THE TRUE COST OF SALT

Are application practices profitable and sustainable?

By PHILL SEXTON, CSP, ASM

Salt is cheap, yet expensive. Salt is effective, yet destructive. Salt is natural, yet invasive. Salt is profitable, yet unsustainable.

Salt is the most used tool for managing slippery winter conditions, with many contractors viewing salt applications as a cheaper option with a bigger revenue opportunity. But is it really?

A whole systems thinking approach is required to understand the economic and environmental sustainability of road salt use, whether it be by public or private operations.

The most broadly used and least expensive salt option for the snow and ice management industry is Sodium Chloride (NaCl). Magnesium Chloride (MgCl) and Calcium Chloride (CaCl) are comparatively more expensive (at least double the cost) and, in my experience, often are being used when temperatures or environmental conditions don't dictate, thus wasting money and increasing environmental impact.

Salt economics

When you look beyond the initial application, the consequences of salt usage start to become more expensive:

- It destroys the surfaces you are attempting to make less slippery.
- It rots the infrastructures we are attempting to manage and protect. Salt eats away at metals in concrete walks, parking decks, doorways and vehicles. Salt corrodes the electrical components in vehicles, elevators, escalators and security systems. Salt behaves like 100-grit sandpaper destroying flooring, carpeting and clothing.

• It contaminates and erodes soils, burns turf, and desiccates expensive live plant materials.

Furthermore, clients and constituents who are meant to benefit from the use of salt as a deicing agent tell me they would rather not deal with these costly consequences. They want a better solution.

Numerous studies have confirmed that every ton of salt applied (valued between $75-$150 per ton) results in thousands of dollars of extraneous expense. A 1987 Institute of Gas Technology study by L.R. Hudson valued the full life cycle impact of 1 ton of road salt at $1,543 ($4,000 per ton in today's dollars).

Equipment. Life cycle costs include the reduced life and increased costs for vehicles used to apply the salt. A low-mileage work vehicle expected to last 10 years many times needs to be replaced in 6-7 years due to the increased costs and damage the vehicle incurs if it is used to apply salt.

Cleanup. An International Sanitary Supply Association (ISSA) study confirmed the cleanup cost for typical amounts of rock salt applied at building entrances (less than $5 worth) averages $50 in labor and materials, each time salt is tracked into a building.

The need for costly floor maintenance services such as waxing and buffing at least double and many times the life expectancy of the flooring is cuts in half.

These statistics further support the

THE LIFE CYCLE OF SALT

The true cost for applying salt, whether it be a 50-pound bag or one ton, must be calculated by assessing the full life cycle of salt, which starts way before it is applied during winter operations.

The cost of salt is conceived at the **SALT MINE**, which costs money to harvest and deducts from the life supply of the mine. From there, costs are incurred through the following:

INVENTORY (Storage)

SALES & PURCHASE (Wholesale, re-wholesale, broker, retail)

