MISSISSIPPI-RIDEAU SOURCE PROTECTION REGION

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MINUTES

Mississippi-Rideau
Source Protection Committee May 5, 2011 #5/11

Location: Merrickville Community Centre

Present:

Scott Berquist	George Braithwaite
Carol Dillon	Richard Fraser
Drew Lampman	Patricia Larkin
Pieter Leenhouts	Randy Malcolm
Peter McLaren	Beverly Millar
Eleanor Renaud	Janet Stavinga (Chair)

Mary Wooding (Ministry of the Environment Liaison)

Staff:

Sommer Casgrain-Robertson	Allison Gibbons
Tiffany Onesi	Michelle Paton
Brian Stratton	

Guests: Jim Anderton, Rideau Valley Source Protection Authority
Frank Hull, Ontario Good Roads Association

Regrets:

Scott Bryce	Paul Knowles
Tammy Rose	

Jean-Guy Albert (Medical Officer of Health Liaison)
Alan Arbuckle (Source Protection Authority Liaison)
Mark Burnham (Source Protection Authority Liaison)

1.0 Welcome and Introductions

Chair Stavinga welcomed everyone to the meeting. She introduced Jim Anderton, a newly-appointed member of the Rideau Valley Conservation Authority's Board of Directors who was participating on behalf of the Source Protection Authorities.

Chair Stavinga then asked all participants to introduce themselves.

a) Agenda Review

Chair Stavinga reviewed the purpose of the meeting and proposed reversing Agenda Items 2.0a and 2.0b so Patricia Larkin would present first.

b) Notice of Proxies **None**

c) Adoption of the Agenda

Motion 1-5/11

That the Agenda be approved as amended.

Carried

d) Declarations of Interest **None**

e) Approval of Minutes

Two errors were identified in the draft minutes: George Braithwaite had not attended the meeting and page 3 should reference O. Reg. 213/01.

Motion 2-5/11

That the minutes of the Mississippi-Rideau Source Protection Committee meeting of March 3, 2011 be approved as amended.

Carried

f) Status of Action Items

Motion 3-5/11

That the Mississippi-Rideau Source Protection Committee receive the Status of Action Items Report for information.

Carried

A member asked staff to add, as an action item, the question of why the Provincial Threats Tables identify indoor fuel storage tanks as significant threats while outdoor storage tanks are considered moderate threats. This had been noted during the April meeting at which time Mary Wooding agreed to raise the question with the Ministry of the Environment and report back to the Committee.

g) Correspondence **None**

2.0 Road Salt Presentations

a Patricia Larkin gave a presentation on the health and environmental concerns associated with the application of road salt. The application of road salt can contaminate drinking water sources rendering the water non-potable. Ms. Larkin stressed the importance of managing both the risks and benefits to health as a result of road salt application. She advised that climate change is expected to increase the number of “treatable events” requiring increased use of road salt.

Driver education and salt education programs will be important outreach tools in managing salt application.

The Provincial Threats Tables identify the application, handling and storage of road salt as a significant drinking water threat if road salt is applied in an area where the percentage of total impervious surface area is greater than 80%. Patricia Larkin stated that studies in other regions have shown high concentrations of chloride where impervious surfaces were 45%. Mary Wooding agreed to raise this issue with the Ministry of the Environment and advise the Committee of any proposed changes. Staff were asked to add this as an Action Item also.

b Brian Stratton introduced Frank Hull, Manager of Technical Services, with the Ontario Good Roads Association.

Frank Hull spoke to the Committee about road salt, its management and the promotion of best management practices including the development of Environment Canada's Code of Practice for the Environmental Management of Road Salts. This Code applies to municipalities that use more than 500 tonnes of road salt per year.

Mr. Hull explained these municipalities are supposed to produce a Salt Management Plan which is unique to each municipality and can address the application, handling and storage of road salt, snow storage, equipment evaluation and enhancement, and a procedure for yearly review of the plan and implementation of corrective actions to address deficiencies. Municipalities are supposed to report to Environment Canada that they have a Salt Management Plan and provide an annual monitoring report that looks are implementation progress. Environment Canada does not collect copies of the actual Salt Management Plan.

Mr. Hull described the chemical composition and application uses of road salt, de-icing agents, and emerging products that use agricultural waste materials. He highlighted the positive and negative aspects of each of these compounds. He also explained Road Weather Information Systems (RWIS) which monitor pavement temperatures and can help determine when to apply road salt.

Mr. Hull confirmed that most municipal and road authority salt is now stored indoors and the surrounding yards are now usually paved to aid in the collection of run-off and wash water from cleaning trucks and equipment.

Snow dumps and snow storage were discussed. Mr. Hull advised that recent studies indicate that there is very little sodium chloride present in stored snow or storm water management ponds. However, heavy metals, solids and particulate matter are present and must be treated. Environmental Assessments are required before a municipality can create new snow dumps.

Studies have indicated that a large percentage of road salt is used by private sector facility managers and contractors. Mr. Hull stressed the importance of education and training programs and described, in greater detail, the Region of Waterloo's "Smart About Salt" program. This certification program involves private sector property owners, contractors and insurance companies. The insurance companies offer discounts to property owners who use certified contractors. Landscape Ontario, the Business Owners and Managers Association (BOMA), the University of Waterloo, and the Ontario Good Roads Association are members of the Smart About Salt Council. The council has been investigating the feasibility of using agricultural broadcast spreading technology in parking lot salt applications. A pilot program will be tested in Ottawa this spring and, if successful, will be launched provincially.

Members emphasized that winter driving training and snow tire requirements should play important parts in lowering the public's expectation for bare roads in winter and the amount of road salt that needs to be applied.

Chair Stavinga thanked Mr. Hull for his presentation.

3.0 Source Protection Plan Development

Sommer Casgrain-Robertson advised that this staff report is included in the Agenda package to provide contextual background information. Ms. Casgrain-Robertson added that, beginning in June, a number of cross-referencing tables will be attached that will track:

- Policy development progress
- Use of different policy tools
- Policy implementers
- Municipal responsibilities
- Policies for significant, moderate and low drinking water threats.

4.0 Draft Policy Ideas

a. Road Salt and Snow Storage

Sommer Casgrain-Robertson stated that two of the provincial threat categories are road salt and snow storage. The road salt threat includes application, handling and storage of road salt while the snow storage threat includes snow that is pushed into large piles along roads or in parking lots (snow banks) and snow that is transported to a central storage site from other locations (snow dumps).

Ms. Casgrain-Robertson informed the Committee that the impervious surface percentage in Kemptville, Carleton Place, Perth and Smiths Falls is greater than 80% and therefore results in significant threats for road salt application. There are also existing significant threats for snow storage in Carleton Place, Perth, and Smiths Falls. She added that future significant threats are possible in all areas.

There is no federal or provincial legislation that directly regulates the use of road salt or the storage of snow. Environment Canada's Code of Practice is not a regulatory requirement, compliance is voluntary. A policy therefore needs to be developed but can rely on existing, well developed best management practices.

Ms. Casgrain-Robertson stated that Salt Management Plans are currently required under Environment Canada's Code of Practice for municipalities using more than 500 tonnes of road salt annually. She explained that the Code also outlines the ability to identify salt vulnerable areas where a Salt Management Plan would also be required. The explanation Environment Canada gives for what salt vulnerable areas are aligns closely with the vulnerable areas delineated through the source protection process. In the coming years a link between the two may form and delineating salt vulnerable areas and developing Salt Management Plans for them may become more common.

