

SALT &

Published by SALT INSTITUTE

**Highway Deicing™**

for the WINTER MAINTENANCE PROFESSIONAL

EARNING ABOVE-AVERAGE ROI ON YOUR SNOW AND ICE CONTROL TRAINING

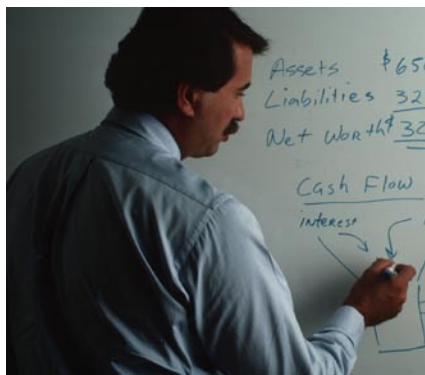
Scrimping to meet lean budgets (so what else is new?), inexperienced snowfighting managers sometimes succumb to the mirage of “savings” by axing snow and ice training. They invest in personnel budgets, equipment and materials and shortchange training.

Investments in snowfighter training can earn your highest return-on-investment (ROI) – if you do it right. Curtailing training is short sighted and likely to create problems that end up costing more than the investment in proper training.

BENEFICIARIES OF SNOW AND ICE CONTROL TRAINING

The fact of the matter is: almost everyone associated with snow and ice control operations benefits from training. Our customers benefit from snow and ice training; customers include all roadway users and those who depend on them, such as

- Commuters, shoppers, friends and family
- Businesses and manufacturers
- Service providers including governments, schools, emergency medical crews, taxi and bus patrons
- “Our children and grandchildren” concerned with inheriting a livable world



Most of these groups benefit by having some mobility options during and after snow and ice events. Highway users see additional benefit from fewer accidents that may result from improper snowplow operation or highway treatment. Roadside neighbors can benefit by not having physical or chemical damage that results from untrained operators who do not have the required operational skills. Environmental benefits accrue by minimizing the use of, and controlling migration of, snow and ice control materials and other substances that can and do cause damage.

Our agency operations benefit from snow and ice training, allowing government managers to achieve:

- Reduced operational costs
- Improved operational efficiency and effectiveness
- Proper knowledge and job skills
- Improved morale and attitudes
- Employee development

- Organizational and personnel safety
- Tort liability mitigation
- Positive public and media image
- **An assured and happy future for the agency**

Training mechanics keeps equipment productive: less downtime, less repair costs and longer service lives. Training enables operators to know and perform proper preventive maintenance procedures. Proper operational training on equipment will result in less damage to the equipment and other features. Agency infrastructure is likely to last longer as a result of the proper use of ice control materials and other infrastructure maintenance techniques.

Agencies should create records allowing them to identify costs and track the changes they seek and achieve through training. Different operations have different metrics. I am aware of one situation where the investment in training resulted in a significant reduction in the accident/incident rate (accidents/incidents per million snow and ice miles driven) of the New York State Department of Transportation (NYSDOT) snow and ice control fleet of snowplows. In the early 1990's, the department was mandated to change from two-person snowplow operation to one-person snowplow operation. The Department initi-

continued on page 2



ated and executed a comprehensive training and certification program focused on operational safety. In the transition snow and ice season, the accident/incident rate declined by 33% from previous years. In the following year, the accidents dropped another 33%. That training program required training and certification on the heavy dump truck, various plow wing configurations and One Person plowing.

Since that time, NYSDOT has instituted training/certification programs for all equipment used by the Department. Those programs are available on line at: <http://nysdot.gov/portal/page/portal/programs/trans-maint-train/eval-guides>

True benefit/cost data associated with training efforts is hard to come by. The Utah Department of Transportation Research and Development Division report, *The Development and Evaluation of a High-fidelity Simulator Training Program for Snowplow Operators*, (November, 2004) looked at the results of a high fidelity snowplow simulation training program in terms of post-training accidents vehicle repair costs and fuel efficiency by comparing simulator trained operators with those who did not receive the simulator training. Although the data was limited, those results were projected to calculate monetary savings. The report is available at: <http://www.dot.state.ut.us/main/uconown er.gf?n=200412141531561>

The Arizona Transportation Research Center undertook a similar study of simulator training, *Snowplow Simulator Training Evaluation Final Report 585*, November, 2006 and used similar measures of effectiveness as Utah. The results, although

based on limited data, the trend for less accidents, less vehicle repair costs and less fuel consumption associated with simulator-trained operators is apparent and could be extrapolated in the same manner as done by Utah. That report is available at: www.azdot.gov/TPD/ATRC/publications/project_reports/PDF/AZ635.pdf

A training evaluation tool used by Fortin Consulting, Inc. who is doing “winter parking lot and sidewalk maintenance training” for a number of Minnesota governmental agencies is an “exit poll” type of survey that is completed by class participants. Here, they ask directly what the attendees had to do in their home locations, and how much, in order to meet the objectives of the class.

