

APPENDIX 2 - ADDITIONAL RESOURCES

1 - Environment Canada Offices and Website

Additional information about the Code of Practice and the issue of road salts can be obtained through Environment Canada Offices, listed below, as well as Environment Canada's Road Salts Website:
www.ec.gc.ca/nopp/roadsalt/en/index.cfm

Environment Canada Office for:	Phone Number
Newfoundland and Labrador, Prince Edward Island, Nova Scotia and New Brunswick	902-426-9590
Quebec	514-283-4670
Ontario	416-739-5872
Alberta, Manitoba, Saskatchewan, Northwest Territories and Nunavut	780-951-8600
British Columbia	604-666-9862
Yukon	867-667-3402

2 - Resources from other organizations

The table below lists documents and information pertaining to best management practices for road salts which can be found from other organizations and municipalities.

RESOURCE	ORGANIZATION
<ul style="list-style-type: none"> • <i>Syntheses of Best Practices - Road Salt Management:</i> <ol style="list-style-type: none"> 1.0 Salt Management Plans 2.0 Training 3.0 Road and Bridge Design 4.0 Drainage and Stormwater Management 5.0 Pavements and Salt Management 6.0 Vegetation management 7.0 Design and Operation of Road Maintenance Yards 8.0 Snow Storage and Disposal 9.0 Winter Maintenance Equipment and Technologies • <i>Get SMART about salt - Learning Guide:</i> <ol style="list-style-type: none"> 1. Transportation impact to economy 2. Science of road salt and ice and Application strategies 3. Equipment and Technologies 4. Road salt and the environment 5. Material storage and handling and Snow disposal sites 6. Monitoring and record keeping 	Transportation Association of Canada www.tac-atc.ca

Additional Resources

RESOURCE	ORGANIZATION
<ul style="list-style-type: none"> • Training sessions for operators and supervisors • RWIS maps for Ontario • Adaptation of AASHTO's (American Association of State Highway and Transportation Officials) winter maintenance training to the Canadian context. 	Ontario Good Roads Association (OGRA) www.ogra.org
<i>Salt Management at Highway Maintenance Yards</i> CD (October 2003) intended for highway maintenance contractors, superintendents, foremen and operators.	Joint Environment Committee [Alberta Transportation, Alberta Environment and Alberta Infrastructure]
<ul style="list-style-type: none"> • Snowfighters Training Program • Snowfighters Handbook • Salt Storage Handbook 	Salt Institute www.saltinstitute.org/snowfighting www.saltinstitute.org/34.html#wi
Winter maintenance training through provincial chapters	Canadian Public Works Association www.cpwa.net
<ul style="list-style-type: none"> • Questions and Answers about Road Salts • Road Salt Management and Chloride Reduction Study Report 	Region of Waterloo, Ontario www.region.waterloo.on.ca/web/region.nsf
<ul style="list-style-type: none"> • Liquid Anti-Icing • Roads winter maintenance 	Region of Peel, Ontario www.region.peel.on.ca/pw/roads/winter-maintenance/index.htm

3- Other examples of road salts management

The following extracts are reprinted, with the permission of the Federation of Canadian Municipalities (FCM), from its 2002 and 2003 *Municipal Governments and Sustainable Communities: A BEST PRACTICES GUIDE FCM-CH2M HILL Sustainable Community Awards*. The Awards are also supported by FCM's Green Municipal Funds, by Environment Canada through funding for Partners for Climate Protection, and by Transport Canada.

CITY OF TORONTO, ONTARIO **Population: 2,481,494** **Salt Management Plan**

Additional Resources

Icy roads can have a dramatic impact on public safety, so managing winter conditions on the City of Toronto's 5,100-kilometre road network required a broad management strategy. The city's Salt management plan is based on best practices and sets out a framework to continuously improve road salt management. The plan includes a Good Housekeeping Code of Practice that improves salt management practices at storage facilities and, by 2003, all new maintenance facilities must be designed following the principles set out by the Transportation Association of Canada. Because the plan is activity-based, it allows the city to phase in new approaches and technologies to ensure that public safety is not compromised.

Contact: Gary Welsh, Director, Transportation Services, District 4, (416) 396-7842

TOWN OF CALEDON, ONTARIO

Population: 50,595

Reduction in Road Chlorides

The Town of Caledon has reduced the amount of chlorides it uses to manage dust and ice on the town's roads by implementing four specific practices. About 600 kilometres of the town's roads are gravel, so one such practice was to convert many of these rural roads to hard surface. The town expects that overall chloride use on these converted roads will be cut in half. Caledon also implemented a spring stabilization practice to deep grade gravel roads. This produces more uniform road characteristics and maximizes road strength, allowing the town to apply liquid calcium chloride more easily and efficiently. By the end of 2002, the town had reduced its overall chloride use by 67 per cent, with annual operating savings in the order of \$1 million.

Contact: Hans Muntz, Director of Infrastructure, (905) 584-2272

CITY OF BRAMPTON, ONTARIO

Population: 351,646

Responsible Use of Salt in Snow and Ice Control

The escalating use of salt on the City of Brampton's roads was increasing costs and environmental degradation. The city purchased new spreaders that pre-wet the salt before it is applied to roads, reducing salt usage by 30 per cent. When snowfall or icy conditions are expected, primary roadways are pre-salted to prevent snow and ice from sticking to the road surface. Salt is placed along the centre of the roadway and allowed to spread to the curb by means of normal traffic flow, forming a brine that melts the ice. New salt storage shelters were also built to prevent runoff from improper storage, and the city plans to phase out conventional snow removal equipment and replace it with leading-edge salt spreaders.

Contact: Deborah Tracogna, Senior Manager, Corporate Communications, (905) 874-2143

4 - Glossary

TERM	DEFINITION
Anti-icing	The application of a de-icer to a roadway, often before a frost or snowfall, in order to prevent melted snow and ice from forming a bond with the road surface.
Best Management Practices (BMP)	Set of recommended procedures to achieve the proposed objective or objectives.
De-icing	To prevent a bond from occurring between the snow and the road surface or to destroy a bond that has already formed.
Electronic spreader controls	These controls minimize salt wastage by ensuring that the appropriate spreader rate is achieved. Modern ground speed spreader controls regulate the amount of salt dispersed based on the vehicle's speed, while maintaining a consistent and accurate application of materials.
Pre-wetting	The addition of a liquid to solid de-icers or abrasives before application, in order to quicken melting and to improve material adherence to the road surface.
Road Weather Information System (RWIS)	A network of roadway sensors connected together to provide real-time, accurate and site specific pavement surface conditions and weather data. RWIS allow maintenance crews to make informed decisions on road maintenance actions based on current weather conditions.