RAIN TO RUNOFF: Road Salt in our City

What is Road Salt?

Road salt is used to make roads, sidewalks, and parking lots safe to walk and drive on in winter.

More than five million tonnes of road salt are used across Canada every winter!

When snow and ice melts on our streets and sidewalks, the water travels into storm drains, and then into rivers, wetlands, and lakes. Road salt ends up travelling along with it, and the salty water is harmful for the wildlife and plants that live there!

Science Experiment: Melting Ice

Normally, water freezes at 0° C, but when salt is added, water will stay liquid in even lower temperatures. This is what makes salt so effective for keeping paved areas ice free!

Scientists are exploring alternatives to salt that might be kinder to our environment. Some examples include unusual ideas like beet juice and cheese brine! Let's discover whether some of our household ingredients could be used as possible 'de-icers'.

MATERIALS

- 3+ bowls
- 3+ ice cubes
- 1 tablespoon of salt
- 1 tablespoon of each de-icing ingredient of your choice

1. Gather possible de-icing ingredients for your experiment. In addition to salt, try using alternatives such as: pickle juice, instant coffee, sugar, garlic powder, etc.
2. Place one ice cube in each bowl. Don't add anything to the first bowl—this will be our control!
3. Add 1 tablespoon of salt to the second bowl.
4. For every additional bowl, add one tablespoon of a 'de-icing' ingredient that you chose. Make sure that you label each bowl, so you remember what you put in!
5. Set a stopwatch and check on your ice cubes every few minutes to see which are melting the fastest, and which are melting the slowest.

DISCUSSION QUESTIONS

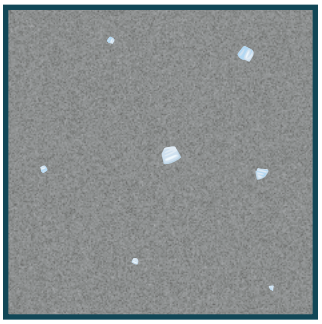
1. Which ingredients made the ice melt the fastest and the slowest?
2. Can you think of any reasons not to put some of these ingredients on roads and sidewalks?
3. Some people throw bird seed on ice, not to melt the ice, but to gain traction! Can you think of any other eco-friendly items that could be used to make ice less slippery?

Outdoor Activity: Road Salt in Your Neighbourhood

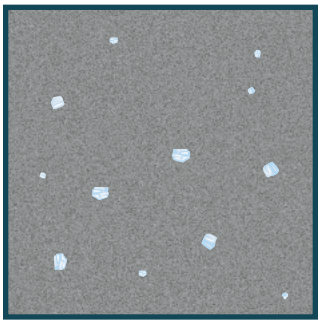
One of the main problems with road salt is that we use too much. Let's discover how much road salt is being used in your neighbourhood!

1. Find an area on your local sidewalk that is safe to work in. Using a ruler, measure out a square with each side being 1 m long. *You might be able to mark out your square in sidewalk chalk!*

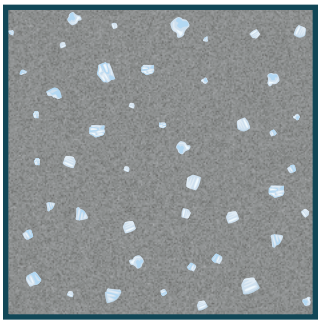
2. Take a look at the square. Judging the amount of salt in this area, does it mostly resemble image A, B, or C?



A. Not enough salt



B. The right amount of salt



C. Way too much salt!

3. Try counting the number of salt crystals in your square. The recommended amount of road salt is 58 g per m^2, which is around six large crystals and six small crystals of salt per square! Did you count more or less?

4. Record your results in the table below. *Keep in mind that road salt is only necessary when there is snow on the ground and temperatures are above -4^0 C, otherwise it's too cold for the salt to act!*

5. Try sampling different areas in your neighbourhood and see if your results change!

Temperature: _____ Weather Conditions: _____ Snow on the Ground: ☐ Yes ☐ No

Location	Photo Match (A, B, or C)	Salt Crystals Counted	Recommendation (not enough, correct amount, too much!)
1.			
2.			
3.			

DISCUSSION QUESTIONS

1. Overall, is your neighbourhood using too much salt, too little, or just enough?
2. Can you think of any ways to teach others about what you've learned about road salt?