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MDS RESEARCH PAPER

**A DIRTY BOMB EXPLODES IN CANADA: AN EVALUATION OF CANADA'S
MILITARY PREPAREDNESS**

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ABSTRACT

Terrorism threatens the Western way of life. Terrorists fight in the shadows; they integrate with the public society and, when successful, strike at the precise moment when Western societies are most vulnerable. The attacks of 9/11 displayed to what extent terrorist groups are willing to go to achieve their goals. Terrorists continue to demonstrate the desire to acquire weapons of mass destruction, which is a cause of great concern to many nations, including Canada.

In response to this threat, the Government of Canada realized it needed a more robust approach to mitigate terrorists' incidents which resulted in the creation of the Chemical, Biological, Radiological and Nuclear (CBRN) strategy. This new strategy uses a four prong approach to enhance Canada's ability to diminish and prevent CBRN incidents. Within the four strategic objectives, Canada has stressed the importance of cooperation, sharing of information, research, coordination and training with Canadian departments and agencies across Canada as well as international partners.

This paper examines DND's supporting role to assist civilian agencies in the event of a CBRN incident occurring in Canada. The tasks assigned to DND departments and military forces can assist and have greatly assisted law enforcement agencies and other related departments in preventing, preparing for and recovering from CBRN incidents. Nevertheless, this paper concludes in the case of two of the four strategic objectives, prevention and mitigation and preparedness, DND is able to meet its commitments under this mandate. However, under in terms of response and recovery, the CF cannot meet its mandate due to current manning strength and equipment shortfalls.

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Part 1 - Introduction

The world's inhabitants are currently approaching 6 billion and projections for 2050 estimate between 8 to 12 billion people. The population increase will place a greater strain on the earth's natural resources and increase political pressures to meet the demands and needs of its citizens.¹ Another source of increasing global volatility is failing states. They are breeding grounds for terrorist groups, which flourish when the political regime lacks complete control. International security has also been threatened recently by civil wars fuelled by ethnic, religious and political extremism as portrayed in the Balkans and former Soviet Union.² These factors, along with the technological boom, the proliferation of weapons of mass destruction, ease of travel around the world, and the erosion of national borders, have changed the face of terrorism today.³ Terrorists have adapted quickly to Western security defences and have developed novel ways to disrupt, inflict damage and wage destructive campaigns against Western society. They fight in the shadows; they integrate with the public society and, when successful, strike at the precise moment when Western societies are most vulnerable. The attacks of 9/11 were particularly lethal, demonstrating to what extent terrorist groups are willing to go to achieve their goals. Cities with large concentrations of population are becoming increasingly attractive as targets because they present an opportunity to inflict mass casualties.

¹ Department of National Defence, "1994 White Paper," <http://www.forces.gc.ca/admpol>; Internet; accessed 11 February 2008. 2.

² *Ibid.*, 3.

³ Canadian Security Intelligence Service, "Backgrounder No. 8 - Counter-Terrorism," <http://www.csis-scrs.gc.ca>; Internet; accessed 19 November 2007.

Al-Qaeda, a terrorist organization with aspirations of acquiring weapons of mass destruction, has cited Canada as a potential target in the foreseeable future. If, for example, a dirty bomb was planted near City Hall in Toronto by a terrorist group, could current federal government and Department of National Defence agencies be able to prevent it from exploding? If not, does the government and the military have the consequence management infrastructure to respond and recover from this type of incident? Many Canadians still believe that a terrorist attack could never happen on Canadian soil. However, the possibility should not be neglected. As a nation, Canada must do everything in its power to prevent it from occurring. Even if the probability of a terrorist attack is low, its potential impact could devastate the national economy.⁴

Weapons of mass destruction fall into the following categories: chemical, biological, radiological and nuclear (CBRN).⁵ For the purpose of this paper I will focus solely on the radiological threat (dirty bomb). The dirty bomb is the cheapest and easiest to build and the material necessary to construct this device is fairly simple to acquire. In

The paper will first explore the nature of terrorism and its choice to use a dirty bomb as a method of achieving their goals. This will provide the basic knowledge to link the Canadian Forces with the perceived threat that dirty bombs and terrorists bring to Canada. The next section will describe the Government of Canada's and DND's strategies to mitigate CBRN events. This will be followed by a description of current government's and DND's capabilities and then these capabilities will be analyzed against the relevant mandate to determine if the departments are meeting them. Only through the analysis of comparing both organizations can an assessment be made that the Canadian Forces, in its supporting role, is not meeting the mandate specified under response and recovery objectives of the CBRN Strategy.

Part 2- Dirty Bombs and the Terrorists that Wish to Exploit It Use

Dirty Bomb. Radiological dispersion devices (RDD) or so called "Dirty Bombs"⁶ are a potential weapon of choice for some rogue states and terrorist groups. The ability of this weapon to cause both panic and economic distress is enormous.⁷ There are three types of radiological dispersion devices that terrorist groups may endeavour to use or build. The most basic is an unshielded container with radioactive material inside located near high traffic areas like train stations, subways and shopping centres, tucked away from unsuspecting eyes. The second type, a dirty bomb or RDD, is defined as "a device that uses explosive force to disperse small particles of radioactive material over a wide

⁶Peter D. Zimmerman, and Cheryl Loeb, "Dirty Bombs: The Threat Revisited," *Defense Horizons*, no. 38 (January 2004): 1.

⁷Gilbert King, *Dirty Bomb: Weapon of Mass Disruption* (New York: Penguin Group (USA) Inc., 2004), 13.

area.”⁸ The third type, atmospheric RDD, alters the radioactive material into a fine powder so that it can be easily carried through air currents.⁹

The explosive used in a dirty bomb can range from traditional dynamite, to TNT (trinitrotoluene), to fertilizer.¹⁰ The initial blast does not only injure or kill individuals in the immediate vicinity but also through the airborne propagation of radiation and contamination. There are three types of radiation that can be discharged, “alpha rays, which are helium nuclei; beta rays, which are electrons; and gamma rays, which are very high energy, short wave length light.”¹¹ Alpha and beta particles can be stopped fairly easily. The barrier can be air, thin clothing or paper and, in the case of beta particles, aluminium foil or human skin; however, if either one is inhaled or ingested, it can cause severe health problems. Gamma rays are extremely penetrating and can travel many meters in the air or through many centimetres of lead shielding.¹²

Exposure to radiation occurs on a daily basis for all humans naturally through the environment, as well as through examination processes at hospitals. The doses are usually low and have minimal effects on the body.¹³ The main objective of a terrorist who uses a dirty bomb is to increase exposure levels of radiation to well above normal. The extent of the exposure or contamination is dependent on the following factors: the size of the blast, weather conditions and the type and amount of radioactive material

⁸Steven .M. Kosiak, *Homeland Security, Terrorism and Weapons of Mass Destruction: A diagnostic Assessment* (Washington: CSBA, 2003). 40.

⁹*Ibid.*, 40.

¹⁰*Ibid.*, 20.

¹¹Peter D. Zimmerman, and Cheryl Loeb. “Dirty Bombs: The Threat Revisited ...”, 1.

¹²*Ibid.*, 1.

¹³Gilbert King, *Dirty Bomb: Weapon of Mass Disruption ...*, 22.

used.¹⁴ The explosion of the dirty bomb may not kill you; however, extended exposure to the radiation particles will hasten one's death as a result of radiation poisoning, cancer or other health problems.

A dirty bomb is fairly simple and cheap to construct compared to a nuclear weapon. The knowledge, space, infrastructure and technical expertise required is far less demanding. The information or plans to build a conventional explosive device can be located reasonably easily on open sources such as the internet.¹⁵ By comparison, the theoretical knowledge to construct a nuclear device is also fairly easy to obtain; however, an engineer is required to create a functional nuclear weapon of mass destruction.¹⁶ The radioactive material for the RDD can be obtained through different sources ranging from the black market to local facilities.

Low-level sources of radioactive materials are located within hospitals, construction sites and at food irradiation plants. These facilities use low-level radioactive material to sterilize equipment, to treat illnesses and to destroy harmful microbes in food.¹⁷ The security and control procedures guarding these sensitive materials have not always been up to reliable standards due to human ignorance or simple complacency. With the fall of the former Soviet Union, higher-levels of radioactive material are now more readily available.¹⁸ Terrorists are fully aware of the lapses of security in these areas

¹⁴*Ibid.*, 22.

¹⁵Nadine Gurr and Benjamin Cole, *The New Face of Terrorism: Threats from Weapons of Mass Destruction* (London-New York: I.B Tauris Publishers, 2000), 62.

¹⁶*Ibid.*, 63.

¹⁷Steven .M. Kosiak, *Homeland Security, Terrorism ...*, 40.

¹⁸*Ibid.*, 33.

and are ready to exploit these avenues to obtain the material required for their weapons of destruction.¹⁹

It is unlikely that a dirty bomb will cause the mass casualties of a nuclear weapon with its initial blast; it simply does not have the power. The psychological effects to the local populace would be significant, however, regardless of the radiation yield of the device, and the clean up efforts associated with the incident would be costly. An explosion can also severely affect the local and surrounding economy. Many experts therefore refer to the dirty bomb as an instrument of “mass disruption,”²⁰ rather than mass destruction. Once an explosive device is identified to contain radioactive materials that have been dispersed in the area, as a result of the explosion, there would be significant panic. The hospitals in the local area would be overwhelmed in a matter of minutes, there would be a mass exodus of the population from the area and the local economy would be temporarily devastated. Even after the cleanup was completed there would be no guarantee that residents and workers would return.²¹ The attractiveness of this weapon as a tool of mass disruption is therefore appealing.

Terrorists. Terrorism is not a new phenomenon. It can be traced as far back to the era of the Romans, when Jewish zealots waged a campaign of terror against them.²² Many definitions of terrorism currently exist within the literature. For the purpose of this paper, the following definition from the Department of National Defence – *The Asymmetric Threat*, will be utilized. Terrorism is “the calculated use of violence or the

¹⁹Department of Foreign Affairs and International Trade Canada, *Global Partnership Program - Making a Difference* (Ottawa: DFAIT, 2006), 2.

²⁰Gilbert King, *Dirty Bomb: Weapon of Mass Disruption ...*, 37.

²¹Steven M. Kosiak, *Homeland Security, Terrorism ...*, 41.

²²Canadian Security Intelligence Service, “Backgrounder No. 8 ...”, 3.

threat to inculcate fear, intended to coerce or intimidate governments or societies in pursuit of goals that are generally political, religious or ideological.²³ Terrorism has evolved just as societies have. Terrorists cannot be characterized as a single group or a monolithic threat. Many types of groups currently exist, in an array of sizes, with diverse interests, goals and capabilities.²⁴ Terrorist groups of old, during the Cold War period, were more political in nature than religious. Their political nature limited the damage inflicted. If the attacks were seen as too violent, they could have undermined the terrorists' claims of legitimacy among their constituents and within the international community.²⁵ On the other hand, today's terrorists tend to be more religious. They are largely resentful (to the point of hatred) of Western culture and its influence upon their societies.²⁶ They may have political aims; however, these goals no longer appear to limit the lethality of attacks as they did in the past. The logic followed by religious terrorist groups is fundamentally different from secular ones. The primary aspiration is not to obtain concessions from a government but to realize a spiritual necessity.²⁷ Actions focus on achieving the end, not the ways or the means.

Terrorists understand that they cannot win a conventional war against Western armies. They have isolated Western society's vulnerabilities through use of asymmetric threats. An asymmetric threat is "a term used to describe attempts to circumvent or undermine an opponent's strengths while exploiting his weaknesses, using methods that

²³Department of National Defence, *The Asymmetric Threat ...*, A-11.

²⁴Steven .M. Kosiak, *Homeland Security, Terrorism ...*, 3.

²⁵Alan O'Day, *Weapons of Mass Destruction and Terrorism*, (UK: Ashgate, 2004) 107.

²⁶Micheal D. Intriligator and Abdullah Toukan, *Terrorism and Weapons of Mass Destructions* (New York: Routledge, 2006), 70.

²⁷*Ibid.*, 57.

differ significantly from the opponent's usual mode of operations."²⁸ The Chechen extremists' use of radioactive material in a Moscow park is an example of an asymmetric attack.²⁹ The ultimate goal of such a terrorist group is to destroy the Western way of life. Such groups find new and innovative ways to wage their campaign against Western societies as technology evolves.

