How it works

The baking soda disrupts fungal spores, preventing them from germinating. The oil and soap help the mixture stick to plant leaves.

## Boiling Water for Sidewalk Weeds

### What you need

- Boiling water

### What to do

Take the boiling water and pour it over weeds in the cracks of your sidewalks or driveways.

### How it works

Most weeds can't stand up to this treatment. Just be careful when pouring.

## Vinegar for Stubborn Weeds

### What you need

- Vinegar

### What to do

Apply vinegar; use a foam paintbrush to brush the vinegar directly onto the leaves of weeds you're trying to kill. This prevents the vinegar from getting onto other plants and ensures that the entire leaf surface is coated with the vinegar.

### How it works

The acid in vinegar will burn the leaves.



## Activity Six

# Make Fruit Leather



Fruit leathers are a tasty, chewy, dried fruit product. They are made by pouring pureéd fruit onto a flat surface for drying. When dried, the fruit is pulled from the surface, and can be rolled for storage. It gets the name “leather” from the fact that once the pureé has dried, it is shiny and has the texture of leather.

Fruit leathers can be made from fresh, frozen or canned fruit. By making your own, you can save money, mix fruit flavours and use less sugar. For the diabetic, fruit leathers made without sugar are a healthy choice for snacks or desserts. Applesauce can be dried alone or added to any fresh fruit pureé as an extender. It decreases tartness and makes the leather smoother and more pliable.

### What you need

- 500 millilitres (2 cups) of fruit, ripe or slightly overripe fresh, or canned (Keep the juice of canned fruit.)
- 10 millilitres (2 tsp) of lemon juice or 0.5 millilitres (1/8 teaspoon) ascorbic acid (if fruit is light in colour.)
- 50 to 125 millilitres (1/4 to 1/2 cup) sugar, corn syrup, golden syrup or honey (optional)
- Measuring cups, measuring spoons, 30 millimetres x 40 millimetres (13 x 15 inch) pan or tray, blender, plastic wrap, oven

### What to do

- Wash fresh fruit or berries in cool water. Remove peel, seeds and stem. Cut into chunks.
- Pureé fruit until smooth. If the canned fruit pureé is too thick, add juice.
- Add lemon juice or ascorbic acid to light coloured fruit to prevent darkening.
- Add sweetener if needed. Keep in mind that corn syrup, golden syrup or honey is best for longer storage because it does not crystallize. Sugar is fine for immediate use or short storage.
- Line 30 millimetres x 40 millimetres (13 x 15 inch) cookie pan with plastic wrap being careful to smooth out wrinkles. Do not use waxed paper or aluminum foil.
- Pour pureé onto tray and spread evenly, about 0.3 millimetres (1/8 inch) thick. Avoid pouring pureé too close to the edge of the cookie sheet.
- Place in oven at 60°C (140°F) for up to 18 hours. Leather dries from the outside edge toward the centre. Test for dryness by touching center of leather; no indentation should be evident.
- While warm, peel from plastic and allow to cool. The leather can then be rolled and wrapped in plastic. It will keep up to one month at room temperature. For storage up to one year, place tightly wrapped rolls in the freezer.

## Activity Seven

### Home Canning

Home canning is not complicated. It is a simple procedure that applies heat to food in a closed glass jar to interrupt the natural decaying that would otherwise take place. Proper, safe home canning procedures control the growth of spoilage microorganisms allowing us to keep food beyond its normal storage period. For best results, preserve ingredients at its peak of freshness.

In home canning, food can be grouped into two types – high acid and low acid. They require different processing based on their acid levels. Fruits, fruit juices, jams, jellies and other fruit spreads, pickles, salsa, chutney and tomatoes with added acid (lemon juice or vinegar) are all high acid foods. All high acids foods are easy to prepare and allow you to get creative with canning. Vegetables, meat and game, poultry, seafood, soups, stews, tomato-vegetable sauces and tomato-meat sauces are all low acid foods. **All low acid foods must be heat processed in a pressure canner** to eliminate the risk of botulism.

Home canning is very rewarding and can be a lot of fun if you take a few minutes to prepare. Here are some guidelines for you.

