

The hard facts about our flooding problem



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Homeowners don't need to be reminded about the huge cost of flooding — an average of \$43,000 per residence, according to the Insurance Bureau of Canada.

Flooding is also costly in terms of the tremendous amount of stress, anxiety and inconvenience these incidents cause.

Spring runoff resulting in a surge in river levels, was the main culprit behind the thousands of homes flooded in Ottawa, Gatineau and other parts of eastern Canada in recent weeks.

But flooding is now a year round problem whenever temperatures hover above zero, due to a combination of sudden storms, sewer systems unable to handle large volumes of water within short periods of time and one simple hard fact... runoff... from paved roads, parking lots and driveways.

Most household driveways in Canada are hard, impermeable surfaces — so there's nowhere for the water to go, other than onto our streets. The resulting runoff can not only cause extensive flooding, but also stream erosion and such contaminants as oil, gas and engine coolant entering our waterways.

On the home front, there are a variety of ways we can help mitigate flooding caused by heavy rainfall. You can start by connecting your downspouts to one or more rain barrels.

If you're building a new home, consider a design with a smaller footprint and corresponding roof space, leaving more of your property for gardens and lawns (although even lawns — while not as bad as driveways, cause some runoff). Whether a new or existing home, build a driveway with less surface area. And if you want to do something which on the surface (pun intended) seems completely radical, install a permeable driveway.

Various types of permeable driveways have been around for several years and yet for some reason, most consumers don't know much about them and opt for such hard surfaces as asphalt, concrete and brick.

Surfaces that cause runoff and contribute directly to urban flooding and the polluting of our waterways.

One company with a potentially transformative solution, designed to eliminate runoff from driveways, roads and parking lots, is an Ottawa-based business called PurePave Technologies (www.purepave.com).

PurePave, which has representatives in different parts of the country (including Toronto, Montreal and Vancouver) has developed a perme-



This golf cart pathway for Manhattan Woods Golf Course was built with a goal to eliminate costly water damage.

able surface using a resin bonding system with various types of aggregate.

The surface is much harder than asphalt and yet a standard PurePave driveway is rated to filter 14,000L/M² (litres of water per square metre) per hour.

You read that right — 14,000 litres of water, per square meter, per hour. According to PurePave literature their surface has much greater elasticity than asphalt or concrete, enabling it to handle spring thaws. It also stands up to salt, snowplows and oil spills.

"Underneath the pavement is where it gets really interesting," observes PurePave CEO Taylor Davis. "We engineer a permeable base system that is typically a foot to a foot and a half deep, depending on soil conditions. And with that we can accommodate two back-to-back 100-year storms and still not reach saturation. So they hold an incredible amount of water."

Davis says that based on the rainfall numbers in a city such as Ottawa, the surface could accommodate the

city's annual precipitation — even if it came down all at once. And homeowners could potentially route water from their lawns and their roofs, resulting in net zero runoff from their properties.

Clearly PurePave is onto something that is potentially revolutionary when it comes to flood mitigation. They are already in discussion with one builder interested in offering the permeable driveways to homeowners throughout an entire new neighbourhood, potentially eliminating the need for a stormwater catchment area and freeing up land for other use, such as a community park.

The National Research of Canada is now providing funding for Davis' company through its Industrial Research Assistance Program (NRC-IRAP), motivated no doubt by the federal government's focus on flood reduction and creating more resilient cities.

PurePave surfaces aren't inexpensive — comparable in cost to interlocking brick; so the reality is some consumers may not wish to pay that much.



Scarborough homeowners shared a new pathway project between their houses to clean it up and eliminate water issues with an anti-slip surface.



The Ottawa owner of this backyard patio was won over by the permeable surface, white-marble appearance and benefits of no weeds or cracks.



Etobicoke homeowners saw how local concrete driveways had heaved due to spring thaw and were drawn to the elasticity of the PurePave surface.

ut a higher cost than say asphalt is understandable, considering the need to build a base surface first, under which the permeable pavement is applied.

As well, both from a homeowner and community perspective, we need to start weighing out the added cost of permeable surfaces versus the much higher costs of damage

to our homes, erosion of our stream systems and pollution, resulting from uncontrolled flooding.

— Mark Wessel lives in Collingwood, Ont., and is a passionate advocate for living more sustainably at home and in the greater community. Visit his blog at sustainablebuildercommunity.com.