

British Columbia

Sprayable earthquake-resistant concrete could 'save lives,' researchers say



UBC researchers develop new seismic-resistant concrete

[Tina Lovgreen](#) · CBC News · Posted: Oct 10, 2017 4:46 PM PT | Last Updated: October 12, 2017



UBC researchers have developed a seismic-resistant, fibre-reinforced concrete that can be sprayed onto masonry walls to strengthen them. (Tina Lovgreen/CBC)

Researchers at the University of British Columbia have developed a spray-on concrete substance they say will make buildings earthquake-resistant and can be used to retrofit schools for half the price.

"This material can be sprayed on vulnerable structures to significantly enhance their resistance to earthquakes and save lives," said Nemy Banthia, a UBC civil engineering professor.

In the coming weeks, the material will be used to strengthen Dr. Annie B. Jamieson Elementary School in Vancouver, which is already undergoing upgrades.

Researchers hope the material will be used to strengthen other schools and buildings around the province.

"If you look at our B.C. schools, you will see miles and miles of unreinforced masonry corridor walls, and, during an earthquake, these are the corridor walls that would collapse and our children would suffer casualties, unfortunately," said Banthia.

Watch how the wall crumbles without EDCC:

UBC researchers test a wall that was not sprayed with the earthquake-resistant concrete to show how the wall crumbles 0:05

By spraying the material called EDCC, an eco-friendly ductile cementitious composite, researchers say walls will become ductile or pliable.

Researchers say spraying a 10-millimetre layer of EDCC on a masonry wall kept it from crumbling in a simulation that mimicked the 9.0 magnitude earthquake that hit Tohoku, Japan in 2011.

"It can take shaking of about 200 per cent level of the actual intensity of the 2011 Tohoku earthquake ... The same wall without the retrofit will normally collapse at about 60 -65 per cent of the intensity," said Salman Soleimani-Dashtaki, a PhD candidate.

Watch how the wall reacts after it's sprayed with EDCC:

After the wall is sprayed with a layer of EDCC, the wall doesn't collapse even against shakes of 200% level of the actual intensity of the 9.0 magnitude Tohoku, Japan earthquake in 2011 0:18

'Far too early' for all schools

UBC President Santa Ono said the groundbreaking innovation is also cost-effective.

"This costs half of the cost of standard retrofit," said Ono.

In August, the province reported that [155 schools in earthquake-prone areas](#) are considered "high risk" and have no scheduled upgrades planned.

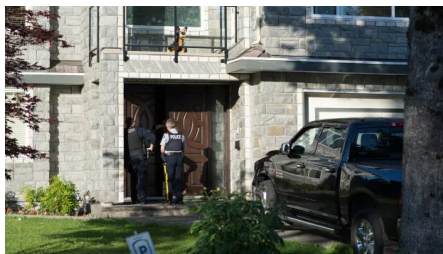
But the Ministry of Education said given EDCC is a relatively new product, it is far too early to say how many schools in B.C. will be retrofitted using it.

"Each seismic project will utilize the most appropriate materials for the specific circumstances of the project," said the ministry in an emailed statement.

B.C. Advanced Education Minister Melanie Mark said the new technology could be used, not only on schools, but on other buildings too.

"I imagine more work will continue. We want to make sure when we leave our kids that they will be there when we pick them up in the afternoon, so our government is committed to safety," said Mark.

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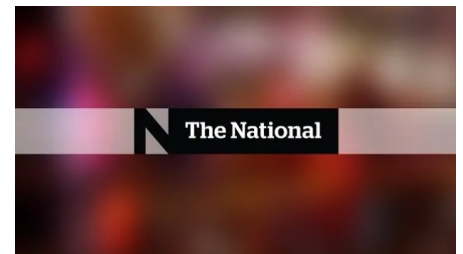
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