Ms. Casgrain-Robertson reviewed the draft policy ideas for the application, handling and storage of road salt.

Members discussed whether private contractors or facility managers were the target audience. Staff were directed to revise the Policy Tool and Concept wording to place facility managers first in the following statement "Implement a Smart About Salt Program (or equivalent) targeted at facility managers and private contractors applying...". This amendment is to be applied to the following policy situations:

3. Existing and Future Significant Threat – Road Salt Application Education and Outreach.
4. Existing and Future Moderate and Low Threats – Road Salt Application Education and Outreach

Chair Stavinga noted that the industry was likely well positioned to accept the recommended education and outreach tools as evidenced by the salt application pilot program being introduced by the City of Ottawa, National Capital Commission and BOMA. Chair Stavinga suggested that the Mississippi-Rideau and Raisin-South Nation Source Protection Committees should align themselves with this pilot project to ensure that source protection objectives are incorporated.

Staff clarified that the recommended testing for chlorides at municipal wells would be done on raw water. Brian Stratton confirmed that the City of Ottawa currently tests for chloride levels in their municipal drinking water.

A member asked about the storage of salt by private contractors, Frank Hull confirmed that most private contractors usually store only enough salt to last one or two storm events. This salt is generally stored near or at the job-site. This salt is often obtained from covered municipal storage areas. Members discussed the idea of using education and outreach tools to encourage municipalities to sell road salt to private contractors.

Ms. Casgrain-Robertson reviewed the draft policy ideas for the storage of snow.

Members discussed the policy ideas and noted the following:

2. Future Significant Threat - Snow dumps
   While recent studies indicate a reduction in the presence of chlorides in snow dumps, the presence of other chemicals, heavy metals, solids and particulates necessitates a prohibition on the future storage of hauled snow where it would be a significant threat.
3. Existing and Future Significant Threat – Snow Banks
   Members questioned whether existing electronic report templates used by Environment Canada could accommodate an assessment of the measures implemented to address the snow storage threat. Frank Hull confirmed the current templates have a snow removal and disposal section. Staff will confirm through early engagement that these reports can accommodate the information being asked for the in the draft policy ideas.

Committee members acknowledged the benefit of using the Smart About Salt program as a model.

A member asked about the application of salt on provincial roadways and interprovincial bridges. Through early engagement staff were asked to identify provincial and interprovincial roads that cross intake protection zones and wellhead protection areas and flag this issue for the Ontario Ministry of Transportation. The findings will be brought back to the committee.

Motion 4-5/11

That the Mississippi-Rideau Source Protection Committee approve the Draft Policy Ideas for Road Salt Storage, Handling and Application and Snow Storage and direct staff to undertake early engagement with potentially affected persons and bodies.

Carried

b. Waste (hazardous, industrial, municipal, commercial, septage & tailings)

Sommer Casgrain-Robertson reviewed the proposed draft policy ideas for nine of the ten waste disposal site threat subcategories. She advised that a future staff report would propose draft policy ideas for waste disposal sites that deal with PCB waste storage.

Ms. Casgrain-Robertson explained that waste disposal sites are heavily regulated through Ontario's *Environmental Protection Act 1990* (Part V – Waste Management) as they all require a Waste Certificate of Approval. Other regulations also exist that regulate some of the waste subcategories, examples are the *Ontario Water Resources Act* and the Federal *Fisheries Act*. Drew Lampman indicated that mine tailings are exempt under Part V of Ontario's *Environmental Protection Act 1990.* Staff will look into this exemption and develop

a separate draft policy idea for the storage, treatment and discharge of tailing from mines if necessary. This would be presented to the SPC for their consideration along with the draft policy idea for PCB waste storage.

A member questioned the handling of landfill sites that were abandoned in the 1960s and 1970s. Brian Stratton reminded members that, to be considered a significant threat, a landfill must be located within a Wellhead Protection Area with a vulnerability score of 10 or 8 or be located within an Intake Protection Zone with a vulnerability score of 10 or 9. He added that the size of the fill area in hectares would also have a bearing. Ms. Casgrain-Robertson explained that a brownfield inventory does exist and if, through the source protection process, it was determined that a historic land-use activity was causing a drinking water issue, a condition could be identified and dealt with as a significant drinking water threat. No such municipal drinking water issues were identified in the Mississippi-Rideau.

Through early engagement, staff were asked to create a draft policy idea to address former waste disposal sites in the Highly Vulnerable Aquifer areas. The policy could recommend that an inventory of these sites be compiled and possibly testing and/or monitoring be undertaken.

A member asked why private salvage yards were not included in the list of waste disposal threat activities. Mary Wooding agreed to raise the issue with the Ministry of the Environment and report back.

Members discussed the draft policy ideas and made the following change:

3. Future Moderate or Low Threat – Monitoring Policy
   Delete the word “annually”.

Motion 5-5/11

That the Mississippi-Rideau Source Protection Committee direct staff to draft a policy idea for former waste disposal sites that are moderate or low threats.

Carried

Motion 6-5/11

That the Mississippi-Rideau Source Protection Committee approve the Draft Policy Ideas as amended for Waste Disposal Sites and direct staff to undertake early engagement with potentially affected persons and bodies.

Carried

5.0 Community Outreach

Chair Stavinga reviewed the community outreach activities.

Past Activities

3. Mississippi Valley Source Protection Authority
5. Rideau Valley Source Protection Authority
   Sommer Casgrain-Robertson explained that both Authorities had a significant number of new Board members so she present an in-depth overview of the Source Water Protection Program and the work of the Committee to-date.

   Ms. Casgrain-Robertson also presented the draft policy concepts for the handling and storage of fuel oil and on-site sewage systems with a design flow of less than 10,000 litres/per day.

   Both sets of draft policy concepts were received by the Authorities. Letters can now be sent out to potentially affected property owners. Staff will continue to bring future draft policy concepts to the Authorities.

Upcoming Activities

1. Ontario Road Salt Management Group
   Ms. Casgrain-Robertson will be presenting about source water to the Ontario Road Salt Management Group on June 9. Chair Stavinga suggested that there might be an opportunity to learn more about the salt application pilot project in Otttawa.

2. Glens Community Association – Annual General Meeting
   Ms. Casgrain-Robertson explained that the Glens Community Association is an urban community in Ottawa on private wells. Ms. Casgrain-Robertson will be presenting at their Annual General Meeting to provide an update on the "clustering" option under the source protection process.

3. Municipal Working Group Meetings.
   A Municipal Working Group meeting has been scheduled for June 16 in Perth. Staff will seek input on draft policy concepts developed to date. Staff will advise which Committee members should plan to attend.

4. Special Source Protection Committee Meeting – Assessment Report Revisions
   Ms. Casgrain-Robertson advised that a tentative meeting has been scheduled for June 20. This meeting will be used to address any last minute Assessment Report revisions that may be required as a result of MOE comments. If no comments are received from MOE and/or no revisions are necessary, the meeting will be cancelled.

Carol Dillon advised that the Ontario Environmental Network has been holding conference call conversations with environmentalists who sit on Source Protection Committees. The next conference call will be held on Tuesday, May 10 and participants will include Ian Smith, Paul Heeney, Tim Fletcher and Kevin Church. Patricia Larkin and Carol Dillon will participate in the call.