- Use only current, tested home-canning recipes that include the appropriate heat processing method and time for the food and mason jar size, designate headspace for the food and jar size, and come from reputable sources that use the jars and lids that you are using today.
- Review the recipe to ensure you have all the ingredients and tools. For best results, do not substitute.
- Fill home canner with fresh water and heat; it takes a long time for that much water to come to a boil.
- Visually inspect your jars for nicks, cracks, uneven rims or sharp edges that may prevent sealing or cause breakage. Wash jars and place on a rack in a boiling water canner. Cover jars with water heat water to simmer (80°C /180°F). Keep jars hot until ready to use.
- Set screw bands aside and place SNAP LID® closures in small pot of hot but not boiling water.
- Set up your filling station and have non-metallic funnel, ladle, paper towels, tongs and screw bands at the ready. If making spreads, also have a spoon and bowl for skimming during cooking time.
- Set up your resting station. Set clean tea towels in a place near the stove where your processed jars can rest, undisturbed, for 24 hours.



- Pre-measure dry ingredients. Some recipes are time sensitive, so have ingredients ready to go.
- Prepare fresh ingredients according to the recipe using a large deep pot.
- Heat process ALL home canned foods (freezer spreads excepted), follow step-by-step directions and you'll have success.

Based on the produce you have available, select what you would like to make, find a current tested recipe with step-by-step instructions and preserve the freshness of summer.

Remember you are working with very hot liquids; be careful!



## Activity Eight

# Say Cheese

## Yogurt Cheese

Some cheeses require extensive ingredients, preparation and aging for the final product to finish and be ready to eat. However, yogurt cheese is not difficult or time-consuming to prepare. Yogurt separates readily with the liquid whey draining away from the more solid yogurt. The solid yogurt left behind is “yogurt cheese” because it resembles cream cheese.

### What you need

- Plain or flavoured yogurt, without fruit or gelatin.
- Colander or sieve
- Cheesecloth or coffee filter
- Plastic wrap
- Airtight container



### What to do

1. Line a colander or sieve with approximately eight layers of cheesecloth. Alternatively, you can use a coffee filter.
2. Set the colander over a bowl, and scoop the yogurt into the cheesecloth or filter. Make sure the whey dripping off is relatively thin and clear. If it's thick and white, you are losing too much “curd” and do not have sufficient layers of cheesecloth.
3. Cover the yogurt and let it drain anywhere from 1 to 12 hours, depending on the desired thickness of the cheese; the longer it drains, the thicker the resulting “cheese” will be.
4. Refrigerate the yogurt while it's draining.
5. Scrape the yogurt cheese from the cheesecloth/filter using the spatula. Transfer the yogurt cheese to a plastic container and cover the container tightly.
6. Store the finished product in the refrigerator. It will keep for about a week.

### Tips

- Allow 250 millilitres (1 cup) of yogurt for every 75 millilitres (1/3 cup) of yogurt cheese called for in a recipe; half to two thirds of the yogurt will be lost in the ‘cheese-making’ process, depending on how long you drain the yogurt.
- The cheesecloth can be reused; simply rinse it out and hang it up to dry.
- Don't discard the whey! It contains valuable nutrients, and you can use it as a substitute for milk or water in many bread, muffin or cake recipes.
- When making a dip or spread with yogurt cheese, fold other ingredients in gently. Avoid vigorous beating and mixing, and never put yogurt cheese in a food processor.



## Simple Cottage Cheese

The following recipe produces a delicious cottage cheese that resembles ricotta. It is excellent fresh or used in cooking Italian dishes such as lasagne. This is great for beginners to get the feel for the basics, and best of all, the product can be enjoyed immediately.

### What you need

- 4 litres 2% milk
- 125 millilitres (1/2 cup) vinegar
- 5 millilitres (1 tsp) salt
- Cream (optional)
- Pot
- Heating element
- Thermometer (optional)
- Colander
- Bowl
- Airtight container (if any cheese is left)



### What to do

1. Heat the milk to 90°C (190°F). Usually you would need a thermometer for other cheeses but with this cheese, you can turn off the heat just before the milk begins to boil.
2. Add the vinegar and allow the mixture to cool.
3. When cool, pour the mixture into a colander. Keep the curds and drain off the whey (or keep it to use as substitute for milk or water in many bread, muffin or cake recipes).
4. Pour the curds into a bowl, sprinkle on a little salt and mix well.
5. Taste. You may wish to use less salt or more. Add a little cream for a silky texture.
6. Enjoy.

