

 **07hr\_SC-ENR\_sb0128\_pt01**



(FORM UPDATED: 08/11/2010)

**WISCONSIN STATE LEGISLATURE ...  
PUBLIC HEARING - COMMITTEE RECORDS**

**2007-08**

(session year)

**Senate**

(Assembly, Senate or Joint)

**Committee on ... Environment and Natural  
Resources (SC-ENR)**

**COMMITTEE NOTICES ...**

- Committee Reports ... **CR**
- Executive Sessions ... **ES**
- Public Hearings ... **PH**

**INFORMATION COLLECTED BY COMMITTEE FOR AND AGAINST PROPOSAL**

- Appointments ... **Appt** (w/Record of Comm. Proceedings)
- Clearinghouse Rules ... **CRule** (w/Record of Comm. Proceedings)
- Hearing Records ... **HR** ... **bills and resolutions** (w/Record of Comm. Proceedings)
  - (**ab** = Assembly Bill)                      (**ar** = Assembly Resolution)                      (**ajr** = Assembly Joint Resolution)
  - (**sb** = Senate Bill)                              (**sr** = Senate Resolution)                              (**sjr** = Senate Joint Resolution)
- Miscellaneous ... **Misc**

\* Contents organized for archiving by: Mike Barman (LRB) (August 2012)

June-2014



December 4, 2007

**EXECUTIVE SESSION HELD**

Present: (5) Senators Miller, Jauch, Wirch, Kedzie and  
Schultz.

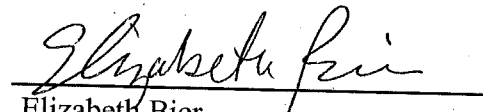
Absent: (0) None.

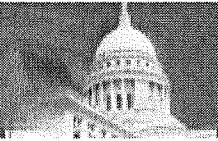
Moved by Senator Wirch, seconded by Senator Schultz that **Senate  
Bill 128** be recommended for passage.

Ayes: (5) Senators Miller, Jauch, Wirch, Kedzie and  
Schultz.

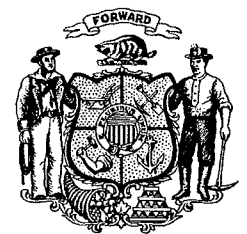
Noes: (0) None.

PASSAGE RECOMMENDED, Ayes 5, Noes 0

  
Elizabeth Bier  
Committee Clerk



WISCONSIN STATE LEGISLATURE



**Vote Record**  
**Committee on Environment and Natural Resources**

Date: 12/4/07

Moved by: Wirch

Seconded by: Schultz

AB \_\_\_\_\_ SB 128 Clearinghouse Rule \_\_\_\_\_

AJR \_\_\_\_\_ SJR \_\_\_\_\_ Appointment \_\_\_\_\_

AR \_\_\_\_\_ SR \_\_\_\_\_ Other \_\_\_\_\_

A/S Amdt \_\_\_\_\_

A/S Amdt \_\_\_\_\_ to A/S Amdt \_\_\_\_\_

A/S Sub Amdt \_\_\_\_\_

A/S Amdt \_\_\_\_\_ to A/S Sub Amdt \_\_\_\_\_

A/S Amdt \_\_\_\_\_ to A/S Amdt \_\_\_\_\_ to A/S Sub Amdt \_\_\_\_\_

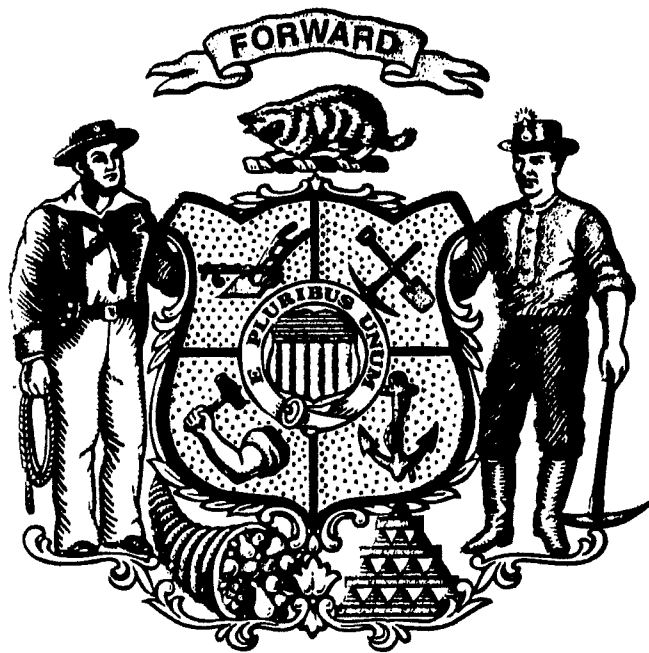
Be recommended for:

- Passage   
  Adoption   
  Confirmation   
  Concurrence   
  Indefinite Postponement  
 Introduction   
  Rejection   
  Tabling   
  Nonconcurrence

<u>Committee Member</u>	<u>Aye</u>	<u>No</u>	<u>Absent</u>	<u>Not Voting</u>
<b>Senator Mark Miller, Chair</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Senator Robert Jauch</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Senator Robert Wirch</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Senator Neal Kedzie</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Senator Dale Schultz</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Totals:</b>	<u>5</u>	<u>0</u>	_____	_____

Motion Carried

Motion Failed



## Bier, Beth

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**From:** Tony Lehmann [tplehmann@mail.ci.wausau.wi.us]  
**Sent:** Monday, May 21, 2007 3:36 PM  
**To:** Bier, Beth  
**Subject:** Sen. Mark Miller

Sen. Mark Miller

Room 409 South  
State Capitol  
P.O. Box 7882  
Madison, WI 53707-7882

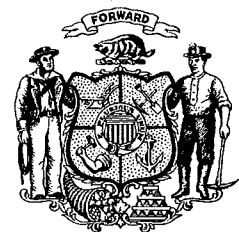
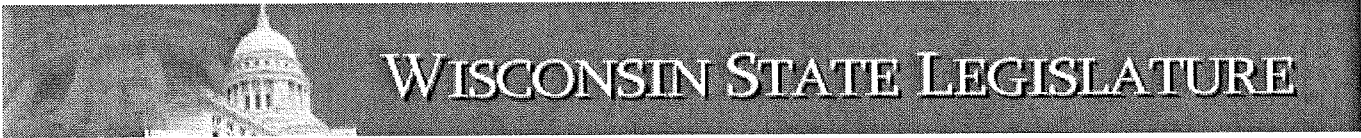
SB 128  
File

Sen. Miller;

I am the City Engineer for the City of Wausau. I am very interested in the upcoming hearing regarding the use of heated pavements in Wisconsin.