Peter McLaren informed the Committee that Lanark County and the Warden's Caucus is looking into the ongoing rumour about metering private wells. This issued was raised at a recent Landowner Association meeting. Ms. Casgrain-Robertson stated that this rumour has been very persistent and that the source protection process will not result in private wells being metered. The Minister of the Environment stated this very clearly in the provincial legislature in 2006.

Motion 7-5/11

That the Mississippi-Rideau Source Protection Committee receive the Community Outreach staff report for information.

Carried

6.0 Other Business

Chair Stavinga advised the Committee that Ian Smith will be taking a personal leave for eight months commencing July 1, 2011. She added that his replacement has not yet been announced.

7.0 Member Inquiries

Patricia Larkin asked about a large quarry proposed for the Niagara Escarpment area. Mary Wooding stated that the quarry is just outside of the Nottawasaga Valley. She stated that the Ministry of the Environment has not received a Permit to Take Water application yet. Members expressed concern with the location of the quarry at the headwaters of two watersheds. Chair Stavinga agreed to follow up with Lynn Dolan, Chair of the South Georgian Bay Lake Simcoe Source Protection Committee.

Patricia Larkin asked if a budget and financial update would be presented to the Committee. Chair Stavinga informed members that once the provincial 2010/2011 budget reviews are complete and the 2011/2012 workplans are approved, staff will present a budget overview to the Committee. This will likely be in July.

Sommer Casgrain-Robertson stated that the Salt Institute had reviewed the Road Salt backgrounder, and provided only minor comments. Overall they were supportive of the information presented.

Ms. Casgrain-Robertson reviewed the contents of the blue folders and asked member to insert them in their Source Protection Plan Resource Binders.

8.0 Next Meeting

June 2, 2011, 4 pm
Perth Civitan
6787 County Road 43, Perth

9.0 Adjournment

The meeting was adjourned at 7:25 pm.

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Janet Stavinga	**Michelle Paton**
Chair	**Recording Secretary**

Road Salt is a Threat to Water Quality

(and Water Security)

Outline

- Determinants of Health and their Interactions
- Risk Science
- Risk Policy
- Potential Interventions – including SPP

Vital Connections – Road Salt is CEPA Toxic

"A substance is toxic if it is entering or may enter the environment in a quantity or concentration or under conditions that:

- have or may have an immediate or long-term harmful effect on the environment or its biological diversity;
- constitute or may constitute a danger to the environment on which life depends; or
- constitute or may constitute a danger in Canada to human life or health." (Section 64).

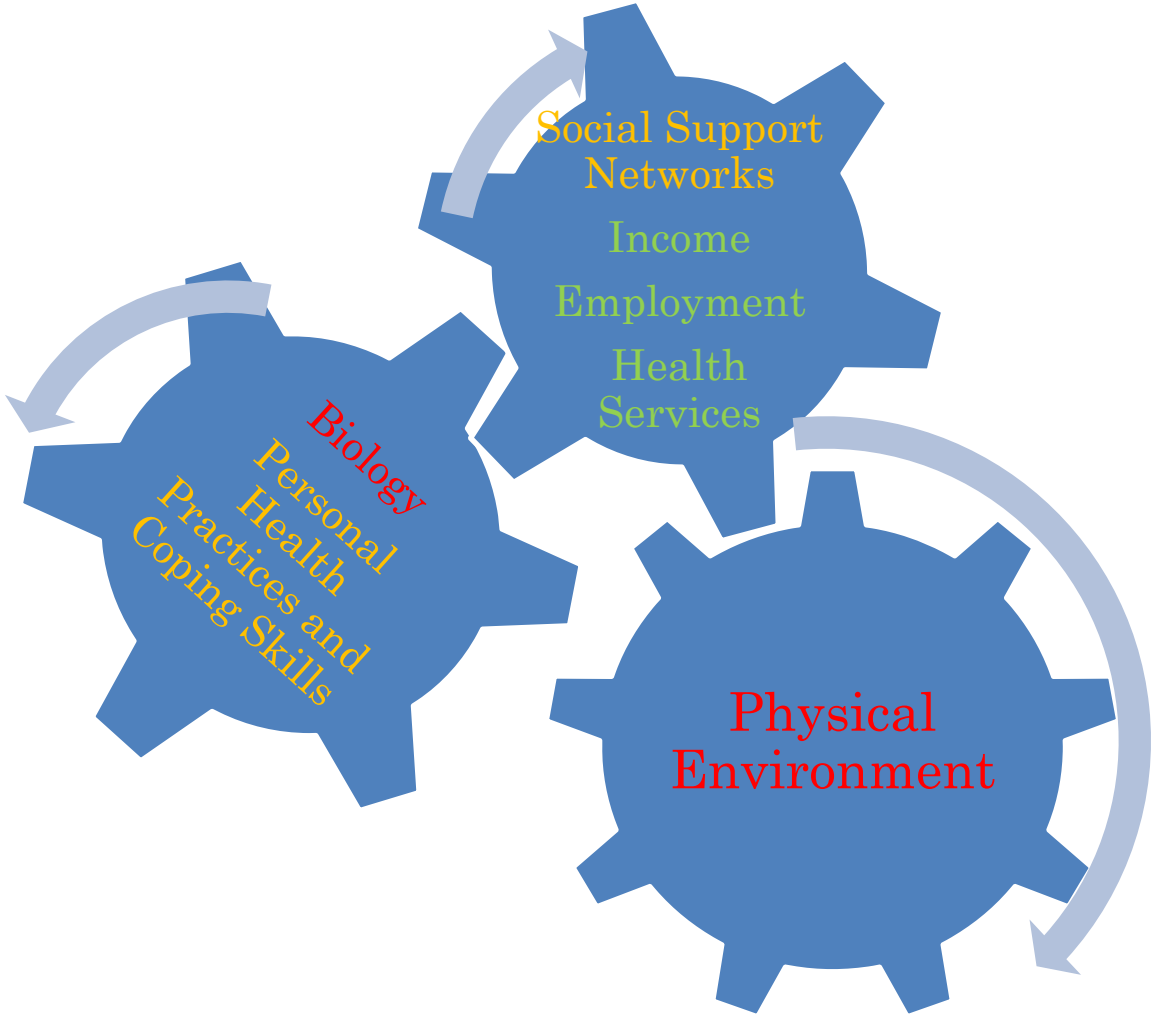
RISK MANAGEMENT OBJECTIVE

- There is 100% probability that the application of road salt can contaminate water with increasing levels of sodium and chloride in certain circumstances, combined with consequence of unpalatable (non-potable) water supply;

- There is also 100% probability of poor road conditions and safety during winter weather events without the application of road salt, combined with consequence of slow downs and accidents;

- The risk management objective is to minimize population health impacts from a water security perspective.

Determinants of Health affected by the application of road salt and their Interactions



Health Determinants Affected Negatively

- **Physical Environment**
- **Biology**

Health Determinants Affected Positively

Nov.25 Thu 7am: FREEZING RAIN warnings have been issued for our entire area. Storm hits near midnight. Fri am commute will be treacherous.

