2011 ANNUAL REPORT

Biological and Chemical Defence Review Committee

Sheldon H. Roth, Ph.D. (Chair)
Julia M. Foght, Ph.D.
Pierre M. Potvin, Ph.D.

January 2012

2011 ANNUAL REPORT

BIOLOGICAL AND CHEMICAL DEFENCE REVIEW COMMITTEE

TABLE OF CONTENTS

INTRODUCTION

The policy of the Government of Canada is to press for global, comprehensive and verifiable treaties banning all biological and chemical weapons. To this end, Canada is a State Party to the *Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction* (the Biological Weapons Convention or BWC) and also, to the *Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction* (the Chemical Weapons Convention or CWC).

However, for as long as the threat from such weapons endures, be they in the hands of state or, potentially, non-state actors, the Government has a recognized obligation to ensure that members of the Canadian Forces (CF) are adequately equipped and trained to protect themselves from exposure to biological and chemical warfare agents. Such protection is required not only during the course of operational deployments abroad, but also in the context of military support to responses to terrorist incidents at home or other domestic emergencies involving these agents.

This said, the Canadian public, as well as the international community, has the right to be assured that the Government's policy of maintaining only a defensive capability in this field is fully respected at all times and that any related research, development or training activities undertaken are conducted in a professional manner with minimal risk to public safety or the environment.

To facilitate this assurance, the Minister of National Defence, in May 1990, directed the establishment of the Biological and Chemical Defence Review Committee (BCDRC or, "the Committee") as an adjunct to the Defence Scientific Advisory Board. Today, the BCDRC operates at arm's length from Government. Its mandate is to provide an independent, third-party review of the Biological and Chemical Defence (BCD) research, development and training activities undertaken by the Department of National Defence (DND) and the Canadian Forces (CF) with a view to assessing whether they are defensive in nature and conducted in a professional manner with no threat to public safety or the environment.

The BCDRC normally comprises three experts in scientific disciplines relevant to BCD such as chemistry, microbiology and toxicology. One of these is selected by the Committee to serve as Chair. New members are appointed by the Chair on the recommendation of the applicable professional society. The Chair also arranges for an administrative staff member to function as the Committee's Executive Officer.

Committee membership as of 1 April 2011 was as follows:

Dr. Sheldon H. Roth (Committee Chair)
Professor of Physiology & Pharmacology and Anaesthesia
University of Calgary

Dr. Julia M. Foght
Professor of Microbiology
University of Alberta

Dr. Pierre G. Potvin
Professor of Chemistry
York University

Brig.-Gen.(Ret'd) J.J. Selbie serves as Executive Officer to the Committee

The Committee's annual cycle of activity includes:

- Briefings in Ottawa from representatives from National Defence Headquarters (NDHQ) and the Department of Foreign Affairs and International Trade (DFAIT) on BCD issues
- Visits to selected CF training establishments, operational formations and units where BCD activity takes place, and to associated government (mostly DND) research and development facilities such as the Defence Research and Development Canada (DRDC) centre at Suffield, Alberta (which is visited every year)
- Publication of an Annual Report in the public domain with key observations, findings and recommendations

The Committee's Annual Reports, dating back to 1991, are available on its website (www.bcdrc.ca). No report was produced in 2010 due to a delay in renewing the Committee's mandate.

The work of the Committee is funded by a contribution from the Government of Canada Department of National Defence.

SUMMARY

Having detected no evidence to the contrary during the course of its 2011 briefing and visit programme, the Committee concludes that:

- Canada's policy of maintaining a purely defensive biological and chemical warfare capability is fully respected by the DND and the CF;
- The BCD research, development and training activities undertaken by the DND and the CF are compliant with Canada's obligations as a State Party to the BWC and to the CWC;
- The BCD research, development and training activities undertaken by the DND and the CF, as observed by the Committee, pose no apparent threat to public safety or the environment
- There is no covertness or duplication within the BCD program

In addition to its principal conclusions, the Committee, drawing upon its observations made during the course of its visits to DND and CF training establishments, operational formations, units and research and development facilities, offers eleven recommendations aimed at reinforcing the good management and effectiveness of Canada's BCD program.

