PACE
PARTNERS FOR A
CLEAN ENVIRONMENT

# Stormwater Protection
# *Winter De-icing*

Spring 2009

## What is PACE?

PACE provides education outreach, technical assistance, and recognition for environmental achievement. The program is available at no cost to businesses in Boulder County. PACE offers:

- Assessments to identify opportunities for waste reduction, water conservation, and energy-efficiency
- Information and assistance to meet your business needs
- Compliance education
- Public recognition for your environmental efforts

## Why Participate?

Compliance – Our free, non-regulatory consultations help you comply with environmental laws and ordinances and reduce your liability.

Cost Savings - Less waste means lower disposal and operating costs. Efficient use of water, energy, and materials saves money.

Public Image - Environmental practices impact your image with customers, the community, and regulatory agencies.

## Public Recognition!

PACE publicly recognizes certified businesses through free advertising. This includes Internet listings and advertising in newspapers, magazines, utility bill inserts, and radio spots.

Certified businesses receive a PACE window decal and framed certificate. PACE encourages the public to support businesses that contribute to the community through environmentally sound operating practices.

## De-icing Products

Salt or alternative de-icing chemicals are used in winter maintenance to melt snow and ice to ensure pedestrian safety. When snow and ice melt, the water becomes stormwater runoff, which ends up in our streams, rivers and lakes via our stormdrain system. As the runoff moves over paved surfaces, it collects sand, salt, and other pollutants and deposits them into surface waters causing contamination. De-icers can reduce oxygen levels and/or increase salinity in our surface waters. In addition, de-icers have the potential to cause building, pavement and interior flooring deterioration.

Follow product directions carefully to reduce the amount of de-icer used and choose environmentally preferable de-icing products to reduce your impact on the environment.

### Environmentally Preferable De-icing Chemicals

- Choose products with CMA or calcium chloride as the main ingredient
- Avoid products with rock salt and urea (view table on following page)
- Avoid kitty litter, it is not a de-icer and can get messy and be tracked inside

### Reclaiming Excess De-icing Products

De-icing product left on pavement after a snow event is a threatened discharge that can reach the storm drainage system causing an illicit discharge. Fines up to $1,000 per day for ordinance violations may be imposed. Reduce your liability and save money by reclaiming your de-icer for reuse by sweeping or vacuuming the solids from the sidewalk after the storm. Only reapply de-icer in trouble spots that can ice up overnight due to snowmelt runoff. Do not pressure wash sidewalks to remove de-icer without wastewater reclamation.

### Put your sidewalk on a Low Salt Diet

1. Check the label and view table on following page to pick safest de-icing products.
2. Shovel and scrape early and often - de-icers work best when there is only a thin layer to remove.
3. Know your salt risk zone - identify if you have salt-sensitive trees, plants, or shrubs within 5-10 feet of your sidewalk.
4. Apply de-icer early, but sparingly. A little salt goes a long way - applying more salt won't speed up the melting process.
5. Remove slush; after snow and ice has melted to prevent refreezing.

KEEP IT CLEAN PARTNERSHIP
Communities in the Boulder and St. Vrain watersheds working together to protect our water quality.
BOULDER • BOULDER COUNTY • ERIE
LONGMONT • LOUISVILLE • SUPERIOR

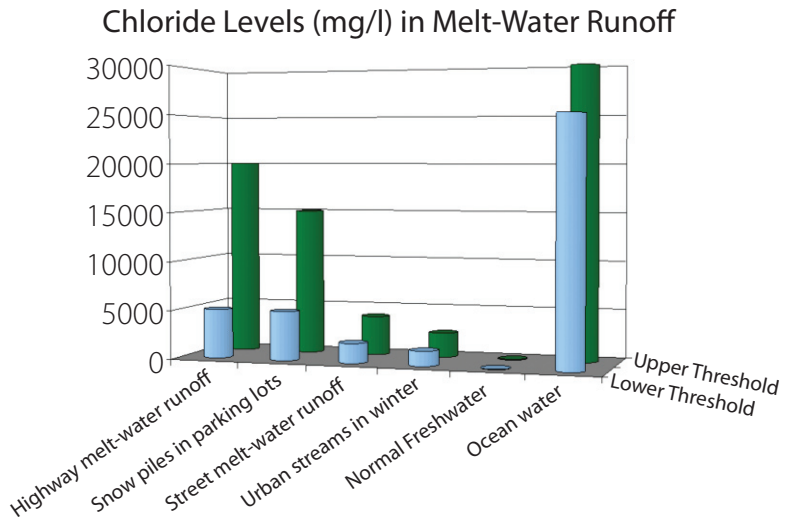
**Tools To Remove Snow and Ice**
Snow Shovel | Dutch Hoe

