

CHESAPEAKE BAY AND WATER RESOURCES POLICY COMMITTEE

Salts Workshop Outcomes & Next Steps

Heidi Bonnaffon

CBPC Members
May 17, 2019



Metropolitan Washington
Council of Governments

Outline

- April 1st COG Salts Workshop—presentation highlights
- Possible next steps for COG:
 - Develop a regional core training for road crews.
 - Work towards managing public expectations via education and outreach

Presentation Highlights

Hans Holmberg, LimnoTech in Minnesota

- Presented about the national need for a salt use balance: Needed for public safety, but salt is affecting water quality.



What's the problem?

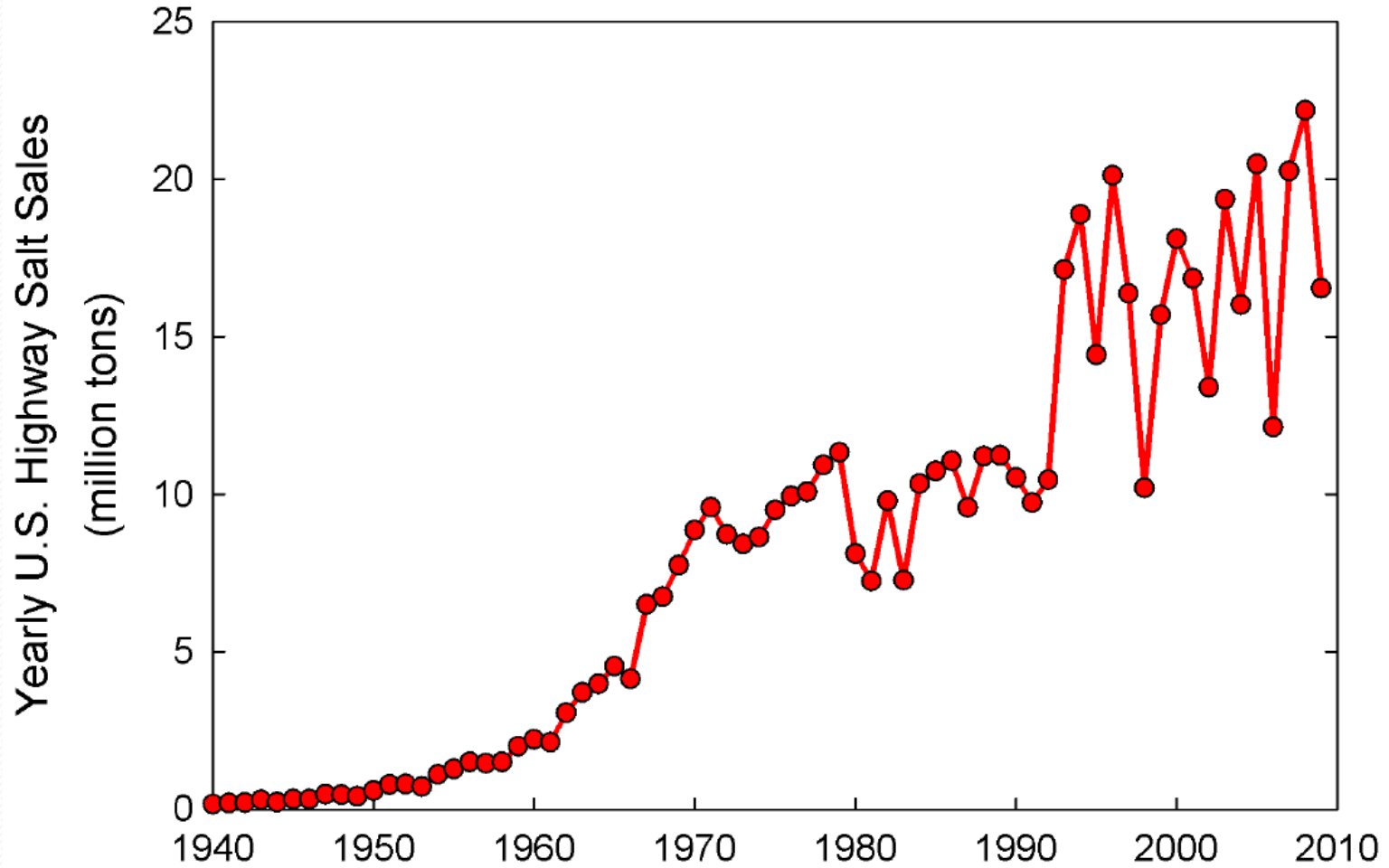
The public expects & needs safe roads, parking lots and sidewalks



Hans Holmberg, LimnoTech



Road salt usage has increased



Source: Salt Institute

Hans Holmberg, LimnoTech



What's the problem?

