

July 9, 2018

Subject Title: Salt Management Plan - Winter Operations

Purpose

The purpose of this briefing note is to outline the City's salt management practice and commitment in achieving improved environmental protection without compromising road safety and to provide an update following the January meeting in which salt application rate impacts on private side property owners were discussed with the Mayor's office and senior Community and Fire Services staff.

Background

The Salt Management Plan (the Plan)

The City's Salt Management Plan is designed to set out a policy and procedural framework for ensuring that the City of Markham continuously improves the management of road and parking lot salt in winter operations. The Plan demonstrates the City's commitment to reduce the environmental effects of excessive salt use, consistent with the code of practices set out by Environment Canada.

In addition, the Plan establishes appropriate standards and best practices for salt application, salt storage and snow disposal. The City has had the Plan in place since 2005 with yearly updates provided to Environment Canada. All staff is responsible for ensuring that effective salt management practices, guidelines and procedures are followed and that services are provided in accordance with the policies outlined in the Plan. This will ensure effective winter maintenance for the safety of all roadway users in the City of Markham while striving to minimize the amount of salt entering the environment and at the same time meeting Provincial legislation related to road maintenance standards for winter services.

Highlight of City's Salt Management Practice

1. Equipment

- One-tonne sanders equipped with spreader control devices and its application rates is comparable to road sanding units.
- City owned sander/plow combination units equipped with anti-icing* equipment.
- City owned sander/plow combination units equipped with salt pre-wetting** application units.
- City hired combination contract specified all units must have pre-wetting capability.
- Supervisor, Working Supervisor and Patrol vehicles equipped with infrared thermometer to measure road surface temperatures
- City calibrates our road and parking lot de-icing units in house which allows us to adjust the salt application levels on a per occurrence basis based on specific weather events. Operators under direction of their Supervisors, have the flexibility to adjust the settings to accommodate specific conditions. For example, applications rates may be adjusted for black ice and frost and on steep grades conditions.
- All in-house and contracted units are equipped with AVL (automatic vehicle locators) to track the location and speed.

* Anti-icing is a proactive snow and ice control strategy whereby straight brine is sprayed directly on the road in advance of a storm. The term can also refer to early application of chemical in any form early in a storm to prevent the formation of the snow/road bond.

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**Pre-wetting is the application of a liquid to a solid material just prior to application to the road surface. Applying a liquid to the solid material helps the solid material “stick” to the road surface and not bounce away onto the shoulder. Liquid applied to a solid chemical also begins the process of brine formation and allows the chemical to act quicker.

2. Facility

- Miller Yard equipped with 60,000 litre brine tank station - Brine (23% NaCl, 77% Water) - \$0.15/L
- City installed two Road Weather Information System (RWIS) stations to provide Markham specific weather forecast.

3. Policy

- Developed a Good Housekeeping Policy minimizing material waste and environment impact in our yards

4. Training

- Developed comprehensive winter maintenance Operator Training Program for all Operations staff.
- Fleet staff are trained to calibrate City’s winter equipment. All in-house and hired staff receive annual training on calibration methods based on manufacturer’s recommendations and actual unit testing.
- Ongoing training for Supervisor and Working Supervisor with new technology and best practice.

5. Ongoing Improvement Projects

- Continue to upgrade City’s in-house and hired fleet to anti-icing and salt pre-wetting capabilities in new units where applicable.
- Continue to identify environmentally sensitive areas and develop procedures to reduce potential impacts of salt.
- Continue to identify snow storage / disposal sites to service new urban areas

Alternative Snow and Ice Control Materials

The usage of salts is essential for the safety and mobility of our transportation facilities. In order to alleviate the potential negative impacts of salt use to the environment, alternatives to chloride salts (organic or semi-organic) have been sought by industry for a decade now.

There are a lack of evaluation on the performance of these organic/semi-organic products in a real-world setting. The other major challenge is that there are no systematic study on any defendable guidelines for the recommended material application rates for transportation agencies to follow. This could lead to over usage on these materials.

Regardless of material cost and reliability, the City of Markham’s public works yard for equipment, material and snow storage is already at capacity. Until the City develops a new works yard to facilitate increased capacity, we are not in position to consider this product.

Update

As requested, City staff met in early June, 2018 to review the possibility of implementing a bylaw to impose application rates on private property owners, specifically large scale malls and commercial property owners. The intent would be to align service levels to existing City municipal lots. Staff do not support this initiative due to the following;

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- Imposing application rates on private property owners will expose the City to claims should the City be named in slip and fall incidents.
- Providing a list of qualified vendors will further expose the City should it be named in possible future claims.
- Public optic of advertising a list of vendors may prove to be negative for the City

Staff Recommendations

- The City should undertake more of an education position as regulation of salt use is a Federal role under the direction of Environment Canada. Possible solutions could include;
 - During winter months, add a link to Landscape Ontario's direction surrounding best practises for winter maintenance. This also provides a list of landscape vendors.
 - Provide a link to Environment Canada's Code of Practises surrounding winter application rates and practises.
 - Provide links to the Smart About Salt program and any other associated programs which may be beneficial to private property owners.

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