The City of Wausau, in association with Marathon County, is looking at the installation of an outside stairway between two levels of parking associated with our County public library. Due to the northern exposure of the sidewalk and the heavy use anticipated, we would very much like to be able to construct the stairway using heated concrete pavement. It is my understanding that current law in Wisconsin precludes the use of such pavement. We feel the use of a heated pavement in this situation, as well as other similar conditions would not only be a net energy savings measure due to the minimized maintenance needed, but it would enhance public safety since modern deicing systems using heated pavement are automated.

Thank you





To: Chairman Miller  
Sen. Robert Jauch (Vice-Chair)  
Sen. Robert Wirch  
Sen. Neal Kedzie  
Sen. Dale Schultz

From: Brian J. Nemoir

Date: May 23, 2007

Subject: Submitted Testimony—SB 128, repeal of the prohibition on outdoor heated surfaces

Thank you Chairman Miller and the assembled members of the committee, and I apologize as a previous engagement has left me unable to testify in person. My name is Brian Nemoir, I am testifying in support of SB 128, and will try to be brief in my comments and will also supply a copy of my testimony to the committee members.

Prior to the mid-1970s, there were a number of examples of both public and private usages of heated surfaces designed to keep sidewalks, ramps, stairs, stoops, steps, entrance ways and driveways clear of winter's oft-despised byproduct, snow.

Back then, the heated surfaces used most-often were steam-driven, with some electrical applications. Previously-used systems were often unreliable, energy-consumptive and required manual operation. With the country in the throws of an energy crisis, and with limited applications statewide, banning the non-energy friendly heated surfaces was an easy sacrifice (101.124). At the time there were an estimated ten states instituting bans according to the National Conference of State Legislators (NCSL). Wisconsin's heated surface prohibition did include a couple of exceptions, specifically hospitals and senior homes/assisted living facilities, where continued usage is fairly common and within the past ten years has delivered positive results.

### **Current:**

Technological advancement with both steam and electrical products has silenced the major complaint prompting the mid-70s prohibition, excessive energy consumption. Current products—whether they be steam-drive or electrical—run with far-greater efficiency, utilizing automated timers/weather sensors which monitor both temperature and moisture regulating usage based on need.

Steam products, requiring a boiler system, have employed chemicals like glycol which is an alcohol-based solvent to prevent freeze-ups, and easier energy transfer making for a more efficient system.

Electrical products have made many positive advances. Previously high-voltage products with unnecessary long runtimes were the only option. Currently, when considering an electrical heated surface product, low voltage options are the industry standard. On average, low voltage options run 3-6 hours per storm, and for an average driveway (estimated at 600 sq ft) cost somewhere around \$8-12 (35w system @.09 Kilowatts-per hour) to keep thawed/clean. Heated surface operational costs are similar if not less than a snow removal service and don't produce the CO<sub>2</sub> ozone emissions of snow removal equipment.

In addition, the electrical consumption needed to run such a heated surface product draw during a time in which electrical consumption is in lower demand (compared to the electricity-reliant summer months).

Many health care providers and senior centers already legally utilize heated surface, and have affirmed the many benefits, including:

- **Increased Safety**—Greater safety means less chance of an accident, which lowers exposure to litigation.
- **Reduced Interior Wear-n-Tear**—By not tracking in snow, salt and water, abuse on interior environments is minimized.
- **Less Environmental Harm**—Eliminating the need for salt or other snow melt chemicals is easier on the immediate environment (grass, trees, decorative plantings) as well as the sub-surface environment. In addition, heated surfaces don't contribute CO<sub>2</sub> emissions as do the heavy and light machinery used by professional snow removal crews.

It's worth noting the environmental harm sodium chloride, the most commonly-used road salt mixture, has on the greater environment. Not only are communities like Waukesha experiencing higher sodium levels within the shallow aquifer, of equal if not greater concern is the impact on lakes around urban areas. Specifically addressing such concerns is the 2004-05 Road Salt report issued by the City of Madison. The report points to the deleterious impact the continued use of road salt has had on area lakes and the various watersheds and wells. In 1972, the City of Madison mandated a 50% reduction in current salt usage. Since, with a minimal increase in road surfaces, Madison road salt usage has increased 48%. Clearly, the ban has proven ineffectual, and the impending results are shocking. Briefly, two key facts worth noting:

- Since 1975, chloride in well no. 6 has increased 246%, Chloride in well no. 10 has increased 551% and well no 17 has increased 282%. Sodium has also increase, although not at similar levels

- In 2003-04, stormwater runoff discharging directly into Spring Harbor/Lake Mendota contained chloride at 36,000 mg/L, which translates to a concentration 69% higher than salt in seawater

Such extremely concerning environmental trends are occurring at a time in which Madison-area precipitation during the winter months (snow is measure by precipitation) is down, and temperatures are up nearly 5 degrees on average, comparatively, when considering the past twenty years. Unfortunately, as temperatures rise, and precipitation decreases, a public addicted to clean streets demand increase salt usage.

Admittedly, heated roads aren't a realistic alternative, but allowing individuals and businesses the option of a safe, efficient and enviornmentally cooperative heated surfaces is a realistic option.

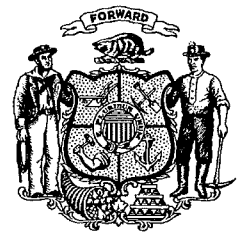
I close by noting one last change since the heated surface prohibition was put in place over twenty years ago...according to the National Conference of State Legislators, Wisconsin remains the only state prohibiting heated surfaces. Additional industry research affirms such findings.

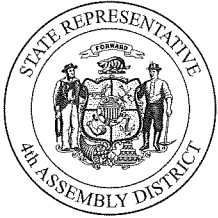
I ask for your support of SB 128 and its companion bill AB 229.

Thank you.



# WISCONSIN STATE LEGISLATURE





# Phil Montgomery

Serving the Communities of Allouez, Ashwaubenon, De Pere and Green Bay

December 3, 2007

Senator Mark Miller  
Chair – Senate Committee on Environment and Natural Resources  
Room 409 South  
State Capitol  
P.O. Box 7882  
Madison, WI 53707-7882

Dear Senator Miller:

I am writing today to respectfully ask for your support of Assembly Bill 229 and Senate Bill 128 during executive session of the Senate Committee on Environment and Natural Resources to be held on Tuesday, December 4, 2007.