Over the past two decades or so, the following trends have been observed by the RAND-MIPT in reference to terrorists' activities. Religious and non-traditional terrorist groups have undergone a renaissance. The number of the terrorist attacks has declined; however, the lethality of the attacks has increased. Terrorist groups have increased their efforts in targeting US installations and civilians abroad and at home. Lastly, terrorist activities are no longer limited by geography; terrorists now operate transnationally.³⁰

Terrorists require money to support their international activities and to invest in technologies that make their operations more efficient. Terrorist groups are apt at finding financial support for their causes through countries that sympathize with their methods as an approach to achieving their political goals against the West.³¹ Iran, Cuba, and North Korea have all been linked to supporting these types of organizations.³² Terrorists also raise funds through drug trafficking, credit card fraud, extortion and business fronts.³³ For example, Al-Qaeda relies heavily on the money raised through poppy fields of Afghanistan. The terrorist footprint is now dispersed internationally;

²⁸Department of National Defence, *The Asymmetric Threat ...*, 1-2.

²⁹Wayne L. Pickering, *An Assessment of the Canadian Forces' Capability To Manage the Consequences of the Domestic Use of CBRN Weapons of Mass Destruction* (Michigan: Proquest, 2005), 11.

³⁰Steven .M. Kosiak, *Homeland Security, Terrorism ...*, 11-14.

³¹*Ibid.*, 14.

³²*Ibid.*, 14.

³³United States. *National Strategy for Combating Terrorism* (US: President, 2003), 7.

groups units can share funds, technology, intelligence, knowledge, training and planning when executing an attack.³⁴ This flexibility did not exist in the past, which potentially increases their success rate and the lethality of the planned attacks.

Some groups have acquired the financial backing needed to attempt to develop Weapons of Mass Destruction. For example, in 1995, the Tokyo Subway system was attacked by way of sarin nerve gas by a religious cult called the Aum Shinrikyo.³⁵ The attack did not materialize completely as planned; however, it clearly indicated that terrorist groups are ready, and capable, of resorting to the use of Weapons of Mass Destruction (WMD). In 1998, Osama bin Laden “proclaimed the acquisition of WMD as a ‘religious duty’ ...”³⁶ Knowing terrorist groups are attempting to acquire these types of weapons can be psychologically crippling to a society that thrives on freedom of movement, like North America.

Canada is a nation of immigrants and as a result represents a small portion of the population of the world within its borders. Because it borders the United States, it is not surprising that it is second to the US in harbouring terrorist groups or a part of their organizations.³⁷ The United States continues to be the priority target for terrorists groups, but as it becomes more difficult to penetrate its homeland defences, Canada may be perceived as a “soft target.”³⁸ Due to Canada’s proximity to the United States, along with the flow of trade and economic integration between the two countries, Canada’s

³⁴*Ibid.*, 8.

³⁵Canadian Security Intelligence Service, “Backgrounder No. 8 ...”, 5.

³⁶United States. *National Strategy for Combating ...*, 10.

³⁷Canadian Security Intelligence Service, “Backgrounder No. 8 ...”, 6-7.

³⁸Wayne L. Pickering, *An Assessment of the Canadian Forces’ Capability To Manage the Consequences of the Domestic Use of CBRN Weapons of Mass Destruction* (Michigan: Proquest, 2005), 11.

economic infrastructure could be targeted. For example, if power, oil and natural gas infrastructure were destroyed or damaged through the use of a RDD, this could not only have a dramatic effect on Canada's economy, but also on America's.³⁹

Modern societies like Canada are vulnerable to attacks from WMD because of their porous borders, the accessibility of materials required to build these devices, their free and open societies, and the high population densities in cities.⁴⁰ The hatred manifested by religious terrorist groups remains intense and should not to be taken lightly. They have displayed the desire, capabilities, and the patience to continue to wage a protracted war against Western societies. The threat of terrorist groups obtaining WMD is real, and although less likely in the short run, as time passes the probability will increase.⁴¹

Conclusion

Terrorism, coupled with the threat of RDD use, is one of the biggest enemies that endangers the Western way of life today. When confronted with an enemy, one must know the enemy to defend oneself properly and be able to defeat it, if necessary. If one does not understand the enemy's capabilities, motivation, weaponry, inspiration, and structure, one will not have the essential information to develop strategies, contingencies and plans to prevent an attack; protect one's assets and country; recover from an attack; and if required go into battle to defeat the enemy. The Government of Canada and the Department of National Defence need to have a clear understanding of the enemy and the

³⁹*Ibid.*, 11.

⁴⁰Alan O'Day, *Weapons of Mass Destruction and Terrorism* .., 43.

⁴¹Micheal D. Intriligator and Abdullah Toukan, *Terrorism and Weapons of ...*, 75.

threat in the aim of developing all encompassing strategies to address the issue at hand and executing the plans to deal with terrorist attacks or incidents.

Part 3- Government of Canada / DND Strategies to Deal with Terrorism

In the aftermath of the events of 11 September, 2001, Western countries, including Canada, realized they were not immune from terrorist attacks. As a result, Canada has acted swiftly to develop a Chemical, Biological, Radiological and Nuclear (CBRN) Strategy to address the threat posed by terrorist organizations wishing to cause and inflict as much damage as possible to the Western way of life. I will first tackle the infrastructure of the Government of Canada to provide a clear picture where the Canadian Forces fits within the construct of dealing with an asymmetric threat. Then, I will speak to the CBRN strategies that the federal government has established followed by the DND mandate.

The Government of Canada is responsible for developing the policies and operational procedures necessary to respond to the criminal activities of terrorist incidents. The Minister of Public Safety and Emergency Preparedness undertakes the coordination of Canada's preparedness for and response to terrorist attacks within Canadian borders while the Minister of Foreign Affairs and International Trade is responsible for the same issues abroad.⁴² The RCMP, the Canada Border Services Agency and the Canadian Security Intelligence Service are the primary organizations that function on behalf of the Minister of Public Safety and Emergency Preparedness for the roles and responsibilities with which that office is charged.⁴³

⁴²Public Safety and Emergency Preparedness Canada, *The Chemical, Biological, Radiological and Nuclear Strategy of the Government of Canada* (Ottawa: Minister of Public Works and Government Services, 2005), 4.

⁴³*Ibid.*, 7.

Provincial and territorial governments are in charge for the law enforcement and public safety within their regional sector. As a result, provincial and territorial government forces, in coordination with the RCMP, the lead agency as per the Security Offences Act sub-section 6(2), are the first responders in the event of a terrorist attack to include CBRN.⁴⁴ If the incident overwhelms the provincial or territorial and local resources, the government can request support from other federal agencies (for example Health Canada, Department of National Defence, to name a few) through the Office of Critical Infrastructure Protection and Emergency Preparedness.⁴⁵

The goal of the CBRN Strategy of the Government of Canada is “to protect Canada and Canadians by taking all possible measures to prevent, mitigate and respond effectively to a potential CBRN incident.”⁴⁶ The CBRN Strategy supports the key elements of the Government of Canada’s Anti-Terrorism Action Plan which are to stop terrorists from entering the homeland; protect civilians from terrorist attacks; develop tools to bring terrorists to justice; keep Canada-US borders safe to ensure the free flow of goods; and work with Canada’s allies to apprehend terrorists and to prosecute them to the full extent of the law.⁴⁷ This strategy encompasses the domestic and international elements; as well, it is entrenched within Canada’s National Emergency Management System, bringing together all authorities and departments from the local municipalities through to the government in Ottawa. In all, the Government of Canada has fourteen federal departments which work together to achieve the aim of the CBRN Strategy. The

⁴⁴Solicitor General Canada,

lead agency for the Government of Canada is Public Safety and Emergency Preparedness Canada.⁴⁸

The Department of National Defence is “responsible for supporting domestic operations with the CBRN military expertise, intelligence and scientific support.”⁴⁹ The Canadian Forces provides for the military defence of Canada, as well as giving operational support in the case of a CBRN incident. The CF assists the international community in counter-proliferation efforts; it intercepts, analyzes and shares CBRN-related intelligence; and it supplies forces and assets to wage war against terrorism.⁵⁰

The structure of the CBRN Strategy is based on four objectives: prevention and mitigation, preparedness, response and recovery. These objectives together help to prevent and diminish the effects of a CBRN terrorist attack within Canada. Programs, policies, and funding issues are developed within this construct. This paper will now provide a broad definition of each strategic objective, in addition to examples of programs and or initiatives with which the Government of Canada and the Departmental of National Defence are involved.

Prevention and Mitigation. The aim of this objective is to continue the global effort in combating terrorism through coordinated common practices and standards in Canada and with the international community. It is critical that Canada and Canadians are equipped with the necessary tools, equipment, knowledge and training to deal with the adverse effects of a terrorist incident. Provinces, territories and governmental agencies need to work together as a cohesive group to ensure all members are prepared

⁴⁸*Ibid.*, 7-9.

⁴⁹*Ibid.*, 7.

⁵⁰*Ibid.*, 7.

and understand their responsibilities in an event of a crisis. Intelligence gathering and the sharing of information among internal, external and international agencies is critical to threat assessments and warnings. The following programs will illustrate how the Government of Canada and DND are going about to prevent and mitigate the CBRN threat.

Prior to the development of the CBRN Strategy of Canada, Canada relied on several treaties, conventions and several other programs or initiatives to address the CBRN threat. One such initiative is the nuclear Non-Proliferation Treaty (NPT), the cornerstone of Canada's nuclear disarmament and nuclear non-proliferation policy. The treaty was signed in 1968 and is based on three pillars: "non-proliferation, disarmament and peaceful uses of nuclear energy."⁵¹ The main purposes of the treaty are to stop the nuclear arms race, to initiate and implement nuclear disarmament under strict controls and finally to share with other states the benefits of peaceful nuclear technologies and equipment to produce clean energy. The International Atomic Energy Agency (IAEA), of which Canada has been a member since 1957, is the body in charge of the programming and of ensuring that all parties of the treaty are aligned and are adhering to the guidelines set.⁵² By reducing the availability of these types of weapons within the world, not only does it increase international security, but also security within Canada.

⁵¹United Nations, "Non-Proliferation of Nuclear Weapons," <http://www.un.org/events/npt2005/npttreaty.html>; Internet; accessed 23 February 2008; Department Foreign Affairs and International Trade, "The Nuclear Non-Proliferation Treaty (NPT)," <http://www.international.gc.ca/arms/intro-nuclear-treaty-en.asp>; Internet; accessed 23 February 2008.

⁵²Department Foreign Affairs and International Trade, "The Nuclear Non-Proliferation Treaty (NPT)," <http://www.international.gc.ca/arms/intro-nuclear-treaty-en.asp>; Internet; accessed 23 February 2008.

The Convention on the Physical Protection of Nuclear Material was signed in Vienna and New York in March 1980. Canada ratified it later that same year. The Convention is an international legally binding undertaking to ensure countries are taken the necessary measures to safeguard nuclear material. It has developed measures associated with the “prevention, detection and punishment of offenses relating to nuclear material.”⁵³

In 1986, the Canadian government signed of two International Atomic Energy Agency’s (IAEA) conventions, one being the Convention on Early Notification of a Nuclear Accident and the other Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency. The first establishes an alerting scheme for nuclear accidents that have the potential of releasing radiological material into another country. This provides the necessary warnings to neighbouring countries to implement their radiological emergency plans to protect and ensure the safety of their citizens.⁵⁴ The later “sets out an international framework for cooperation between countries and with the IAEA to facilitate prompt assistance and support in the event of nuclear accidents or radiological emergencies.”⁵⁵ It also obliges each country to inform the IAEA of its existing specialists, equipment, or other materials it could render as aid. However, each country decides whether or not it can afford to release the assistance upon request.⁵⁶

In 1987, the Missile Technology Control Regime (MTCR) was established by Canada, United States, Germany, France, Japan, United Kingdom and Italy. The MTCR

⁵³IAEA, “International Convention and Agreements,” <http://www.iaea.org/Publications/Documents/Conventions/cppnm.html>; Internet; accessed 01 March 2008.

⁵⁴Health Canada, “International Coordination of Nuclear Emergency Preparedness and Response,” http://www.hc-sc.gc.ca/ed-ud/part/int/index_e.html#convention; Internet; accessed 01 March 2008.

⁵⁵*Ibid.*

⁵⁶*Ibid.*

is an informal voluntary alliance of states working together to reduce the trade or transfer of unmanned delivery systems capable of carrying weapons of mass destruction.⁵⁷ To date, the alliance has grown to involve thirty-four countries. Canada and its partners have developed and launched:

the use export licenses for rocket and other unmanned air delivery systems, as well as related equipment, material and technology, to deter those who seek to build or acquire unmanned WMD delivery systems and related technologies.⁵⁸

This tracking mechanism is the basis for regulating transfers to any area that is beyond the Government's power or control of these unmanned vehicles capable of carrying WMD payloads, and related equipment and technology relevant to these missiles.⁵⁹ These guidelines are not forced upon the partners of the MTCR; however, they are to be incorporated within their national legislation and practices.