COMMITTEE ACTIVITIES 2011

During the course of 2011, the Committee conducted the following briefing, visit and related activities:

- **Senior Officer Chemical, Biological, Radiological and Nuclear (CBRN) Defence Course – Ottawa (04-08 April)**. The Committee's Executive Officer attended this course aimed at familiarizing participants drawn from the DND and CF as well as other federal, provincial and municipal agencies with various aspects of CBRN Defence including:
    - CBRN threat
    - Current CBRN Defence equipment capabilities and limitations
    - CBRN Defence policies and training
    - Basic science of biological and chemical warfare agents
    - CBRN Defence medical considerations
    - Hazard protection
    - CBRN Defence capability development
    - Maritime, land and air forces CBRN Defence issues
    - National Chemical, Biological, Radiological, Nuclear and Explosives Response Team
    - Canadian Joint Incident Response Unit
    - Public Safety Canada CBRN Defence issues
    - Chemical, Biological, Radiological, Nuclear and Explosives (CBRNE) Research and Technology Initiative (CRTI) & Public Security Technical Programme
    - CF decontamination capability

- **Maritime Forces Atlantic – Halifax (2-3 May)**. The Committee was briefed on Maritime Command BCD doctrine, tactics, procedures, equipment and training. A tour of HMCS TORONTO included explanation of the ship's BCD systems and procedures. The Committee also visited the CF School of Maritime Engineering's Damage Control Division where it met with instructors in the BCD Section and toured the Section's facilities.
- **1 Canadian Field Hospital – CFB Petawawa (4 May)**. The Committee discussed with the Commanding Officer the capability of the field hospital to treat casualties under biological or chemical warfare conditions.
- **Central Medical Equipment Depot – CFB Petawawa (4 May)**. The Committee was briefed by the Commanding Officer on arrangements for the procurement, storage and distribution of BCD medical counter-measures and toured the Depot's facilities.
- **The Royal Military College of Canada – Kingston (5 May)**. The Committee toured the College's analytical, synthesis, environmental and chemical protection laboratories and was briefed on a number of subjects including:
    - The work of the DRDC sponsored Defence and Security Research Institute (DSRI) and its collaboration with College faculty and staff
    - Ongoing research related to protective capability and the design of respirators, clothing systems and equipment against CBRN agents
    - Analytical applications of biological, chemical and radiological defence research
    - CBRN Defence Environmental Group activities
- **Chief of Defence Intelligence – NDHQ Ottawa (6 May)**. The Committee was briefed on the current assessed biological and chemical warfare agent threat.
- **Assistant Deputy Minister (Policy) – NDHQ Ottawa (6 May)**. With the assistance of representatives from DFAIT, the Committee was briefed on the status of the CWC and BWC, including an update on compliance by the DND and the CF. The Committee also was briefed on recent counter-proliferation support activities conducted under the auspices of the DFAIT-led Global Partnership Program.
- **Chief of Force Development – NDHQ Ottawa (6 May)**. The Committee was briefed by an officer of the Directorate of Chemical, Biological, Radiological and Nuclear Defence (D CBRN Defence) on the status of the BCD capital procurement program as well as recent developments concerning the writing and publication of BCD doctrine.
- **Defence Research & Development Canada Corporate Office – Ottawa (6 May)**. The Committee was welcomed by Dr. Marc Fortin, newly appointed Assistant Deputy Minister (Science and Technology) and Chief Executive Office of Defence Research and Development Canada. His staff provided an overview brief on DRDC as well as specific presentations on the following:
    - Biological and chemical hazard protection
    - Medical counter-measures
    - Centre for Security Science (CSS) and the Chemical, Biological, Radiological, Nuclear and Explosives Research and Technology Initiative (CRTI)