Chloride is toxic to aquatic life

- State standard = 230 mg/l
~1 teaspoon salt in 5 gallons water

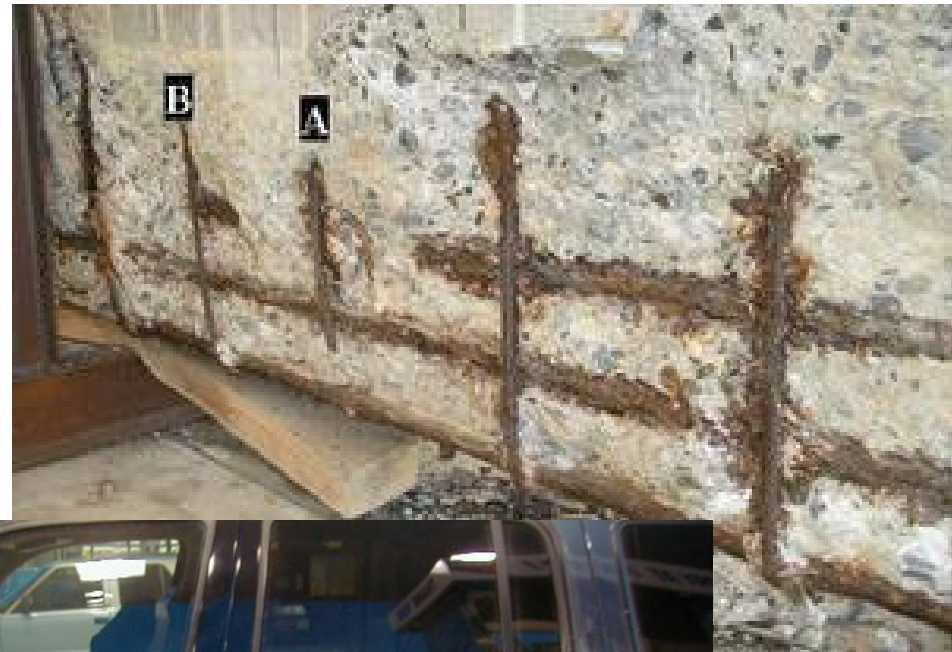


Hans Holmberg, LimnoTech



Other problems with road salt

- Source water protection
- Corrosion
- Vegetation
- Cost



Hans Holmberg, LimnoTech





Human-Accelerated Weathering



Evolving Weathering in Urbanized Watersheds Over Time