In 1990, the National Counter-Terrorism Plan (NCTP) was created to curtail terrorist activities. The plan was defined as follows:

A set of arrangements that guide the police, municipal, provincial and federal government response to terrorist incidents in a co-ordinated and co-operative manner. The plan outlines the roles and responsibilities of police services and all levels of government in terrorist incidents. With lessons learned from counter-terrorism exercises and information gleaned about the state of international terrorism, the NCTP is continually updated so that it keeps pace with the threat environment.⁶⁰

In Canada, terrorism is considered a criminal offence under the Criminal Code and it is for this reason that local police will be the first responders in the event of a terrorist

⁵⁷Department of Foreign Affairs and International Trade, "Missile Technology Control Regime (MTCR)," <http://www.international.gc.ca/arms/missile-mtcr-en.asp>; Internet; accessed 24 February.

⁵⁸*Ibid.*

⁵⁹MTCR, "Guidelines for Sensitive Missile-Relevant Transfers," <http://www.mtcr.info/english/guidetext.htm>; Internet; accessed 24 February.

⁶⁰Public Safety Canada – Archive, "National Counter-Terrorism Plan," http://ww2.ps-sp.gc.ca/national_security/counter-terrorism/ccta_e.asp; Internet; accessed 22 February 2008.

attack. Under the auspice of the NCTP, DND is responsible for maintaining an immediate response capability to any CBRN incident to include the following support to civil authorities:

Preventive responsibilities to includes:

- co-operation with the intelligence community to maintain the threat assessment;
- the development of mutually agreed operational procedures with police services through training and co-operation;
- the operation of the National Defence Command Centre to assist other departments and agencies as required; and
- the provision of hostage rescue and nuclear, biological and chemical technical assistance.

Incident response responsibilities are:

- to provide armed assistance in the resolution of a terrorist incident, in support of the RCMP;
- to provide advice and technical assistance;
- to provide a nuclear, biological and chemical response capability; and
- to provide other assistance as required when the tasks are beyond the capabilities of the civil authorities.

Consequence management responsibilities are:

- to provide advice and technical assistance to determine measures necessary to isolate, contain, assess and dispose of nuclear, biological and chemical hazards;
- to perform specialized tasks within a contaminated area such as administering basic medical care to and removal of any casualties from a contaminated area and assisting in the determination of the nature of the contaminant;
- to assist with the decontamination of persons and property; and
- to co-ordinate the provision of any required military support to civil authorities.⁶¹

After the events of Three Mile Island, Pennsylvania in 1979 and Chernobyl, Ukraine in 1986, Canada and the U.S. realized the need to develop a joint plan to deal with radiological crises. This cooperation resulted in the creation of the Canada-United States Joint Radiological Emergency Response Plan which was finalized and signed in 1996. The plan is designed to alert each country's appropriate federal authority of the

⁶¹Public Safety Canada, "An Overview of Canada's National Counter Terrorism Arrangements," http://ww2.ps-sp.gc.ca/publications/national_security/terrorism_arrangements_e.asp; Internet; accessed; 26 March 2008.

possible or actual threat of a radiological incident; to launch a framework of mutual agreed measures to minimize the threat caused to public health, safety, property and the surroundings; and to assist in the coordination between both federal governments in supplying the support required to provinces and states distressed by a potential or real radiological event.⁶²

The Comprehensive Nuclear-Test-Ban Treaty was adopted in 1996 and signed by 71 states, including the five nuclear-weapon states at the time. Canada ratified the treaty in 1998. The treaty bans any type of nuclear weapon test explosion and forbids any such nuclear explosion to take place within its jurisdiction. Its adherents must also refrain from promoting or in any way partaking in this sort of nuclear explosion testing.⁶³

The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management was initiated in 1997, to which 42 countries to date, including Canada, are a party. This particular convention is the first legal instrument to address this issue on a global scale and entered into force in June 2001. This Joint Convention provides guidelines and procedures to be followed when spent fuel or radiological waste is permanently transferred from civilian nuclear reactors or defence programs to a civilian corporation for final storage and management of the radiological materials.⁶⁴

In December 2001, the NCTP was further facilitated by the creation of the Anti-Terrorism Act (Bill C-36). This new legislation created:

⁶²Health Canada, "International Coordination of Nuclear Emergency Preparedness and Response," http://www.hc-sc.gc.ca/ed-ud/part/int/index_e.html#convention; Internet; accessed 01 March 2008.

⁶³CTBTO Preparatory Commission, "Who We Are The Preparatory Commission," <http://www.ctbto.org/>; Internet; accessed 01 March 2008.

⁶⁴IAEA, "International Conventions & Agreements," <http://www.iaea.org/Publications/Documents/Conventions/jointconv.html>; Internet; Accessed 01 March 2008

measures to deter, disable, identify, prosecute, convict and punish terrorist groups; [and] provide[d] new investigative tools to law enforcement and national security agencies and ensure[d] that Canadian values of respect and fairness are preserved and the root causes of hatred are addressed through stronger laws against hate crimes and propaganda.⁶⁵

Furthermore, in response to the Winnipeg floods of 1997 and the ice storm in 1998, coupled with the events of 9/11, the Canadian Government realized that it required a national response framework. The government, acting as the lead, created a new response system called National Emergency Response System (NERS) to harmonize and coordinate all agencies across Canada into a cohesive structure to respond efficiently to all types of national emergencies.⁶⁶ The aim of the NERS is to increase Canada's capabilities within the following areas: "incident identification, warning and notification, information sharing, incident analysis, planning, and operations coordination."⁶⁷ The NCTP is integrated within the NERS framework.

The dissolution of the former Soviet Union in 1991 ended the Cold War era; however, it also opened a market to terrorist groups and or states seeking the expertise, equipment and materials within the CBRN environment. With the events of 9/11, this provided a "reminder of the seriousness of terrorist threats and underscored the urgency of preventing terrorists and states of proliferation concern from adding weapons and materials of mass destruction to their repertoires."⁶⁸

⁶⁵ Public Safety Canada – Archive, "Anti-Terrorism Act Receives Royal Assent," http://ww2.ps-sp.gc.ca/publications/news/2001/20011218_e.asp; Internet; accessed 23 February 2008.

⁶⁶ Public Safety Canada – Archive, "National Emergency Response System," http://ww2.ps-sp.gc.ca/publications/backgrounders/2005/20050124-7_e.asp; Internet; accessed 22 February 2008.

⁶⁷ *Ibid.*

⁶⁸ Department of Foreign Affairs and International Trade Canada, *Global Partnership ...*, 3.

In 2002 at the G8 Kananaskis' Summit, Canada introduced the Global Partnership Program to deal with this very issue. Under the leadership of the Government of Canada, this project was implemented. Canada was instrumental in securing the initial funding commitments, it made possible the development of multilateral and bilateral arrangements and it was influential in building the partnership beyond the original G8 members.⁶⁹ The Global Partnership Program focuses in the following four areas:

- the destruction of chemical weapons;
- the dismantlement of decommissioned nuclear submarines;
- the disposition of fissile material; and
- the redirection of former weapons scientists.⁷⁰

The partnership is grounded in six principles which were developed by Canada. These principles call upon states to reinforce global non-proliferation efforts through the execution of multilateral treaties and other international tools; obtain means to keep track of and secure WMD materials in use, storage and transport; build appropriate and secure storage facilities for WMD goods; empower and provide necessary tools to law enforcement and cross border officials domestically and abroad to deter, detect and interdict illegal trafficking of WMD; reinforce national export and trans-shipment control structures in regards to materials required for development or construction of WDM; and reduce stockpiles of WMD substances.⁷¹ The project's goal is to raise US\$20 billion over a ten year period, to which Canada has pledged \$1 billion, to fund the appropriate programs to deal with the Cold War WMD legacy. To date, 21 countries are committed

⁶⁹*Ibid.*, 3.

⁷⁰*Ibid.*, 3.

⁷¹*Ibid.*, 8.

to the Global Partnership Program, speaking to the resolve of the world to address this threat.⁷²

The Proliferation Security Initiative (PSI) was proposed and implemented by the United States in the spring of 2003. It “aims to help prevent the proliferation of WMD, their delivery systems, and related materials, through enhanced interdiction efforts,”⁷³ and is built upon the current multilateral non-proliferation endeavours. The PSI clearly stipulates that any act taken under the auspices of this mandate will be within existing national authorities and international law. To date, over eighty countries, including Canada, contribute to this important initiative to prevent the illicit trafficking of CBRN technologies, delivery systems and related materials.⁷⁴ The PSI is not a formal organization or a treaty body. Its main objective is to bring together like-minded states that have the capability and the will to take the necessary steps to eliminate or reduce the flow of these dangerous materials across borders locally and globally. In December 2003, Canada was requested to take part in the Operational Expert Working Group (OEWG), a sub-group of the PSI, and to monitor or play a part in future PSI interdiction exercises. Canadian participation highlights the government’s resolve to protect its people against this menacing threat. It also provided an opportunity to advance our prospects of non-proliferation, arms control and disarmament objectives and multilateral cooperation.⁷⁵

⁷²*Ibid.*, 9.

⁷³ Department of Foreign Affairs and International Trade, “Proliferation Security Initiative,” <http://www.proliferationsecurity.info/introduction.html>; Internet; accessed 23 February.

⁷⁴*Ibid.*

⁷⁵ Department of Foreign Affairs and International Trade, “The Proliferation Security Initiative,” <http://www.international.gc.ca/arms/psioverview-en.asp>; Internet; accessed 23 February.

The PSI was critical to the execution of the United Nations Security Council Resolution (UNSCR) 1540 under Chapter VII of the United Nations Charter, espoused on 28 April 2004.⁷⁶ Per the committee, the Resolution 1540:

imposes binding obligations on all States to establish domestic controls to prevent the proliferation of nuclear, chemical and biological weapons, and their means of delivery, including by establishing appropriate controls over related materials. It also encourages enhanced international cooperation on such efforts, in accord with and promoting universal adherence to existing international non proliferation treaties.⁷⁷

This resolution will assist in stifling the efforts of proliferators to circumvent existing non-proliferation norms, and to profit from such trade to the detriment of international security.

Canada is one of 123 countries which actively participate in the Hague Code of Conduct (HCOC) against Ballistic Missile Proliferation, “a politically binding agreement to prevent and curb the proliferation of ballistic missiles.”⁷⁸ Subscribers to the Code vow to restrict the development, testing, and employment of ballistic missiles and to minimize the holding of these devices. Canada regards the propagation of ballistic missiles as a serious threat to international peace and security. It sees a link between ballistic missiles and weapons of mass destruction. As a result, Canada strongly advocates the HCOC. As with the NPT, it realizes it can make a significant contribution to dealing with missile-related issues and play an even greater role in the future. At the fourth HCOC meeting in

⁷⁶United Nations, “The United Nations Security Council Resolution 1540 (2004),” <http://www.un.org/sc/1540/>; Internet; accessed 23 February.

⁷⁷*Ibid.*

⁷⁸Department of Foreign Affairs and International Trade, “Hague Code of Conduct against Ballistic Missile Proliferation,” <http://www.international.gc.ca/arms/missile-hcoc-en.asp>; Internet; accessed 24 February.

June 2005, Canada introduced a revised “proposal on a cascade of criteria for pre-launch notifications with the aim of ensuring maximum reporting of launches.”⁷⁹

The Emergency Preparedness Act was created in 1988 to establish the Government of Canada’s roles and tasks in case of an emergency. This Act stipulated that federal departments and agencies were responsible for developing plans for unforeseen and potentially devastating incidents. The Emergency Preparedness Act has recently been updated to address the severity of emergencies that have recently occurred in Canada and abroad, such as the events of 11 September 2001 and the electrical blackout in the north-eastern U.S. and Ontario that occurred in August 2003. The key elements of the Act are as follows: determine tasks and functions of the Minister of Public Safety and Emergency Preparedness; establish the emergency functions of all federal ministers within their areas of responsibility; recognize the level of federal assistance required for provincial and territorial emergencies; and lastly, supply the legal conditions for the Governor in Council to announce a provincial emergency to initiate federal support.⁸⁰ The *Emergency Preparedness Act* was further complemented by the introduction of the *Emergency Management Act* in November 2005. This Act provides the rigid governmental framework for emergency management in today’s evolving world.⁸¹ The Government Operations Centre (GOC) is a network of operation centers operated by several federal departments to include RCMP, CSIS, Health Canada, Foreign

⁷⁹Department of Foreign Affairs and International Trade, “Canadian Annual Declaration to the Hague: 31 March 2006,” <http://www.international.gc.ca/arms/Canadian-Declaration-en.asp>; Internet; accessed 24 February.