WHO NEEDS TRAINING?

The answer to this is, perhaps different than expected: everyone involved in winter maintenance that we possibly can. A list of groups may include:

- Equipment Operators and Wing People
- Supervisors
- Managers
- Support Staff
 - Toll Collectors
 - Radio/Dispatch People
 - Office Staff
- Police
- Media
- Customers
- Legislative/Executive bodies

The need for training for some of these groups may not be readily apparent. However, each agency group needs to know their role in winter maintenance and how to perform their duties effectively. Police agencies are really a partner in snow and ice operations and they should be aware of agency treatment policies

and the best way to describe snow and ice road conditions. The last three bullet items are a little bit of a stretch in terms of actual training. It is more a process of providing targeted information of value.

WHAT TRAINING TOPICS ARE APPROPRIATE FOR WINTER MAINTENANCE PERSONNEL?

In this case the answer is: it is absolutely group specific. Appendix C-1 in the FHWA Report “Winter Maintenance Technical Peer Exchange: A Final Report” is a fairly complete list of training topics that are applicable to operators, supervisors and managers. That list is available at: http://www.saltinstitute.org/snowfighting/winop-resources/training_topics.doc. Other agency groups need to know agency snow and ice control policy, how to interact with the public and their specific duties in the event of major snow and ice events.

HOW DO WE PROVIDE EFFECTIVE TRAINING?

Before getting into the specific training forums, a brief discussion of some components of adult learning theory may be appropriate. First of all, we must recognize that learning is very individualistic, in that everyone receiving training has his or her own learning characteristics, experience base and style response. It is up to the instructor to look at audience characteristics in a general way, and try to use techniques that are likely to be effective.

The effective learning situation should be:

- Purposeful
- Based on Student Experience
- Multifaceted
- Active in Process

EARNING ABOVE-AVERAGE ROI (continued from page 2)

We need to ensure that training is done “on purpose.” Try to determine the goals or motivations of the group; show them how the training will support those goals. These may be career goals, safety goals, topic interest goals, and others.

All learning is by experience, but learning takes place in different forums and in varying degrees of richness and depth. If a learning experience can be made to be challenging, and involve feelings, thoughts, memory of past experiences and physical activity, it will be much more effective than simply trying to push something into a student’s memory.

Variety in the learning experience is important. Using combinations of verbal, conceptual, perceptual, and problem solving elements can make the learning experience more effective.

Adult learners require an active process. That is, to react and respond emotionally (inwardly and/or outwardly) or intellectually to what is being presented. Presenting material in a way that evokes those responses is challenging, but doable.

Beyond the theory stuff there are some practical tips for effective training:

- Training must be customized/group specific.
- The closer to 1 on 1, the better; “class size” matters.
- Subject matter should be meaningful and useful.
- Uniformity of message within an agency is essential.
- Trainers should be knowledgeable and credible.
- Use peer trainers to the extent possible.
- Feedback within and after training is essential.
 - Testing (oral and written)
 - Small group discussion
 - Training evaluations by students

There are a variety of training forums available for snow and ice training. We will discuss a few in the more or less order of effectiveness:

OJT (on the job training)

This is the most common form of training and is where a trainee learns a task or skill by actual performance. This is a common method for learning how to operate various pieces of equipment. The modern model for OJT involves specified training and certification requirements before being allowed to “fly solo” on a piece of equipment (see the NYSDOT training and certification program reference above).

Mentor Training

This is where a more senior or higher level employee is assigned to work with a “trainee” or lower level employee to develop job skills, knowledge and confidence that support career advancement and/or other goals. In order for this to be effective, it must have defined content, schedule and duration.

Tailgate Training

This is training at the crew level. Here, a supervisor, or crew member, is assigned to become familiar with a small segment of agency policy, safety policy, task performance or other item that is of particular interest or importance to the crew. On a scheduled basis, the crew meets and discusses the “topic of the week” for about 15 minutes so that everyone has a clear understanding of what is required.

Peer Training

This is where an active worker, that has exceptional topical skills or knowledge, is brought in to train people of his or her same level. The peer trainer may be from another location within the agency or hold a similar position in another agency. By avoiding the personnel culture dynamic of the same work location, the training is usually more effective.