- Income
- Employment
- Health Services

Health Determinants Affected Both Ways

- Social Support Network
- Personal Health Practices and Coping Skills

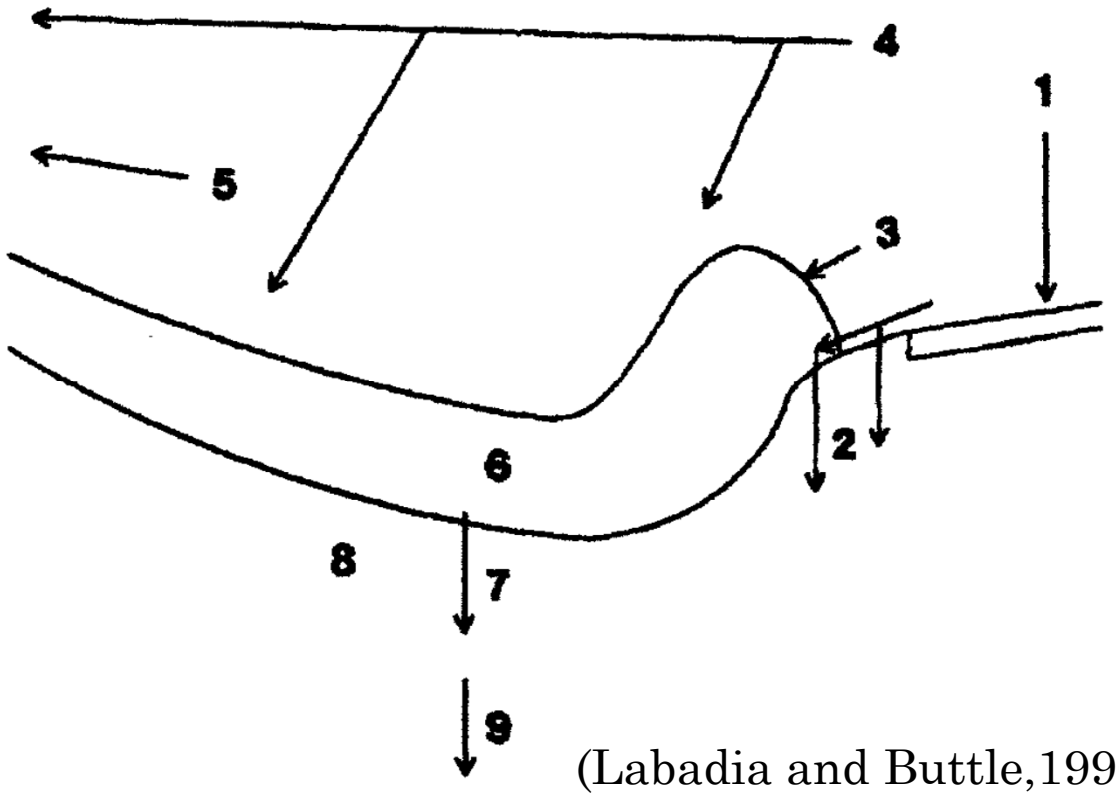
RISK SCIENCE - PHYSICAL-CHEMICAL PROPERTIES OF ROAD SALTS

Substance	Specific Application	Eutectic [1] temp (°C)	Working[2] temp (°C)	Water solubility (g/100mL) (°C)	Estimated Use (1997/98)[3]
Sodium chloride, NaCl	**Road de-icer and anti-icer, de-icing additive for sand**	**-21**	**0 to -15**	**35.7 (0) 39.12 (100)**	**4.7 million tonnes**
Calcium chloride, $CaCl_2$	Road de-icer, de-icing additive, anti-icer, suppressant, road construction	-51.1	<-23	37.1 (0) 42.5 (20)	108,000 Tonnes
Mixture of sodium/calcium chloride (80/20 mix)	Road de-icer, road anti-icer	n.a.	-12		
Magnesium chloride, $MgCl_2$	Road de-icer, de-icing additive, road anti-icer, dust suppressant	-33.3	-15	54.25 (20) 72.7 (100)	25,000 Tonnes
Mixture of sodium/ magnesium chloride (80/20 mix)	Road de-icer	n.a.	<-15		
Potassium chloride, KCl	Alternative road de-icer	-10.5	-3.89	56.7 (100)	2,000 Tonnes
Sodium ferrocyanide, $Na_4Fe(CN)_6 \cdot 10H_2O$	Anti-caking additive			31.85 (20) 156.5 (98)	
Ferric ferrocyanide, $Fe_4[Fe(CN)_6]_3$	Anti-caking additive			insoluble	

Risk science - Pathways of salt movement into Surface and Groundwater

1, NaCl application to road; 2, infiltration of runoff; 3, road cleaning;

4, spray transport; 5, snow redistribution by wind; 6, retention in snowpack; 7, infiltration from snowpack; 8, retention in soil; 9, recharge



(Labadia and Buttle,1996)

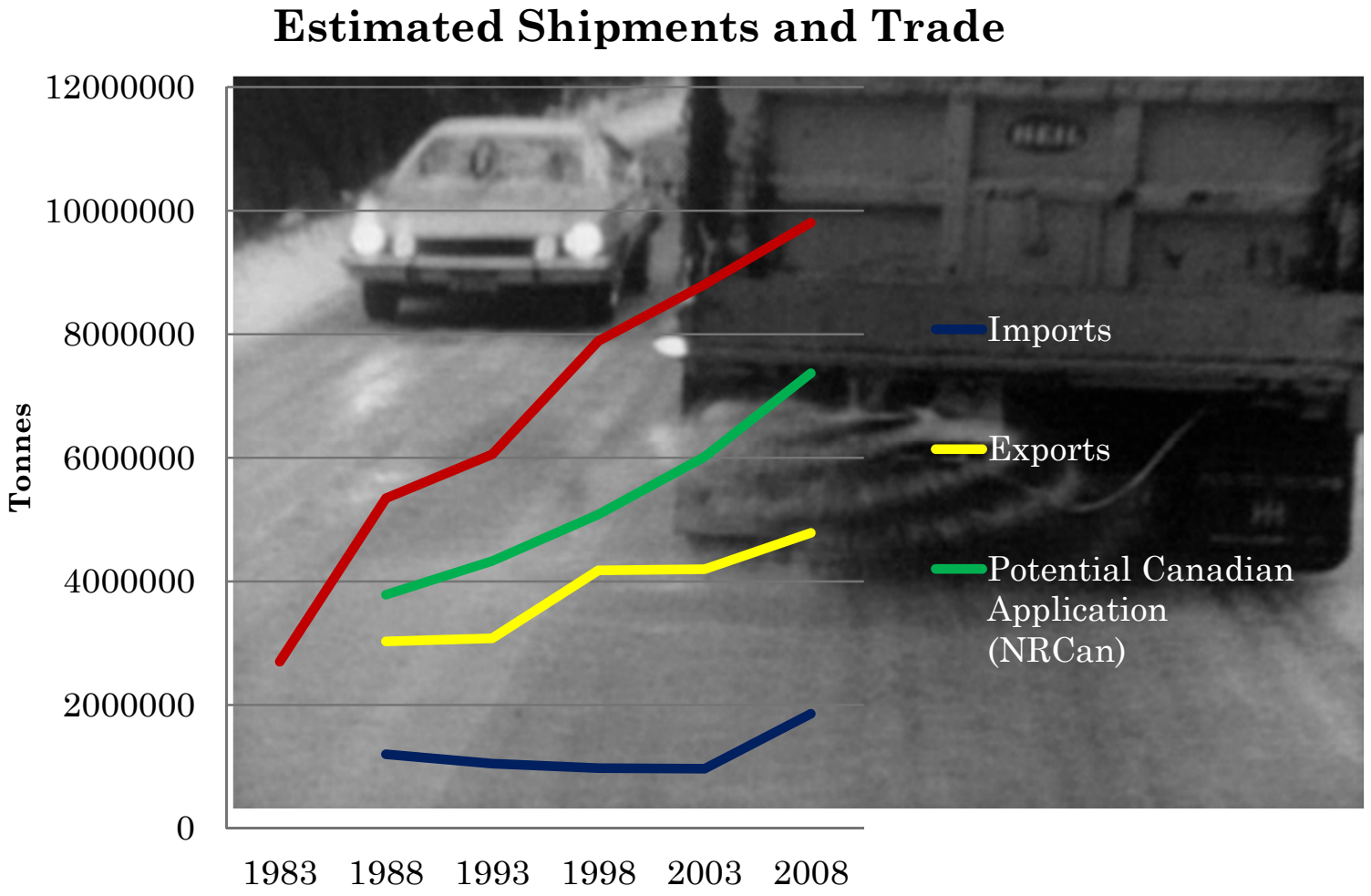
Risk science – Drinking Water Standards

Federal-Provincial-Territorial Committee on Drinking Water Standards (Excerpted from Health Canada (2008)):

