



INSIDE THIS ISSUE

- 1** Get Ready to Shovel: Winter Deicers and Water Quality
- 3** Spill Prevention Progress at GSFC (Greenbelt)
- 4** Bringing Nature Home with Dr. Doug Tallamy

Visit us on the web for more information about Goddard's environmental programs and other outreach bulletins at

<http://code250.gsfc.nasa.gov/outreach.cfm>

1, 2, 3 Get Ready to Shovel

By Rebecca Ford
Code 250

Winter Deicers and Water Quality

When winter weather is forecasted, many of us rush to the stores to purchase inclement weather supplies to keep our sidewalks and streets safe. When the snow or ice melts or when it's washed



away with the next rainfall, the chemical deicers that are used to help keep our roadways clear are carried into our waterways. Deicers are pollutants that can harm aquatic organisms and vegetation within the

Chesapeake Bay watershed. Knowing which chemical deicers are less harmful and how best to treat ice and snow this winter can help minimize the impact of road salts on the environment.

Deicer Impacts on Stormwater and the Environment

An estimated 2.5 million tons of road salt (sodium chloride) are applied to our roadways annually across the Chesapeake Bay watershed. While road salt helps keep highways open and safe for travel, it also adds large quantities of chloride into surface and ground water. Sodium chloride is extremely soluble in water. Once it enters the watershed, it stays there. Elevated chloride levels from road salt runoff increases the salinity of freshwater streams, which harms many forms of aquatic life, amphibians,

and plants. It can also contribute to contamination of human drinking water. Trees and other terrestrial plants can be impacted from repeated road salt applications. Some studies have shown that as many as ten percent of trees found along road corridors are damaged by road salt.

Know Your Deicers. Reduce Your Impact.

As you prepare for the next snow storm, make yourself aware of which deicers are more environmentally-friendly. Minimize the chemicals introduced into the environment by first attempting to remove as much snow as possible using shovels or snow blowers. If you must use a chemical deicer, consider deicing materials other than the traditional rock salt. Deicers containing CMA® (calcium magnesium acetate), such as Happy Paws™, SubZero 20™, or Green Earth™ are brands that are not toxic to plants and aquatic life.

For each environmentally-friendly deicer available in stores today, there is an equal number that only claim to be "eco-friendly."



Trees badly damaged by road salt.



Many of these products contain a mixture of common chemical deicers that are combined in a way that only slightly minimizes the environmental risks. Table 1 can be used as a reference for the most common chemical components used for deicing and the pros and cons of each.

Assess Your Weather Conditions

During a winter weather event, it's best to do a quick assessment of the snow density, air temperature, and potential for snow melt to determine the best method for snow removal. Knowing how best to treat wintry conditions can help minimize the quantity of deicer being used, and therefore, the amount of chemicals being introduced into our waterways. Table 2 offers strategies for using your eco-friendly deicer, depending on the type of precipitation. Limit the amount of ice melt you apply and remember, the most environmentally-friendly deicer at your disposal, is your snow shovel! ❖



Visit the websites below for more information on eco-friendly deicers and the environment.
<http://chesapeakestormwater.net/2009/01/winter-road-salt-and-the-chesapeake-bay/>
<http://www.cbtrust.org/site/apps/nlnet/content2.aspx?c=mjPKXPCInH&b=5818141&t=11609223>
<http://www.thriftyfun.com/tf16691674.tip.html>

Table 1 Deicing Strategies	
Type of Wintry Precipitation	Deicing Strategy
Dry, Powdery Snow	Light snow should be shoveled or swept immediately to avoid using deicer altogether.
Wet, Heavy Snow	Apply deicer as soon as snow begins falling in order to prevent it from bonding to sidewalks and pavement.
Sleet and Freezing Rain	Apply deicer product in advance of these wintry conditions in order to prevent ice from building up.
Significant Snowfall	When 2+ inches of snow falls, plow or shovel first and then use deicing product to melt underlying layers of ice that have built up.

Table 1 Deicers and Impacts		
Name	Pros	Cons
Rock Salt	Traditional and inexpensive	Releases high levels of chloride ions as it dissolves; pollutes waterways.
Calcium Chloride	Works at low temperatures (-25° F), more effective than rock salt	Harmful to plants and is toxic to animals; easily tracked indoors.
Magnesium Chloride	Very effective at snow melting with minimal environmental impact	Is corrosive to metals such as steel and aluminum poles.
CMA	Low toxicity levels, non-corrosive and safe for pets and plants	More expensive than rock salt and is less effective at lower temperatures.

