BRICK 50 YEARS 1969 - 2019 UTILITIES
THE BRICK TOWNSHIP MUNICIPAL UTILITIES AUTHORITY
EPA WaterSense PARTNER

Saving Water with Water Savings

Welcome to a New Year of Water Savings!

This edition provides steps you can take throughout the year to save water and information on WaterSense-certified toilets. It includes information on deicers with a table showing their lowest melting temperatures and impacts to the environment and infrastructure.

A New Year's Resolution for Savings

Make a resolution to save water throughout the year. Take the "I'm for Water" pledge to help use less water and spend less on utility bills by visiting USEPA's WaterSense (https://www.epa.gov/watersense/im-water-pledge). Download the 2023 monthly resolutions checklist that provides one or two simple steps you can take each month to save and protect our water for future generations. Join thousands of others who are doing their part in protecting this precious natural resource we can't live without.

WaterSense Toilets

Toilets use the most water in the home by accounting for 30 percent of a home's indoor water consumption. Older homes may still have old, inefficient toilets that can use up to 6 gallons of water per flush (gpf). New WaterSense certified toilets only use 1.28 gpf without compromising performance. A family can save up to 20 to 60 percent (almost 13,000 gallons per year) with a water efficient commode. That can equal a savings of up to $140 dollars per year or about $2,200 over the lifetime of the toilet. If all the homes in the United States with older, inefficient toilets were replaced with new WaterSense models, 520 billion gallons of water would be saved. That's the amount that flows over Niagara Falls in about 12 Days! To learn more visit WaterSense's residential toilet page (https://www.epa.gov/watersense/residential-toilets).

look for WaterSense Meets EPA Criteria

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Deicers and Their Impacts

Deicer	Lowest Effective Temperature for Deicing °F	Impacts on Environment
Sodium Chloride ($NaCl$) [1]	15 [3,4,5,6]	Can break down soil structure and decrease permeability, while increasing metal mobility in soil. May increase heavy metal and chloride contamination in groundwater and fresh water supplies affecting drinking water supplies. Excessive chloride loading possible in fresh water bodies with limited potential for dilution or near paved surfaces, affecting survival of freshwater creatures and plants. Spray from traffic affects vegetation causing osmotic stress and leaf scorch, which may influence spread of salt-tolerant or non-native species. Causes salt poisoning in birds, as well as vehicle strikes with birds and mammals. Initiates and accelerates corrosion of exposed metal and concrete reinforcement bars as well as cement deterioration.[2]
Calcium Chloride ($CaCl_2$) [1]	-20 [3,5,6]	While Calcium improves soil structure, the Chloride may increase the mobility of heavy metals. May increase heavy metal and chloride contamination in groundwater and fresh water supplies affecting drinking water supplies. Excessive chloride loading possible in fresh water bodies with limited potential for dilution or near paved surfaces, affecting survival of freshwater creatures and plants. Even though Calcium is important for plant growth, the Chloride causes osmotic stress and leaf scorch. Paved and metal surfaces stay wet longer, potentially increasing their corrosion rates.[2]
Magnesium Chloride ($MgCl_2$) [1]	5 [2,5,6]	While Magnesium improves soil structure, the Chloride may increase the mobility of heavy metals. May increase heavy metal and chloride contamination in groundwater and fresh water supplies affecting drinking water supplies. Excessive chloride loading possible in fresh water bodies with limited potential for dilution or near paved surfaces, affecting survival of freshwater creatures and plants. Even though Magnesium is important to plant growth, the Chloride causes osmotic stress and leaf scorch. Causes metal and cement deterioration. Cement deterioration may be accelerated from Magnesium reactions.[2]
Calcium Magnesium Acetate (CMA) [1]	20 [3]	Even though Calcium and Magnesium improve soil structure, they release heavy metals in soil and into the environment. Heavy metals released from soil may enter into groundwater and surface water supplies, potentially affecting drinking water sources. Dissolved oxygen demand in water bodies associated with acetate degradation decreases oxygen availability for aquatic creatures and plants. Can cause osmotic stress in vegetation at very high levels. Even though it is less corrosive than chloride based deicers, it accelerates metal corrosion.[2]
Potassium Acetate (KA)[1]	-15 [2,3,4,5]	Even though it improves soil structure, it can release heavy metals to the environment. Potential for heavy metals to migrate to groundwater and surface water supplies, affecting drinking water sources. Dissolved oxygen demand in water bodies associated with acetate degradation decreases oxygen availability for aquatic creatures and plants. Can cause osmotic stress in vegetation at very high levels. Even though less corrosive than chloride based deicers, it accelerates metal corrosion.[1]
Agricultural By-Products (complex sugars fro root crops and grains)[1]	No Information Provided	In surface water bodies, nutrient enrichment from phosphorus and nitrogen leads to dissolved oxygen demands by breaking down the organic materials in it. This increases aquatic vegetation, can cause harmful algal blooms and depletes dissolved oxygen for aquatic creatures. It may also release heavy metals to the environment. May initiate and accelerate corrosion in metals and cement, but requires further evaluation.[1]
Manufactured Organic Materials[1]	No Information Provided	In surface water bodies, nutrient enrichment from phosphorus and nitrogen leads to dissolved oxygen demands by breaking down the organic materials in it. This increases aquatic vegetation, can cause harmful algal blooms and depletes dissolved oxygen for aquatic creatures. It may also release heavy metals to the environment. May initiate and accelerate corrosion in metals and cement, but requires further evaluation.[1]
Abrasives (sand)[1]	Doesn't melt - For traction only [3]	Increases turbidity and sedimentation in surface water bodies.[1]