- **Canadian Forces Health Services (CFHS) Group Headquarters – Ottawa (6 May)**. Commodore Hans Jung, Canadian Forces Surgeon General and Director General Health Services, welcomed the Committee and introduced the following staff presentations:
    - Overview of CFHS Group 2010-11 BCD related activities
    - Operational medicine priorities for R&D related to biological and chemical warfare agent medical counter-measures
    - Regulatory Affairs – Status of Health Canada licensing of medical counter-measures
    - Biological Warfare Threat Medical Counter-Measures (BWTMCM) Project Update
- **Defence Research and Development Canada - Suffield Research Centre - CFB Suffield, Alberta (26-27 May)**. The Committee's visit to DRDC Suffield incorporated a full program of presentations, discussions, information exchanges and verification activities including the following:
    - An overview presentation by Dr. Cam Boulet, Director General DRDC Suffield
    - A status report delivered by the Deputy Director General of the various projects that comprise the biological and chemical defence research and development program at Suffield
    - An explanation of DRDC Suffield's current involvement in the CRTI. CRTI is a program managed by the Centre for Security Science aimed at increasing the capacity of "Science-based Departments" in the Government of Canada to respond to CBRNE incidents in Canada. The Centre for Security Science is itself a cooperative effort between DRDC and Public Safety Canada.
    - A summary of live-agent training support activities conducted by DRDC Suffield's Counter-Terrorism Technology Centre (CTTC) and a discussion of related issues
    - A report by on the management of contaminated sites within the Experimental Proving Ground at Suffield
    - A report on completed, planned and proposed infrastructure changes and related issues
    - A review of various biological and chemical warfare agent threat issues
    - A verification of biological, virology and toxin holdings and a review of relevant holdings management procedures and an update on the incineration of old stocks
    - A discussion of transfers of pathogenic biological materials between DRDC Suffield and other agencies and a review of relevant control and tracking procedures
    - An inspection of BSL II laboratories
    - An inspection of chemical holdings and discussion of procedures for the control and tracking of chemical agents
    - An opportunity to review the Organisation for the Prohibition of Chemical Weapons (OPCW) Final Inspection Report arising from the OPCW's routine verification inspection of the Canadian National Single Small-Scale Facility at DRDC Suffield on 12-13 January 2011
    - A review of current research contracts awarded to other agencies and presentations from two representative contracted researchers
    - Informal laboratory visits and briefings

- A visit to DRDC Suffield's Good Laboratory Practice (GLP) compliant lab for a discussion of lessons learned during its 2nd and 3rd years of operation
- A tour of the Mobile Chemical Laboratory and a briefing on its employment in support of the 2010 Vancouver Olympics and the 2010 G8/20 meetings
- A tour of the All Hazards Triage Facility
- A visit to the CTTC's Cameron Training Centre on the Experimental Proving Ground to view the training waste storage area
- Meetings with the General Safety Officer, the Corporate Services Officer representing the Environmental Officer, the Acting Chair of the Chemical Safety Committee and the Chair of the Biohazard Safety Committee
- A meeting with the Commander of CFB Suffield

At the end of its visit, the Committee debriefed Dr. Boulet and his executive management team on our initial observations and conclusions. A tele-conference was held with Dr. Fortin, the Assistant Deputy Minister (Science and Technology) and Chief Executive Office of Defence Research and Development Canada for the same purpose.

- Finally, the Committee was informed, in accordance with past practice, of the discovery and disposal, at CFB Suffield of a single, old unexploded munition suspected of, but found not to contain chemical warfare agent.

OBSERVATIONS

General. The Committee was warmly welcomed and received complete and proactive cooperation of authorities at all the headquarters, units, agencies and sites visited. The presentations and other information packages received were relevant, focused and detailed.

Threat. The briefings that the Committee received from the Chief of Defence Intelligence and at DRDC Suffield attested to a continued credible biological and chemical warfare agent threat.

Defensive Capability. During the course of its briefings and visits, the Committee had occasion to view capability requirements and procurement plans; research and development facilities and activity; in-service equipment and other materiel; doctrine; and, training. In all instances, the Committee was satisfied that these pertained solely to the functions of biological and chemical agent detection, identification and monitoring; warning and reporting; protection; hazard management (e.g., decontamination); and, medical counter-measures. The Committee assesses such functions as consistent with the maintenance of a purely defensive capability.

Compliance with Policy and International Conventions

DND/CF chemical and biological defence policy is set out in Defence Administrative Order and Directive (DAOD) 8006-0 (accessible on the internet). During its visit to the DRDC Canada Corporate Office on 6 May 2011, the Committee received written certification from the Director General Science and Technology Operations that the projects in the 2009 and 2010 DRDC Canada R&D program related to

BCD for which he and his subordinate directors are responsible, are in compliance with the provisions of DAOD 8006-0.