**Activity Nine**

***Green Tips – Food Production***

Record at least three tips that you learned in this unit and that you can share with others.

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 **Online Resources**

**Gardens**

Building a Raised Bed

<http://www.popularmechanics.com/home/how-to-plans/lawn-garden/4308264>

Lasagna Gardening

<http://organicgardening.about.com/od/startinganorganicgarden/a/lasagnagarden.htm>

**Compost**

Composting Game

[www.bravekidgames.com/flash\\_game\\_home\\_compost.php](http://www.bravekidgames.com/flash_game_home_compost.php)

More information of composting in Canada.

[http://www.compost.org/English/ENGLISH\\_INDEX.htm](http://www.compost.org/English/ENGLISH_INDEX.htm)

Video on how to build a simple compost pile

<http://www.wikihow.com/Build-a-Compost-Bin>

worm composting

[www.working-worms.com](http://www.working-worms.com)

<http://www.cityfarmer.org/wormcomp61.html>

Building a wooden worm compost box

<http://dnr.wi.gov/org/caer/ce/ee/cool/wormbox.htm>

Preserving Food

<http://www.preservefood.com/>

<http://www.bernardin.ca/>

## Unit Seven: Making Greener Choices

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### Activity One

### *Make a Card*

Cards and gifts mark special occasions but contribute to rampant consumerism. Purchased cards are often viewed once and then considered garbage. Handmade cards can be more precious and valued by the recipient and indicate your love and respect for the recipient.

Cards can be simple or quite elaborate. Card making has become popular, and as a result, craft and retailers have responded by stocking all sorts of papers, lettering and embellishments. This activity, however, focuses on creating a card from ordinary paper, or perhaps the paper you make in Unit 3. Draw your own lettering and make your own embellishments. Create a work of art.

You can find lots of inspiration and instruction on the Internet. Check out some of these websites for help and ideas:

Basic Cardmaking # 1

<http://www.youtube.com/watch?v=fne9hbTxzQw>

How to Make Handmade Greeting Cards

[http://www.ehow.com/videos-on\\_5166\\_make-handmade-greeting-cards.html](http://www.ehow.com/videos-on_5166_make-handmade-greeting-cards.html)

Make a Birthday Card

<http://www.wikihow.com/Make-a-Birthday-Card>

Making Greeting Cards

<http://www.making-greeting-cards.com/>



## Activity Two

### Make a Gift

Use your talents to make a gift for someone special. You could handcraft something – sew a placemat, crochet a toque, knit a scarf, embroider a coaster, felt an eyeglasses case, make a wooden toy or construct a cutting board. You could create a poem, write a story or compose a song. The possibilities are endless.



The Internet is a source of an amazing array of ideas, suggestions and advice. Here are some of many you could use:

A Do-It-Yourself Christmas: 34 Great Homemade Gifts You Can Make

<http://www.getrichslowly.org/blog/2008/11/13/a-do-it-yourself-christmas-34-great-gifts-you-can-make-yourself/>

Super Quick Gifts to Make

<http://www.bhg.com/crafts/easy/30-minute-projects/super-quick-gifts-to-make/>

101 Crafty Gifts

<http://www.instructables.com/id/101-Crafty-Gifts-To-Make/>

75 Things to Make for Mother's Day

<http://www.tipjunkie.com/holiday-crafts/things-to-make-for-mothers-day/>



### Activity Three

## *Game of Re-gifting*

Some groups or families have formalized a “re-gifting” gift exchange. It is called a White Elephant, Yankee or Chinese gift exchange. Each participant supplies one wrapped gift. The order in which the gifts are chosen is determined and the game begins. The first person opens a wrapped gift, and then the next person chooses whether to open a wrapped gift or “steal” a previously opened gift. If a person has his gift stolen, he also has the option of choosing a wrapped gift or stealing an unwrapped one. When a wrapped gift is opened, the turn ends. When all gifts have been unwrapped, the game ends. This gift exchange or game has many variations, and it can be a lot of fun!