⁸⁰Public Safety Canada, “Emergency Preparedness Act,” <http://www.publicsafety.gc.ca/pol/em/epa-eng.aspx>; Internet; accessed 26 February 2008.

⁸¹Public Safety Canada, “New Emergency Management Act Introduced,” <http://www.publicsafety.gc.ca/media/nr/2005/nr20051117-eng.aspx>; Internet; accessed 26 February 2008.

Affairs and Department of National Defence. It establishes and maintains communications across the country and with international partners. The GOC deals “with anything – real or perceived, imminent or actual, natural disaster or terrorist activity – that threatens the safety and security of Canadians or the integrity of Canada's critical infrastructure.”⁸² Both Acts establish the roles, tasks and management framework for the Government of Canada to remain abreast of all incidents affecting the safety and security of Canadians internal to the country and abroad.

Preparedness. The goal of this objective is to ensure Canada and Canadians are ready to deal with the effects of a CBRN event. This remains a priority for the Government of Canada. To obtain this goal the government is undertaking the following actions. The Canadian government and DND continue to work with provinces, territories, academic community and the private sector to create and implement the necessary protective measures against CBRN incidents. They are advocating research and development in partnership with agencies across the country and allies to build capacity in areas that are lacking. They are very much focused on providing and sustaining a coordinated CBRN training plan across the country to maintain the readiness of the first responders and other organization involved in the response to a CBRN event and ensure standards and procedures are set and monitored for adherence. Lastly, the government is acting as the catalyst to exercise the CBRN plan and capture the lessons learned to ensure policies, training standards, inter-agency communications and other issues are upgraded to improve the response to a CBRN threat or incident.⁸³ The

⁸²Public Safety Canada, “Government Operations Centre,” <http://www.publicsafety.gc.ca/prg/em/goc/index-eng.aspx>; Internet; accessed 26 February 2008.

⁸³Public Safety and Emergency Preparedness Canada, *The Chemical, Biological ...*, 6.

following paragraphs will illustrate how the Government of Canada and DND are ensuring that Canada is prepared to respond efficiently and quickly to a CBRN threat.

The Canadian Emergency Management College (CEMC) was established in the 1954. The college is “the Government of Canada's focal point for cross-disciplinary emergency management training and learning.”⁸⁴ The CEMC is the leading institution in providing CBRN training to first responders in cooperation with several federal departments. The mandate for the college is to prepare first responders through education and training to minimize the impacts of disasters to include the CBRN threat on the Canadian public. The College provides for standardization in training which is crucial for cross-agency coordination; it increases knowledge of those outside the purview of the first responder population which provides the much needed foundation to recognize and respond to a CBRN incident or threat; and it instills confidence and competence within first responders as they have been trained to face this kind of disaster. The CEMC priorities are:

- to advance the state of [Emergency Management (EM)] knowledge in Canada by gathering, developing, integrating and sharing core information and resources;
- to in close collaboration with provincial and territorial EM training programs, work to support and augment those programs with complementary courses and services;
- to provide to federal employees a training and learning program focused on cross-disciplinary EM; and
- to promote the development of the Canadian EM educational community, including its academic, government, not-for-profit and private sector elements, through proactive community building and outreach both nationally and internationally.⁸⁵

⁸⁴Public Safety Canada, “Mandate of the Canadian Emergency Management College,” http://www.publicsafety.gc.ca/prg/em/cemc/03abt_01-eng.aspx; Internet; accessed 01 March, 2008.

⁸⁵*Ibid.*

The National Exercise Program (NEP) is composed of training courses and operational exercises that contribute to the sharpening of the National Emergency Response System.⁸⁶ The simulated exercises are conducted at a regional, national and international level and involve scenarios ranging from natural disaster, to health threats and to terrorist attacks. Participants from governmental departments and agencies, first responders from all levels and military forces partake in these exercises to improve upon the basic knowledge, experience, policies and standards, and collaboration between departments to ensure efficient and effective responses. In 2005, Canada participated in an international exercise with the U.S. and U.K. called TRIPLEPLAY, a simulated terrorist attack against Canada. This multinational and multi-agency exercise allowed current operating procedures and standards to be observed within operation centres, and revealed how senior officials made their decisions, the flow internal and external communication, and enabled the exchange of classified intelligence and operational information to identify any gaps, deficiencies and problem areas to improve the responsiveness of the entire system.⁸⁷

The Centre for Security Science, created in 2006, is a joint endeavour between the Department of Research and Development Canada (DRDC) and Public Safety Canada. The main goal of the Centre is to strengthen Canada's "ability to prepare for, prevent, respond to, and recover from high-consequence public safety and security events,"⁸⁸ through the use of science and technology. The CBRN Research Technology Initiative

⁸⁶Public Safety Canada, "National Exercise Program," <http://www.publicsafety.gc.ca/prg/em/nep/index-eng.aspx#in>; Internet; accessed 02 March 2008.

⁸⁷*Ibid.*

⁸⁸Defence Research and Development Canada, "Centre for Security Science," <http://www.css.drdc-rddc.gc.ca/index-eng.asp>; Internet; accessed 01 March, 2008.

(CRTI) and the Public Security Technical Program (PSTP) are managed by the newly created centre. The CRTI was launched in 2002 and represents a new best practice model for expertise and leadership in the federal science and technology community. It is also a move towards interdepartmental and external collaboration. This new department harnesses current capabilities to better mitigate, protect from and respond to CBRN threats. The agency supports the Government of Canada's role in threat assessment, surveillance, alert warning, consequence management, criminal investigation, crisis management, immediate reaction, operational preparedness and sustainment.⁸⁹ The CRTI resulted in significant gains in the following areas:

- Canada's CBRNE [Explosive] response capabilities;
- the expertise, knowledge, and capabilities of Canadian CBRNE S&T performers; and
- links between diverse science and security communities, both domestic and international.⁹⁰

The Public Security Technical Program (PSTP) goes beyond the CRTI's focus and expands its scope to encompass the following three missions: Critical Infrastructure Protection (CIP), Surveillance, Intelligence and Interdiction (SI2) and Emergency Management and Systems Integration (EMSI).⁹¹ Prior to explaining the functions of each mission within PSTP, I will first address a portfolio within PSTP that deals with risk and gap analysis. The operations research team conducts scientific and analytical processes to societal security challenges, particularly as they apply to "risk assessment,

⁸⁹Science and Technology for Canadians, "CRTI: Science for a Secure Canada," <http://science.gc.ca/default.asp?lang=En&xml=E743069B-3FF5-4AC7-A079-9591764C8910>; Internet; accessed 01 March, 2008.

⁹⁰Defence Research and Development Canada, "CRTI," <http://www.css.drdc-rddc.gc.ca/crti/index-eng.asp>; Internet; accessed 01 March, 2008.

⁹¹DRDC, "Public Security Technical Program," <http://www.css.drdc-rddc.gc.ca/pstp/index-eng.asp>; Internet; accessed 02 March 2008.

capability planning, critical infrastructure protection, collaboration and psychosocial issues.”⁹² These research findings are then used to assist decision makers in dealing with the operational problems that arise across the span of missions that fall under the responsibility of the Centre of Security Science. The PSTP risk portfolio is involved in the following activities which supports the CSS initiatives:

- to provide a measure of risks and corresponding gaps;
- technology foresight and security visioning;
- vulnerability assessment;
- risk assessment within a risk management framework;
- capability gap analysis;
- capability-based planning; and
- other disciplines that can inform investment prioritization.⁹³

The focus of the Critical Infrastructure Protection establishment is to boost capacity to “strengthen and support the robustness, reliability, resilience, and protection of physical and information technology facilities, networks, services, and assets.”⁹⁴

Because, if the information technology structure is damaged or destroyed, it could place significant stresses upon the health care system, safety and security infrastructure, economic well-being of the community and may even affect the functionality of the country. The CIP is divided into two areas of priority: physical and cyber CIP.⁹⁵

Physical CIP addresses those issues related to the protection of critical infrastructure to include power generation, transmission and distribution systems; water-supply and transportation systems. It identifies each system; it identifies associated vulnerabilities as they relate to attack, natural disasters and accidents; it determines each system’s level of

⁹²*Ibid.*

⁹³DRDC, “Priorities,” <http://www.css.drdc-rddc.gc.ca/pstp/priorities-priorites/index-eng.asp>; Internet; accessed 02 March 2008.

⁹⁴DRDC, “Critical Infrastructure Protection,” <http://www.css.drdc-rddc.gc.ca/pstp/priorities-priorites/cip-pie-eng.asp>; Internet; accessed 02 March 2008.

⁹⁵*Ibid.*

resiliency to all identifiable hazards; and lastly, it brings to light the interdependencies between the infrastructures to comprehend how the breakdown of one system could affect the others.⁹⁶ Cyber CIP gives attention to protecting Canada's networked information infrastructures that direct communication and IT across the nation. Currently, Cyber CIP is concentrating on "build[ing] the capabilities required to understand and combat the growing problem of cyber crime."⁹⁷

The task at hand for the Surveillance, Intelligence and Interdiction unit is to build science-and technology-based capabilities to uncover and apprehend terrorist and criminal activity through surveillance, observation, disrupting their activities and interdiction. SI2 has identified four priorities to further increase its capabilities:

- surveillance and intelligence;
- policing and officer safety;
- border and transportation surveillance, intelligence, and interdiction; and
- maritime surveillance, intelligence, and interdiction.⁹⁸

The purpose of the Emergency Management and System Integration (EMSI) is to develop the capacity to guarantee the performance, adaptation and interoperability of nationwide and worldwide public security, emergency management capabilities, and the sustaining infrastructure, as well as to impart vulnerability and systems analyses.⁹⁹ The EMSI program has identified four priorities to build upon its current capacity "emergency

⁹⁶*Ibid.*

⁹⁷*Ibid.*

⁹⁸DRDC, "Surveillance, Intelligence and Interdiction," <http://www.css.drdc-rddc.gc.ca/pstp/priorities-priorites/surveillance-eng.asp>; Internet; accessed 02 March 2008.

⁹⁹DRDC, "Emergency Management and System Integration," <http://www.css.drdc-rddc.gc.ca/pstp/priorities-priorites/emsi-guis-eng.asp>; Internet; accessed 02 March 08.

response and recovery; interoperability, standards, modeling and decision support; psychological factors; and Search and Rescue.”¹⁰⁰

The Canadian Security Intelligence Service (CSIS) plays a vital role in maintaining security for Canadian citizens. The role of the service is to investigate threats to consolidate and analyze information, and to generate intelligence reports to brief the Government of Canada on possible and current threats that may affect the security of Canada and its citizens. The following are the key threats the agency focuses on: “terrorism, proliferation of WMD, espionage, foreign interference and cyber-tampering affecting critical infrastructure.”¹⁰¹ CSIS tasks are divided into the following categories: intelligence collection and analysis; sharing intelligence; security screening and sharing information with the public. Individuals working for CSIS gather information from numerous sources to include: the public; foreign governments; human sources; through technical devices able to intercept communications; and through open sources. CSIS analysts assess the quality of information gathered and convert the information into useful strategic and tactical level security intelligence that is shared within the Canadian government and internationally with its partners. At the strategic level, CSIS produces briefs on possible emerging trends and issues that may affect Canadian security. At the tactical level, it analyzes and distributes current threats to national security.¹⁰² A critical component of CSIS’ duties is the sharing of intelligence with other organizations and international partners as this allows Western law enforcement agencies to keep abreast of terrorists’ activities in the aim of disrupting and

¹⁰⁰*Ibid.*

¹⁰¹Canadian Security Intelligence Service, “Role of CSIS,” http://www.csis-scrs.gc.ca/en/about_us/role_of_csis.asp; Internet; accessed; 21 March 2008.

¹⁰²*Ibid.*

dislocating their activities and capture if the moment presents itself. Security screening is one of the main operational activities of CSIS. The Security Screening program acts as a first line of defence against terrorism. Its primary goal is to prevent “non-Canadians who pose security concerns or risks from entering or receiving permanent residence in Canada” and to foil any attempt of individuals trying to gain access to sensitive government assets, locations or information.¹⁰³ Last of all, CSIS feels it is important to advise and reach out to the Canadian public so that Canadian citizens clearly understand its role and tasks involved in supporting national security.