Wisconsin banned the construction of heated sidewalks, ramps, stairs, stoops, steps, entrance ways, plazas, or pedestrian bridges as a response to the energy crisis of the 1970's. Only health care providers and nursing homes were exempted from this ban.

While this prohibition was well intended and served a purpose at the time it was implemented, improvements in technology have proven the ban to be outdated and unnecessary; therefore, Assembly Bill 229 and Senate Bill 128 seek to repeal the current ban on construction and operation of heated sidewalks in Wisconsin.

Lifting this ban would have many positive impacts for homeowners, pedestrians, local governments and the environment.

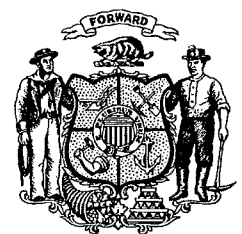
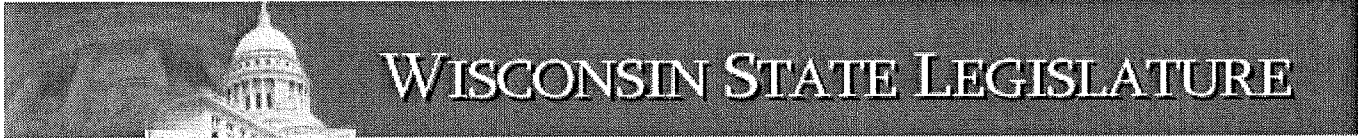
With heated sidewalks in place, there is no longer a need to salt a driveway or sidewalk which has an immediate, positive impact on the environment and of course pedestrian safety improves from sidewalks cleared in a timely, efficient manner.

Home owners, business owners and local governments can also benefit from salt, snow and water not being tracked indoors and by reduced snow removal costs.

This ban was put in place to reduce our dependence on fossil fuels and protect the environment. For the same reasons, the time has come to repeal this ban.

Sincerely,

Phil Montgomery  
State Representative  
Fourth Assembly District





**BRIAN J. NEMOIR, PRESIDENT**

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DELAWARE, WI 53018  
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FULLIMPACTCOMMUNICATIONS.COM

SB 128  
File

Date?

## Summary of Sodium Chloride Use in Madison

- 48% more salt used in 2004/05 than in 1972/73 when 50% reduction effort was implemented
- Precipitation in Madison has trended downward, while average winter temperature has trended upward
- Since 1975, chloride in well no. 6 has increased 246%, Chloride in well no. 10 has increased 551% and well no 17 has increased 282%. Sodium has also increase, although not at similar levels
- The impact of private property is not included within this study
- In 2003-04, stormwater runoff discharging directly into Spring Harbor/Lake Mendota contained chloride at 36,000 mg/L, which translates to a concentration 69% higher than salt in seawater



## City of Madison Road Salt Report – 2004–2005

Prepared by John Hausbeck, Kirsti Sorsa, and Tommye Schneider, Madison Department  
of Public Health

28 September 2005

### Summary

Winter road maintenance in Madison is critical and the application of road salt is an important tool in the maintenance process. However, the overuse of road salt can negatively impact the environment. For this reason, the Madison Common Council implemented a plan to reduce the use of road salt in the City of Madison to 50% of the amount used in the winter of 1972–73. After correcting for the number of street miles maintained, 48% more road salt was applied in the winter of 2004–05 as compared with 1972–1973. Monitoring of surface and ground water continue to show increasing trends in chloride and sodium levels although the levels are not yet a human health hazard. Storm water monitoring during snowmelt has identified surges of extremely high levels of chloride. These surges have the potential of harming fish and other aquatic organisms as they enter local lakes and rivers. Additional efforts to reduce road salt applications are needed if Madison is going to achieve the goals set in the 1970's. Madison Streets Division has taken actions such as pre-wetting road salt with calcium chloride brine, which is expected to increase the efficiency of road salt as a deicer. It is also important to expand salt reduction efforts to neighboring communities and private properties in order to reduce the sodium and chloride inputs to surface and groundwater resources.

### Historical Background

The City of Madison began recording use of sodium chloride (road salt) as a street deicer in the winter of 1959–60. In 1962, the Madison Common Council requested that the Madison Department of Public Health (MDPH) begin a study of the effects of road salt on surface waters in the Madison area. At that time, the environmental effects of chemical deicers were found to be minimal.

In 1973, the Madison Common Council implemented a plan to reduce the use of road salt in the Lake Wingra watershed to 50% of the amount used in the winter of 1972–73. As part of this plan, the Council renewed MDPH's charge to monitor and analyze the effects of road salt use. In the winter of 1977–78, the 50% salt use reduction objective was extended to include the entire City and MDPH was directed to submit an annual salt report to the Madison Common Council.

## Introduction

Road salt is an important tool for winter road maintenance. Madison Streets Division's winter road maintenance program includes plowing, spreading abrasives (sand), and spreading deicing chemicals (road salt). Madison uses sodium chloride for deicing because it is readily available, inexpensive, and effective. In an effort to increase the effectiveness of road salt, staff wet the road salt with a 32% solution of calcium chloride as they are spreading the salt. This brine is added at a rate of six gallons per ton of salt. The primary factors considered by Streets personnel when making decisions about winter road maintenance are ice conditions and traffic safety. In 2004-05, the Streets Division was responsible for maintaining 734 street miles of roads and highways in Madison.

Other groups applying road salt in the process of winter road maintenance include communities surrounding Madison, businesses, private contractors, and residential property owners. The Dane County Highway Department maintains County roads and highways and contracts with the Wisconsin Department of Transportation for maintenance of the Beltline and interstate highways. Dane County salts an estimated 2700 lane miles (roughly equivalent to 1000 street miles) of county roads and highways. The amount of road salt and other deicers applied by private contractors, businesses, and residential property owners is unknown.

Although road salt plays an important role in assuring transportation safety, it also poses a significant environmental health concern. Water from snow and ice melt carries dissolved road salt into lakes and streams through stormwater runoff and into groundwater through water seepage. Because chloride ions from dissolved road salt are not removed from water by chemical or biological processes, all of the chloride applied as road salt is expected to reach surface water or groundwater. Dissolved sodium also moves easily in the environment although some sodium ions will be adsorbed by the soil. At sufficient concentrations, these chemicals have toxic effects on plants and fish. If these chemicals seep into our deep groundwater reservoirs, our drinking water quality is also at risk. The following report provides the most recent assessment of Madison's road salt use on the environment.