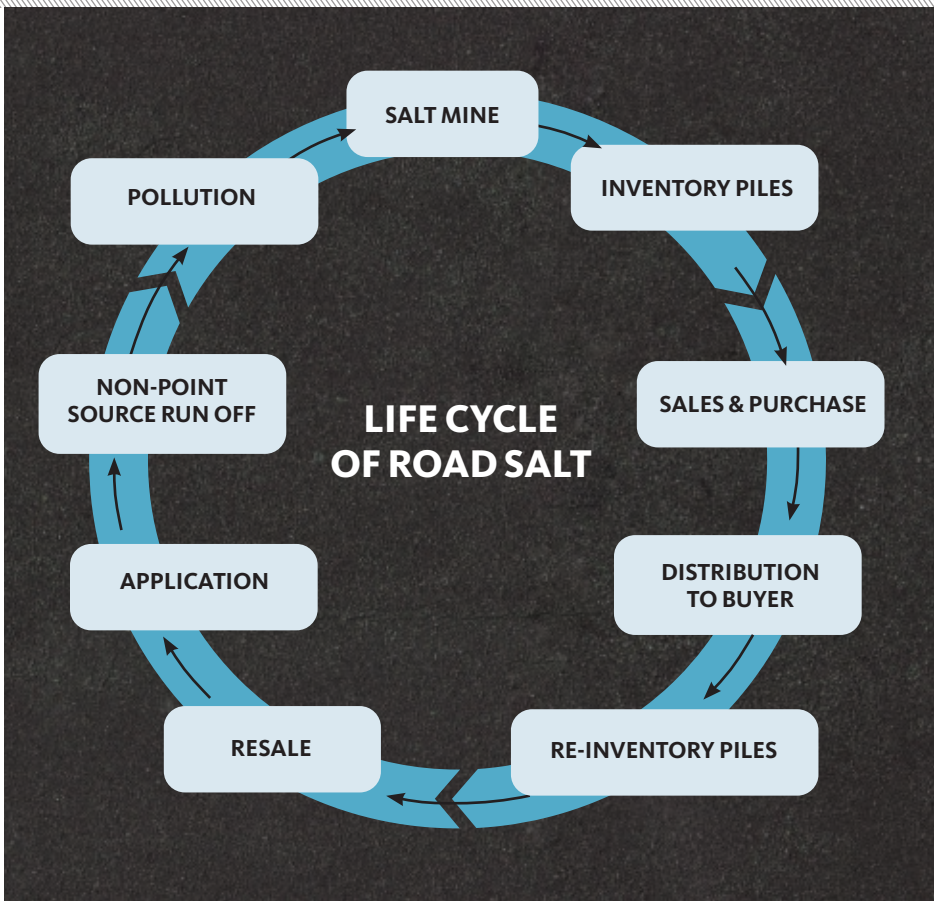
DISTRIBUTION TO BUYER (Transportation via barge and/or truck)

RE-INVENTORY (Unload and load)

RESALE to applicator (reload and unload to purchaser)

APPLICATION (roads, parking lots and sidewalks)

The repeated application stage of salt's life cycle produces **NON-POINT SOURCE RUN OFF**, which is when **POLLUTION** in soils and freshwater aquifers begins. The inventory and storage stages are contributors when salt piles are stored on pervious surfaces; are allowed to leach beyond the storage containment; or due to uncovered piles.



fact that the cost of applying salt is at least 10 times the cost of the salt itself.

Deicing products making "environmentally friendly" or "pet friendly" claims are misleading if they include chloride salts. All chloride salts equally cause corrosion to infrastructure, which begs the question if the "more expensive" but less corrosive non-chloride alternatives are truly more expensive.

Environmental cost

Salt is even more destructive to the environment, particularly fresh water. Chloride pollution impacts freshwater and soil ecosystems. And it doesn't take much salt to destroy a watershed forever.

The Environmental Protection Agency has designated salt as a known pollutant; yet as an industry and society, we are still allowed to use it as an unregulated and unrestricted use chemical.

Unlike most other water pollutants, chloride salts do not biodegrade. They permanently alter the freshwater aquifers they leach into since they accumulate rather than dilute.

It only takes 1 teaspoon of salt to pollute 5 gallons of water, a 50-lb. bag to pollute 20,000 gallons and a ton to pollute 800,000 gallons … forever.

Solutions

The solution to pollution and expensive infrastructure damage is salt use reduction. Statistical studies I've researched or been part of over the past two decades confirm that the industry overapplies salt by at least 20%. This known waste alone is money in the bank if you are willing to admit to it and do something about it.

SIMA and this magazine have published standards of practice for reducing salt use, including preventing the bond of snow and ice, more efficient chemical methods, and mechanical tools.

Another solution is to consider seasonal contract language that addresses the inefficiencies of time and materials and frequency-based application incentives.

Although non-chloride deicing chemical solutions are readily available, heed caution and research future unintended consequences before using them. It stands to reason that any chemical used in concentrate and volume will negatively impact the environment.

Focusing on natural waste that always exists in any operation, and continuous improvement methods for maintaining or increasing levels of service while using less chemicals, is the best start to saving money, increasing profits and reducing environmental impacts. SB

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