Response. The third objective of the CBRN Strategy is to reinforce Canada’s capabilities to react to CBRN events. The Government of Canada will:

- integrate crisis and consequence management of a CBRN incident and support provinces and territories in their management efforts;
- enhance national operational response capabilities for CBRN incidents within the National Emergency Response System;
- share intelligence and provide first responders with the equipment, technology and training to respond to a CBRN incident; and
- ensure that the Government Operations Centre is connected with regional centres to coordinate the management of CBRN incidents or other critical events.¹⁰⁴

PSEPC has the lead responsibility of ensuring the CBRN Strategy meets the mandate of the Government of Canada’s National Security Policy within our nation’s borders and abroad. In all PSEPC includes fourteen federal departments, along with all provinces, territories, municipalities, first responders, private industry, academia and non-governmental organizations which all contribute to the CBRN Strategy of Canada in the area of response.¹⁰⁵ The Canada Border Services Agency (CBSA) manages our borders

¹⁰³*Ibid.*

¹⁰⁴Public Safety and Emergency Preparedness Canada, *The Chemical, Biological ...*, 6.

¹⁰⁵*Ibid.*, 10.

in relation to travel and international trade. The agency acts as a filter and gateway to ensure the safety, health and security for Canadians. CSIS provides the vital intelligence on possible terrorist activities and threats to Canada; while the RCMP averts, responds to and prosecutes these incidents. Upon request, DND can provide forces and assets to assist in the aftermath of a terrorist attack. Health Canada, Environmental Canada, Transport Canada, Fisheries and Oceans Canada / Canadian Coast Guard and the Canadian Nuclear Safety Commission all have important roles to play under their areas capability. Agriculture and Agri-Food Canada share their expertise and provide advice on CBRN-related substance that concerns crops, soils and livestock. Under the Emergency Preparedness Act, the Canadian Food Inspection Agency is mandated to react to incidents that entail food safety, animal and plant wellbeing or any event relating to its programs. Natural Resources Canada provides real-time aerial mapping of radioactive material inadvertently or deliberately scattered which is critical to users in determining evacuation routes, sheltering areas, quarantine and decontamination zones. Lastly, the Privy Council Office addresses the coordination of emergency public communications in the aim of reducing panic and hysteria during a CBRN disaster.¹⁰⁶

PSEPC is the federal lead in developing Canada's ability to recover victims from major structural collapse or trapped within other enclosures. A group of specialized rescuers called Urban Search and Rescue (USAR) are integrated into a team that are supplemented by search, medical and structural assessment resources. The USAR program is one initiative that is striving to enhance Canada's national emergency response capability. The USAR is further divided into three operational levels: light,

¹⁰⁶*Ibid.*, 7-9.

medium and heavy capacity. PSEPC has identified five priorities in the development of the USAR program:

- plans, policies and protocols to outline responsibilities of the federal government, and of USAR teams deployed in afflicted areas outside home jurisdictions;
- standard equipment designed for Light, Medium and Heavy USAR operations;
- training in technical skills and joint operations with other teams;
- national guidelines or standards, where required; and,
- exercises to improve capability and develop interoperability.¹⁰⁷

Four Canadian cities, Vancouver, Calgary, Toronto, and Halifax and the province of Manitoba, at present have, or are developing the heavy USAR program. In addition to the heavy USAR, forty-one smaller jurisdictions across Canada are in midst of acquiring a light or medium USAR capability. The sustainability to respond to an emergency for light, medium and heavy are as follows: 12 hours within jurisdiction; 24 hours within mutual aid boundaries and up to 10 days across Canada (re-supply required within 3 days).¹⁰⁸ Of note, within the medium USAR, a HazMat operations technician (optional) which can provide expertise in the following area: atmospheric monitoring; HazMat/CBRN detection and monitoring; hazardous materials containment; and bio-hazard waste management. As for heavy USAR, a HazMat/CBRN specialist is a member of the team who is able to mitigate HazMat/CBRN incidents effect to include radiological monitoring, personal protective equipment and decontamination (for team requirements).¹⁰⁹

¹⁰⁷Public Safety Canada, “Heavy Urban Search and Rescue,” <http://www.publicsafety.gc.ca/prg/em/usar/index-eng.aspx>; Internet; accessed; 25 March 2008.

¹⁰⁸*Ibid.*

¹⁰⁹Public Safety Canada, “Canadian Urban Search and Rescue (USAR) classification guide,” <http://www.publicsafety.gc.ca/prg/em/usar/usar-guide-eng.aspx>; Internet; accessed; 25 March 08.

Under the framework of the DND there are several sections that are prepared to assist the Government of Canada when called upon to provide direct support to initial responders and municipalities which can be easily overwhelmed by a CBRN incident. For example, the Canadian Joint Incident Response Unit (CJIRU) based in Trenton is the Canadian Forces' chief operational obligation in consequence management of a terrorist incident. This company is a sub-unit of the National CBRNE Response Team which is comprised of players from the CF, RCMP and Health Canada. The CJIRU is composed of immediate, reinforcement and sustainment response components that will be discussed in more detail in the next chapter.¹¹⁰ Another Canadian Forces unit which can provide further assistance to civilian response organizations is the Disaster Assistance Response Team (DART), also located in Trenton. This team focuses its responsibilities in the following four areas: primary medical care; purifying water for consumption; command and control structure; and restricted special engineer capabilities.¹¹¹

Recovery. The last objective of the CBRN Strategy is recovering from the disastrous effects of a CBRN episode. To this day, recovery from this type of event poses the greatest challenge for the Government of Canada. As already mentioned, first responders are the initial force to confront and react to a CBRN incident. It is crucial that these individuals have the training to respond quickly, effectively and are able to recognize this type of incident swiftly to ensure all the tools, experts and support required are at their disposal. This is vital to minimizing casualties, contamination, economical distress, public panic and psychological effects associated with this type of disaster. If the Government of Canada does not react or deal with this type of situation with great

¹¹⁰Department of National Defence, *Canada Command Direction for Domestic Operations – Interim Version VI* (Ottawa: Canada Command, 2006), 7-2/5.

¹¹¹*Ibid.*, 10-9/12.

care and leadership it will not only lose the confidence of its citizens but also of its partners and allies. The Government of Canada continues to develop the CBRN strategy to respond to terrorist events; however, the key to recovery is the execution of this plan.

The Government of Canada has two programs to assist provinces and territories recover costs from large scale disasters that have surpassed local and regional resources. The financial assistance provided by the government is distributed by way of provincial and territorial governments designed and developed initiatives that determine the amount and type of aid to be provided to those who have suffered the losses. PSEPC is charged with delivering these programs which are Disaster Financial Assistance Arrangements (DFAA) and Federal Disaster Assistance Initiatives (FDAI). The DFAA provides response and recovery costs that exceed what provincial and territorial are expected to bear on their own, while FDAI has developed a wide-ranging set of disaster recovery programs designed to respond to Canadian needs.¹¹²

Since DFAA's creation in the 1970, the Government of Canada has provided more than \$1.8 billion in post-disaster assistance to provinces and territories to return infrastructure and personal property to pre-disaster conditions. Examples of "eligible expenses include, but are not limited to, evacuation operations, restoring public works and infrastructure to their pre-disaster condition, as well as replacing or repairing basic, essential personal property of individuals, small businesses and farmsteads."¹¹³ Disasters that have benefited from this program are the British Columbia forest fires in 2003 and the Alberta floods in 2005.

¹¹²Public Safety of Canada, "Recovery," <http://www.publicsafety.gc.ca/prg/em/rec-eng.aspx>; Internet; accessed; 22 March 08.

¹¹³*Ibid.*

PSEPC is the lead in creating the programs under FDAI. It is accomplishing its mandate in three ways:

revis[ing] the existing DFAA; develop[ing] new or improved disaster assistance instruments to complement the DFAA; and creat[ing] an inventory of existing federal and provincial programs, policies and legal tools for disaster assistance and recovery.¹¹⁴

The DFAI works towards identifying areas that are not covered under the DFAA and in coordination with other federal officials, develops assistance programs for them (like in the cases of the human and animal health scares brought on by SARS and mad cow disease). Several federal programs exist under the following categories: agriculture, health, physical damage and taxes.¹¹⁵

Conclusion

Especially after the events of the 9/11, the Government of Canada has been more focused and determined to develop a new strategy to deal with terrorist attacks. As introduced in the chapter, the CBRN Strategy of the Government of Canada was implemented to address the very real threat of terrorism to Canadian soil. The Government of Canada has initiated or been party to several programs, treaties and conventions to address the threat of terrorism at the international level. Approaching the issue abroad not only increases security at the international level, but also domestically. The new strategy led to the creation of a lead agency, PSEPC, responsible for coordinating Canada's overall response to CBRN incidents. This focal point provides the leadership and establishes priorities to ensure the all departments understand their mandate and streamlines the coordination process required for information transfer across

¹¹⁴*Ibid.*

¹¹⁵*Ibid.*

Canada. The CBRN Strategy not only stresses cooperation, sharing of information, lessons learned, research, training and coordination within Canadian agencies, it also considers Canadian allies. This alliance contributes to knowledge, activities and whereabouts of terrorists groups with the aim of disrupting, dislocating, capturing and destroying their operations.

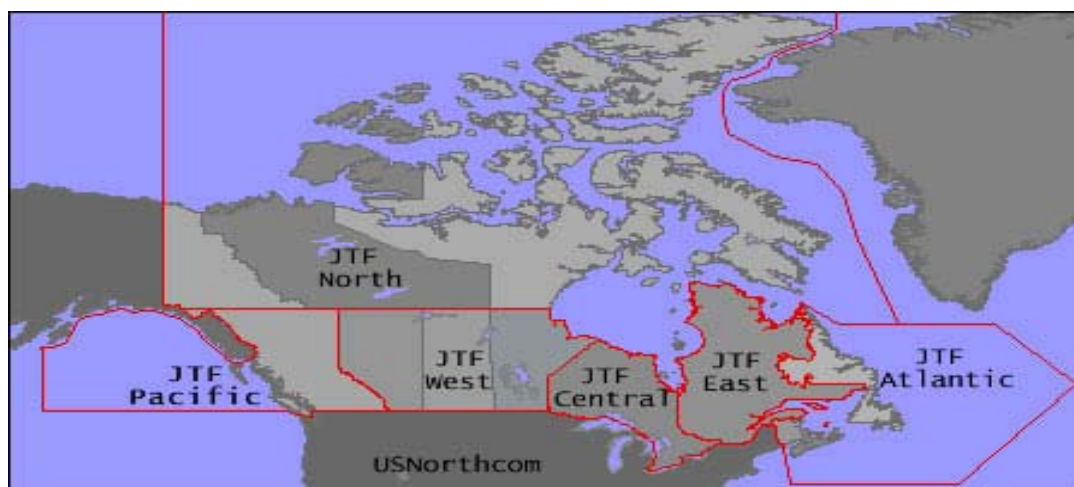
Has the Government of Canada focused its efforts in the right areas? A lot of energy has been placed in the following two CBRN Strategy objectives: prevention and mitigation and preparedness. I do not question the importance of these two objectives; however, at the present time, these areas seem to have been the primary focus of the Government. To most, Canada is considered a peaceful nation and no harm should be directed at it. However, over the last several years Canada has demonstrated its resolve to battle terrorism and it is no longer simply a peacekeeping nation. As a result, this has increased the possibility of a terrorist attack on our homeland. As the threat of a terrorist attack increases, the issue of consequence management moves more prominently to the fore front. The next chapter will address the Canadian Forces' current CBRN capabilities in its supporting role to the first responders.

Part 4- Current DND / CF CBRN Capabilities

To this day, Canada and its allies remain possible targets of CBRN terrorism. The Government of Canada and DND must be prepared to react swiftly and decisively if such a disastrous CBRN incident ever occurred on Canadian soil. The following pages will describe the current DND CBRN capabilities, in its supporting role to the government, to be prepared for, to respond to and to recovery from a terrorist attack.

Canadian Forces. Under the authority of the Chief of Defence Staff, the Commander of Canada Command (Canada Com) has been delegated the responsibility to work and coordinate with all municipal, provincial and federal powers for the planning, training exercises, use and conduct of military operations in any federal response to a CBRN event. Canada Com is also actively involved by providing military expertise in several working groups ranging from the municipal up to the federal level.¹¹⁶ The links that are established at the provincial and municipal levels are through the Regional Joint Task Forces (RJTF) liaison officers. A link with the United States through NORTHCOM has been launched that has developed points of contacts with State agencies responsible to responding to CBRN incidents. This increases the availability of possible resources to react and deal with terrorist attacks.¹¹⁷ Under the auspices of Canada Com there are six RJTFs which distributed across the country: Pacific, North, West, Central, East and Atlantic. (See figure 4.1)

Figure 4.1: Depicts each RJTF area of responsibility.¹¹⁸



¹¹⁶Department of National Defence, *Canada Command – CBRN Concept of Operations* (Ottawa: Canada Com, Draft 2007), 1-1/2.

¹¹⁷*Ibid.*, 2-2/2.

¹¹⁸*Ibid.*, 3-2/3.