Have a re-gifting gift exchange. You can have a theme or set a value, but no buying is allowed. Wrap your presents in recycled paper and enjoy the excitement!

Check out this website for rules, variations and tips on this type of gift exchange.

<http://www.yankeeswap.com/yankee-swap-rules.php>



**Activity Four**

***Green Tips – Making Greener Choices***

Record at least three tips that you learned in this unit and that you can share with others.

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 **Online Resources**

[www.ec.gc.ca/education/default.asp?lang=EN&n=129C994E-1](http://www.ec.gc.ca/education/default.asp?lang=EN&n=129C994E-1)

[www.greennexus.com/omaog/index.aspx?country=CA](http://www.greennexus.com/omaog/index.aspx?country=CA)

Games and facts

[www.nwf.org/rrgreenzone/GreenwayHouse.aspx](http://www.nwf.org/rrgreenzone/GreenwayHouse.aspx)

**Green buying**

A consumers' guide to green products and services available in Saskatchewan

<http://www.saskatchewangreendirectory.org/>

Conservation Council of Ontario Great Green Directory

<http://www.greatgreendirectory.ca/>

Conservation Council of Ontario – We conserve

<http://weconserve.ca/index.html>

City of Vancouver – Green Vancouver

<http://vancouver.ca/green-vancouver/a-bright-green-future.aspx>

BC's Sustainability Education Network

<http://www.walkingthetalk.bc.ca/>



# Unit Eight: Our Natural Environment

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## Activity One

### *Visit a Natural Area*

Exploring our outdoor environment can be fun and exciting. What better way to appreciate our environment than to see and learn first-hand about plants, animals and scenery it has to offer? However, sometimes in our zeal to explore nature, we unintentionally harm it through campfires, garbage or just even our footprints. We need to make sure we leave it in the same condition, or better condition than, we found it. The key is to help maintain the sense of awe that natural areas can hold for the next visitor.

Research the parks, sanctuaries and natural areas in your area. Select one to visit. Invite a park ranger, environmental agency representative or naturalist to join you. They can provide information that will enhance your visit.

Be sure to take water, sunscreen, rain jacket and some food. Be prepared for the weather and always tell someone where you are going and when you expect to be back.

📌 **Here are some links to our national and provincial parks:**

Parks Canada

<http://www.pc.gc.ca/eng/index.aspx>

BC Parks

<http://www.env.gov.bc.ca/bcparks/>

Alberta Parks

<http://www.albertaparks.ca/>

Saskatchewan Parks

<http://www.saskparks.net/>

Manitoba Parks

<http://www.gov.mb.ca/conservation/parks/>

Ontario Parks

[www.ontarioparks.com/](http://www.ontarioparks.com/)



Quebec Parks

[http://www.sepaq.com/pg/index.dot?language\\_id=1](http://www.sepaq.com/pg/index.dot?language_id=1)

Nova Scotia Parks

<http://parks.gov.ns.ca/>

New Brunswick Parks

<http://www.tourismnewbrunswick.ca/See/Parks.aspx>

Prince Edward Island Parks

<http://www.tourismpei.com/pei-provincial-parks>

Newfoundland and Labrador

<http://www.env.gov.nl.ca/env/parks/parks/index.html>

## Activity Two

### *Participate in a Restoration Project*

Many different groups and agencies undertake restoration projects. Research what is going on in your area and volunteer to help. It might be a 'spring clean' garbage pickup, tree planting or weed removal.

If you can't find a project to join, create your own. Most communities have garbage on their roadways, or weeds that need to be controlled. Talk to your town council, seniors' housing group or school to see what you could do.

When you are on the job, make sure you have water and sunscreen. A hat to keep the sun off your head will help reduce the chances of sunstroke as well.

📌 **Here are links on ecological restoration:**

Parks Canada

<http://www.pc.gc.ca/progs/np-pn/re-er/index.aspx>

Ontario Society for Ecological Restoration

<http://www.serontario.org/>

For restoration projects in your area, check with your local environmental, wildlife or parks agency.



