Framework topic: Community Knowledge - The collective knowledge of the community is an incredible resource. The ability to tap into this intelligence is essential for continued growth.

Balancing Community Safety with Environmental Safety
By: Hannah LaMendola

In the wake of a winter storm, glittering road salt melts through alabaster snow drifts and glass-like ice in the fight to reclaim the roads of Holland, MI. But this battle needs a strategy as road salt can damage the environment when misused. According to the United States Environmental Protection Agency (EPA), road salt "can contaminate drinking water, kill or endanger wildlife, increase soil erosion, and damage private and public property." Thus, the City of Holland is tasked with many important decisions regarding road salt usage and its environmental impact.

Scott Broeve, the Transportation Manager at the City of Holland, shares that the city's strategy involves salt trucks outfitted with pre-wet systems and salt boxes. The pre-wet systems apply a mixture of calcium chloride and an agricultural byproduct to the salt before it is used on the roads. Pre-treating helps the salt activate quicker, lowers its freezing point, and keeps it from bouncing off the road when applied.

When applying the salt, Broeve explains that the salt-truck drivers typically operate the systems in manual mode where drivers control the drop of the salt. This control allows drivers to use "skip pattern application," applying salt only in critical areas that traffic will carry through to untreated road sections. Furthermore, drivers can avoid dropping salt near designated "environmentally sensitive areas." These strategies reduce and contain the amount of material dropped. Using less salt and only where needed helps to lower costs and protect local ecosystems.

While these are the strategies Holland currently employs, Broeve points out that "advancements continue to be made to maximize efficiency in clearing roads." One such advancement is the use of liquid additives, which, alongside application best practices,

are the primary ways to control salt usage. Furthermore, Broeve shares that "the City of Holland has experimented with pre-treating roads but is currently using de-icing methods."

Holland residents can apply these same ideas and strategies to reduce the negative environmental impact when de-icing. The Metropolitan Water Reclamation District of Greater Chicago shares five S's of mindful salt use:

1. *Shovel First*—Salt should only be used after the snow is removed and only in areas needed for safety.
2. *Use sparingly*—A 12-ounce coffee mug should be enough salt for a 20-foot driveway or 10 sidewalk squares (250 square feet).
3. *Spread*—Distribute salt evenly, not in clumps.
4. *Sweep*—If salt is left over on the ground after the ice melts, too much salt was used. Sweep up leftover salt to keep it out of rivers and streams.
5. *Switch*—Salt stops working if the temperature drops below 15°F. When it gets this cold, switch to sand.

Additionally, using road salts that do not contain chloride (a component that is harmful to local ecosystems, particularly plant and aquatic life), can help to protect the environment. According to the New Hampshire Department of Environmental Sciences, alternatives to standard sodium chloride road salts include calcium magnesium acetate (CMA), potassium acetate (KA), agricultural by-products, sand, and more. Some alternative brands worth consideration include Entry chloride-free liquid ice melt, Harris kind melt ice melter, Ready Go ice melter, and other chloride-free ice melters.

If Holland residents have any questions regarding the city's winter operations, they can contact the transportation office at (616) 928-2400.

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