Improved pavement markings can save lives

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As spring finally emerges after a ferocious winter,, our battered roads will soon be re-exposed. While potholes and cracks might make news, a bigger concern should be the deterioration to pavement markings, from yellow to white lines, which are a big factor in preventing traffic accidents.

A study from Concordia University, funded by Infrastructure Canada and published in *Structure and Infrastructure Engineering*, found that snowplows are the biggest culprit in erasing roadway markings.

The research team also examined the impact of salt and sand on the visibility of pavement markings. The conclusion: a simple switch in paint can save cars—and lives.

Using data from the ministries of transportation in Ontario and Quebec

and the municipalities of Montreal and Ottawa, Professor Tarek Zayed of Concordia's Department of Building, Civil and Environmental Engineering measured the relationship between materials used in pavement markings, and their age and durability. He also compared highways with city roads, examined traffic levels and took note of the types of vehicles involved. Finally, Zayed and his research team examined marking types such as highway centre lines, pedestrian crosswalks, and traffic intersections.

They found snowploughs to be the worst on roads because they literally scrape paint off the streets. "Snow removal is the major contributing factor to wear and tear on pavement markings, because when snow is pushed off the road, part of the markings is taken off too," says Zayed.

What can improve the chances of pavement markings surviving the winter? Zayed suggests that an upgrade to more expensive and durable epoxy paint might be more cost-effective in the long run. Other options include paint tape and thermoplastic, although these are quite expensive.

He also suggests wider use of a technical device called a retroreflectometer to help assess the paint's reflectivity and resulting effectiveness. "In the U.S., this standard has been in place for almost a decade," he says, adding that minimum standards for reflectivity are used to signal when a road must be repainted.

Zayed also says Canadian roads are in desperate need of more studies. For example, while epoxy is known to be a more durable paint, since it is not yet widely used in Ontario and Quebec, more research is needed to show exactly how it holds up to stressors like salt and snow removal. While several studies have been conducted in the central and southern United States to compare and evaluate the durability of pavement markings, Zayed points out that the findings don't translate very well given the strikingly different weather conditions between warm versus

seasonal climates.

Provided by Concordia University