**Additions To Prevent Formation of Ice**
Expandable Downspout Extension | Splash Block

## Salting Our Streams [1]

Chloride is the most common de-icer applied. Chloride is very soluble in water and it freely reaches our surface waters through stormdrain and groundwater systems. This graph illustrates the level of chloride in melt-water runoff from various sources.

Common De-icing Chemicals [1,2]




**"Many products that claim to be eco-friendly are often just a combination of the most common five chemicals used in de-icers, but blended in such a way as to minimize environmental risks and keep costs low for consumers." [3]**

### References:


[1] Schueler, Tom. "Snow, Road Salt, and the Chesapeake Bay." Center for Watershed Protection. Dec. 07 www.cwp.org/rr_photos/jan05/snowandsalt.pdf

[2] University of Michigan, Occupational Safety & Environmental Health. December 2007 www.oseh.umich.edu/stormwater/wintermaint.html

[3 Brown, Ellen. "Solutions for Slippery Sidewalks." January 2007. Thrifty Fun. December 2007 www.thriftyfun.com/tf16691674.tip.html


## Helpful Resources

See the PACE website
for a list of helpful resource sheets

www.pacepartners.com

This provided listing is for informational purposes only; it is not an endorsement of any product by PACE. For more information call PACE at 303-786-PACE (7223)

## PACE Contacts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| De-icing Chemical | Works To | Environmental Impact | Benefits | Downfalls | Cost | Notes |
|---|---|---|---|---|---|---|
| Calcium Chloride ($CaCl_2$) | -25°F | Less harmful than salt to vegetation | Releases heat when it dissolves, reduces the amount of salt used by 10-15% | Leaves harmful residues on carpet, keeps pavement wet, corrosive to metal | 3X more than salt | Must be covered and kept in dry place |
| Magnesium Chloride ($MgCl_2$) | -13°F | Less harmful to the environment than calcium chloride and sodium chloride | Competitive price, | Corrosive, easily tracked inside increasing cost for floor cleaning and replacement | 2X more than salt | Works well when mixed with sand or other de-icers |
| "Rock Salt" Sodium Chloride (NaCl) | 15°F | Can deplete the oxygen supply needed by aquatic animals and plants, leaches into ground and makes it harder for plants to survive | Low purchase price | Can be corrosive to concrete, buildings, structural steel and cars | ~ $5 for 50lb bag | Contains cyanide as anti-caking agent (0.01% dry weight) |
| Carbohydrate Based Solution | | Biological and environmentally safe | No adverse effects on infrastructure, corrosion inhibitor | Some products may have an odor, liquid is thick | Low cost | Works well when mixed with $MgCl_2$ |
| "CMA" Calcium Magnesium Acetate | 22°F | The most environmentally benign, high concentrations can reduce oxygen levels in surface waters, safe for vegetation | Does not accumulate in the soil, little damage to concrete versus rock salt | Not as effective in colder temperatures and acts slower than salt | 20X more than salt | Use twice as much CMA as salt, keep dry for indefinate storage |
| "KA" Potassium Acetate (KO2CCH3) | -75°F | Lowers oxygen levels in surface waters, is biodegradable | Low corrosion, safer than salt on steel, requires fewer applications | Can cause slickness on pavement | 8X more than salt | Used as a prewetting agent for solid de-icers |
| "Urea" ($NH_2CO\ NH_2$) | 20°F | Can release ammonia and nitrates into the water supply | | In large amounts, it can burn plants | 5X more than salt | Primary use is as a fertilizer |