With respect to the OPCW routine verification inspection of the Canadian National Single Small-Scale Facility at DRDC Suffield on 12-13 January 2011, the Committee observed that the Final Inspection Report indicates that the inspectors found the DRDC Suffield facility to be compliant with Canada's obligations pursuant to the CWC.

It should be noted that due to past activities at CFB Suffield, from time to time, unexploded munitions are found at DRDC Suffield and are treated as suspected Chemical Weapons. These munitions are reported to National Defence Headquarters and the OPCW to obtain permission for their destruction

Safety & Environmental Protection

The Committee observed that at all units and locations visited, there existed a positive culture of safety and environmental stewardship. However, our visit to the licensed small scale synthesis facility at the Royal Military College raised concerns regarding the necessity for this additional facility; and, for its safe operation.

Holdings of biological, viral and toxin holdings at DRDC Suffield were verified. There has been continued progress in reducing holdings to the minimum required for current defensive research. The Committee notesthat inventory management will in future be assisted by specialized software and labeling tools.

Chemical agent holdings at DRDC Suffield were also verified. The Committee observed that control and tracking procedures were in good order and that improved laboratory and field practices have been implemented following a recent comprehensive review of procedures and the conduct of related safety exercises.

The CTTC continues to discharge in exemplary fashion its mandate to provide CBRNE live-agent training, advice and technological support to the CF, domestic first responders and international military and first-response groups. It also supports Canadian government and commercial companies in the testing and evaluation of products for use in the CBRNE threat environment, and police agencies by providing a facility for the forensic identification of suspected chemical and biological agents. While the Committee did tour the Centre's facilities, no live-agent training was in progress at the time. The Committee intends to arrange to observe live-agent training at some point in the coming months in order to include a safety assessment in our next annual report. It was noted, however, that the success of the CTTC's live-agent training program has put considerable strain on DRDC Suffield's contaminated waste management facilities.

The biological and chemical safety committees at DRDC Suffield are both operating effectively with the biological safety committee deemed to be especially proactive.

In the past, the Committee has expressed concern over the fact that DRDC Suffield's biological and chemical laboratories are situated in the same building as are found its administrative offices. A plan is now in place for the construction of a new state-of-theart laboratory complex to be located on the

Experimental Proving Ground at a distance from structures housing administrative functions. The Committee looks forward to following the progress of this project.

The DRDC Suffield plan for the management (to include remediation) of contaminated sites on the Experimental Proving Ground appears sound and the Committee looks forward to observing the progress of its implementation in the years to come.

The Committee observed that DRDC Suffield is making a concerted effort to improve its waste stream management practices. Key to the success of this commendable initiative is replacement of the existing incinerator. Apparently funds have been allocated for this purpose.

Dr Boulet indicated that he intends to initiate, within the next year, a comprehensive external review of DRDC Suffield policies, practices and procedures in keeping with the high priority he assigns to matters of safety and environmental stewardship

Other Observations

During its visit to Maritime Forces Atlantic in Halifax, the Committee learned that BCD subjects are no longer a part of the highly effective annual operational readiness evaluation programme for ships of the fleet conducted by the so-called "sea training" staff. It was understood that BCD readiness is instead evaluated on a mission-specific basis for those ships tasked for deployment on operations which are assessed as involving a potential biological or chemical threat. Moreover, this readiness activity may even take place only after a ship has set to sea. This may be detrimental to the maintenance of the navy's requisite level of biological and chemical defence training.

1st Canadian Field Hospital is to take receipt of a new Transportable Collective Protection Shelter System. This system is designed to provide the capability to continue the essential tasks of command and control, medical care and rest and recovery while on international and domestic operations in areas where there is a threat of the use of chemical or biological warfare agents.

The Committee observed the Regional Medical Equipment Depot to be an effective and efficiently run unit. Arrangements for the safe storage and controlled distribution of biological and chemical warfare agent medical counter-measure drugs were assessed as adequate. The Committee was pleased to note on-going initiatives to introduce new inventory management software and to establish a quality assurance staff position for the purpose of implementing pharmaceutical "good manufacturing practice" at the Depot.