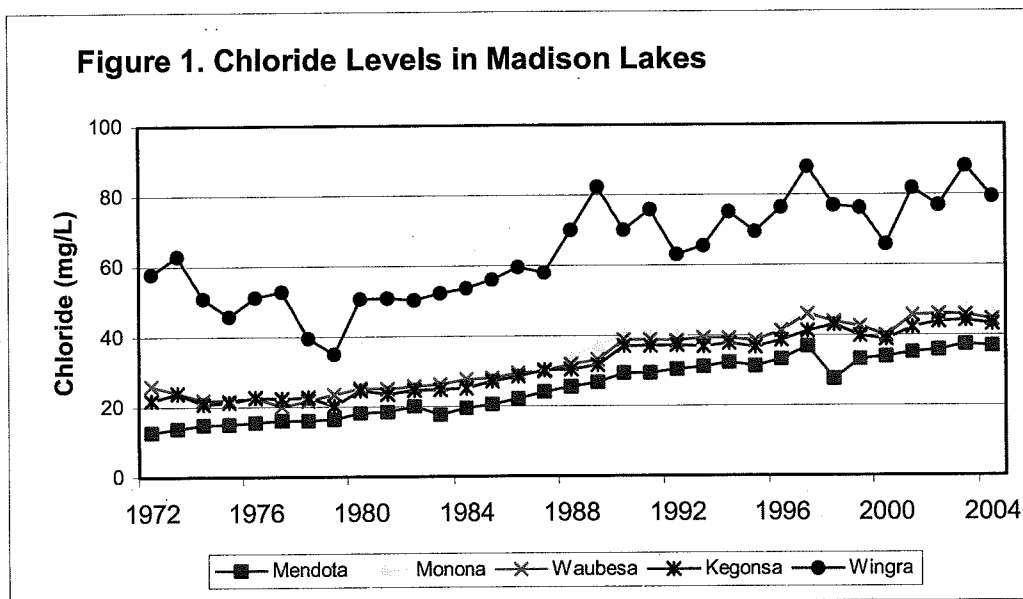
## Monitoring Results

During the winter of 2004-05, 12,037 tons of salt, 3,926 tons of sand (10% salt), and 8,066 gallons of calcium chloride (32% solution) were applied in the process of maintaining 734 miles of Madison streets (Table 1). In the winter of 1972-73, 11.1 tons of salt were applied per mile of street maintained. In 2004-05, 16.41 tons of salt per mile of street maintained were applied, representing a 48% increase. Over the last 10 years, changes in salt application rates have ranged from a 19% reduction in 2001-

02 to a 59% increase in 2000-01. The winter of 1984-85 was the last winter that salt use was reduced by 50% or more from 1972-73 rates. The amount of road salt added to the environment by individuals and agencies other than the City of Madison is unknown. The Dane County Highway Department and county municipalities purchased 66,760 tons of road salt on the state contract for the 2004-05 winter season (Table 2). If all of this salt were applied during the season, it would be approximately five times the amount applied by the City of Madison. The amount of salt applied to private property, both commercial and residential, continues to be unknown; however, the Road Salt Subcommittee of Madison's Commission on the Environment is working to estimate the impact from these sources.

Levels of chloride in Madison's drinking water are lower than the Wisconsin Department of Natural Resources Secondary Maximum Contaminant Level (SMCL) of 250 mg/L (Table 3). With the exception of well 27, the wells listed in Table 3 show small annual increases in sodium and chloride levels. Over time, these small increases have added up to significant increases of these chemicals in drinking water. Between 1975 and 2004, chloride in Well No.6 has increased 246%. Chloride in Well No.10 has increased 551% and Well No.17 shows a 282% increase in chloride levels. Sodium has increased less dramatically over this time period. The average sodium levels in all drinking water wells range from 2 to 24 mg/L in active wells. The US EPA has set the health-based drinking water advisory level at 20 mg/L to protect individuals on sodium-restricted diets (500 mg sodium/day).

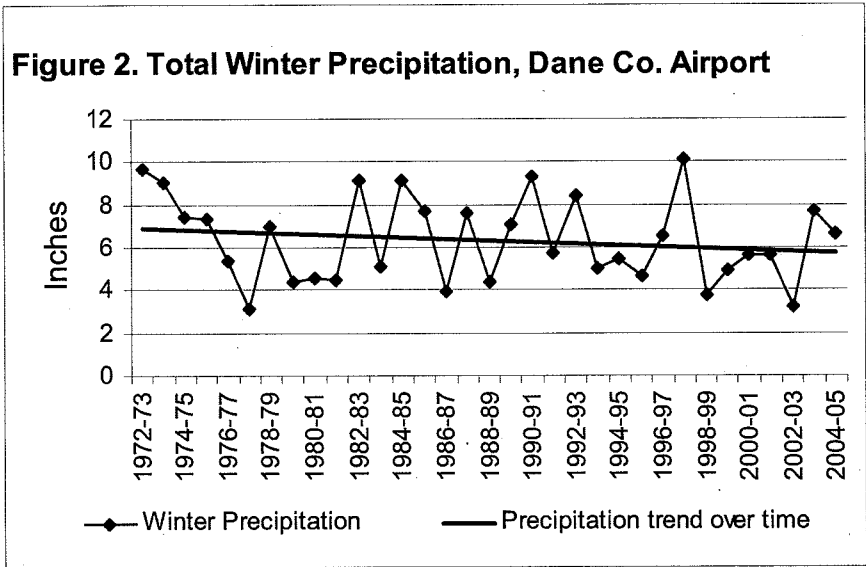
Chloride concentrations in Madison springs, fed by shallow groundwater, are two to four times higher than the concentrations found in impacted drinking water



wells, which tap the deep groundwater aquifer (Table 4). These levels are consistent with levels observed in previous studies by Edgewood College students and members of the Friends of Lake Wingra.