The CF's role in a federal CBRN response includes, but not limited to:

- a. Command and control of the military assets;
- b. CBRNE specialists who can provide:
 - CBRNE defensive advice;
 - Hazard prediction, warning and reporting;
 - Detection and identification of chemical, biological and radiological contamination;
 - Sample taking for laboratory analysis and for use as forensic evidence;
 - Extraction of casualties from the contaminated area;
 - Decontamination of personnel and equipment; and
 - CBRNE Medical countermeasures and treatment of casualties;
- c. Medical support to assist in the treatment of civilian casualties who have been injured through exposure to the CBRNE agents or sources and/or the damaged infrastructure and Medical casualty evacuation by land or air;
- d. Decontamination support for mass casualties, equipment and infrastructure;
- e. Search and extraction to assist in the extraction of casualties from damaged infrastructure; and
- f. Assistance to law enforcement agencies to assist in the evacuation and augment of the security in the affected area.¹¹⁹

The tasks mentioned above are provided by two units within the CF. The CBRNE Response Team (CBRNERT) supplies the defence specialists who are responsible for crisis management, while consequence management is furnished by the CBRNE Response Force (CBRNE-RF) which is comprised of a medical; decontamination, SAR and security elements; as well as the C2 team that directs the CBRNE-RF.^{120 121}

The CBRNERT is a force generated by Canada Special Operations Force Command (CANSOFCOM) from the Canadian Joint Incident Response Unit (CJIRU), stationed at Canadian Forces Base Trenton. This unit supplies the CF element of the National CBRNE RT together with the RCMP and the Public Health Agency of Canada which shapes the federal government's counter-terrorism response capacity.¹²² The

¹¹⁹*Ibid.*, 3-1/3-2/3.

¹²⁰*Ibid.*, 3-2/3.

¹²¹*Ibid.*, 5-1/7.

¹²²*Ibid.*, 6-1/3.

manning establishment of the CJIRU is approximately 100 personnel.¹²³ The Army Reserve's Coys situated in Vancouver, Calgary, Toronto, Montreal and Halifax further supplement the CJIRU by minimizing the initial response time to a CBRN incident, especially on the east and west coasts. These Coys are outfitted as the CJIRU; therefore, they provide additional resources that allow the CJIRU to stay on station for a longer period of time before re-supply is required.¹²⁴ Upon notification of a CBRN incident the CJIRU reconnaissance group deploys within four hours and the remainder of the element which is composed of the Advance Group and Main Body launches within six to eight hours. Once on site, the CJIRU assesses the situation and reports back to the Incident Commander on CBRN defensive measures required and other resources needed to react and recover from the episode.¹²⁵

The CBRNE-RF follow on response force is intended to enhance the initial response of the CJIRU and supply specialized capabilities.¹²⁶ The CBRNE-RF is composed of Regular and Reserve Force personnel who are tasked from within CF units. Per Canada Com Contingency Operation Plan 10150/06 – Lizard, the maximum follow on response force of 1100 personnel may be generated depending on other operational commitments.¹²⁷ This response force is trained, exercised and equipped to perform when called upon the following roles: “CBRN detection, identification and sample taking; casualty extraction; casualty decontamination; and emergency medical triage,

¹²³ Department of National Defence, “CANSOFCOM – CJIRU – Background Information,” http://www.cansofcom.forces.gc.ca/en/cjiruinfo_e.asp; Internet; accessed 20 March 2008.

¹²⁴ Department of National Defence, *Canada Command – CBRN Concept ...*, 6-1/3.

¹²⁵ *Ibid.*, 5-1/7.

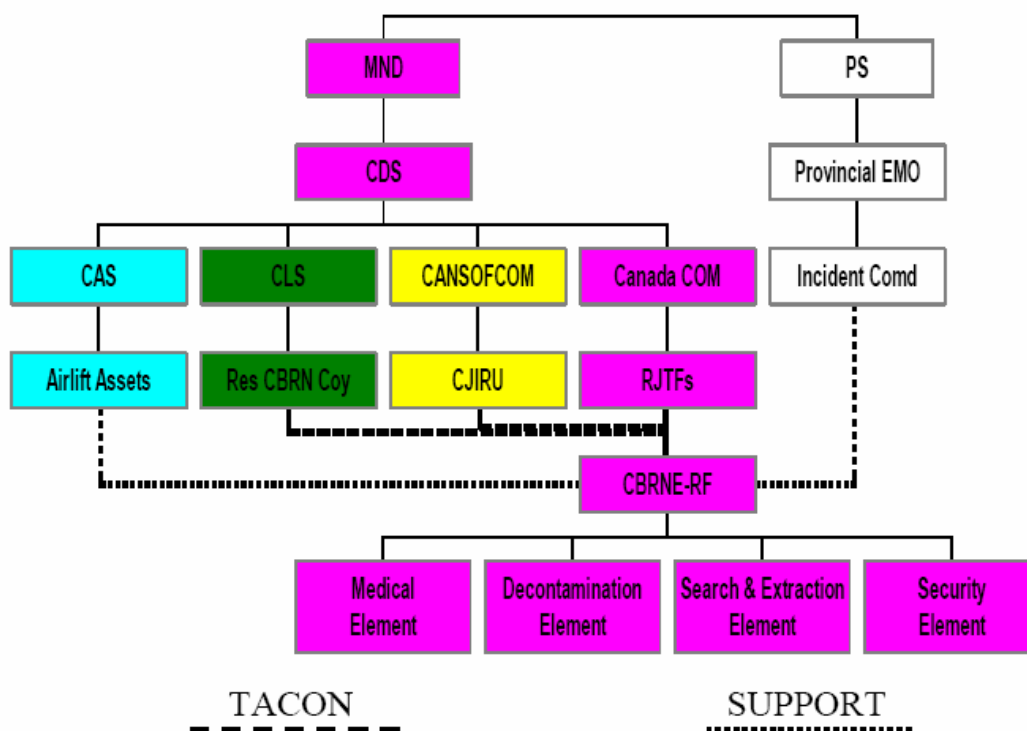
¹²⁶ *Ibid.*, 4-1/4.

¹²⁷ Department of National Defence, *Canada Command Contingency Operation Plan 10150/026 – LIZARD*, (Ottawa: Canada Command, 2006), 19/25 .

treatment and stabilization.”¹²⁸ Additionally a security component is incorporated into the unit which includes tasks such as to cordon off the affected area; provide entry control points and litter bearing as required. Each RJTF is responsible for sustaining the capacity to gather and deploy a CBRNE-RF within their area of responsibility on short notice.

The national response CBRN operation is based on a tiered response of local, provincial and federal responders. The CBRNE-RF is considered as an element of the federal response under the command and control of Canada Com. The military command and control structure of the CF’s CBRN response is depicted in the following diagram.

Figure 4.2: CBRN Military C2 Structure.¹²⁹



¹²⁸Department of National Defence, *Canada Command – CBRN Concept ...*, 4-1/4.

¹²⁹*Ibid.*, 4-2/4.

The medical element of the CBRNE-RF is “designed to provide sophisticated and short duration, pre-hospital emergency medical treatment during a CBRN response mission and at rescue sites.”¹³⁰ The medical unit can work hand in hand with the Public Health Agency of Canada (PHAC) disaster medical assistance team under the support of the National Disaster Medical System. The treatment priorities for this element are as follows: first, treatment of casualties directly exposed to the CBRN incident which have been encountered by the CBRNE-RF; secondly, treat CBRNE-RF personnel; third, take care of other CF personnel involved; and fourth, other as practical.¹³¹ If needed, other DND assets can be made available to support the incident commander. For example, the CF Field Hospital is able to supply bed space for decontamination of victims, while the Chief of Air Staff units with helicopters or fixed wing can execute medical evacuations to medical facilities away from the incident that are less crowded.

The decontamination element of the CBRNE-RF is one of the most crucial facets of the unit. It performs mobile and non-mobile patient decontamination under the watchful eye of medical personnel. Other tasks that the team may perform are to assist the security element with local zone supervising for force protection and to prevent disruptive individuals from interrupting the decontamination processes.¹³² The following units within the CF have decontamination resources entrenched:

- Regular Force:
 - CJIRU;
 - 1 Service Battalion (Edmonton);
 - 2 Service Battalion (Petawawa); and
 - 5 Battalion Service (Courcelette, QC)..

¹³⁰*Ibid.*, 7-1/3.

¹³¹*Ibid.*, 7-1/3.

¹³²*Ibid.*, 8-1/3.

- Army Reserve: (currently being developed)
 CBRN Coy (Vancouver);
 CBRN Coy (Calgary);
 CBRN Coy (Toronto);
 CBRN Coy (Montreal); and
 CBRN Coy (Halifax).

- Regular Air Force:
 Airfield Engineers (3 Wing – Bagotville)
 Airfield Engineers (4 Wing – Cold Lake)
 Airfield Engineers (8 Wing - Trenton)
 Airfield Engineers (14 Wing - Greenwood);
 Airfield Engineers (17 Wing - Winnipeg); and
 Airfield Engineers (19 Wing – Comox)¹³³

The third component of the CBRNE-RF is the search and extraction element. It is “capable of conducting limited search and extraction operations in a contaminated environment subject to the type and concentration of contamination.”¹³⁴ The search and extraction element is a light, movable, extremely skilled search and extraction rescue unit, capable of rapidly deploying to a CBRN incident and capable of operating in a severely damaged building or structure to search for, find, and remove victims. Along with supporting the Incident Commander, this component, when called upon, can assist the Heavy Urban Search and Rescue that functions under the direction of Public Safety Canada.¹³⁵

The last component of the CBRNE-RF is the security element. Of particular note, the CBRNE-RF will never deploy to an emergency site without the security element unless specifically instructed to do so. The element is composed of members from special operations forces, military police, Army Immediate Reaction Units or other forces. The main tasks for this component involve establishing physical security for the

¹³³*Ibid.*, 8-1/3.

¹³⁴*Ibid.*, 9-1/7.

¹³⁵*Ibid.*, 9-1/7.

CBRNE-RF, cordon and entry control point security, debris clearing under the control of medical or extraction personnel, and supplementary boots on the ground to assist the CBRNE-RF any other activities as necessitated.¹³⁶

The Canadian Forces Nuclear, Biological and Chemical School (CFNBCS) located in Borden provides advanced individual training in the areas of NBC Defence, Nuclear Emergency Response, Radiation Safety and CBRN Counter Terrorism response. The school in all offers nine different types of courses and can train up to six hundred personnel per year.¹³⁷ This allows the CF to maintain the expertise within the Forces to sustain the knowledge base required to continue to develop strategies to counter and defeat terrorist activities abroad and within the country.

Under the auspices of CANSOFCOM, the Joint Task Force 2 (JTF2) performs the WMD counter proliferation operations, which is one of the nine core tasks for which this unit is responsible. The primary tasks associated with the counter proliferation of WMD are to locate, seize, destroy, render safe, capture, or recover WMD and related materials.¹³⁸ The unit is highly trained and specialized to carry out “WMD interdiction and seizure tasks across the full spectrum of operations, including the ability to conduct opposed maritime interdiction operations.”¹³⁹ JTF2 also receives support from CJIRU through specialist advice, hazard detection, collecting samples and contamination forecasts which in turn enhance its domestic and international operational capabilities.

¹³⁶*Ibid.*, 10-1/3.

¹³⁷National Defence, “CFNBCS,” <http://www.borden.forces.gc.ca/997/5/5-63-eng.asp>; Internet; accessed; 23 March 2008.

¹³⁸Joint Chiefs of Staff, “Joint Publication 3-05 – Doctrine for Special Operations,” http://www.dtic.mil/doctrine/jel/new_pubs/jp3_05.pdf; Internet; accessed 20 March 2008, II-10.

¹³⁹ Cdr J.J.B. Zwick, “Canadian Forces Support to the Proliferation Security Initiative: A Vital Element for Canada’s National Security and CF ‘No Fail’ Task” (Toronto: Canadian Staff College Paper), 10.

This unit is small in stature; however, it is well positioned to support the fight against terrorists or other organizations who wish to use WMD as a terror weapon.

The Canadian Navy is also well equipped and trained to conduct maritime interdiction operations which include: to intercept, board and search vessels of interest; to locate and identify any illegal cargo (WMD or related materials); and to seize and contain this hazardous freight safely. CF destroyers and frigates have designated boarding teams capable of accomplishing boardings up to but not including opposed ones.¹⁴⁰ They also deploy with portable detection and monitoring equipment which allows the detection of CBRN threats and basic containment containers which permits safe storage of hazardous materials. The Navy is also mandated to uphold a high readiness Nuclear Emergency Response Team (NERT) on each coast to react to maritime nuclear emergencies. The aim of the NERT is to ensure public safety through monitoring of visiting vessels which are nuclear powered. Each team is comprised of a Radiation Monitoring Platoon which is well equipped to check the vessel and the surrounding community for the presence of radioactive material.¹⁴¹ This asset is critical in reducing the threat of terrorism as interdiction of suspected vessels carrying WMD and related materials can be accomplished away from the Canadian coastline.