The BCD-related research undertaken by members of the faculty at the Royal Military College of Canada is impressive. Moreover, the successful establishment of the Defence and Security Research Institute (DSRI) at the College is indicative of productive collaboration between DRDC and RMC. The Committee looks forward to invitations to observe the conduct of DSRI workshops in the biological and chemical defence realm.

The mission of the Directorate of Chemical, Biological, Radiological and Nuclear Defence (D CBRND) is to enable the CF to survive and to operate effectively in a CBRN environment. It does this by coordinating

the development of CBRN defence joint capabilities (e.g. equipment procurement) and by providing expert CBRN defence strategic and operational support (e.g. advice to operational commanders, doctrine development, training and readiness activities and facilitation of science and technology support). The Committee holds in high regard the staff of this Directorate and the work they do. We noted that Directorate staff served as an essential source of advice to commanders supporting the Vancouver Olympics and the G8/20 Summits in 2010 and also during the recent Japanese nuclear energy crisis.

The Canadian Forces Health Services Group plays a vital role in the development of the fifth enabling component of a comprehensive BCD programme - that being the development of medical counter-measures to the effects of biological and chemical warfare agents. This is a daunting task given the formidable array of scientific, medical, regulatory, industrial/business, international, resource and program/project governance complexities in play. This was clearly illustrated by the presentation received on the Biological Weapons Threat Medical Counter-Measures (BWTMCM) project. The Committee observed that progress is being made in such areas as the establishment of clear operational medicine priorities for medical counter-measures research and development, and in regulatory affairs; notably Health Canada approval of the Extraordinary-Use New Drug (EUND) category that will facilitate deployment of medical counter-measures. The Committee was pleased to learn of the growing contribution of the GLP certified laboratory at Suffield and the advancement of the Canadian Medical Countermeasures Development Consortium concept. This concept is aimed at harnessing and coordinating the efforts of the many stakeholders involved by means of a guiding framework encompassing research & discovery pre-clinical development; clinical trial development licensure & commercialization; and, acquisition and deployment. This said, the need for national strategic level leadership of medical counter-measure development was emphasized as was the advisability of periodic review of the purpose and structure of the development effort.

The Committee is excited by the research conducted by DRDC Suffield scientists; however, the apparent slow pace of Public Works and Government Services Canada (PWGSC) contracting procedures has allegedly resulted in significant delays and lost opportunities with respect to cutting edge research projects especially those categorized as Technology Demonstrations.

The Committee is impressed with the capability of Mobile Chemistry Laboratory developed and staffed by DRDC Suffield scientists and deployed in support of security for the Vancouver Olympics and the G8/20 Summits in 2010. This laboratory is an important national asset and there is concern that the funding provided to DRDC Suffield to operate and maintain the laboratory is due to expire in 2012.The Committee was also impressed by the capability of the All-Hazards Triage Facility newly located at DRDC Suffield and available to support security agencies across the country.

The Committee noted that the recent reduction of time devoted by scientists to the Tactical Medical Training Program in the DRDC Suffield swine model facility has improved the balance between research and training in that facility. This addresses a previous concern of the Committee.

CONCLUSIONS

Having detected no evidence to the contrary during the course of its 2011 briefing and visit activity, the Committee concludes that:

- Canada's policy of maintaining a purely defensive biological and chemical warfare capability is fully respected by the DND and the CF.
- The BCD research, development and training activities undertaken by the DND and the CF are fully compliant with Canada's obligations as a State Party to the BWC and CWC.
- The BCD research, development and training activities undertaken by the DND and the CF pose no apparent threat to public safety or the environment.
- There is no covertness or duplication within the BCD program.

RECOMMENDATIONS

Pursuant to its observations made during the course of its 2011 briefing and visit activity, the Committee makes the following recommendations:

