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Backgrounder

Government of Canada invests over \$35 million for Science and Technology projects to enhance Canada's safety and security

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Defence Research and Development Canada (DRDC) is investing more than \$35 million for 24 new research projects, under the Chemical, Biological, Radiological-Nuclear and Explosives (CBRNE) Research and Technology Initiative (CRTI).

A Government of Canada lead department or agency has been identified for each CRTI project to work with other federal departments, as well as municipal and provincial governments, academia, and industry partners.

List of new projects being funded through the CRTI

Research and Technology Development projects close existing gaps in the capabilities and capacities of the science and technology (S&T) and operational communities to effectively respond to chemical, biological, radiological-nuclear and explosives (CBRNE) incidents.

The 11 **Research and Technology Development projects** are:

1. The Canadian Police Research Centre will lead the development of a CBRNE Recommended Equipment List (REL) for frontline emergency response agencies (08-0105RD). **Partners:** Association of Canadian CBRN Technicians, Canadian Association of Chiefs of Police, Canadian Association of Fire Chiefs, Canadian Police Association, Canadian Standards Association, Defence Research and Development Canada, Emergency Management Services Chiefs of Canada, International Association of Fire Fighters, Paramedic Association of Canada, Patriot CT Services, and Public Safety Canada.
2. Public Safety Canada will lead the development of a database tracking specific chemical materials by geographical location (08-0116RD). **Partners:** Agriculture and Agri-Food Canada, Defence Research and Development Canada, Defence Science and Technology Limited, Department of National Defence, Royal Canadian Mounted Police, and University of Ottawa.
3. Quanser Consulting Inc. will lead the development of a more advanced remote-controlled robotic device capable of disarming explosive devices (08-0142RD). **Partners:** Defence Research and Development Canada, National Research Council of Canada Institute for Aerospace Research.
4. The University of Ottawa will lead the development of a prototype tool for proactively identifying strengths and weaknesses of communities in relation to emergency management (08-0176RD). **Partners:** Canadian Red Cross and Council of Voluntary Sector Emergency Directors, Carleton University, Government of Nova Scotia Department of Community Services, Human Resources and Skills Development Canada, Public Health Agency of Canada.
5. The University of Ottawa Heart Institute will lead the development of technologies to detect disease outbreaks and monitor public events, as well as procedures and best practices for their implementation (08-0190RD). **Partners:** AMITA Corporation, Carnegie Mellon University (US), City of Ottawa, Defence Research and Development Canada, Health Canada, National Research Council, Ontario Agency for Health Protection and Promotion, Public Health Agency of Canada, Queens University.
6. Defence Research and Development Canada will lead the development and testing of technology for disarming explosives from a safe distance (08-0200RD). **Partners:** Canadian Forces Base Trenton, Department of National Defence, International Safety Research, March Scientific Ltd., White Sands Test Center (US).
7. The Canadian Food Inspection Agency will lead the development of technology to improve early detection of food contamination (08-0203RD). **Partners:** Health Canada, Michigan State University

(US), Public Health Agency of Canada, University of Guelph, University of Minnesota (US), and United States Department of Agriculture (US).

8. Defence Research and Development Canada will lead the development of a nuclear materials detection system (08-0214RD). **Partners:** Advanced Applied Physics Solutions, Atomic Energy of Canada Limited, Canada Border Services Agency, Carleton University, Health Canada, International Safety Research, Los Alamos National Laboratories (US), University of British Columbia.
9. Defence Research and Development Canada will lead the development of technology capable of more effective long-range radiation detection (08-0222RD). **Partners:** Bubble Technology Industries, Canadian Nuclear Safety Commission, Health Canada, National Physical Laboratory (UK), National Research Council.

Technology Acceleration projects aim to more rapidly commercialize technologies that are already in development in order to address key capacity gaps and deliver needed technologies into the hands of responders in a more timely and efficient manner.

The three **Technology Acceleration projects** are:

10. TeknoScan Systems Inc. will lead the development of technology capable of quickly sampling and detecting explosives in cargo containers (08-0104TA). **Partners:** Canada Border Services Agency, Transport Canada.
11. Defence Research and Development Canada will lead the development of a therapeutic agent against ricin poisoning (08-0112TA). **Partners:** Canada West BioSciences Inc., Canadian Forces Health Services Group, Cangene Corporation.
12. Mobile Detect Inc. will lead the development of the next generation of radiation surveillance networks able to detect, characterize, and localize threats (08-0208TA). **Partners:** Atomic Energy of Canada Ltd., Canadian Nuclear Safety Commission, Defence Research and Development Canada, Foreign Affairs and International Trade Canada, GE Global Research (US), Health Canada, McFadden Technologies Ltd., Ottawa International Airport Authority, Royal Military College of Canada, San Diego International Airport (US), Transport Canada.

Technology Demonstration projects involve the participation of the operational community from the beginning of a project in order to ensure that the S&T capacity being developed truly responds to their needs. These projects show off the usefulness of new technologies by having them tested in an operational setting and providing the end-user with a "leave-behind" capability which allows them to permanently integrate the knowledge and technology acquired into their daily operations.