The Canadian Air Force, under the auspices of NORAD, is responsible for protection and enforcement of national sovereignty of Canadian airspace. As a result, the Air Force has a significant role in interdicting suspicious aircraft carrying dangerous

¹⁴⁰Cdr J.JB. Zwick, "Canadian forces Support to the Proliferation . . .", 8.

¹⁴¹Department of National Defence, "Canadian Navy – Background: The CFB Esquimalt Nuclear Emergency Response Team," http://www.navy.forces.gc.ca/marpac/news/marpac_news_e.asp?id=246; Internet; accessed 20 March 2008.

cargo or WMD and related material under the Operation Noble Eagle mandate.¹⁴² “The Air Force has the full range of military capability required to conduct these missions, subject to the direction and authorization of the Government of Canada.”¹⁴³ With prior notification of location and destination, fighter aircraft can intercept aircraft of interest and force them to land at a diverted airfield, usually at a specified area away from highly populated areas. Once the aircraft has landed it is inspected by the appropriate governmental agencies and if hazardous material is found, it is seized and contained within the CBRN guidelines. Also, the aircraft of concern can be denied right of entry into Canadian airspace and forced to return to original departure point or find another airport within another country to land. As with the Navy, the Air Force has a vital role in protecting and safeguarding Canadian citizens from potential terrorist attacks originated from the air.

DND. Defence Research and Development Canada (DRDC) is an agency of the Department of National Defence working with the other government departments and agencies, universities, innovative companies and research organizations world wide to respond to the scientific and technological necessities of the CF. DRDC research and developmental programs span a wide range. For the purpose of this paper I will focus solely on the DRDC projects dedicated to approving equipment and strategies to prevent, be prepared for, respond to and recover from CBRN incidents. There are seven DRDC centres spread out across Canada in the following locations: DRDC Suffield, DRDC Toronto, DRDC Valcartier, DRDC Atlantic, and three in Ottawa: DRDC-Ottawa, DRDC

¹⁴²Canadian Air Force, “Post September 11, 2001,” http://www.airforce.forces.gc.ca/site/athomedocs/athome_1_5_e.asp; Internet; accessed 20 March 2008.

¹⁴³Cdr J.JB. Zwick, “Canadian forces Support to the Proliferation ... 9.

Centre for Security Science (CSS) and DRDC Centre for Operational Research and Analysis (CORA).¹⁴⁴

DRDC Suffield houses the Counter Terrorism Technology Centre (CTTC) and the CB Forensic Reference Laboratory currently being built. CTTC mandate is to

provide CBRN live agent training, advice, and technical support to the Canadian Forces, domestic first responders, and international military and first response groups; support Canadian companies in the testing and evaluation of products for use in the CBRN threat environment; support police agencies by providing a facility for the forensic identification of suspected chemical and biological agents; and support domestic demilitarization tasks by providing subject matter expert and decontamination support.¹⁴⁵

This training centre allows participants to practice and develop tactics, techniques and procedures safely in what they call a hot CBRN environment (Live Agent Training). As new equipment or products are developed CTTC provides the expertise and facilities to test and evaluate these new systems and providing recommendations for improvement and procurement advice. On the other hand, the CB forensic laboratory will soon be able to receive and screen samples at the All Hazard Triage Facility. This facility will be able to conduct the standard radiological and chemical screenings. This will permit samples from various areas of contamination to be examined in a safe manner in one space.¹⁴⁶

DRDC Ottawa assists the government and the CF in the following CBRN areas: anti-terrorism and counter smuggling technologies and radar and nuclear defence. As the threat of terrorist attacks grow, more effort is being placed on counter-terrorism efforts towards the potential risk from radiological dispersal devices (“dirty bombs”). For many years now, DRDC Ottawa has assisted the Canadian Forces in improving radiation

¹⁴⁴Defence Research and Development Canada, “Canada’s Leader in Defence and Security S&T,” http://drdc-rddc.gc.ca/about/us_e.asp; Internet; accessed 20 March 2008.

¹⁴⁵*Ibid.*

¹⁴⁶*Ibid.*

detection, calculating radiation dose and developing medical treatments to radiation exposure. Currently DRDC is creating a portable detector that can trace radioactive material left on surfaces like bricks, sand, and cement; to assist law enforcement officials prove that radioactive material were stored in a garage or trunk for example.¹⁴⁷ The Mobile Nuclear Laboratory is self-contained, self-powered laboratory can be deployed to remote locations to conduct “state-of-the-art measurements and on-site analysis of radiation.”¹⁴⁸ The laboratory provides expertise of DRDC Ottawa’s Radiological Analysis and Defence group and an all-inclusive set of technologies. This facility is the most robust within Canada for on-site measurements. Some of these mobile suite capabilities include:

the ROSPEC™ high-resolution neutron spectrometer; hyper-sensitive thermoluminescent dosimeters and neutron dosimeters; the Microspec™ suite of hand-carried equipment capable of gamma-ray, X-ray, beta or neutron spectroscopy; the Liquid Scintillation Counting System; and a Photographic Airborne Radiation Spectroscopic System that provides real-time data transfer from airborne platforms to remote ground stations.¹⁴⁹

Lastly, the facility has a sixteen acre compound licensed for the transportation of and experiments with radioactive sources. This allows for the testing, evaluation and experimentation of CF combat vehicles and other types of equipment in a CBRN environment. This is critical to ensure the CF and civilian responders have the tools, training and experience to work efficiently and effectively in this type of environment.¹⁵⁰

¹⁴⁷Defence Research and Development Canada, “Radiological and Nuclear Defence,” http://www.ottawa.drdc-rddc.gc.ca/html/cb_rad_e.html; Internet; accessed 21 March 2008.

¹⁴⁸Defence Research and Development Canada, “Radiological and Nuclear Defence,” http://131.136.253.133/html/radiation_e.html; Internet; accessed 21 March 2008.

¹⁴⁹*Ibid.*

¹⁵⁰*Ibid.*

DRDC CSS has the following four assigned missions: CBRNE, CIP, SI² and EMSI which have been described in the previous chapter; therefore will not be discussed in this chapter. DRDC CORA, Toronto, Atlantic and Valcartier accomplish valuable research and development for the CF; however, their work is not in the area focus of this paper.

The Royal Military College of Kingston has a centre that specializes in the development and evaluation of performance of chemical protective equipment, called the Chemical Protection Group. This organization works in collaboration with military, first responders and industry. The group is an element of the CBRN Research and Technology Initiative of the Government of Canada, and is leading the team, composed of several federal government departments and industrial partners, that is creating standards for and improvements in first responders protection equipment. They also have a Chemical Vapour Penetration Test Facility for the assessment. The facility “includes a process control laboratory, an environment controlled vapour test chamber, personnel and equipment preparation rooms, and an analytical laboratory.”¹⁵¹ This group is instrumental in ensuring military and first responders have the protective equipment to be able to function within a CBRN and bomb disposal environments. Currently, the Chemical Protection Group is working with the military to field a low physiological burden NBC garment (lighter in weight than the current garment and allowing more freedom of movement).¹⁵²

¹⁵¹ National Defence, “RMC – Chemical Protection Group,” http://www.rmc.ca/academic/chem/research/suit-tst/index_e.html; Internet; accessed 23 March 2008.

¹⁵² *Ibid.*

Communications Security Establishment (CSE) Canada is an agency under DND which concentrates on safeguarding Canada's security through information superiority.

CSE's mandate, supported by the Anti-Terrorism Act, is divided into three areas of focus:

- to acquire and use information from the global information infrastructure for the purpose of providing foreign intelligence, in accordance with Government of Canada intelligence priorities;
- to provide advice, guidance and services to help ensure the protection of electronic information and of information infrastructures of importance to the Government of Canada; and
- to provide technical and operational assistance to federal law enforcement and security agencies in the performance of their lawful duties.¹⁵³

In support of Canada's National Security Policy, CSE has re-orientated its focus to security concerns. As a result, CSE allocates the greater part of its foreign intelligence efforts to collecting and sharing intelligence, not only internally but abroad, on problems such as terrorism, proliferation of WMD and cyber threats. When Canadian Forces are deployed overseas on operations, CSE supports their needs fully. CSE plays an integrate role in analyzing IT vulnerabilities and providing solutions to maintain IT systems protected or safe from cyber attacks; as it is critical that all government agencies are able to safeguard sensitive information and the networks that hold this data. Lastly, it can greatly assist law enforcement and security agencies with its expertise within the fields of cryptology and IT security.¹⁵⁴

Conclusion

As described in this chapter, DND has a number of programs and research projects looking ahead to assist the government and the CF combat terrorism at home and

¹⁵³Communications Security Establishment Canada, "What We Do," <http://www.cse-cst.gc.ca/home/whatwedo-e.html>; Internet; accessed; 21 March 2008.

¹⁵⁴Communications Security Establishment Canada, "Parliamentary Review of the *Anti-Terrorism Act* Special Senate Committee Chief CSE Appearance – 11 April 2005 Speaking Notes," <http://www.cse-cst.gc.ca/home/anti-terror-e.html>; Internet; accessed; 21 March 2008.

abroad. These initiatives ensure personnel assigned the daunting tasks of counter-terrorism have the intelligence, tools, equipment and protection to work in this type of environment. The Navy, JTF2 and the Air Force, if deployed overseas, have the means to address a terrorist threat against Canada abroad (not on the main land), which of course is the preferred manner to disrupt and or destroy terrorist attack plots. The CBRNE Response Team, the CBRNE Response Force, along with JTF2, DRDC, CSE, Navy and the Air Force, in supportive roles, give the government broad range of capabilities to address terrorist activities and potential attacks internal to Canada. These capabilities cover the four strategic objectives included in the CBRN Strategy of the Government of Canada.

In reviewing the CF force structure available to the government, what comes into question is, does the current CF establishment have the boots on ground and equipment available to meet its mandate? The current structure can probably deal quite effectively with one disaster as displayed in the Alberta floods; however, a commitment to Afghanistan or the 2010 Olympics plus a terrorist attack on Canadian soil will overwhelm the CF capacity quickly. I question this fact due to the current commitment to Afghanistan and how this is currently stretching and stressing our forces at the particular moment. The following chapter will address this very issue.

Part 5 – Does current DND/CF capabilities meet DND mandate

In assessing Canada's CBRN response strategy, Ms Fraser urged the government to rectify training shortfalls for first-responders, to improve disparate response strategies, and to address "poorly allocated" emergency response capabilities,

such as the lack of a national pool of equipment that is compatible and interoperable.¹⁵⁵

Reported by Jeff Esau
Special to the Ottawa Business Journal

To this day, many Canadians presume that the Canadian Forces will be there to assist local first responders if their resources are insufficient to deal with a crisis. As the Forces know too well, this support is only provided upon request and within the guidelines set by the Government of Canada. Unfortunately, a gap still exists between local first responders and the federal government on the training, funds and tools required to be able to respond and recover from a CBRN attack. The bigger cities and municipalities, in most cases, are in better shape than smaller ones. The former have access to funds, other than those from the government, to obtain the essential equipment and training to react to a CBRN incident. Many local governments have grown tired and impatient with the inefficiency of the current governmental programs to provide the CBRN equipment and training and have obtained these tools through their own means.¹⁵⁶ In Alberta, OCIPEP has supplied approximately 1.8 million dollars for the purchase of CBRN equipment for its municipalities; however, the equipment remains unused because funds have not been made available to maintain or train with the equipment.¹⁵⁷ The Government of Canada has not effectively distributed the training standards and programs related to CBRN initiative. Many provinces are not aware of the training standards or programs available to assist them in preparing for the disaster of a CBRN

¹⁵⁵Jeff Esau, "Firms ready to plug 'gaps' in Canada's terror defence." *Ottawa Business Journal*, (April 11, 2005) [journal on-line]; available from <http://www.integratir.com/mediacoverage.asp?ticker=T.VRS&report=show&id=4008&lang=EN>; Internet; accessed; 21 March 2008.

¹⁵⁶*Ibid.*

¹⁵⁷Parliament Senate, *National Emergencies: Canada's Fragile Front Lines, Volume 2*, (Ottawa: Senate, March 2004), 48.

attack.¹⁵⁸ As a result, this applies even more pressure on the limited CF resources to be able to respond to provinces' requests for assistance during a CBRN incident.