Parameter	Aesthetic Guideline	Year
Chloride	≤250 ml/l *	1979 (2005)
Sodium**	≤200 ml/l	1992

- * Approximately 40 teaspoons/litre
- ** It is recommended that sodium be included in routine monitoring programmes, as levels may be of interest to authorities who wish to prescribe sodium-restricted diets for their patients
- In Ontario – this is 20 mg/l – approximately 4 teaspoons/litre

Risk science – Canadian Rock Salt industry



Selected study Results - Chloride

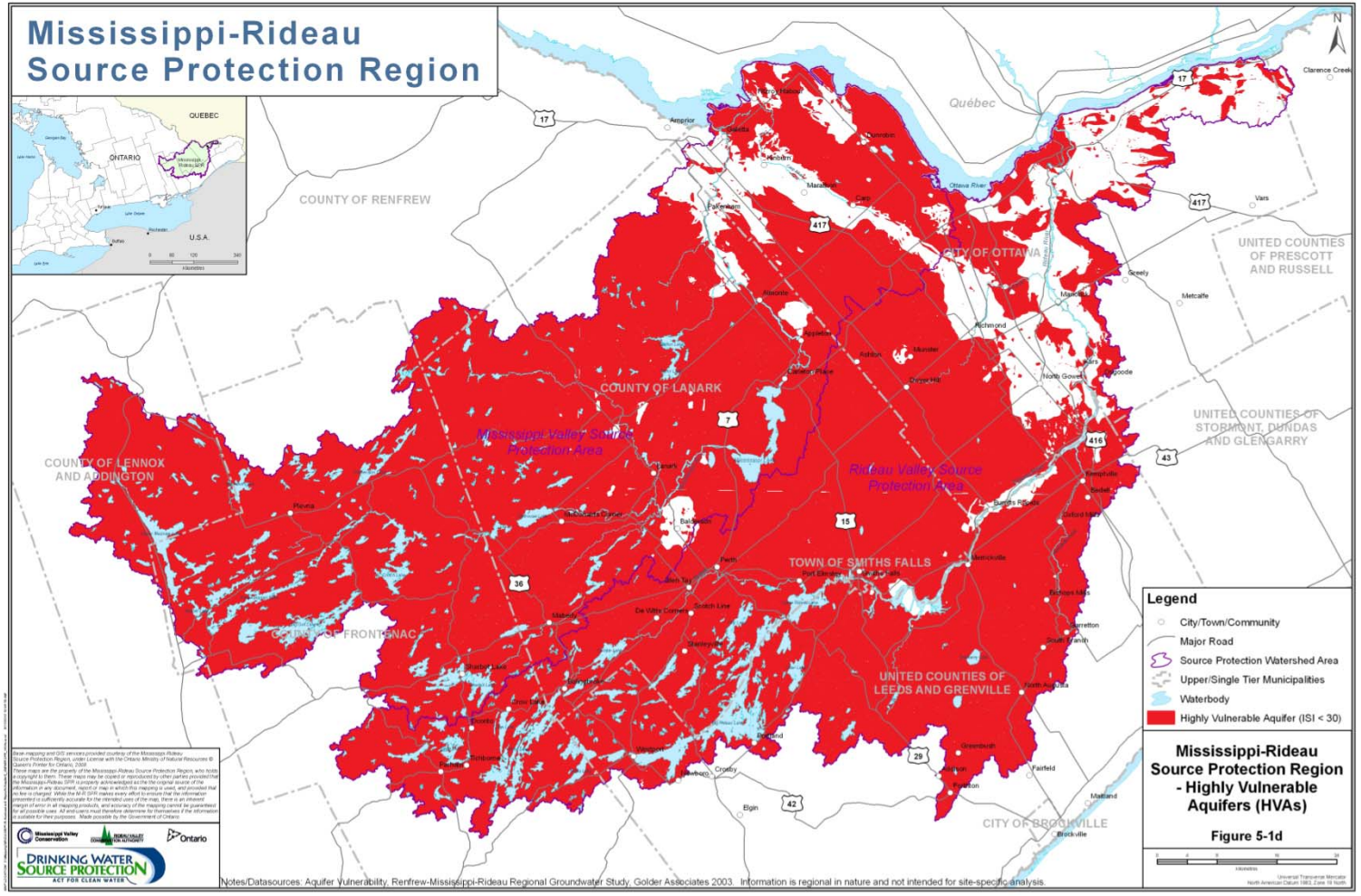
- Groundwater – Region of Waterloo - selected wells
  - 1960 - <50 mg/l (Johnston et al 2000)
  - 1990s - 250-300 mg/l (Johnston et al 2000)
  - 2010 – 200-350 mg/l (Grand River Draft AR, 2010)
- Surface water (Mississippi Rideau Draft AR, 2010)

Surface water locations in Mississippi Rideau Source Protection Region	Est. 146 samples 12@ >250mg/l (8%) 6@ 150-250mg/l (4%) 21@ 50-150mg/l (14%) 107 @ ‹50 mg/l (73%)
Groundwater locations in Mississippi Rideau Source Protection Region	Est. 260 samples 23 @ >250mg/l (9%) 35 @ 150-250mg/l (13%) 65 @ 50-150mg/l (25%) 137 @ <50 mg/l (53%)

