

## Fear, panic, staggering financial fallout

The aim of a dirty bomb is not to kill but to create incredible disruption, expert says

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A dirty bomb uses conventional explosives to spread radioactive material.

"You can't taste it, you can't smell it. There are no dogs that can find it," said Chris Clarke of Mobile Detect, an Ottawa firm. "You need to go in with detectors and find it."

The aim of a dirty bomb is not to kill people but to create disruption, says Tom Cousins of Defence Research and Development Canada.

"And the way you do that is by contaminating large areas and feed on the people's fear of radiation."

A study led by the defence research agency underscores the potential of such a bomb to exact a toll of fear, panic -- and staggering financial fallout.

The study predicts economic costs of up to \$8.75 billion should a device laden with radioactive americium be set off outside Vancouver's B.C. Place Stadium -- a venue for the 2010 Winter Olympics -- and as much as \$2.25 billion if one exploded near the Ambassador Bridge between Windsor and Detroit.

Canada has put considerable effort into trying to prevent, but also be ready for, a dirty bomb attack, said Public Safety Minister Stockwell Day.

"We know that terrorists have a particular fascination with explosives and radioactive explosives would be devastating," Day said in an interview.

"An event like that could happen."

The study also says:



Fred Chartrand, the Canadian Press

Chris Clarke, president of the Ottawa company Mobile Detect, says dogs can't find dirty bombs -- only detectors.

\* Explosion of a cesium-137 device on the second floor of Parliament Hill's Centre Block would contaminate 45 per cent of the building and, even with the effects largely contained by the majestic Gothic structure, radiation would spread over an area of 1.3 square kilometres through windows smashed in the blast.

\* A similar cesium detonation in Montreal's Lafontaine Tunnel would be much like exploding the device outside, in that 70 per cent of the contamination would be released through ventilation ducts to disperse radiation over 145 square kilometres.

\* Mere placement -- not explosion -- of a backpack containing 1,000 curies of radioactive cobalt-60 in packed B.C. Place Stadium during a four-hour sporting event would claim about 85 lives and result in economic costs of up to \$8 billion.

In preparing the study, the defence researchers drew on input from the Canadian Security Intelligence Service, the Canadian Nuclear Safety Commission, Atomic Energy of Canada Ltd. and Battelle Memorial Institute in the United States.

A final report is expected by next March, but a summary of work to date was presented in mid-June at an invitation-only meeting of federal researchers in Gatineau, Que.

In tabulating the costs of a dirty bomb involving 20 curies of americium-241, researchers assumed a mild wind speed of three metres per second (10.8 km/h) and looked at various degrees of cleanup. They factored in the costs of decontamination and decommissioning, damage to buildings, evacuation of people, loss of productivity from earnings, reduced tourism and medical treatment.

"There's no getting away from the fact that you will have areas of land that will have to be cleaned up," said Cousins.

In the case of Toronto, a radioactive plume moving eastward from around the CN Tower would waft over the downtown core, spreading beyond the Don Valley Parkway to midtown neighbourhoods.

"We've done research, worked with other countries at looking at a real good dirty bomb," said Inspector John Bureaux, officer in charge of the RCMP's explosives disposal and technology section.

"And there is an optimal way. It's not easy, it takes a lot of work."

Bureaux quickly adds, however, that there's no way to tell how skilled a terrorist might be at crafting a crude device.

It means the national team of RCMP officers and Canadian Forces personnel set up to handle chemical, biological, radiological, nuclear and explosive hazards must err on the side of caution.

"So when we go in, we're going to deal with it as a worst-case scenario," Bureaux said.

Emergency personnel would quickly crunch numbers to determine the area downwind to be evacuated -- just in case. What is truly chilling is that the americium explosion is the least alarming scenario outlined by federal officials.

Consider this: the study says outdoor detonation of a dirty bomb containing 1,000 curies of cesium-137 -- a large amount of an easily dispersed isotope -- would send radioactivity cascading over an area of about 250 square kilometres. Using the most stringent cleanup standards, the massive economic toll of such an incident is pegged at up to \$250 billion for Toronto and surrounding area,

\$80 billion in Vancouver and British Columbia's lower mainland, and \$75 billion in Windsor and southernmost Ontario.

Given the implications, federal officials and industry partners have collaborated on numerous research projects to better prevent, anticipate and respond to a dirty bomb. Ottawa International Airport, for example, is now equipped with 25 detectors to zero in on a radioactive threat.

Emergency personnel around the country have taken part in several training exercises, including one in which a dirty bomb contaminates southern Ontario vineyards.

But there are gaps. The defence research study says Canada and other nations lack the technology to decontaminate a large, densely populated area under the extreme cost and time pressures that a radiological event would demand. It also cites the need for agreement at local, provincial and federal levels on a long-term recovery strategy. "There are currently no Canadian standards for cleanup after a radiological or nuclear terrorist event."

Experts say the explosive impact of a dirty bomb would kill or injure few, if any, people. Some could experience elevated risk of cancer, depending on the amount of radioactivity unleashed.

Radiation safety authority Jeff Lafortune says a terrorist strike on a chemical plant would almost certainly make more people sick than a radiological attack. But because it is poorly understood, radioactivity tends to frighten people, which could put pressure on government officials to undertake an exhaustive cleanup after a dirty bomb explosion.

"Radiation's perceived by the general public as being something like evil," said Lafortune, president of International Safety Research in Ottawa.

"So when you say, 'Well, you know, yes, it's a little bit contaminated, but it's below standard,' what do you think most people will say?"

The recent London poisoning of former Russian spy Alexander Litvinenko with radioactive polonium-210 is seen by Canadian officials as a dry run for a dirty bomb attack. Federal authorities received some 180 phone calls and 200 e-mails from Canadians who feared they may have been contaminated after traces of the material turned up on airplanes and at a London hotel.

Many people started showing up at emergency rooms, some needlessly.