Supplement to Final Report

The Final Report states that the tests "should not be used to predict actual field performance," which runs counter to Clear Roads original stated goal of helping agencies to predict performance. How would you frame this to the snow and ice community to help them see the usefulness of these tests?

The tests can be used to predict relative field performance of a deicer and should be used in the context of a well-known product, such as sodium chloride. The tests do not provide the information needed to determine how much chemical to apply to a snow or ice covered road. This excerpt from the SHRP *Handbook*[1] is important to keep in mind:

> "The utility of most of the test methods [including the Ice Melting Test] will be enhanced when the test results are compared to the test results obtained for conventional deicing chemicals. Either sodium chloride or calcium chloride should be used as control or reference materials because they are the principal components of the most widely used chemical deicer formulations. Laboratory tests are designed to evaluate stated characteristics under controlled, specified conditions, and in most cases, to provide comparative data over an accelerated time interval. Although reasonable attempts have been made to reconcile these approaches with actual field materials and conditions, some differences remain. After initial evaluations in the laboratory, field testing is ultimately required to determine acceptable deicer performance and compatibility."

You have indicated that the lab tests are likely to have considerable variation between labs, which may present challenges to us in implementing these as "standard tests" that are considered valid by all parties. You have suggested Round Robin tests between labs, but how likely is that to convince a vendor or the rest of the Snow and Ice community of the repeatability? Are there additional comments you could add that might help those with less education in Chemistry to understand the value of these tests?

A Round Robin test would quantify the amount (or lack) of repeatability and to identify/address certain details currently not specified in the test procedures that may contribute to any inconsistency between different laboratories. We found good repeatability in our laboratory in terms of the DSC and modified SHRP ice melting tests. Nonetheless, ASTM standards are widely used in many industries and every standard requires a statement regarding the test method's Precision and Bias (new standards need the statement within five years). There is even a standard that describes how to conduct an interlaboratory study (these involve several labs) to determine the precision of the test method (ASTM E691). According to ASTM, at least six laboratories should be used, but fewer than six can participate because "the bottom line is that some precision information is preferable to no precision information[2]." Because of this, we feel a Round Robin test would help increase user acceptance and confidence of the snow and ice community in the repeatability and reproducibility of the test methods. Nonetheless, an alternative approach to Round Robin test would be to have the testing community peer exchange every a few years to compare notes and fine-tune the existing test method.

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[1] Chappelow, Cecil C., A. Dean McElroy, Robert R. Blackburn, David Darwin, Frank G. de Noyellas, and Carl E. Locke. Handbook of Test Methods for Evaluating Chemical Deicers. Strategic Highway Research Program Report No. SHRP-H-332, 1992.

[2] Picariello, Pat. "Fact vs. Fiction: The Truth about Precision and Bias." ASTM Standardization News, March 2000. Online http://www.astm.org/SNEWS/MARCH_2000/P&B_mar00.html