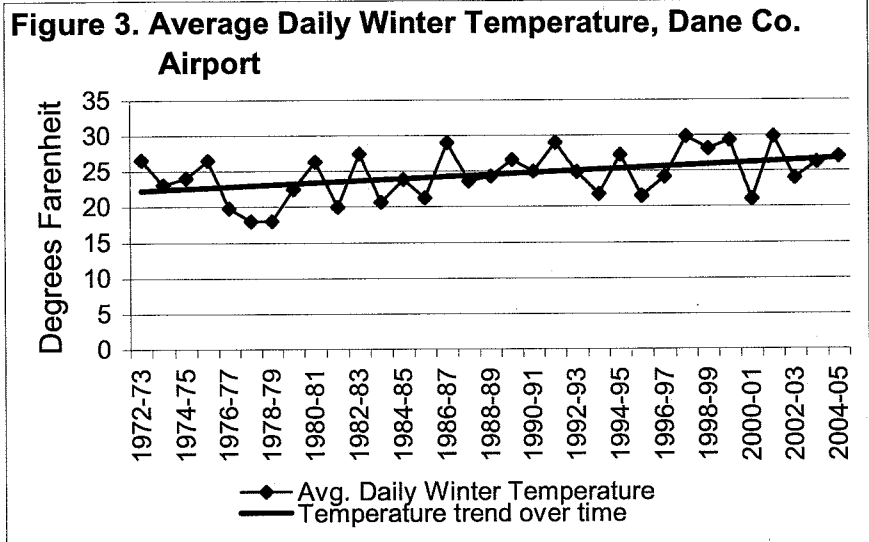
The long-term trends in chloride and sodium levels in the local surface waters continue to exhibit gradual increases. However, these chloride levels have not yet reached Wisconsin Department of Natural Resources (WDNR) standards for chronic or acute toxicity, 395 mg/L and 757 mg/L respectively. This suggests that these surface waters, while impacted by past deicing activities, have not exceeded State standards (Tables 5 and 8 and Figure 1). Small water bodies such as Lake Wingra and mid-size lakes such as Lake Monona with large urbanized watersheds are more sensitive to the impacts of road salt than larger Lake Mendota.

Routine monitoring, performed during dry periods, has shown steadily increasing concentrations of these chemicals; however, water analysis of storm water entering the lakes has shown extreme spikes in chloride concentrations. Although data were not available for 2004–05, the USGS monitored specific conductance continuously in two locations, the Spring Harbor stormsewer and along Starkweather Creek, during 2002–03 and 2003–04. In Spring Harbor stormsewer, estimated chloride levels based on specific conductance ranged from 100 to 36,000 mg/L. The estimated total amount of chloride entering the stormsewer at Spring Harbor between January and April was 0.140 metric tons (0.23 tons of salt) in 2003 and 0.190 tons (0.29 tons of salt) in 2004. This stormsewer discharges directly into Lake Mendota and is located within a quarter mile of Well #14. During a snowmelt event in February 2003, estimated chloride concentrations in Spring Harbor near the storm sewer outfall reached 1700 mg/L under the ice and 3300 mg/L near the bottom. With an increasing distance from the outfall, estimated chloride concentrations were diluted to 320 mg/L under ice and 920 mg/L near the bottom (Table 6). Estimated chloride concentrations within the Spring Harbor stormsewer at this time ranged from 19,000 to 20,000 mg/L. Estimated chloride concentrations at the Starkweather Creek monitoring location ranged from about 50 to 1500 mg/L



during the winter of 2004 (Table 6).

Weather data collected from Dane County Regional Airport suggest that winters have become milder since the winter of 1972-1973. The total amount of winter precipitation has decreased during this period; however, none of the recorded totals were significantly different from the mean of 6.3" of winter precipitation (Figure



2). Winter precipitation is defined as all precipitation received during the months of December through March. Snow and ice are included in this measure after being melted to liquid water. Since 1972-73, the average daily temperature recorded from December through March has increased although not significantly (Figure 3).

### Discussion

Although the total amount of salt applied has increased over time, we have also seen an increase in the miles of streets being maintained. Our current measure to account for the quantity of street maintained, street miles, might overestimate the application rate because it does not take into account the number of lanes each street represents. Because there has been a considerable change in the number of multi-lane streets in Madison, this may be significant. However, the number of lane miles maintained is not available at this time. Using the best measure available, tons of salt applied per street mile, and considering the increasing mildness of winters in Madison, the goal set by the Madison Common Council in 1973 is not being achieved.

In addition to Madison street deicing, Madison's water resources are impacted by deicing activities that occur in the communities surrounding the City as well as on private property within the City. Only 30% of the of the total area drained by the Yahara River north of Lake Waubesa lies within the City of Madison. In the past, efforts to quantify the amount of salt applied outside the City of Madison and on private property (residential and commercial) have been mostly unsuccessful. Table 2 shows that agencies maintaining streets and highways around Madison purchased over five times the salt that was applied in Madison. However, there is no information on how much of this road salt was applied during the winter. In the case of private property,

there are no data on the amount of deicing salt applied to driveways, sidewalks, and parking lots. Due to the large size and increasing development of parking lots associated with shopping centers, road salt applications on parking lots may be a significant portion of the total application of road salt in Madison. The ad-hoc Road Salt Subcommittee of the Commission on the Environment is currently working on estimates of salt applications in these areas and plans to recommend methods for tracking the use of road salt in the future.

Levels of chloride and sodium in Madison groundwater and surface water continue to be within the regulatory limits and are not a human health hazard at this time. As shown in Table 3, the water from well #17 has exceeded the US EPA advisory level (non-enforceable) for sodium in the last two years. While the presence of elevated sodium in this well was higher than desired, it is not considered to be a human health hazard. Even for individuals on a sodium restrictive diet, a level of 20 mg/L represents only 4% of the allowable daily intake.

A pilot study conducted by the USGS and MDPH during the winters of 2002-03 and 2003-04 measured specific conductance and subsequently estimated chloride concentrations as high as 36,000 mg/L in storm water runoff discharging directly into Lake Mendota at Spring Harbor. This translates to 59,000 mg/L of salt, which is 69% higher than the concentration of salt in seawater (Table 7). The receiving water in Lake Mendota as well as Starkweather Creek also exhibited high chloride concentrations during a snowmelt event, exceeding the chronic and acute toxicity levels set by the Wisconsin DNR for chloride. These extreme levels of chloride in storm runoff may exert severe short-term adverse effects on aquatic organisms and biological diversity, particularly in low-dilution aquatic systems. Canadian researchers have estimated that 5 percent of aquatic species would be affected at chloride concentrations of about 210 mg/L, and 10 percent of species would be affected at chloride concentrations of about 240 mg/L. Sensitive algal species are affected at concentrations as low as 10 to 20 mg/L of chloride (Environment Canada, 1999). The extreme chloride levels in Spring Harbor may also be impacting drinking water considering that Well 14 is located within a quarter mile of the stormsewer and this well has the most rapidly increasing chloride levels.