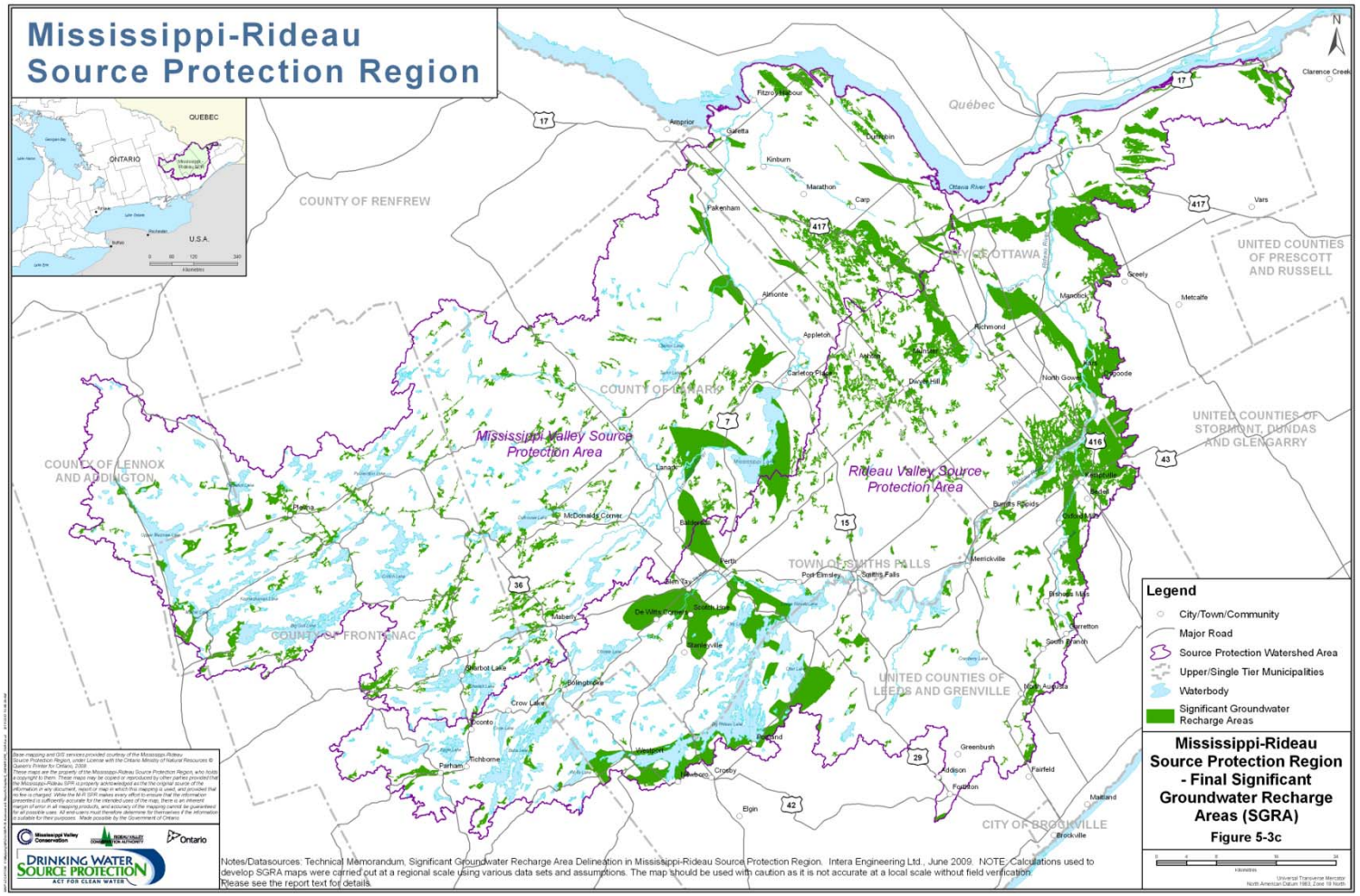
SELECTED STUDY RESULTS - SODIUM

- Groundwater - Oak Ridges Moraine
  - Early 1990s - >500 mg/l –
    (Labadia and Buttle, 1996)
- Groundwater – Region of Waterloo
  - Early 2000s - 8% wells exceed 250 mg/l (Hodgins, 2002)
- Surface water – New York State
  - 1952-1998 - 130% increase (Godwin et al, 2003)
- Paucity of local data

Highly Vulnerable Aquifers



SIGNIFICANT GROUNDWATER RECHARGE AREAS



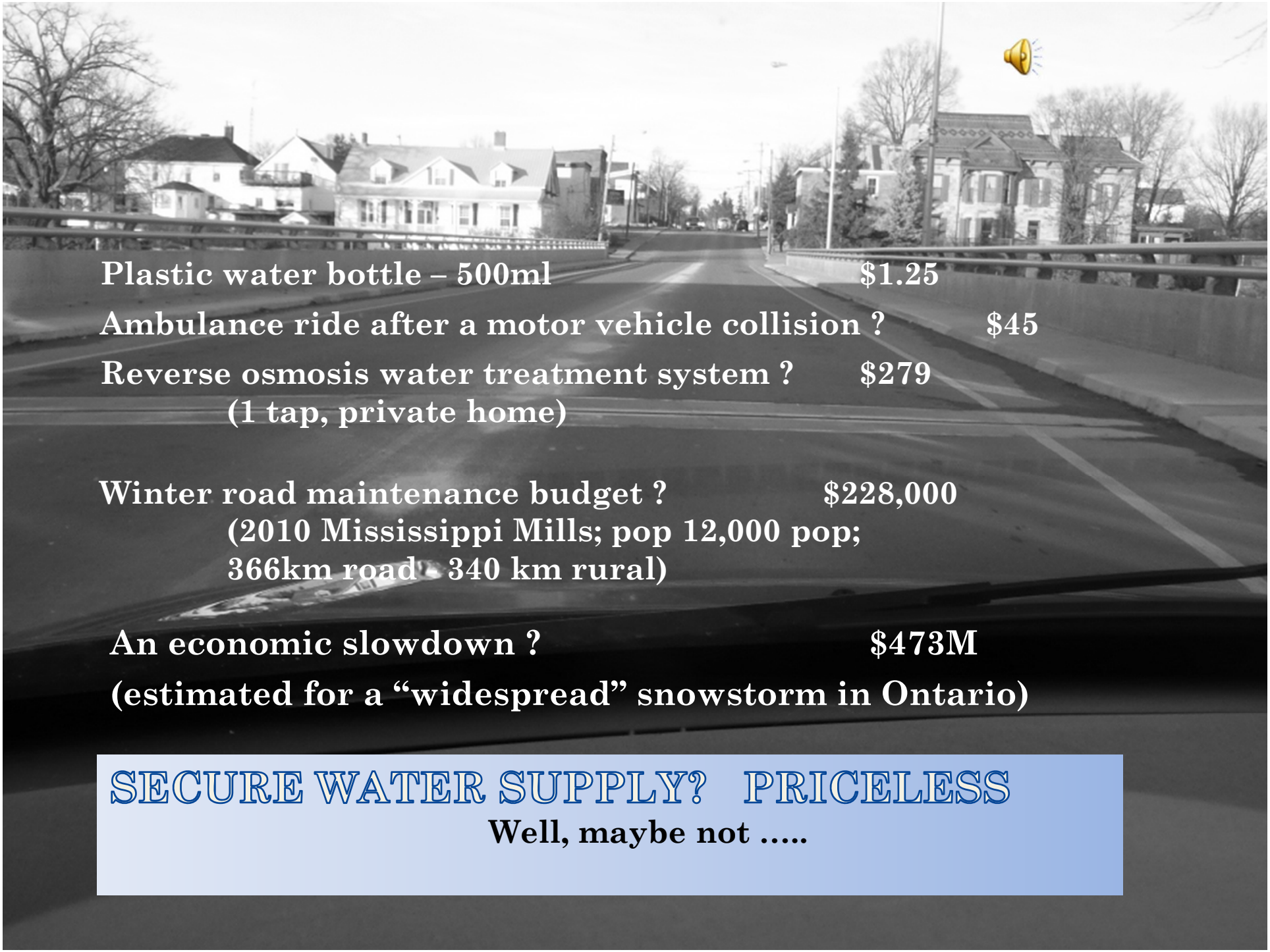
Backdrop of Climate change

Nov.25 Thu 7am: FREEZING RAIN warnings hve been issued for our entire area. Storm hits near midnight. Fri am commute will be treacherous.

