



Lesson 1

Preventing Pollution: Environmental Impact and Regulations



Student handout



Assessment tools



Resources



Videos



Lesson 1:

Environmental Impact and Regulations

BC Curriculum Links

LEARNING OUTCOMES

Address and build on the following :

Work place safety

A1 Demonstrate WorkSafe BC Regulations

A2 Describe Workplace Hazardous Materials Information System (WHMIS)

Regulations

A4 Demonstrate Work Safe Practices

Tools and Assessment

C5 Use shop tools and equipment (e.g. cleaning equipment)

TRAINING STANDARDS

Facility Requirements

Shop area must meet Municipal and Provincial bylaws in regards to waste water management and environmental laws.
[This includes regional regulations highlighted in this resource.]

Resources

Electronic and hardcopy lesson plans, handouts, maps and more information are available online at:

www.crd.bc.ca/teacher

or by contacting:

education@crd.bc.ca

Purpose

Use the following lesson to build on workplace safety knowledge, and learn about our local pollution history and the regulations in place to protect the community and environment from improper management and disposal of automotive waste.

Preparation

Display or prepare copies of the:

- student handout “Background”
- “Sewered Area” map and the “Watersheds” map for your community
- “Flow Diagram” for your watershed

Set up viewing activities:

- interactive artwork by Chris Jordan “Car Keys”
www.chrisjordan.com/gallery/rtn/#car-keys
- video “Automotive Repair Part 1: Environmental Impact”
www.youtube.com/watch?v=IGCsTDzVIEI

Procedure

1. (Optional) Display Chris Jordan’s artwork Car Keys (2011)
 www.chrisjordan.com/gallery/rtn/#car-keys
 - Ask students what they think Chris Jordan used to create this image.
 - Click on the image and watch the focus zoom-in to show 260,000 car keys (one for each gallon of gas burned in motor vehicles every minute in the USA).
 - NOTE: In Canada, we use approximately 20,000 gallons/minute of automotive gasoline (Estimate based on 2009-2011 figures from Energy Use Data Handbook Table online. Retrieved March 2014 from <http://oee.nrcan.gc.ca>)
2. Ask students what products they use in the shop. Bring to their attention the various hazardous wastes they potentially handle.
3. Explain there are WorkSafe regulations to help keep them safe when handling hazardous materials. Likewise there are local regulations to keep them, the community and the environment safe from exposure to used and leftover hazardous waste materials.
4. Distribute and read “Background: Our Industrial Pollution and Local Regulations” individually or as a class.

Automotive Shop

5. View the video “Automotive Repair Part 1: Environmental Impact”
 www.youtube.com/watch?v=IGCsTDzVIEI
6. Explain that what does down indoor and outdoor drains from homes, businesses, industry and institutions can impact the environment (as shown in the video).
7. Display your community’s *Sewered Area* map to build on the connections identified in the video between your shop and the environment.
 - The pipes which carry wastewater from our homes, businesses, industries and institutions can be connected to a sanitary sewer system (sewered) or septic system (unsewered).
 - What’s the difference? Drains connected to CRD sanitary sewers discharge wastewater into the ocean via deep sea outfalls after treatment (note: CRD facilities have different types and levels of treatment). Drains connected to a septic system send wastewater into a tank, then through a distribution box into a network of underground perforated pipes which allows the wastewater to percolate into the ground.
8. Discuss the importance of preventing pollution inside the shop:
 - Preventing contaminants from flowing down a drain connected to the sanitary sewer or a septic system is important in protecting the environment regardless of the level or type of wastewater treatment in place. Some pollutants are not removed or only partially removed while others can be reactivated or negatively altered by treatment. Contaminants may also upset the treatment process, e.g. killing beneficial bacteria in a treatment plant or septic system.
 - If connected to the sanitary sewer, we are protecting the marine environment near the sewage outfall.
 - If connected to a septic system, we are protecting the groundwater, watershed, waterways and the near shore marine environment.
8. Display your community’s *Watershed* map and watershed *Flow Diagram*.
 - Explain that outside the shop, water that flows over the ground will carry any contaminants into the storm drain to nearby waterways and the near shore marine environment.
 - Locate your automotive shop on the map and follow the flow diagram to find out how your shop is connected to the local environment.
 - Have students cup their hands together. Have them visualize or use water to demonstrate that water called “runoff” (rainwater, snow melt, irrigation water) and any contaminants it picks up along the way (dirty hands, grit, oil etc.) flows through the creases in their hands (stream, creeks and rivers) and water that pools in their palms (lakes, reservoirs, oceans) eventually drips out between their hands to the ocean. The area of their hands that drains the runoff into a body of water is called the “watershed”.
 - Have students locate your automotive shop on the map and identify known landmarks (e.g. parks, playgrounds, lakes, and streams), living things (people, plants, animals) and activities (e.g. swimming, fishing) in the watershed that you are helping to protect.
9. Write and post in the classroom:
 - *We are helping to protecting the _____ watershed and/or the marine environment near the _____ sanitary sewer outfall.*

Learn more about...

- CRD Sewer Use Bylaw
- Best Management Practice Guide
- Regional Sanitary Sewer Outfalls and Environmental Monitoring
- Greater Victoria Wastewater Treatment
- Watersheds of the Capital Region
- Septic Systems

www.crd.bc.ca/teacher