**Activity Three**

***Green Tips – Our Natural Environment***

Record at least three tips that you learned in this unit and that you can share with others.

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## Unit Nine: In Our Community

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### Activity One

### *Walk the Talk – Undertake a Community Project*

Initially in this project, you looked at how green your community may or may not be. This is your opportunity to make it greener. You have learned a lot through the project to do some neat and interesting things.

Ask you community leaders for their ideas or approach them with a project. Think of all the things you would need to do it and all the drawbacks you may face so you can be prepared. Be sure to get their buy in – it is their community too.

Here are some ideas:

- *Expand your community's recycling program* – if your community offers only limited recycling say of plastics, see if you can expand it.
- *Offer a recycling pick-up service* – if your community has a drop-off recycling program, offer to pick up recycling for elderly or for those who are housebound.
- *Organize a community garbage clean-up day* – organize your group, club and/or community to pick up the garbage and clean the streets, roads and ditches around your community. This could be a one-off or a monthly event. Ask for community volunteers and advertise using posters, newspapers or whatever else would work in your community.
- *Create a community garden* – check with community members if they have an interest in having a community garden. It may mean providing gardening space to people who might not have access to a garden to grow their own food or it may mean growing produce for food banks that are operating in the community. You would need to find a space that would support a garden and get permission from the appropriate people – the landowner, the community. You may need to recruit help from others including adults to create your garden boundaries, prepare the soil for planting and take care of the garden. You could use composting and other organic environmentally friendly ways of making your garden grow.
- *Develop a community-composting project* – get permission to set up a composting system somewhere in your community. Possible locations would be your recycling depot or your community garden, if you have one. Encourage people to drop off their compostables, or arrange a pick up day to pick up from homes and deposit in your system. You will need to provide good information on what can be composted and what can't and where to find the composter.

- *Green your Community* – pick an area like your school, a park or along the street and spend a day planting trees and flowers. Research the plants that can survive local conditions such as dry weather and frosts.

Here is a guide to help you plan your project:

**Project Title:** \_\_\_\_\_

|  |
|--|
| Describe your project. What are your objectives? What do you want to accomplish? Where is it going to be? Who is your target audience? |
|  |
| Who needs to be involved? From whom do you need permission? Or, who can stop you from undertaking this project?                        |
|  |
| What materials or tools do you need? Do you need volunteers/help?  |
|  |
| If people are helping you, who is responsible for what? What is everyone's role?   |
|  |
| How are you going to let people know about your project? How are you going to advertise?   |
|  |
| What other things do you need to consider?   |
|  |

## Activity Two

### *Talk the Walk – Public Education*

This activity focuses on providing education and information on how to be greener to our community.

- Pick a topic – it could be on anything you have learned in this project such as how to calculate ecological footprints, how to do energy audits, ways to conserve water quantity and quality, the 'R's of being green, green certification, how to composting, how to make cheese and more! You may want to get help from your local environmental or park agency. They have experience and expertise; they may also have posters, leaflets, and other information you can use.
- Choose your 'media'. Sometimes your topic will dictate what type of media you need. For example, the best way to teach people how to build a worm composter would be to hold a workshop at a local garden centre. You could do an infomercial for your local cable station. Providing information on the 'R's of being green may be better as a mall display where you can engage people in conversation. Many people may like to have information they can take away in a written leaflet.
- Develop your materials. Plan how you are going to impart the information. If it is a demonstration, plan that. If it is a leaflet, do your research and write it up. If you are doing an infomercial, you will probably need a script.
- Let people know – use what works best in your community to advertise your workshops or upcoming mall displays.
- Have fun!

Fill out your project planner on the next page to help plan your education project/event. Add more paper if you need it.