High levels of chloride from dissolved road salt in snow and ice melt is toxic to a variety of grasses, flowering plants and trees (terrestrial plants). For this reason, the Salt Institute cautions against the overuse of salt for deicing on sidewalks and driveways. Studies have shown that vegetation along heavily salted roads is negatively impacted by dissolved road salt when it seeps into soils or is splashed directly onto the plant. While these effects are known, the Madison Department of Public Health has not

received complaints from owners or managers of properties where grass, flowering plants or trees have been damaged by excessive salt applications. The Department's monitoring effort does not include the measurement of dissolved road salt in soils or on vegetation near streets receiving road salt. Without complaints or monitoring data, this report is unable to assess the impact of road salt on terrestrial plants in Madison.

### Conclusions

The data presented in this report suggest that additional efforts are needed if the City expects to achieve the road salt use goals set in the 1970's. As recently as the winter of 2001-02, the City realized an 18.6% reduction in salt use, which indicates that increased efforts may not need to be dramatic. However, an increased effort is necessary due to the fact that surface water and groundwater monitoring continues to show increasing levels of chloride and sodium in Madison's drinking water, lakes, and rivers. While levels do not yet pose a human health hazard, salt concentrations in storm water are high enough to potentially cause changes in the aquatic and terrestrial biota favoring salt tolerant species. The following recommendations should be considered as means in which to reduce the use of road salt:

- Streets Division should
  - quantify the street lane miles currently maintained and the number of lane miles maintained during the winter of 1972-73 using existing geographic information system (GIS) data and aerial photography.
  - continue to evaluate deicing and anti-icing alternatives for winter road maintenance.
- The Road Salt Subcommittee of the Commission on the Environment should
  - provide educational information to private property owners, especially businesses with large parking lots.
  - work to better estimate the total salt used on all property in the City of Madison and other communities in the Yahara River watershed.

### References:

Environment Canada, 1999. Priority Substances List Assessment Report. Road Salts  
Canadian Environmental Protection Agency.

### Acknowledgements:

The following individuals and agencies provided the data presented in this report:  
Steve Corsi, The US Geological Survey  
Steve Haag, Dane Co Highway and Transportation Department  
Jim Lorman, Edgewood College  
Alan Schumacher, Madison Streets Division

**Table 1. Madison Street Division winter road maintenance activities**

Year	Material Applied				Streets Maintained (miles)	Salt Applied per Mile <sup>2</sup> (ton/mile)	Change from Winter 1972-73	
	# Salt Applications	Salt (tons)	Sand (tons)	Calcium Chloride <sup>1</sup> (gallons)			(tons/mile)	(%)
1972-73	21	5691.25	2991.85	--	511.91	11.12	--	--
1973-74	29	3755.20	5221.48	--	517.25	7.26	-3.86	0
1974-75	34	4853.80	4627.41	--	517.40	9.38	-1.74	-16%
1975-76	27	2486.18	5143.52	--	525.40	4.73	-6.39	-57%
1976-77	24	1519.96	5703.15	--	529.14	2.87	-8.25	-74%
1977-78	20	2275.74	8927.78	--	538.04	4.23	-6.89	-62%
1978-79	27	3282.40	8461.78	--	547.67	5.99	-5.12	-46%
1979-80	21	2679.78	4936.02	--	557.61	4.81	-6.31	-57%
1980-81	20	1617.76	5796.21	--	562.57	2.88	-8.24	-74%
1981-82	24	4010.05	7536.36	--	565.41	7.09	-4.03	-36%
1982-83	23	2890.53	3484.45	--	567.78	5.09	-6.03	-54%
1983-84	23	4980.10	6181.89	--	552.07	9.02	-2.10	-19%
1984-85	20	2896.65	4263.67	--	567.78	5.10	-6.02	-54%
1985-86	30	5574.10	8730.37	--	561.09	9.93	-1.18	-11%
1986-87	16	3274.20	3010.78	--	564.26	5.80	-5.32	-48%
1987-88	23	4491.30	5367.15	--	571.00	7.87	-3.25	-29%
1988-89	23	4393.28	7060.56	--	580.00	7.57	-3.54	-32%
1989-90	23	5604.95	5809.48	--	587.40	9.54	-1.58	-14%
1990-91	24	5836.00	5727.78	--	587.40	9.94	-1.18	-11%
1991-92	20	4950.28	3751.39	--	591.20	8.37	-2.74	-25%
1992-93	31	7146.88	4121.00	--	595.20	12.01	0.89	8%
1993-94	27	6825.06	3952.56	--	621.30	10.99	-0.13	-1%
1994-95	28	5909.64	4195.80	--	627.80	9.41	-1.70	-15%
1995-96	22	8093.81	7025.87	--	632.00	12.81	1.69	15%
1996-97	35	9862.15	6115.45	--	636.00	15.51	4.39	39%
1997-98	31	7451.00	4062.03	--	643.00	11.59	0.47	4%
1998-99	24	6644.03	6835.16	--	655.00	10.14	-0.97	-9%
1999-00	25	7977.86	4703.52	--	655.00	12.18	1.06	10%
2000-01	28	12485.03	7818.43	--	707.10	17.66	6.54	59%
2001-02	20	6423.02	2320.00	--	710.40	9.04	-2.08	-19%
2002-03	20	9010.33	3162.50	--	730.98	12.33	1.21	11%
2003-04	22	7852.65	4908.59	--	732.07	10.73	-0.39	-4%
2004-05	22	12037.06	3926.42	8066	733.50	16.41	5.29	48%

<sup>1</sup> Road salt is wetted with a 32% Calcium chloride solution at a rate of 6 gallons per ton of road salt while spreading.

<sup>2</sup> Salt applied per mile is calculated by dividing the total amount of road salt applied by the miles of street maintained. This value does not account for the salt mixed with sand (mixed at a 1:10 ratio of salt to sand) or the chloride added to the environment from calcium chloride.



