Picking the right product is key to melting ice from sidewalks, driveways

K-State experts say too much de-icer can harm landscapes, animals

MANHATTAN, Kan. – When it comes to de-icing sidewalks and driveways after a winter storm, not all salts are created equal.

Most of the popular de-icing products sold in stores are chloride-based, each containing a different combination of salt. They include:

- sodium chloride,
- potassium chloride,
- calcium chloride, and
- magnesium chloride.

Ward Upham, a horticulturist with K-State Research and Extension, said knowing the type of salt you are buying at the store could make a big difference in protecting plants, grass and even the concrete around your home.

‘‘The best deicer for landscapes that is readily available to homeowners is calcium chloride,” Upham said. “It works at lower temperatures than other products and won’t harm plants if excessive amounts are not applied.”

Of the four most common choices, calcium chloride has the lowest temperature threshold, working to minus-25 degrees F.

‘‘It generates its own heat as it is mixing with water and dividing into calcium and chloride, so it can be effective at those lower temperatures,” said Mary Knapp, a climatologist at Kansas State University.

Sodium chloride is commonly known as rock salt and is sometimes mixed with sand or other materials. It is the most widely available and often the least expensive.

But Knapp says sodium chloride is only effective at melting ice when temperatures are 12 degrees F or higher. When temperatures get lower than that – as they often do in Kansas – sodium chloride products will not be able to do the job.

Magnesium chloride products are effective to 5 degrees F, while potassium chloride salts are the least effective, melting only to 20 degrees F.

Regardless of the product, “use just enough de-icer to get the job done,” Upham said. “Excess amounts can harm plants and concrete surfaces, especially rock salt and potassium chloride.”

Knapp said all of the chloride-based products can be toxic to plants and animals. She said blanketing areas with de-icer is unsafe and won’t be any more effective than smaller amounts.

‘‘Chloride is in all of these products and that’s going to have the potential for problems with the environment,” she said. “The calcium chloride and the magnesium chloride tend not to release as much chloride as the sodium chloride and the potassium chloride do. So those two are not as toxic as the other two.’’

Upham noted that calcium magnesium acetate is a newer product that does not contain chloride. The chemicals work together to prevent snow particles from sticking together or to the surface. However, the product is effective only to 20 degrees F.

Some homeowners have tried fertilizer to melt away ice, but Knapp says in order for fertilizer to be effective as a de-icer, “you are overdoing the fertilizer rates that you would normally apply to plant material.”

‘‘As with any fertilizer, if you apply more than needed, you can have plant toxicity from that. Even though you might think of it as being safe for plants, the rate you have to apply is actually damaging.”

Some natural products – wood chips, ash, sand, bird seed, cat litter and sunflower seeds – aren’t normally effective to melt ice, but can help provide traction on slippery surfaces.

Regardless of product used, Knapp said homeowners should take the time to remove as much snow and ice as possible before applying a de-icing product.

‘‘If you throw a de-icer into the midst of snow, it is going to have very little effect,” she said. “It will melt some, but it just doesn’t have the efficacy it has when it is on ice.”

And in some cases, Knapp says it’s OK to let the sun help.

‘‘Take a look at what the temperatures are going to be,” she said. “If you get a clear day following the storm, you can have a lot of the work taken care of for you by Mother Nature. Let solar radiation take the work out of your hands.”

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