

making waves: adopting stream-friendly habits

overview:

In this activity, students will research activities that are harmful to stream health, and log their efforts to improve their habits.

Many of the things we do in our everyday lives can be detrimental to the health of streams. There are many small changes that students and families can make to create a cleaner water supply – and this activity is meant to begin encouraging these kinds of changes and actions.

time it takes:

- 1.5 – 3 hrs for in-class preparation.
- 1.5 hrs to calculate the total points earned and celebrate student successes!

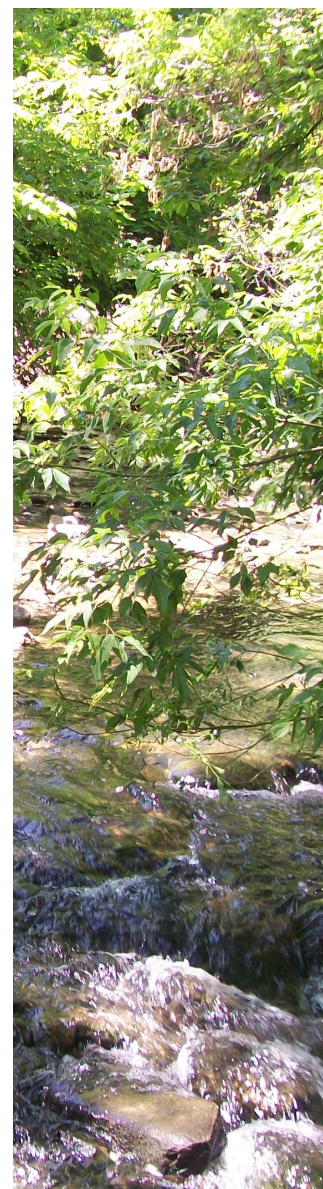
planning:

- Think logistics: Decide the timeline appropriate for your class and their actions, which actions are feasible for your students and their families, and what goal you'd like to set for individuals and as a class.
- Consider making a class visual display of the action log (a tally on the board, a poster, or a class-created display) to keep students motivated towards reaching their goals.
- Look at the 'problem – action – effect table' (handout CH02). You can use this sheet as the basis for student research, or for your own information.
- Prepare the 'action log' (handout CH01) if you plan to use it with your students.

teaching and learning strategies:

In-Class Preparations

1. Review the results from your Changing Currents workshop. What conclusions did you make from the data you found?
2. Introduce the activity and its parameters. Tell students there are a number of small changes that each of them can make in order to improve the conditions of the stream. Brainstorm with students what these actions might be.
3. Introduce the 'action log' (handout CH01), set your goals as individuals and as a class, and discuss prizes for reaching your goals.



4. Divide the 'action log' actions as well as any additional actions you've brainstormed among students and have them research the effect the action will have on improving stream health. You can use the 'problem – action – effect table' (handout CH02) to provide the basis for this research. Students should present their findings to the class.

Action Period

1. Remind and engage students with periodic check ups and point tallies of their 'action logs'.
2. Strategize with students on check up days to encourage them to reach their goals.

After the Action Period

Once your goals have been reached, celebrate with your class (ideas for prizes: pizza lunch, class party, a field trip or any other prize you see fit)!

extension: share your success

Publicize your action log and successes to the school and community, via a presentation, a news article or an announcement.

student presentations:

Presentations on the problem-action-effect of an activity that affects stream health can be framed around the following questions.

- How do we 'normally' do this activity (the status-quo)?
- What are the problems with this way?
- How is this activity detrimental to water quality and stream health?
- What positive action can we do to change the results of this activity?