The twelve **Technology Demonstration projects** are:

13. The Canadian Food Inspection Agency will lead the assessment of key disinfectants used against animal diseases in Canada's meat production plants, as well as the development of protocols and field trials for their use (08-0122TD). **Partners:** USDA/APHIS/Veterinary Services (US), Allen-Vanguard Corporation, Canadian Forces Base Borden, City of Ottawa, Public Health Agency of Canada.
14. Public Safety Canada will lead the development of an electronic database of commercial explosives and articles for rapid analysis by law enforcement, incident analysts and regulatory authorities (08-0131TD). **Partners:** AMITA Corporation, Canada Border Services Agency, Canadian Air Transport Security Authority, Canadian Explosives Industry Association, Natural Resources Canada, Royal Canadian Mounted Police, Toronto Police.
15. Health Canada will lead the development of standard protocols for analytical testing of nuclear forensics evidence to ensure results are more consistent and therefore admissible in a court of law (08-0173TD). **Partners:** Argonne National Laboratory (US), Federal Bureau of Investigation (US), National Research Council, Royal Canadian Mounted Police, Royal Military College, University of Laval.
16. The University of Toronto will lead the development and implementation of an integrated National CBRNE Training System for health, psychosocial and communication professionals (08-0180TD). **Partners:** Alberta Health Services, AMITA Corporation, Canadian Broadcasting Corporation, Canadian Standards Association, Centennial College Toronto, Defence Research and Development Canada, Standards and Emergency Management Consulting and Training Services, Health Canada, MJW Corporation, National Calibration Reference Centre for Bioassay and In Vivo Monitoring, National Microbiology Laboratory, Nortel Global Services, Ontario Ministry of Health and Long-term Care, Public Health Agency of Canada, Royal Military College, Sunnybrook Health Science Centre,

Telus, University of Arizona (US), University of Miami (US), University of Ottawa.

17. The Public Health Agency of Canada's National Microbiological Laboratory will lead the development of tests for the rapid identification of biothreat agents (08-0181TD). **Partners:** Canadian Food Inspection Agency, Defence Research and Development Canada, Health Canada, National Microbiology Laboratory.
18. AMITA Corporation will lead the development and field testing of a bilingual national inventory database of CBRNE emergency resources (08-0192TD). **Partners:** Canadian Association of Fire Chiefs, Carleton University, Defence Research and Development Canada, Department of National Defence, Emergency Medical Services Chiefs of Canada, Environment Canada, National Research Council of Canada, Montreal Police, New Brunswick Department of Public Safety, Public Safety Canada.
19. The Fredericton Fire Department will lead the development of recommendations for the creation of CBRNE Rapid Assessment Teams, including requirements for equipment, training, concept of operations and procedures (08-0197TD). **Partners:** New Brunswick Department of Public Safety, New Brunswick Provincial Fire Marshal Office, Public Safety Canada, SAIC Canada, Saint John Fire Department.
20. Health Canada will lead the development of guidelines to help improve interoperability between first responders when responding to radiological or nuclear events (08-0225TD). **Partners:** British Columbia Ambulance Service, Canadian Forces, Canadian Nuclear Safety Commission, Department of National Defence, International Safety Research Inc., Public Health Emergency Management British Columbia Centre for Disease Control, Public Safety Canada, Toronto Police Services, Vancouver Fire and Rescue Service.
21. The Saint John Fire Department will lead the development of a CBRN mass personal decontamination system including protocols, standard operating procedures, equipment and processes (08-0226TD). **Partners:** Fredericton Fire Department, New Brunswick Department of Public Safety, Public Safety Canada.
22. JGM Engineering Ltd. will lead the development of an intravenous treatment for nerve agent poisoning (08-0233TD). **Partners:** Canadian Forces Health Services, Defence Research and Development Canada, Royal Canadian Mounted Police, Ottawa Hospital.
23. The Public Health Agency of Canada will lead the development of a modeling tool that can be used by laboratories to accurately determine their resource requirements for diagnostic testing during an outbreak (08-0234TD). **Partners:** Alberta Provincial Laboratory for Public Health, Association of Public Health Laboratories (US), British Columbia Centre for Disease Control, Booz Allen Hamilton (US), Canadian Food Inspection Agency, National Microbiology Laboratory, The Centers for Disease Control and Prevention (US).
24. Health Canada will lead the development of techniques that can be used in the field to rapidly identify individuals who may have had an intake of radiological material and provide dose information to physicians (08-0241TD). **Partners:** Atomic Energy Canada Ltd., Canadian Forces, Defence Research and Development Canada.

Chemical, Biological, Radiological-Nuclear, and Explosives Research & Technology Initiative (CRTI)

CRTI represents the federal science community's response and commitment to providing S&T solutions to strengthen Canada's ability to prevent, prepare for, respond to, and recover from CBRNE incidents, including terrorist and criminal acts, accidents and natural disasters. CRTI was originally launched as a five-year, \$170 million program, in May 2002, as part of the \$7.7 billion investment the Government of Canada announced in Budget 2001 to improve Canadian security and counter terrorism efforts. In those five years, a total of \$134.2 million was allocated to 136 projects through an annual competitive project selection process. An additional \$150 million was leveraged through in-kind and other contributions from partners in academia, industry and other government departments. In December 2006, the initiative was renewed for another five years, receiving more than \$175 million in funding. Since its renewal, the CRTI has provided over \$79 million in funding to 49 projects.

CRTI is a component of the Government of Canada's Public Security Technical Program (PSTP), a federally funded science and technology (S&T) program involving 21 federal government departments and agencies that play a role in public safety and security. The PSTP program consists of four theme areas including: Chemical, Biological, Radiological-Nuclear and Explosives (CBRNE) Threats; Critical Infrastructure Protection; Surveillance, Intelligence, and Interdiction; and Emergency Management and Systems Interoperability. Although most of the CRTI's funding is allocated to projects within the CBRNE theme, it also supports projects across all PSTP theme areas.

PSTP is managed by the Defence Research and Development Canada (DRDC) Centre for Security Science (CSS), a joint endeavor between DRDC and Public Safety Canada that provides science and technology (S&T) services and support to address national public safety and security objectives.

DRDC is an agency of the Department of National Defence, responding to the scientific and technological needs of the Canadian Forces, as well as public safety and national security communities. With a broad scientific program, DRDC actively collaborates with industry, international allies, academia, other government departments and the national security community.

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