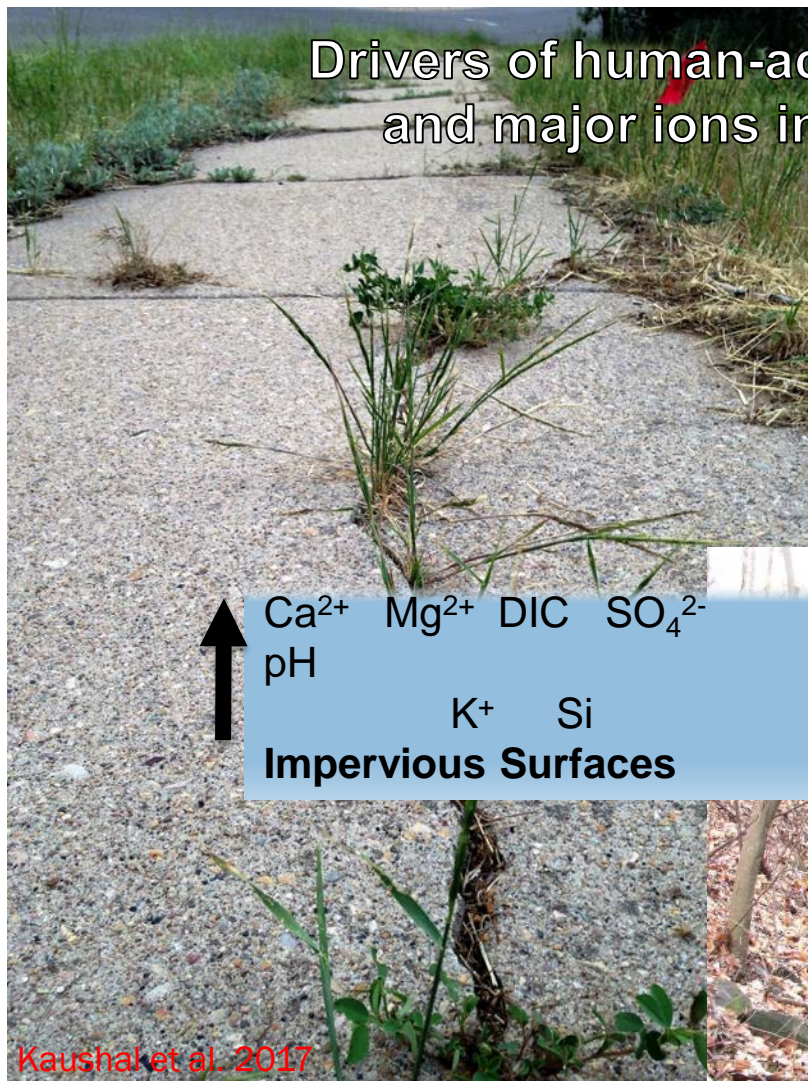
Photo Courtesy: Colin Delzel

Cities create a distinct urban geology

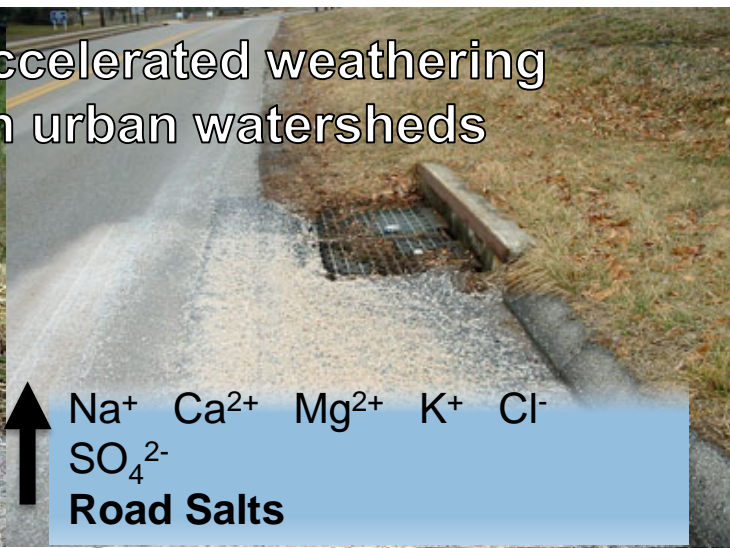
Weathering of “urban karst”

Kaushal and Belt (2012)
Kaushal et al. (2014, 2015)

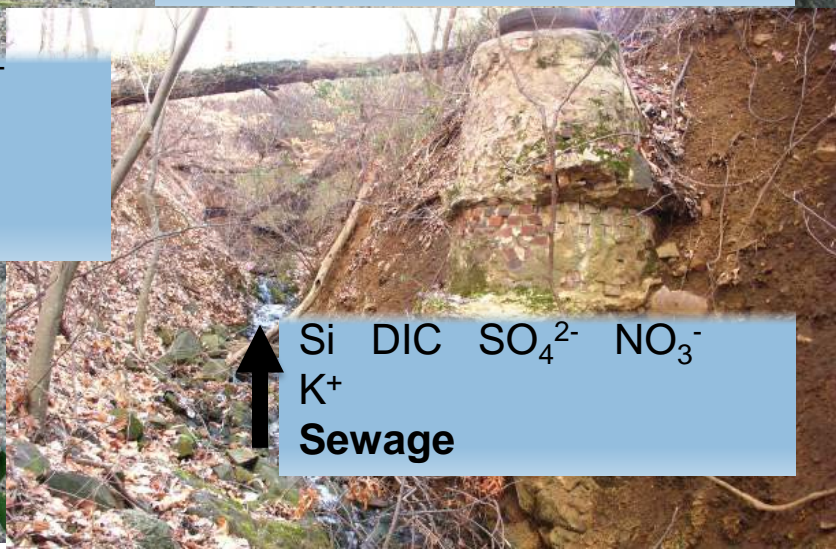
Drivers of human-accelerated weathering and major ions in urban watersheds