**Table 2. Salt purchases on the state contract in Dane County, 2004-05.**

Municipality	Tons Purchased	Municipality	Tons Purchased
Town of Albion	310	Village of Mt Horeb	800
Town of Cottage Grove	580	Village of Oregon	400
Town of Dunn	400	City of Fitchburg	1,400
Town of Oregon	680	City of Madison	10,500
Town of Sun Prairie	450	City of Middleton	1,300
Town of Verona	600	City of Sun Prairie	1,600
Town of Westport	200	City of Verona	480
Village of Cambridge	60	Dane County	47,000
Total road salt purchased on the State DOT contract in Dane County = 66,760			

**Table 3. Chloride levels (mg/L) in selected Madison Water Utility drinking water wells.**

Year	UW 6		UW 10		UW 14		UW 17		UW 23		UW 26		UW 27	
	Cl	Na	Cl	Na	Cl	Na	Cl	Na	Cl	Na	Cl	Na	Cl	Na
1975	8	5	1	3	12		13	9	8					
1976	9	5	<1	2	13		13	9	8					
1977	8	5	<1	2	13		17	12	9					
1978	10	5	2	3	13		15	10	9					
1979	12	5	1	2	17		18	10	11					
1980	14	6	1	2	19		34	16	14					
1981	14	6	0	2	20		24	14	16					
1982	16	7	1	4	21		23	12	18					
1983	17	7	1	2	23		25	14	21					
1984	18	8	1	3	23		24	14	35					
1985	13	7	1	3	27		24	14	33					
1986			2	3			21	12						
1987	24	6	4	3			17	9						
1988	22	8	2	3			28	13			1	2		
1989			3	3			12	11			1	2		
1990		7	1	2			28	13			0	2		
1991	19	7	2	3			47	20			2	2		
1992	22	7	2	3			36	15			2	2		
1993	23	7	3	2	41	12	49	20	48	14	3	2		
1994	22	8	2	3			26	13			2	2	33	14
1995	23	8	3	2	41	14	21	11	49	15	3	2	30	12
1996	25	8	4	3	52	15	53	21	52	15	4	3	26	11
1997	23	8	2	3	53	16	54	22			4	3	25	11
1998	24	9	2	3	55	17	26		55	16	4	4	23	11
1999	25	8	4	3	59	18	50	20	40	13	5	3	23	10
2000	26	9	3	3	58	19	54	23	39	13	5	3	19	10
2001	26	9	4	3	60	21	24	12	45	14	6	3	23	11
2002	26	9	4	3	64	23	24	12	47	16	6	4	22	11
2003	28	10	4	3	69	23	58	25	46	16	7	4	24	12
2004	28	9	7	3	69	22	50	20	73	23	9	4	31	14
<b>Average</b>	<b>19</b>	<b>7</b>	<b>2</b>	<b>3</b>	<b>37</b>	<b>18</b>	<b>30</b>	<b>15</b>	<b>32</b>	<b>15</b>	<b>4</b>	<b>3</b>	<b>25</b>	<b>11</b>
Annual change	0.7	0.2	0.1	0.0	2.0	1.0	1.1	0.3	1.7	0.4	0.4	0.2	-0.5	0.0

**Table 4. Chloride levels (mg/L) in natural springs.**

	Arboretum Spring	Monroe Street Spring	East Towne Mall Spring
2001	97	83.75	60.35
2002	98.55	85.75	54.55
2003	96.42	86.96	51.57
2004	93.53	95.28	70.99
Average	96.38	87.93	59.36

**Table 5. Annual chloride and sodium levels (mg/L) in Madison Area lakes**

Year	Mendota		Monona		Waubesa		Kegonsa		Wingra	
	Cl	Na	Cl	Na	Cl	Na	Cl	Na	Cl	Na
1972	13	NA	23	NA	26	NA	22	NA	58	NA
1973	14	NA	23	NA	24	NA	24	NA	63	NA
1974	15	NA	22	NA	22	NA	21	NA	51	NA
1975	15.2	8	22.8	12.8	21.9	12.4	21.4	11.9	45.9	23.5
1976	15.7	7.5	22.3	12.7	22.7	12.9	22.8	12.1	51.3	25.2
1977	16.3	8.9	23.3	13.5	20.2	13.1	22.6	12.8	52.9	25.2
1978	16.3	8.8	24	13.3	21.8	12.4	22.9	11.4	39.6	19.5
1979	16.6	8.4	23.1	11.8	23.5	12.4	20.5	11.4	35	19.9
1980	18.4	9	25.3	13.6	25.3	12.3	24.7	12.7	50.7	23.9
1981	18.7	9.1	24.7	13	25.1	12.8	23.7	12.5	50.9	23.6
1982	20.3	10.1	25.5	13.7	25.8	13.4	24.8	12.4	50.4	24
1983	17.8	9.9	25.4	13.8	26.3	13.8	25	12.7	52.4	24.4
1984	19.7	10	26.6	14.8	27.7	14.7	25.3	13.1	53.8	25.8
1985	20.7	11.3	27.7	15.7	28.1	15	27.2	14.3	56.2	29.6
1986	22.3	10.8	28.9	15.1	29.5	14.8	28.6	14.3	59.7	27.5
1987	24.3	9.7	30.1	12.9	29.9	12.9	30.4	12.4	58.1	22.7
1988	25.7	11.1	34	15.6	32	14.6	30.5	13.1	70.1	29.8
1989	26.8	11.7	37.4	17.4	33.1	16.9	31.7	15.4	82.3	38.2
1990	29.5	12.7	40.1	18.8	38.9	17.9	37.1	16.5	70.1	31.2
1991	29.5	12.7	40.1	18.8	38.9	18.1	37.1	16.7	75.9	31.2
1992	30.5	12.1	40.1	19.2	38.5	18.8	37.4	17.3	63.2	31.1
1993	31.2	13.5	38.8	19	39.5	19.4	37	18.1	65.7	31.3
1994	32.4	12.9	39.3	16.9	39.3	17.1	37.9	16.2	75.2	31.4
1995	31.5	13.4	39	17.8	38.6	17.3	36.9	16.3	69.7	31.5
1996	33.4	14.1	42.7	18.8	41.4	18.8	38.8	17.5	76.5	33.9
1997	37	15.6	46.7	21.2	46	19.9	41.3	17.9	87.9	41.3
1998	27.8	15.9	43.3	22.7	43.9	23.2	43.1	21.8	77	39.6
1999	33.4	22.7	42.5	23	42.5	23.9	40	22.5	76.3	36.4
2000	34	15	41	20	40	20	39	19	66	31
2001	35.2	15.9	43.9	22.2	45.7	22.4	42.36	20.4	81.8	39.2
2002	36	16	46	22	46	22	44	21	77	37
2003	37.5	16.7	47.4	23.4	45.9	22.6	44.3	21.1	88.2	41.5
2004	37	17.6	46.1	24.0	44.5	23.3	43.3	22.0	79.4	37.9