**Project Title:** \_\_\_\_\_

|  |
|--|
| Describe your project. What are your objectives? What do you want to accomplish? Where is it going to be? Who is your target audience? |
|  |
| Who needs to be involved? From whom do you need permission? Or, who can stop you from undertaking this project?                        |
|  |
| What materials or tools do you need? Do you need volunteers/help?  |
|  |
| If people are helping you, who is responsible for what? What is everyone's role?   |
|  |
| How are you going to let people know about your project? How are you going to advertise?   |
|  |
| What other things do you need to consider?   |
|  |



### Activity Three

## *Walk the Walk – Issue a Challenge*

A challenge is sometimes a great way to get people involved. A little competition, some camaraderie and a goal are often good motivators. You can challenge your club, other clubs, your community or another community. The objective is to better your community, and maybe others, environmentally. Imagine what could happen if the challenge spread across Canada and beyond!

Before you issue your challenge, consider:

- What is your challenge? Is it a 'bike to work/school' week or day? Is it a garbage clean up? Is it the amount of produce you can grow for your local food bank? Or maybe it's the best environmental awareness poster in your school?
- How will you measure? For example, for a roadway garbage clean-up, you may want to measure kilograms of garbage collected, or kilometres of roadway cleaned. For a 'commute by bike to work or school day', it may be the number of participants, or for a poster, you may need a judge to select the winner.
- How long will this be for? A day, a week, a month? When do you declare a winner?
- How do you celebrate or recognize the winner? Do you make a big announcement with photographs in the paper? Do you give the winner a trophy?

Here are some ideas:

- Bike to work or school week
- Grow a row for your food bank
- Road or beach garbage cleanup
- Weed removal
- Environmental posters
- Environmental infomercial
- Photos
- Restoration project
- Environmental essay
- Repurposed artwork
- Waste-free lunch day

#### Check these websites:

One Million Acts of Green – They have a Facebook page for people taking up the challenge of committing 'acts of green'

<http://www.onemillionactsofgreen.com/>

Lexus Environmental Challenge

<http://www.scholastic.com/browse/article.jsp?id=3749321>

Project Earth

<http://www.projectearth.net/>

Check out some of the videos on the Recycling Council of British Columbia's Environmental Short Film competition called 'Trailer Trash':

<http://rcbc.bc.ca/trailer-trashed>

3'R's website has some great campaign video under their Campaign and their Resources banners. Check them out:

<http://www.3rs.ca/Pages/Campaigns.aspx>

Use your project planner on the next page to help you plan your event.

**Project Title:** \_\_\_\_\_

|   |
|---|
| Describe your project or event. What are your objectives? What do you want to accomplish? Where is it going to be? Who is your target audience? |
|   |
| Who needs to be involved? From whom do you need permission? Or, who can stop you from undertaking this project/event?                           |
|   |
| What materials or tools do you need? Do you need volunteers/help?   |
|   |
| If people are helping you, who is responsible for what? What is everyone's role?  |
|   |
| How are you going to let people know about your project/event? How are you going to advertise?  |
|   |
| What other things do you need to consider?  |
|   |

**Activity Four**

***Walk the Walk – Form a Group***



Maybe as you are approaching the end of this project, you would like to continue to do more environmental work but not by yourself. You could join a group, or even create your own group to keep the momentum going.

Here's a website with information on how to set up and formalize an environmental group: [www.econet.ca/tools/index.html](http://www.econet.ca/tools/index.html)

**Group Name:** \_\_\_\_\_

|  |
|--|
| <p>What will be the focus of your group? What are your objectives?</p> |
| <p>What activities will your group focus on?</p>                       |
| <p>How are you going to recruit members to your group?</p>             |
| <p>What other things do you need to consider?</p>                      |

## Activity Five

### *Walk the Walk – Celebrate!*

As described in your reference book, numerous environmental issues and values are highlighted through the designation of days and weeks in their honour. This helps to raise awareness, create support and celebrate achievements or the value itself. Days, like Earth Day, Environment Week and Canada's Parks Day are but a few.



In this activity, you will be organizing an event for one of these days and weeks. You could combine this event with your public education event. Present a worm-composting workshop during Waste Reduction Week. Invite your environmental agency, your local fish and game club to celebrate National Wildlife Week through displays and activities. Open your new community garden with a parade on Earth Day. And for Rivers Day, organize a paddle down your local river and talk about some of the issues that rivers face.

