



# NYSDEC Environmental Education

## Icy Roads: Sanding vs. Salting

**Objective:** Students will observe the effects of salt and sand on ice and vegetation. They will consider advantages and disadvantages of applying salt and sand to icy roads.

**Grade Level:** Elementary, Intermediate

**Time: Activity I:** 15 - 20 minutes

**Activity II:** 15 minutes

**Season:** Any

**Materials: Activity I**

6 small containers	teaspoon
table salt	sand
6 ice cubes	

**Activity II**

3 planting boxes	paper
grass seed or beans	salt
pencils	sand

Icy roads in the winter can pose a very real threat to travelers. Salt and sand are spread on the roads to make them safer for driving. How does this work? Salt lowers the freezing point of water so melting can take place. Sand absorbs sunlight and melts into snow and ice. However, our solutions to one problem can create new problems. Salt and additional sand can upset the delicate balance of the topsoil.

### **Activity Description I: The Effects of Salt and Sand on Ice**

Discuss with the students the reasons for sanding and salting roads in the winter. Have the students put six ice cubes in six small containers and add a teaspoon of salt to two of the ice cubes and a teaspoon of sand to two other ice cubes. They should then set three ice cubes (one with salt, one with sand and one plain) in a sunny area and the other three ice cubes in a shady area. Assign students or teams to observe the ice cubes for the next few minutes to see what happens to them. Which melted first in the sun? Why? What forces promoted faster melting?

Were the results different in the shade? How does sand's effect differ from salt's? Are there any advantages of sand over salt? Any disadvantages?

**Activity Description II: The Effects of Salt and Sand on Vegetation**

Have the students plant seeds (beans, grass, or whatever is available) in three containers. Place them in a sunny location and water them daily. Spread salt over the soil in one container, sand in another, and leave the third container as a control. Have the students observe the plants as they grow and keep a record of when the seeds first sprout, what percentage of seeds in each section sprout, the color of the leaves, and the height of the plants in each container. Have them compare the plant growth in the different containers. What influence, if any, did the salt and sand have? What conclusions can the students draw?

**Follow-up:** Have the class hold a debate on the assets of salting vs. the liabilities of salting, or a debate sanding vs. salting. The students could also research the effect of salt on asphalt and cars and the amount of money their local entity spends on salt and sand each winter.