As specified within the CBRN Strategy of the Government of Canada, four strategic objectives were identified: prevention and mitigation; preparedness; response and recovery, to combat the CBRN threat posed by terrorists. These four strategic objectives will be reviewed against current DND and CF capabilities to identify any gaps that may exist. This process will demonstrate that Canadian military forces do not have the manpower due to current CF establishment strength or sufficient equipment to meet the supportive role they are expected to achieve under the response and recover CBRN strategic objectives.

The tasks specified under the CBRN strategic objective of prevention and mitigation mandate have been mostly carried out by the departments and agencies with the Government of Canada. Numerous treaties, conventions and initiatives have been created and signed on by other international partners to reduce the availability of WMD and related materials to terrorist or other organizations and states that wish to obtain these types of weapons to cause havoc in Western societies to achieve their political or religious goals. Canada, through the implementation of the Global Partnership Program and with the assistance of other countries, has been instrumental in making it more difficult for terrorists to acquire weapons and materials of mass destruction. CSIS, RCMP and CSE are working together to gather and analyze information on terrorist activities and have established ties to an integrated international intelligence network in an effort to minimize the risk of a CBRN threat to Canada. To date, these initiatives have

¹⁵⁸Parliament Senate, *National Emergencies: Canada's Fragile Front Lines, Volume I*, (Ottawa: Senate, March 2004), 44.

made a difference not only in increasing national security but also within the international community. To eliminate the CBRN threat completely is probably a reality that many of us will never see; however, to ignore the threat would be a greater crime. The efforts of governmental agencies like CSIS, RCMP and CSE can be illustrated by the police, in June 2006, arresting numerous individuals who were plotting terrorist attacks in southern Ontario.¹⁵⁹ In my view, the Government of Canada and DND (within its scope) are achieving the aim of the strategic objective of prevention and mitigation.

The second strategic objective, preparedness, strives at ensuring that first responders in the provinces, territories and the CF have the right equipment, training and support to prevent against the CBRN threat and recover if required. Both the government and the CF have established schools to train first responders and military individuals to obtain the knowledge, expertise and equipment training required to respond and recover from the devastating effects of a CBRN attack. Several research facilities are established under the government to develop and/or improve protective clothing, equipment for surveillance of, to detect and protect from the CBRN environment and provide laboratories to test CBRN samples taken in the field. These research facilities also supply an area for live agent training and the testing of newly developed equipment and grounds to exercise newly developed CBRN procedures or standards. The integrated approach of intelligence gathering, previously discussed, increases the possibility of interdicting and disrupting of terrorist activities through the JTF2, Air Force, RCMP and local police in the domestic area, while the Air Force, Navy, JTF2 and RCMP have the means outside the country. Overall, the Government of Canada and DND have made

¹⁵⁹National Post, "Terror Suspects Plotted Two Separate Attack," <http://www.nationalpost.com/story.html?id=c8008ad3-54e2-4155-98d1-6687c5649db3&k=1929> ; Internet; accessed; 23 March 2008.

great strides in increasing their ability to deal with the CBRN threat; however, shortfalls still exist. The horizontal networks and information sharing to include the provinces, territories and municipalities operational communities needs to improve to break down the barriers that currently exist between them. Once these barriers are removed, the flow of information between the government and first responders should dissipate. This in turn should eliminate the gap that currently exists between them and improve the capacity building of the country to respond to a CBRN event.¹⁶⁰ At present, the government is slow in taking the lead and distributing the policies and standards related to CBRN equipment and training. Many municipalities are unaware that standards exist. If they are aware, they do not know where to locate them.¹⁶¹ As previously noted, many municipalities have taken the lead in obtaining the CBRN training and equipment they require as guidance and funds from the government are too slow in coming. The danger with this approach is that first responders may not be applying the same standards and procedures across the board which may lead to confusion between districts, municipalities and provinces when extra resources and assistance are required. Lastly, governmental policies should be put in place to deal with the sustainment of expertise within these specialized organizations.¹⁶² The CBRN field in most cases are smaller divisions compared to most, especially within the Forces; policies should be in place to ensure the knowledge, expertise and specialized equipment within the section or organization are not lost to rotation or transfers. Under the auspices of preparedness, the analysis reveals that deficiencies still exist; however, these shortfalls need to be

¹⁶⁰National Defence, "Chief Review Services Reports" http://www.dnd.ca/crs/rpt/reports_e.htm; Internet; accessed; 24 March 2008, 21.

¹⁶¹*Ibid.*, 21.

¹⁶²*Ibid.*, 37.

addressed at the level of the government. Therefore, DND (within its scope) is accomplishing the aim of the strategic objective of preparedness.

Response and recovery, the third and fourth strategic objectives of the CBRN strategy will be examined together as they work basically hand in hand. As clearly indicated throughout this paper, the first to respond to any incident or disaster, ranging from fires, floods right up to a terrorist attack, are the local municipalities' first responders. If an event or disaster overwhelms local resources, municipalities will request provincial or territorial assistance and if deemed necessary also from the federal government. Firefighters and HAZMAT personnel have the protective garment to protect themselves from most CBRN agents or materials.¹⁶³ However, local police and emergency medical services in many cases do not. Also, first responders may not be quick to identify that a CBRN event has occurred, delaying agent identification and treatment protocols, and thereby increasing casualty rates within first responders.¹⁶⁴ The only decontamination capability resides with the fire/HAZMAT first responder community, which is limited and do not have the capability for mass decontamination when non-commercial agents are utilized.¹⁶⁵ With prior notice of a CBRN event some of these concerns may be alleviated through coordination with the provincial and federal governments to obtain the expertise and equipment required to deal with the type of event; however, prior notice is most likely never to occur.

¹⁶³Solicitor General Canada, *Developing Options to Strengthen National Consequence Management response Capability for Terrorist incidents*, (Ottawa: Solicitor General Canada; April 2001) 19 and 22.

¹⁶⁴Global Fire Rescue 1, "New Options for CBRN Protection - Part 2," <http://www.firerescue1.com/Columnists/Jeffrey-O-Stull/articles/283192/>; Internet; accessed; 24 March 2008.

¹⁶⁵ Solicitor General Canada, *Developing Options to Strengthen ...*, 19.

The CF has a capability to assist first responders in a supportive role. It has a small unit of approximately 100 personnel, the CJIRU, which is an element of the initial CBRNERT, also composed of an element from the RCMP Explosive Ordnance Disposal and the PHAC Mobile lab. A supplementary CBRNE-RF is also available to support the CJIRU which can generate a force of approximately 1100 personnel from within CF units. This follow-on force provides CBRNE detection, identification and sample taking; SAR, decontamination, and security. The current mandate of DND stipulates that the CF must be able to support domestic and international incidents with the following caveats: to be able to support a sustained CBRN domestic incident and either another sustained or unsustained domestic incident or an international operation or ROTO.¹⁶⁶ The CF can meet its mandate to respond two incidents at once with the CJIRU; however, I question whether or not they it be able to meet the manning requirement specified within the CBRNE-RF (follow-on force). The CJIRU can provide limited support to the first responders in the following areas: C2 capability, surveillance, security, recce and decontamination of first responders and personnel of the CJIRU only.

The CF may (and I stress may) be able to generate the numbers required for one CBRNE-RF to respond to a major CBRN incident within Canada or abroad. However, this will depend greatly on the current CF priorities. Currently, the military is being stretched to its limits with its commitment in Afghanistan and will be further stretched by the upcoming Olympics in 2010. Therefore, the CF is unable to meet its mandate to respond too two simultaneous events with the CBRNE-RF. It is not only the question of personnel. The right trade, skills and training to work within the CBRN environment also

¹⁶⁶Department of National Defence, *NBC Defence Services Project: Project Implementation Plan*, (Ottawa: Department of National Defence; 2003), 9.

matter. For the CF to meet its commitment in the area, the manning strength of the CF needs to increase.

Certain deficiencies on the equipment side still exist. For example, the CF requires the capability to provide a sanitized work area in a CBRN environment. Currently the CF has a limited capability aboard the central citadels of ships and within combat aircraft, helicopters, and light armoured vehicles.¹⁶⁷ The mobile structure to provide this protection is called Collective Protection (COLPRO). It would allow C2 and mass decontamination capabilities in a contained area. One Canadian Field Hospital as a transportable COLPRO facility; however, it is out of date and it is yet to acquire the filters, chemical tarps and other components to work.¹⁶⁸ New COLPRO equipment is not expected to arrive until 2010.¹⁶⁹ If the CF requires working in a CBRN environment, the COLPRO facility is crucial not only to provide a C2 element but an area to provide relief from this environment as well as medical care.

As we have seen in past, the government provides funds to the military only within the constraints allowed by a balanced budget and the priorities of the government at the time. The focus of the Government and DND towards the CBRN threat has been revitalized since the events of 11 September 2001; however, the re-structuring of the organization, the training of personnel and the acquisition of required equipment take time and money to meet the CBRN mandate, which is yet to be realized. Gaps between first responders and the government still exist. The information flow, communication

¹⁶⁷Department of National Defence, *The Asymmetric Threat*, (Ottawa: DND Canada; 2001), T-8.

¹⁶⁸*Ibid.*, T-8.

¹⁶⁹LCol S. Gosse, "Facing the Chemical/Biological Threat: Recommended training of Health Services Support Personnel," <http://wps.cfc.forces.gc.ca/papers/csc/csc32/exnh/gosse.doc>; Internet; accessed; 28 March 08.

and standardization of procedures and equipment relating to CBRN is lacking in areas as the government is slow in taking lead in resolving these problems. All first responders are not equipped with protective gear for a CBRN event and in most cases detection of such an event will be delayed, increasing possible injury or casualty rates as a result. The CF, in its supporting role, can provide assistance through CJIRU; however, for increased SAR, mass decontamination and medical services through the CBRNE-RF will be limited and even severely restricted due to equipment availability and manning due to other CF constraints. Improvement has occurred; however, the Government of Canada and DND need to place continued effort to alleviate all current deficiencies to improvement Canada's ability to prevent and respond to CBRN incidents.

Part 6 – Conclusion

This paper analyzed whether or not DND, in its supported role to civilian agencies, was ready and able to assist first responders overcome the disastrous effects of a dirty bomb exploding within Canada. To this day, terrorism remains a significant threat to the Western way of life. Terrorists continue to adapt to the world's counter-terrorism policies and initiatives by creating and developing new ways to disrupt and cause havoc on Western economies and day to day activities. Over the years, terrorist attacks have decreased; however, they have become more lethal. Terrorists' political aims no longer limit the brutality of their attacks in achieving their goals or objectives. As a result, they are actively seeking to acquire WDM. Chemical, biological and nuclear WDM are more difficult to acquire or produce, leaving the dirty bomb as an excellent alternative, as it is easier to produce and obtain the material required for this device. The threat of a terrorist

attack in Canada is low; however, the consequences are high because of the ability of this weapon to severely disrupt the economy; the cost of recovery; and the psychological affects this would have on the population.

The Government of Canada, since the events of 9/11, has developed and implemented a CBRN Strategy to counter terrorists' activities. As described within the paper, the government has used a four pronged approach to enhance Canada's ability to diminish and prevent CBRN incidents from occurring within Canada. PSEPC is the lead agency responsible for coordinating Canada's overall response to CBRN incidents. Under the umbrella of these objectives, the Government of Canada has initiated or been party to many conventions, treaties and initiatives to deal with the threat of terrorism. Also within these strategic objectives, Canada has stressed the importance of cooperation, sharing of information, research, coordination and training with Canadian departments and agencies across Canada and international partners.

In the review of DND's and the CF's current CBRN capabilities it became clear that, these organizations provide a wide range of tools to the government in its fight against terrorism. These tools range from surveillance, to intelligence gathering, to interdiction, to research laboratories, to the development of new CBRN equipment, to SAR, to extra security, to decontamination capabilities and extra medical services. The tasks accomplished by DND departments and military forces can assist and have greatly assisted law enforcement agencies and other related departments in preventing, preparing for and recovering from CBRN incidents. In two of the four strategic objectives prevention and mitigation and preparedness DND is able to meet its commitments under this mandate. Under the auspices of response and recovery, as pointed out within this

paper, the CF does not meet its mandate for the follow of force due to current manning strength and equipment shortfalls.

In the past several years the government has made great strides in improving its CBRN strategy; however, a disconnect stills exists between them and first responders. All municipalities are not aware of the programs and or funds available to them to increase their CBRN response capability. Also, some municipalities and or provinces have taken the initiative in developing their own CBRN response as funds and assistance from the government has been to slow. This, in turn, has created a greater demand for limited CF resources to respond to a CBRN event when called upon. As noted, the government has made great strides in improving its plan to counter-terrorism; however, manning and equipment are still recognized as shortfalls not only within the CF but also within civilian agencies. The importance of recovery from a CBRN event cannot be stressed enough. The inability of the government to respond quickly and efficiently will not be taken lightly in the eyes of Canadians.

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