- Rising Temperature
  - Expected to increase 1-2 degrees Celsius
  - Increased frequency of -5 to +5 C
  - Increased incidence of "treatable events"
    - 150 - 200 mm of snow; a frost event; or a couple of mm of freezing rain
- Precipitation patterns are expected to change
  - Winter rains

Current Salt Risk Policy Initiatives

- Federal level
  - 1995-2001 - 5 year risk assessment resulted in road salts being considered CEPA Toxic for effects on the environment but not human health
    - The substances are not included on Schedule 1
  - 2004 – Voluntary Code of Practice for users over 500 t/year
    - 5 year review just completed; report not available
- Provincial level
  - Ongoing - Notification for sodium
  - With adverse test result, 5 year requirement for re-testing
- Municipal level
  - 2003, 2010 - Region of Waterloo – Road maintenance policy development
- Non-government
  - 2010 - Smart About Salt Council



Plastic water bottle – 500ml $1.25

Ambulance ride after a motor vehicle collision ? $45

Reverse osmosis water treatment system ? $279
(1 tap, private home)

Winter road maintenance budget ? $228,000
(2010 Mississippi Mills; pop 12,000 pop;
366km road - 340 km rural)

An economic slowdown ? $473M
(estimated for a "widespread" snowstorm in Ontario)

SECURE WATER SUPPLY? PRICELESS

Well, maybe not .....

Potential Regulatory Interventions

Rock Salt Ban

- Not feasible at this time – socio-economic effects
  - Cheap de-icer
  - Safety and Economics
  - Ever expanding road network; Societal expectation for bare pavement
  - Salt industry
- In future, could be initiated by any level of government - similar to pesticide ban?

Mandatory Snow Tires

- Feasible – done in Quebec in 2009
  - In Ontario, approximately 8M cars on the road; some have snow tires
  - Could begin with snow belt regions and measure success
- Limitation
  - "Toronto" push back
- Responsibility of car owner
  - Cost - $200- $1000 per vehicle
  - Total estimate = $4B (@$500/vehicle)

Selected Economic and/or Advisory Interventions

Private Well Testing

- Feasible
  - Campaign to target specific well owners
  - Need to develop criteria
  - Overall benefit to broad-based groundwater survey; baseline for future reference
- Limitation? Cost

Accreditation with Smart About Salt Council

- Feasible
  - Implement over 3 yr period – based on prevalence of risk through CWA
  - need to expand capacity of SAS organization
  - $220/person
- Take time to reach all salt operators
- Limitation
  - Creating social norm that application of road salt is a problem
- Responsibility of public and private road maintenance organizations/companies

SELECTED COMMUNITY BASED INTERVENTIONS

Source Protection Plans (SPP)

- Feasible
  - Adapt mandatory SPP policy and apply to areas with moderate or low threats
  - This would apply to areas such as highly vulnerable aquifers, significant groundwater recharge areas, and less than 80% impervious surface
- No additional cost through SPP process; implementation cost in more stringent application procedures in certain areas

Driver Education

- Feasible, long term
- Limitations
  - Change in expectation for bare pavement may be difficult to achieve. Road users want clear roads and they want them quickly
  - Change in driver habits – Risky Drivers Program
- Cost TBD; unfold through MTO, municipalities, CAA, media, social networking

Selected Technological Interventions

Weather Sensors and Pre-Wetting

- Feasible
  - expenditure for road maintenance
  - $/sensor or brine container
- Limitation
  - Trucks also need to have capacity for technology
- Provincial, municipal taxpayer
- Maintenance contractor, but may be passed on to property owner

Weather Warnings

- Feasible and effective
  - early application of road salt inhibits ice and snow from bonding
  - bulletins must continue to be translated in real time or else there would be regional delays in issuing weather warnings
- Limitation
  - Don't take weather warning seriously, or weather warning mistaken
- Canadian taxpayer

SUMMARY

- Application of road salt affects determinants of health (+ve, -ve, both ways)
- Chloride and sodium contamination in surface water and groundwater are highly correlated to % hard surface
- Application of road salt has increased over time and product is unlikely to be replaced
- Prevalence of winter weather conditions that require application of salt likely to increase with climate change
- Risk management interventions are underway but there is more that can be done

Thank you!

Road Salt

Mississippi-Rideau Source Protection Region

May 5, 2011

Environmental Concern

- *2001* ***Environment Canada*** *Report:*
- *"Road salts are entering the environment in large amounts and are posing a risk to plants, animals, birds, fish, lake and stream ecosystems and groundwater"*
- *"road salts that contain inorganic chloride salts"*

- Stakeholder consultations
- Publication of the Code of Practice for the Environmental Management of Road Salts in April 2004

http://www.ec.gc.ca/Publications/default.asp?lan=En&xml=3BF2A95F-65AF-41B8-8BE0-02BE5332FBBF

- Publication of the Syntheses of Best Practice – Road Salt Management in 2003

http://www.tac-atc.ca/english/resourcecentre/roadsalt.cfm

Mandatory 5 Year Review

- Stakeholder consultations
- Review of annual reporting
- Report filed fall 2010
- Awaiting response from Minister

The Code applies to:

(a) Organizations that use more than **500 tonnes of road salts per year** (five-year rolling average); and

(b) Organizations that have **vulnerable areas** in their territory that could be potentially impacted by road salts.

Syntheses of Best Practice

1) Salt management plans
2) Training
3) Road/Bridge design
4) Drainage and stormwater management
5) Pavements
6) Vegetation management
7) Design/Operation of maintenance yards
8) Snow Storage/Disposal
9) Equipment/Technologies

Salt Management Plans

Salt Application

- Equipment
- Anti-icing/de-icing materials
- Decision support systems (e.g. RWIS)
- Training of personnel
- Monitoring effectiveness of application techniques

Road Salt

- Dry
- With abrasives
- Pre-wetted
- Liquid
- Pre-treated

SALT BRINE

Advantages

- Inexpensive
- Can be manufactured in-house
- Works well at moderate temp.
- Accelerates reaction time of dry salt
- Readily available

CALCIUM CHLORIDE BRINE

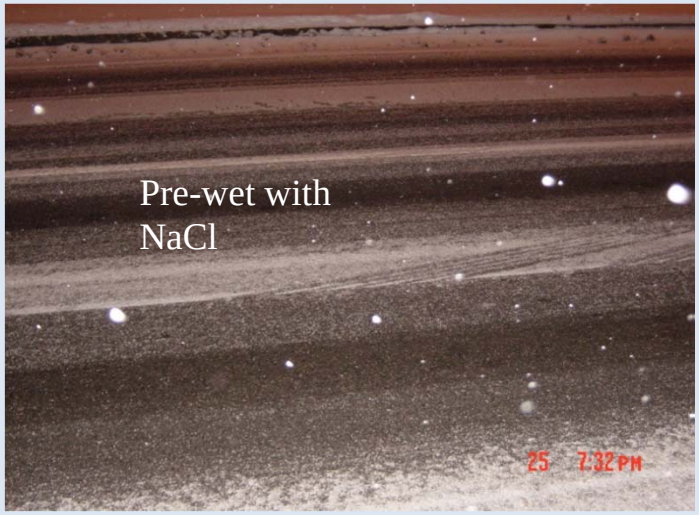
Several Uses….

