

Dirty bomb would cause panic, cost billions: Study

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OTTAWA – A new federal study says the explosion of a small dirty bomb near the CN Tower would spew radioactivity over four square kilometres, resulting in mass anxiety, a rush on Toronto's medical facilities and an economic toll of up to \$23.5 billion.

The nightmarish scenario – detonation of a device containing a modest amount of americium-241, a silvery plutonium byproduct – is among several sobering projections quietly mapped out by federal officials to prepare for a terrorist attack in urban Canada.

The grim outline is not far-fetched. A database of lost and stolen radioactive items compiled by The Canadian Press reveals that an industrial gauge similar to the device in the study was snatched by thieves in Red Deer, Alta., in June 2003.

Though later recovered, the gauge was missing for five days before its owners even noticed it was gone.

Two radiation safety experts consulted by The Canadian Press confirmed the device, used to measure oil wells, is a high-risk instrument that would pose a danger if the americium inside were successfully dispersed in an explosion.

The findings come mere months after the Canadian Security Intelligence Service said a dirty bomb assault was "overdue."

A senior Al Qaeda leader in Iraq exhorted sympathetic scientists to help the terrorist organization build radioactive and germ-laced weapons.

The federal study's preliminary assessments underscore the potential of a dirty bomb – radioactive material spread using conventional explosives – to exact a toll of fear, panic and staggering financial fallout.

The study led by Defence Research and Development Canada predicts economic costs of up to \$8.75 billion should a similar americium-laden device 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, Ont., 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:

– 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.

The purpose of a radiological device is not to kill people but to create disruption, said Tom Cousins, who represented the defence research agency on the study project.

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

In preparing the study, the defence researchers are drawing on input from CSIS, 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 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 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 Insp. 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 dispersible 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.

The Ottawa International Airport is now equipped with 25 detectors to zero in on a radioactive threat.

"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 working with the airport. "You need to go in with detectors and find it."

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?"

Lafortune said there is international agreement on the need for flexible standards on residual contamination levels.

"In the end, it's a case-by-case consideration," he said. "You have to get the people affected involved in the process of determining what is acceptable and not acceptable."

The federal study estimates 10 per cent of people in the vicinity of a dirty bomb event would seek medical attention, overwhelming the health system.

"If you mention the word radiation, people immediately get very concerned. And even if they have very little reason to think that they may have been exposed, they do want to get checked up quickly," said Cousins.

"So they will go to the hospital, they'll be checked up, they'll turn out not to have any contamination at all, but it ties up the system for a period of time."

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 emails 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.

Jack Cornett, director of Health Canada's radiation protection bureau, says the lesson is to get more information out to the medical community sooner.

"I think we could have given them more support than we did."