Skill/Knowledge Based Certification Programs

As with the OJT model above, programs and requirements are coming on line that provide training and /or materials that allow people to study/receive training with the goal of taking a test and receiving certification in a particular discipline. In the private sector, the Snow and Ice Management Association (SIMA) provides a certification program to its member contractors that has both training and testing requirements. Some of the Local Technical Assistance Program (LTAP) centers offer certifications for people who receive specified training and complete a test for specified highway related topics, including snow and ice control.

Training Centers and Academies

A number of highway agencies have dedicated training facilities (in-house or cooperative) where people are sent for intense multi-week training on a variety of highway maintenance topics and equipment operation. Snow and ice control is typically one of the topics offered.

Classroom/Workshop/Seminar/Conference Training

This is generally what people think of when they refer to training. It is a traditional form of training for sure. In order for this to be effective, the class size should be limited to about 30 people or less. This makes it easier for interaction between the instructor and other class members. A major benefit of this type of training occurs when the class members come from diverse locations and agencies. By structuring the program in a way that people are encouraged to talk with each other about the topic at hand, there will be additional learning benefit. If larger classes are unavoidable, roundtables and activities to get people talking with each other are helpful. A reasonably complete snow and ice control train-

continued on page 4

ing program suitable for classroom training (free for the download) can be found at:

www.saltinstitute.org/snowfighting/training-1tap.html

Rodeos and other Competitions

These events can be useful training and public relations tools. The key is to structure the program in such a way that more than just mechanical driving skills are the basis of the event. There should be some classroom type of activity with a required test at the end. The results of the test in combination with the driving score should be the basis of the final ranking of the competitors. In addition to what was covered in the classroom, questions could be based on agency policy documents and training manuals. Other elements of the competition could include: installing tire chains, spreader calibration, pre-operations check of plow trucks and material spreaders, efficient loader operation, etc.

Computer Based Training

In this case, being last on the list doesn't mean that this is least effective - it is just the newest form of available training. AASHTO has de-

veloped a series of self-administered, computer based programs that are available for purchase thru the APWA bookstore (<http://www.apwa.net/bookstore/category.asp?Category=Snow+and+Ice+Control>). The CBT can be customized easily by any agency for its own purposes. Here individuals can log on and off at their own pace and progress through the course until complete. There is testing built into the program.

WHERE CAN WE GET SNOW AND ICE TRAINING HELP?

There are a number of sources of help for snow and ice training. They include:

- State and other highway agencies in the area
- Local Technical Assistance Programs
- Trade Organizations (associations of municipal officials, American Public Works Association, etc.)
- Vendors
- Consultants.
- Salt Institute web site and others
- Federal Highway Administration (AASHTO Eastern Snow EXPO)

WHERE CAN WE SECURE FUNDING FOR SNOW AND ICE TRAINING?

There are a number of possibilities for funding. They include:

- State Labor Departments (grants for safety training)
- Municipal Insurance Cooperatives (risk managements grants)
- Environmental Councils (grants for environmental awareness training)
- Watershed Districts (grants for environmental awareness training)
- Federal Highway Administration (multi-agency workshops)

FINAL STATEMENT

Snow and ice training is a fairly complex area that largely depends on agency commitment and resources. The lack of a large training budget should not diminish an agency's ability to provide effective snow and ice training. Some of the closer to 1-on-1 training forums listed above, can be utilized with little budget impact. All it takes is the commitment to make it happen.

If you'd like this newsletter or our other salt-related information delivered automatically via a newsreader, you can subscribe to our **Salt Institute NewsCentral** service or add any of our http://www.saltinstitute.org/rss/use_own_newsreader.html feeds to your newsreader.



700 North Fairfax Street
Fairfax Plaza, Suite 600
Alexandria, VA 22314-2040

Voice: 703/549-4648
Fax: 703/548-2194 Fax
Web Site: <http://www.saltinstitute.org>
e-mail: info@saltinstitute.org

Published four times a year. Permission is granted to reprint material from *Salt & Highway Deicing* provided credit is given.

You just enjoyed another electronic **Salt and Highway Deicing** Newsletter! It helps you make better decisions in your winter maintenance responsibilities and gives even more information by active links to www.saltinstitute.org <http://www.saltinstitute.org> with specific pages to further snowfighter information. Feel free to forward this newsletter to other interested persons so they can also enjoy this informative free quarterly. Be aware Salt Institute never sells or distributes any of your contact information to any outside source. Please sign up at: <http://www.saltinstitute.org/subscribe/index.html>