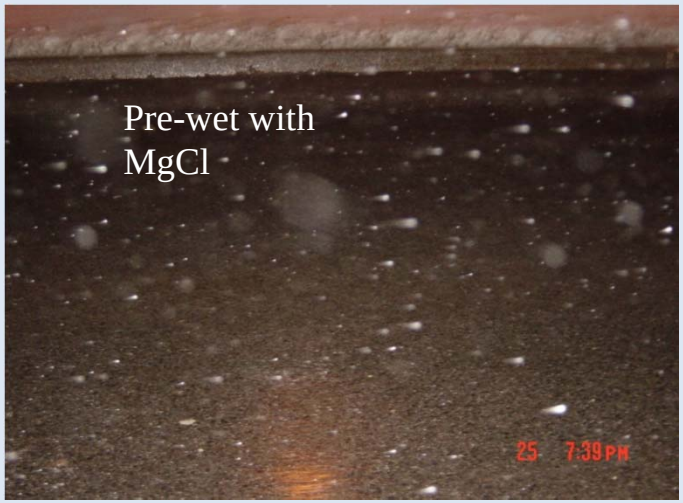
- Pre-wetting agent
- Mixed with sand to prevent freezing
- Direct liquid application
- Works at much lower temperature than sodium chloride brine

MAGNESIUM CHLORIDE BRINE

Advantages:

- Pre-wetting agent
- Direct liquid application
- Works at lower temperatures than salt brine





EMERGING PRODUCTS
Modified Agricultural By-products

Advantages:

- Can be added to sodium, calcium and magnesium chloride
- Lowers freeze point even more
- Reduces corrosiveness
- Reduces environmental concerns

Disadvantages:

- More expensive
- Not readily available
- May have quality control concerns
- Odour
- May require equipment modification

RWIS
(Road Weather Information Systems)

RWIS provide local weather and pavement temperature forecasts

Use pavement temperature for determining when to apply and re-applying deicing and anti-icing materials

VAM (value added meteorologist) forecasts available for road authorities provide more accurate information than radio/TV

Salt Management Plans

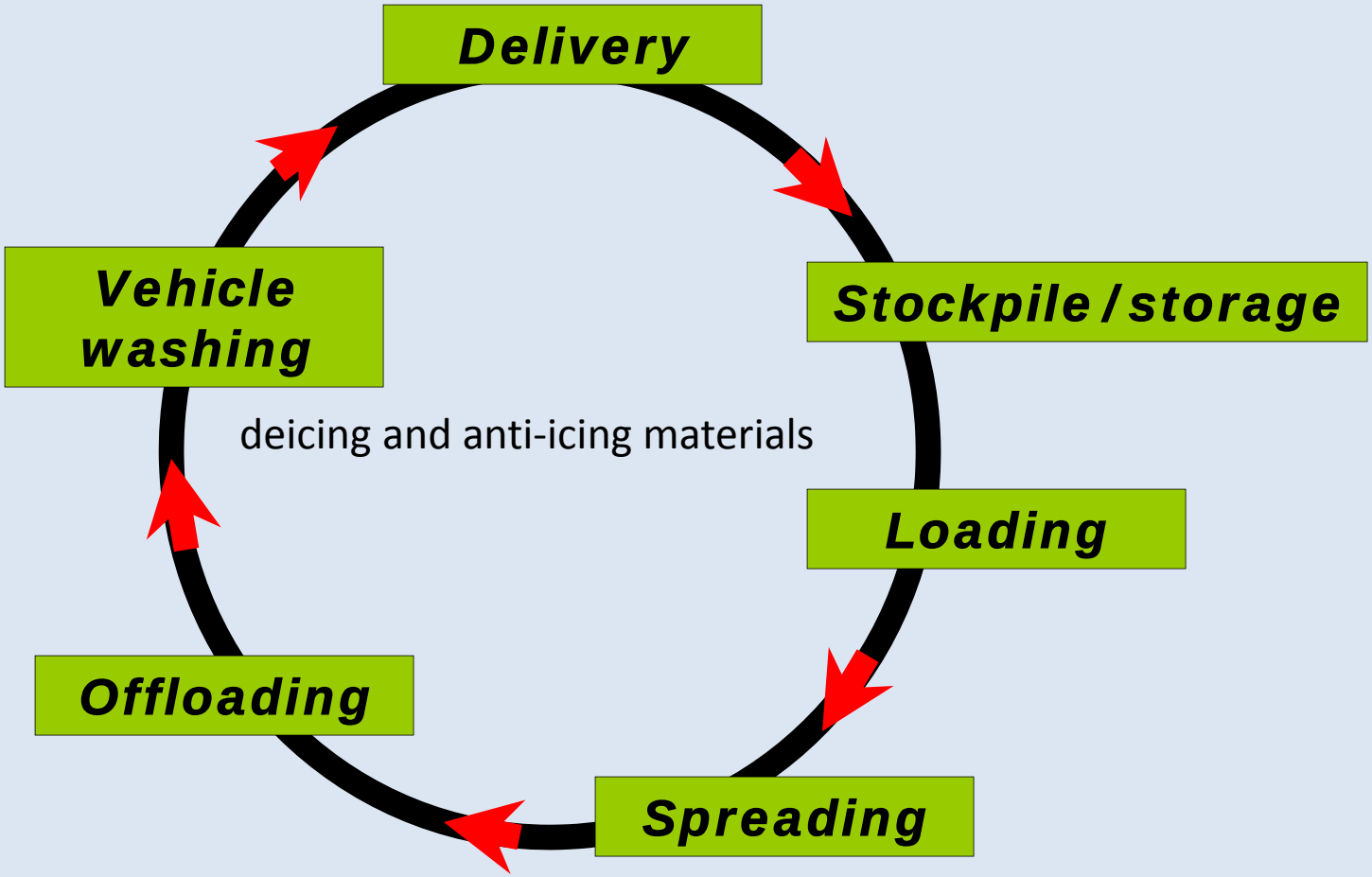
Salt Storage

- Coverage of salt piles
- Handling practices
- Drainage management
- Wash water collection/treatment
- Training of personnel
- Monitoring

deicing and anti-icing materials

SALT HANDLING CYCLE

(*do you see yourself somewhere here*?)



Salt Management Plans

Snow Disposal

- Operational /environmental factors
- Drainage management
- Training of personnel
- Monitoring effectiveness of facility

SNOW STORAGE/DISPOSAL

- Site Selection
- Assessment/Evaluation
  - Haul distance
  - Land Use
  - Zoning
  - Size
- Operation/Maintenance
  - Meltwater
  - Offseason

Salt Management Plans

Training

- CBT training from AASHTO / Ontario version
- WMOT (Winter Maintenance Operator Training) – 3 day
- WMOT for patrollers and supervisors – 3 day
- Refresher – ½ day
- Snow School
- Contract training

Salt Management Plans

Training

- Salt Storage (trainer assisted EC in development of Code of Practice)
- Field trip to site that has indoor handling facilities for loading spreaders and unloading delivery vehicles

Salt Management Plans

Vulnerable areas

- Few municipalities have identified vulnerable areas
- Needs further action
- Most attention in municipalities that draw potable water from ground water

Smart about Salt

- Developed by the Region of Waterloo
- Targeting private sector property owners and their contractors
- Involves insurance companies
- Certification for contractors
- 5% discount on insurance for owners using certified contractors

Smart about Salt

- Established Smart about Salt Council (Landscape Ontario, Building Operators Managers Association, OGRA, others)
- University of Waterloo undertaking study to determine road salt application rates suited for parking lots (area rather than linear)
- Pilot planned for Ottawa this spring
- Launch across province to follow

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