↑
 Ca^{2+} Mg^{2+} DIC SO_4^{2-}
pH
 K^+ Si
Impervious Surfaces



↑
 Na^+ Ca^{2+} Mg^{2+} K^+ Cl^-
 SO_4^{2-}
Road Salts

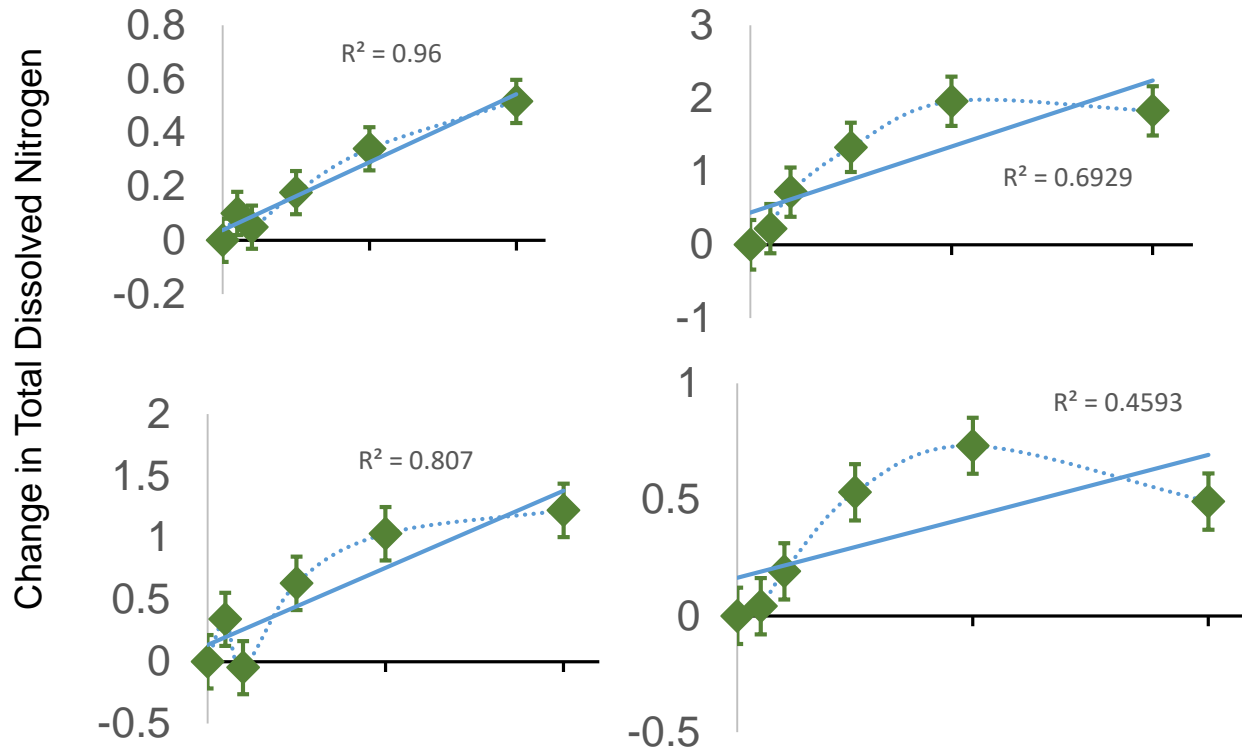


↑
Si DIC SO_4^{2-} NO_3^-
 K^+
Sewage

Kaushal et al. 2017

Sujay Kaushal, University of Maryland

Salinization Mobilizes Nitrogen in Streams

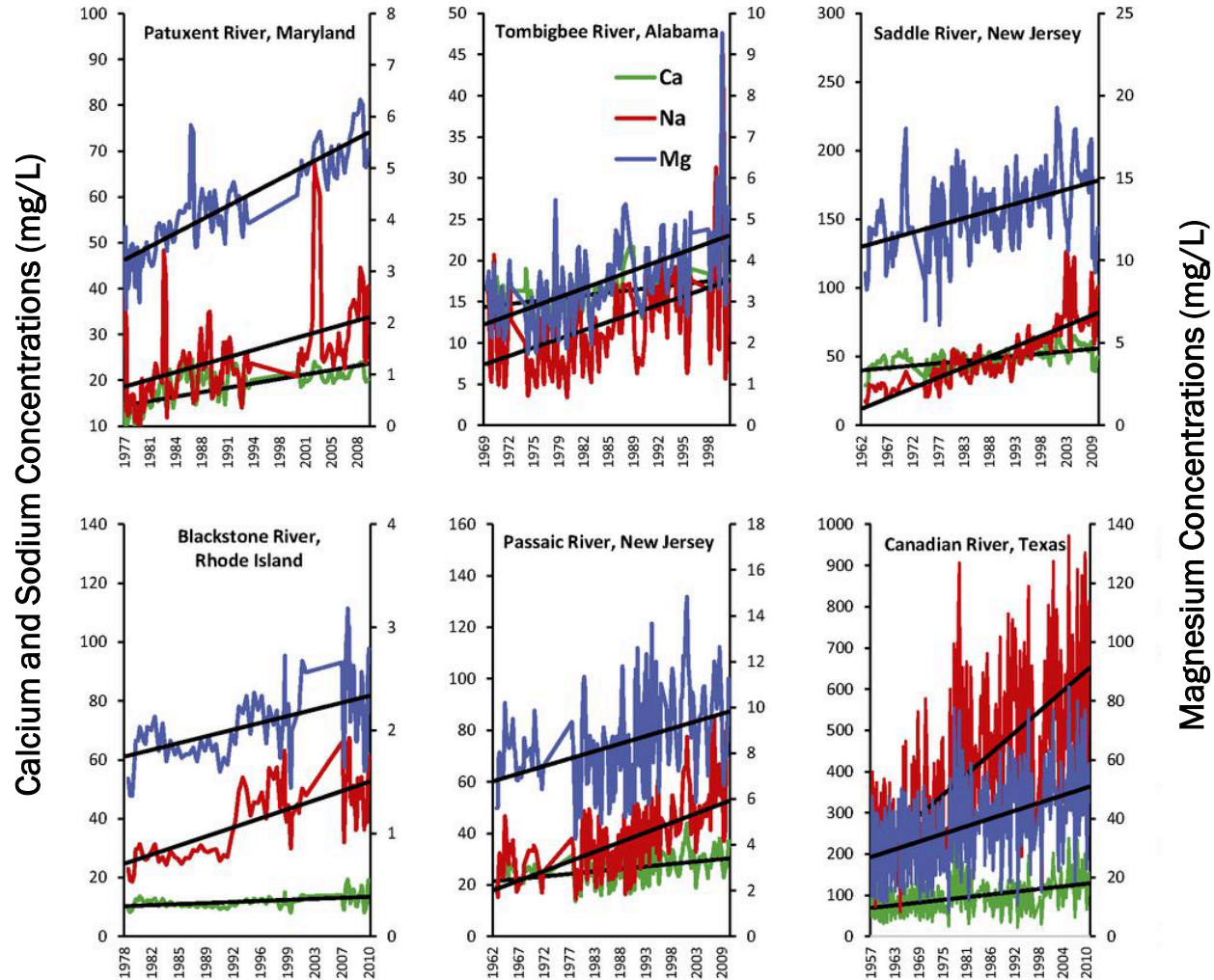


Salt Dosing Experiments: 0 g/L, 0.5 g/L, 1 g/L, 2.5 g/L, 5 g/L, 10 g/L of Na Cl

Haq et al. 2018

Freshwater Salinization Syndrome- Major Ions on a Continental Scale

Kaushal et al. (2018a) *PNAS*



Salts & Water Quality Workshop Outcomes

- Leverage existing efforts that have shown success to use salts more effectively:
 - MD State Highway Administration's training efforts (Snow College) and metric development (pounds of salt/snow inch/lane mile)
 - MS4 permitting in Maryland will address local road networks
 - Potential COG role - Facilitate a common core training for road crew operators
- Expand public outreach efforts on this issue: Need to balance public safety with environmental concerns
 - Can outreach help to manage public expectations for roads and sideways?
 - Public survey---VA Salt Management Strategy DEQ survey
 - COG could help develop consistent regional practices and talking points



Salts & Water Quality Workshop Outcomes

- Expand monitoring efforts to measure whether management actions are having an impact
 - Encourage the Chesapeake Bay Program to monitor for chlorides (possible CBPC letter)
 - COG can work with state partners (DEQ, MDE, DOEE) to determine best use of resources



Salts Workshop Presentations

<https://www.mwcog.org/events/2019/04/01/regional-workshop-on-salts-and-water-quality-water-quality/>



Heidi Bonnaffon

Environmental Planner

hbonnaffon@mwkog.org

202-962-3216

mwkog.org

777 North Capitol Street NE, Suite 300

Washington, DC 20002



Metropolitan Washington
Council of Governments