Students can also add a visual component (eg. a poster) to their presentations.

resources:

Izzo, Victor. **Dry Cleaners – A Major Source of PCE in Groundwater**, California Water Quality Control Board, accessible at http://www.swrcb.ca.gov/rwqcb5/water_issues/site_cleanup/dry_cleaner_rpt.pdf

Wikipedia article on **Tetrachloroethylene** accessible here <http://en.wikipedia.org/wiki/Tetrachloroethylene>

City of Toronto, **Washing Wisely – Car Washing Tips**, accessible here: http://www.toronto.ca/water/protecting_quality/pollution_prevention/car_washing.htm

RiverSides, "**Safe Car Wash**" Campaign in 2003–2004: <http://www.riversides.org/index.php?cat=3&page1=7&page2=&page3=&page4=>

City of Toronto, **Protecting Water Quality – Storm water Pollution**: http://www.toronto.ca/water/protecting_quality/stormwater_pollution/index.htm

Storm Water Strategies: Community Responses to Runoff Pollution: <http://www.nrdc.org/water/pollution/storm/stoinx.asp>

City of Toronto, **Household hazardous wastes and where to dispose of them**: <http://www.toronto.ca/garbage/hhw.htm>

Region of Peel, **Household hazardous wastes and where to dispose of them**: <http://www.peelregion.ca/pw/waste/crc/acceptable.htm#hhw>



making waves: action log

name: _____

Action	Did it!	I was already doing it!	i kinda did it.	I didn't do it.	This doesn't apply to me.
Have your household use a Perchloroethylene and tetrachloroethylene-free dry cleaner.					
Do not wash your household car at home.					
Reduce your household's use of fertilizer.					
Do not use salt on your sidewalk or driveway, or, ask your building not to.					
Install a rain barrel at your home.					
Check with an adult if any oil is leaking from your car onto the driveway. If so, encourage them to have the car fixed.					
Have your household not use pesticides or herbicides on your garden or lawn.					
Stoop and scoop your animal's waste from your property and the road.					
Walk or bike rather than drive.					
Use grey water for gardening and watering plants.					
Conserve water (take shorter showers, fill the dishwasher before running it, only do full loads of laundry).					
Have your household collect and dispose of hazardous wastes properly.					
Have your household use eco-friendly soap and cleaning supplies.					

Parent/ Guardian Signature: _____

making waves: problem-effect-action table

Problem	Effect	Action
Use of PCE in Drycleaning	PCE, a known carcinogen, dissolves in water and gets discharged into the sewer line from many dry cleaning units. Since PCE is heavier than water, it can settle out of sewage pipes through cracks and joints in the piping. The PCE can then seep into the groundwater, travelling through the watershed into streams, affecting the local ecosystems and the quality of the drinking water.	Use a Perchloroethylene and tetrachloroethylene-free dry cleaner.
Home Car Washes	Washing your car in your driveway or an area where the water will flow into the storm sewer is harmful to local stream water quality. Pollutants that gather on the surface of your car or driveway, such as oil, and the detergent used to wash the car, will flow into storm sewers which empty into local streams and lakes without being treated! These pollutants deteriorate the stream water quality and ecosystem health. Commercial car wash facilities must treat their waste water and empty it into the sanitary sewer line, where harmful chemicals are further filtered out by the municipal water treatment system.	Do not wash your car at home – use a car wash or facility that must treat its waste water.
Salt on driveways, Use of fertilizer, herbicides and pesticides, oil leaks on the driveway, improper disposal of animal waste and hazardous waste	Water from rain, melting snow, or irrigation can run off of your property, collecting whatever it comes into contact with and entering the storm sewer and eventually a body of water. It's important to limit the harmful substances that water runoff might come in contact with.	Pick up animal waste; reduce pesticide, herbicide and fertilizer use; dispose of hazardous waste properly; use a non-harmful substance to melt ice in the winter (beet juice instead of salt); throw garbage in it's proper receptacle.
Excessive water run-off from your property	Water from rain, melting snow, or irrigation can run off of your property, collecting whatever it comes into contact with and entering the storm sewer or a body of water. run-off from cement also increases the volume and intensity of water entering streams. Therefore, it is important to limit the amount of water flowing off of your property.	Use a rain barrel to capture rain water, disconnect your downspouts, use materials that allow water to drain into the ground – gravel, grass, plants instead of cement!
Pouring hazardous waste down the sink	In urban areas, harmful substances poured down the drain can leach out of the pipes, and also may not be able to be removed from the water as it is treated. In more rural areas, septic systems may not be able to properly filter the chemicals, and waste can leach into the groundwater.	Dispose of HHWs in approved disposal centres.