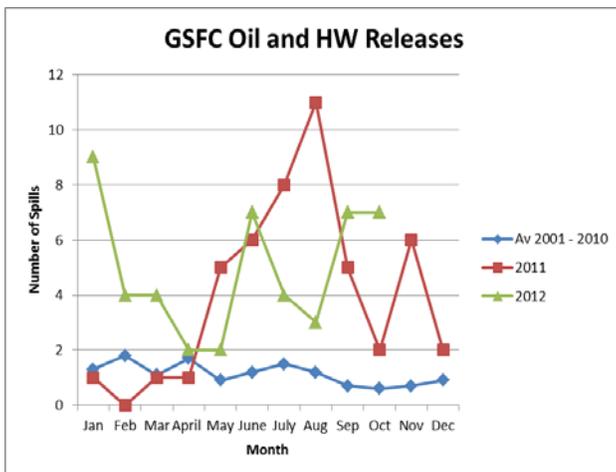


Spill Prevention Progress

By Joseph Hunter
Code 250

How have we been doing?

GSFC has done a great job detecting, reporting and cleaning up spills. Between 2001 and 2010, we reported a little over one spill per month. In 2011, GSFC averaged four reported spills per month. In 2012 there was an average of 4.5 reported spills per month.



That doesn't sound like good news...

It is good news because we have raised our awareness about the importance of reporting spills. We are also preventing oil and other chemicals from entering our stormwater system.

What is the next step?

The next step we need to take is to prevent spills from happening in the first place. A significant portion of spills are oil, antifreeze or hydraulic fluid from vehicles.

Releases from Vehicles

- Perform regularly scheduled maintenance on your vehicle.
- Perform a visual inspection under the hood for potential leaks.



- Watch for signs of engine overheating or maintenance light warnings.

Releases From Heavy Equipment



- Check hydraulic connections.
- Ensure lines and fill caps are secure.
- Perform a visual check of the equipment prior to operation.
- Coordinate elevator work with Code 250.

Fueling Operations

- Ensure oil tanks and dispenser are operating correctly.
- Do not "top off" vehicle fuel tanks. ❖



What is a spill?

Spills are releases of petroleum products, antifreeze, chemicals or other harmful substances to the environment. When spills occur on our roadways, parking lots, pavement, and grass or directly into surface waters, they impair water quality.

All spills, including oil leaks from vehicles traveling on Center, must be reported immediately so that appropriate regulatory reporting and clean up can be accomplished.

If you see a spill, report it! Keeping GSFC clean and protecting the environment is everyone's job.

- Dial 911 from a GSFC phone or (301) 286-9111 from a cell phone.

Joseph Hunter, Oil Program Manager
Extension 6-0466
Email at joseph.v.hunter@nasa.gov



Bringing Nature Home with Dr. Doug Tallamy

By Janine Pollack
Code 250

Dr. Doug Tallamy visited GSFC on January 11 to present key concepts from his book *Bringing Nature Home*. He spoke about how the current quest for the “dream” yard is done at the expense of nature and wildlife. The perfectly manicured yard comprised of a monoculture of turf grass and a few ornamental alien plant species is a lifeless desert to the animals seeking food and shelter. The current landscaping paradigm, Tallamy insisted, must be turned on its head. Home owners must bring nature and biodiversity back into their yards by planting native species that support wildlife throughout the food chain. In many cases, insects can eat only very specific native species of plants because of their closely intertwined ecological development over thousands of years. As our landscape becomes fragmented and native plant species disappear, the insects, birds, mammals, and other creatures that depend on them will disappear, as well. Dr. Tallamy noted that our planet is facing an extinction crisis, with half of the known plant and animal species anticipated to disappear by the end of this century. This can cause entire ecosystems to collapse, and with them the ecosystem services they provide, such as clean water and fresh air, to disappear.

The good news (and there is good news!) is that each of us has the ability to slow and even reverse this trend by acting locally, starting in our own yards. Dr. Tallamy delighted the audience with pictures of the many caterpillars, butterflies, moths, and other insects that have found an oasis of native food sources in his own yard. These critters, in turn, are essential food for organisms higher on the food chain, such as other insects, birds, bats, and small mammals. He has created a thriving ecosystem simply by planting more of the right plants. But can one yard make a difference? The important thing for each of us to remember is that even if we seem like the only one in all of North America who uses more native plant species than alien invasive plants, wildlife will be better off for our efforts. The

effects will be cumulative, and probably synergistic, as more and more people join us. By *sharing* our space with nature, humans can be much better stewards of the lands entrusted to us and make them better for future generations of all species.



If you missed Dr. Tallamy’s talk, check into the Scientific Colloquium website (<http://scicolloq.gsfc.nasa.gov/>) to see the recording or visit <http://bringingnaturehome.net/> to find what species you should plant in your own yard. Spring is around the corner. Start planning and get planting! ❖

Janine Pollack, Water Quality Program Manager & NASA
FreeCycle@Work Coordinator
Extension 6-0509
Email at Janine.N.Pollack@nasa.gov

Environmental Management Newsletter Editor
Lori Levine, Code 250