Here are some things for you to consider:

- Pick a day to base your event around – will this be National Wildlife Week, Earth Day or one of the many others?
- Pick an appropriate event for your day – wildlife and wildlife habitat would be good topics with Wildlife week, save worm composting for Waste Reduction Week or Earth Day.
- Plan your event – What is it that you are going to do? What do you need? Do you need to invite anyone special? Will they have a role? Enlist help if needed.
- Advertise your event and the day that you are celebrating – create a buzz in your community and school. Write an article for your community paper, put up posters around the school and in your community, spread the event by word-of-mouth.
- Have fun!



**Event Title:** \_\_\_\_\_

|   |
|---|
| Describe your event. What are your objectives? What do you want to accomplish? Where is it going to be? Who is your target audience?                            |
|   |
| Who needs to be involved? From whom do you need permission? Or, who can stop you from undertaking this event? Is there anyone special that needs to be invited? |
|   |
| What materials or tools do you need? Do you need volunteers/help? Do participants need to bring anything? Should they dress up?                                 |
|   |
| If people are helping you, who is responsible for what? What is everyone's role?  |
|   |
| How are you going to let people know about your event? How are you going to advertise?  |
|   |
| What other things do you need to consider?  |
|   |

**Activity Six**

***Green Tips – In Our Community***

Record at least three tips that you learned in this unit and that you can share with others.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

### **Online Resources**

*The Psychology of Climate Change Communication* – a free publication available for download from the Centre for Research on Environmental Decisions – can be very helpful in determining how to message environmental efforts to your group and engage them in solutions.

<http://guide.cred.columbia.edu/>

The basics of community-based social marketing (attitude and behaviour change) are detailed in *Fostering Sustainable Behavior* – an online book by Douglas Mackenzie-Mohr available for download.

<http://www.cbsm.com/pages/guide/preface/>

### **Opportunities for Celebrating by Month**

#### **February**

World Wetlands Day, February 2

[http://www.ramsar.org/cda/en/ramsar-activities-wwds-wwd2012index/main/ramsar/1-63-78%5E25324\\_4000\\_0](http://www.ramsar.org/cda/en/ramsar-activities-wwds-wwd2012index/main/ramsar/1-63-78%5E25324_4000_0)

#### **March**

World Water Day, March 22

<http://waterday.org/>

Earth Hour, the last Saturday of March

<http://www.earthhour.org/>

#### **April**

National Wildlife Week, the week of April 10

<http://www.cwf-fcf.org/en/action/awareness/national-wildlife-week.html>

Earth Day, April 22

<http://www.earthday.ca>

[http://www.ecokids.ca/pub/eco\\_info/topics/environmental/earthday/earthday\\_events.cfm](http://www.ecokids.ca/pub/eco_info/topics/environmental/earthday/earthday_events.cfm)

#### **May**

International Migratory Bird Day, second Saturday in May

<http://www.birdday.org/>

International Day of Biodiversity, May 22

<http://www.biodivcanada.ca/default.asp?lang=en&n=0B34ACE4-1>

#### **June**

Commuter Challenge, the first week of June

<http://commuterchallenge.ca/blog/>





Canadian Environment Week, the week that coincides with June 5  
<http://www.ec.gc.ca/sce-cew/default.asp?lang=En&n=69DF79A5-1>

World Environment Day, June 5  
<http://www.unep.org/wed/>

Canadian Clean Air Day, the Wednesday of Canadian Environment Week  
<https://www.ec.gc.ca/sce-cew/default.asp?lang=En>

World Ocean Day, June 8  
<http://www.worldoceansday.ca/>

Canadian Rivers Day, second Sunday in June

Rivers to Ocean Week, the week after the second Sunday in June  
<http://www.cwf-fcf.org/en/action/awareness/rivers-to-oceans/>

## **July**

Canada's Parks Day, third Saturday of July  
<http://www.parksday.ca/eng/index.html>

## **September**

International Day for the Preservation of the Ozone Layer, September 16  
<http://www.un.org/en/events/ozoneday/>

## **October**

Waste Reduction Week, third week in October  
<http://www.wrwcana.com>

## **November**

Buy Nothing Day, last Friday in November  
<http://www.buynothingday.org/>







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