Osmotic stress can inhibit a plant's ability to absorb water and can disrupt the uptake of nutrients. Not only will it reduce the roots ability to uptake water from the soil, it can lead to dehydration and collapse of plant root tissues. It can cause cellular damage, which can lead to reduced shoot growth and drought-like symptoms.

[1] National Academies of Sciences, Engineering, and Medicine. 2007. Guidelines for the Selection of Snow and Ice Control Materials to Mitigate Environmental Impacts. Washington, DC: The National Academies Press, https://doi.org/10.17226/23178.

[2] Kelly, V.R., Findlay, S.E.G., Schlesinger, W.H., Chatrchyan, A.M., Menking, K. 2010. Road Salt: Moving Toward the Solution. The Cary Institute of Ecosystem Studies. http://www.caryinstitute.org/research/reports/road_salt_2010.pdf

[3] Minnesota Snow and Ice Field Handbook for Snowplow Operators, published 2022 by the Minnesota Department of Transportation, Local Research Board, and the University of Minnesota Local Technical Assistance Program, p. 20

[4] Kelly, V.R., Findlay, S.E.G., Weather, KC 2019. Road Salt: The Problem, The Solution, and How To Get There. Cary Institute of Ecosystem Studies, www.caryinstitute.org/road-salt-report, p. 11

[5] Mississippi Watershed Management Organization. Fight Snow and Ice, Pollution-Free, www.mwmo.org.

[6] 9MileCreek Watershed District. Winter Maintenance - Choosing a Deicer, www.ninemilecreek.org.

More on Deicers

In our last edition of *Water Savings*, we discussed applying deicers to sidewalks and driveways. Most of these products contain forms of salt, which can be harmful to the environment. There are also those that contain organic compounds as opposed to salt and can be just as effective in melting ice. All deicers are effective to a certain degree of pavement surface temperature. For example, road salt (Sodium Chloride) is effective at melting ice down to 15^{O}F. The table to the left shows the lowest effective temperatures as well as environmental impacts. Even if a product is labeled organic or safe for the environment, it doesn't necessarily mean there are zero impacts. All deicers can have an impact on our water resources and infrastructure if not used responsibly.

When using any deicer, make sure to follow the manufacturer's directions. Remember more is not better.

A 12 ounce mug is enough salt for 10 sidewalk squares or a 20 foot driveway with 1 to 2 inches between particles. Sweep up any deicer and sand to save and reuse later.