NA = Data not available

**Table 6. Summary of continuous water quality monitoring at Spring Harbor and Starkweather Creek.**

	Spring Harbor Stormsewer		Starkweather Creek
	Maximum Concentration	Total Amount in Stormsewer	Maximum Concentration
		January - April	
	mg/L Chloride	tons Chloride	mg/L Chloride
2003	26,000	0.14	
2004	36,000	0.18	1500
<b>Chloride in Lake Mendota at Spring Harbor February 1 &amp; 2, 2003</b>			
	Spring Harbor	Acute toxicity*	Chronic Toxicity*
	mg/L Chloride		
Under Ice	320 - 1700	757	395
Near Bottom	920 - 3300		

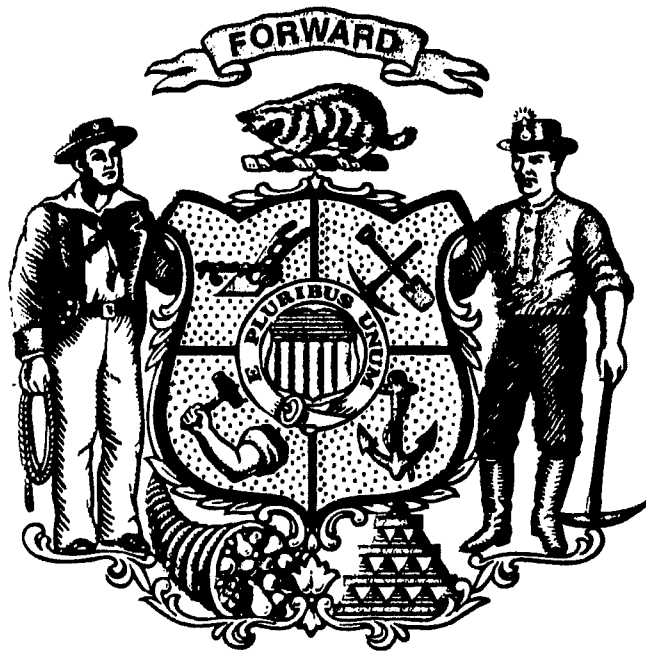
\* = WI Admin. Code NR 105 Water Quality Criteria

**Table 7. Salt concentrations of various water types.**

Water Type	Salt Concentrations (mg/L)
Distilled	0
Rain	10
Pyramid Lake (saline lake, Nevada)	5,200
Ocean	35,000
Brine Well	125,000
Dead Sea	250,000

**Table 8. Change in chloride concentration of Madison Area lakes since 1972.**

Lake	1972 Chloride (mg/L)	2004 Chloride (mg/L)	% Increase
Mendota	13	37	185
Monona	23	46.1	100
Waubesa	26	44.5	71
Kegonsa	22	43.3	97
<b>Average of Yahara Lakes</b>	<b>21</b>	<b>42.7</b>	<b>103</b>
Wingra	58	79.4	37



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**AB 229** (REG Session)

**SB 128** (REG Session)

*Nickname* **Heated Sidewalks**

*Asm Author:* montgomery *Sen Author:* decker

*Bill Description* Wisconsin is currently the only state the still prohibits heated sidewalks, ramps or stairs to be installed. This bill would repeal that prohibition.

*Supporting Arguments* Since Wisconsin has such cold and icy winters, some businesses or government buildings may want to put in heated sidewalks to improve the safety for those that walk in certain areas.

These prohibitions are outdated and using heated sidewalks on some stairways could prevent people from slipping and getting injured without rely on large quantities of salt.

*Opposing Arguments* These are a waste of energy and the problem of slippery walkways can be solved with prompted shovelling and salt.

*Important Amendments*

*Governor's Public Position* None

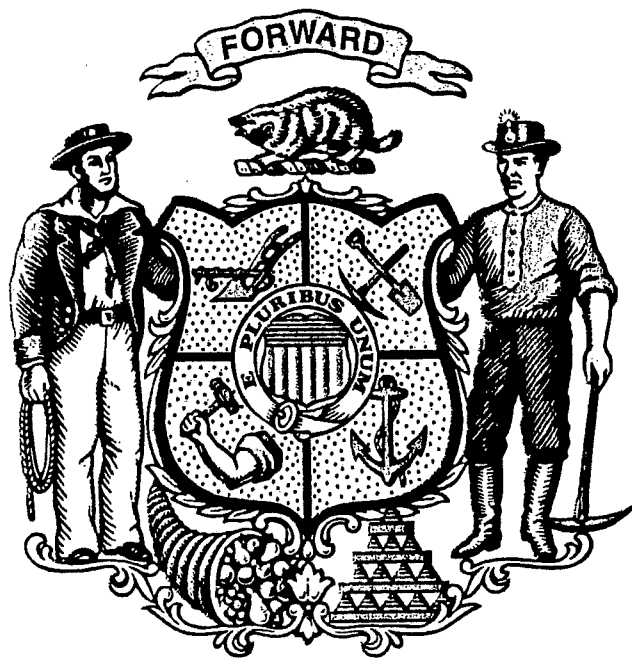
*Vocal Legislative Support:*

*Issues*

*Interest Groups*

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- ▶ Home
- ▶ Lobbying in Wisconsin
- ▶ Organizations employing lobbyists
- ▶ Lobbyists



as of Thursday, May 17, 2007

**2007-2008 legislative session**  
**Legislative bills and resolutions**

(search for another legislative bill or resolution at the bottom of this page)

**Assembly Bill 229**

heated exterior pedestrian walkways.

**TEXT**  
sponsors  
LBR analysis

**STATUS**  
committee actions  
and votes  
text of amendments

**COST & HOURS**  
of lobbying efforts  
directed at this  
proposal

Organization		These organizations have reported lobbying on this proposal:	Place pointer on icon to display comment click icon to display prior comments		
Profile	Interests		Date Notified	Position	Comm
●	●	Steamfitters Local 601	5/16/2007	↑	

Select a legislative proposal and click "go"

**House**

- Assembly**
- Senate

**Proposal Type**

- Bill**
- Joint Resolution
- Resolution

**Proposal Number**

229 (enter proposal number)

**Legislative Session**

2007 Regular Session