1. **DRDC Suffield should continue to reduce its biological, viral and toxin holdings to the minimum required for current research and that it complete as soon as possible the procurement of specialized software and management tools for inventory management.**
2. **DRDC should facilitate the implementation as soon as possible of plans for the re-location of laboratories at DRDC Suffield.**
3. **NDHQ and DRDC should support DRDC Suffield in ensuring that any contractors engaged in soil remediation work on the Experimental Proving Ground are fully prepared to deal (and capable of dealing) safely with any hazardous material they may potentially encounter, including chemical warfare agents.**
4. **DRDC Suffield should be commended for and supported in its efforts to improve waste stream management. Specifically, DRDC should accelerate funding for the replacement of the waste incinerator.**
5. **NDHQ and DRDC should support DRDC Suffield's initiative to conduct a comprehensive external review of its safety and environmental stewardship programs.**
6. **The Chief of the Maritime Staff should investigate ways by which BCD equipment maintenance and training expertise can be maintained over the long term under low-threat conditions.**
7. **Canadian Forces Health Services Group should support the initiative of the Central Medical Equipment Depot to introduce up-dated inventory management software and to establish a Quality Assurance staff position for the purpose of implementing pharmaceutical "good manufacturing practice" (GMP) at the Depot.**

8. **NDHQ should evaluate the necessity for the licensed small-scale synthesis facility at the Royal Military College of Canada. If the requirement remains, arrangements should be put in place for the exchange of laboratory best practices with its counter-part facility at DRDC Suffield.**
9. **NDHQ should consider the concerns and ideas voiced in the health services and defence research and development communities with respect to the future development and deployment of medical counter-measures.**
10. **NDHQ should support efforts by DRDC and DRDC Suffield to sustain the operation and maintenance of the Mobile Chemical Laboratory beyond 2012.**
11. **NDHQ should clarify planned use of the All-Hazards Triage Facility.**

STATUS OF PREVIOUS COMMITTEE RECOMMENDATIONS & OUTSTANDING ISSUES

The Committee believes that all recommendations made in previous reports have been implemented or otherwise appropriately resolved. The Committee will continue to monitor the subject areas that gave rise to past recommendations. Please see Annex A for the status of current recommendations.

ANNEXES

A – Status of Current Recommendations

B – Acronyms and Abbreviations

ANNEX A
to BCDRC 2011 Annual Report

STATUS OF CURRENT RECOMMENDATIONS

No.	Year	Recommendation	DND/CF Response	BCDRC Comment
1.	2011	DRDC Suffield should continue to reduce its biological, viral and toxin holdings to the minimum required for current research and that it complete as soon as possible procurement of specialized software and management tools for inventory management	In 2011, DG DRDC Suffield directed: the completion of a full inventory of all biological, viral holdings; minimization of all holdings to levels that are sufficient to support current and future program requirements and the destruction of surplus materials. This task is expected to be completed by 29 February 2012. The updates to the inventory management software have been received and implemented. (March 2012)	Monitoring
2.	2011	DRDC should facilitate the implementation as soon as possible of plans for the relocation of laboratories at DRDC Suffield	This major construction project has a dedicated project manager, has a signed SS(ID) and is moving towards the definition phase. The project remains a priority in the Agency. (March 2012)	Monitoring
3.	2011	NDHQ and DRDC should support DRDC Suffield in ensuring that any contractors engaged in soil remediation work on the Experimental Proving Ground are fully prepared to and capable of dealing safely with any hazardous material they may potentially encounter	All work on the Experimental Proving Ground (EPG) will follow established DRDC Suffield planning processes, which include comprehensive safety reviews by DRDC Suffield's chemical and safety review committees. In addition, all contractors working these projects must go through ADM (IE)'s protocol approval system. Contractors will receive DRDC Suffield safety and mandatory briefings before being authorized to conduct work. Their work will be monitored by a qualified Suffield project manager to ensure compliance. NDHQ is cognisant of DRDC's attention to ensuring the highest of safety standards for all those that operatate on the EPG and supports their continued vigilance. (March 2012)	Monitoring
4.	2011	DRDC Suffield should be commended for and	The incinerator at the Cameron Centre is on lease and	Monitoring

No.	Year	Recommendation	DND/CF Response	BCDRC Comment
		supported in its efforts to improve waste stream management. Specifically, DRDC should accelerate funding for the replacement of the waste incinerator	being assessed to ensure it will meet the needs of DRDC Suffield. If it meets our needs the incinerator will be purchased; if not priority will be placed on purchasing an incinerator that will meet requirements. The risk of not having a functioning incinerator would mean a direct impact on the research and training programs that are currently being run at DRDC Suffield. (March 2012)	
5.	2011	NDHQ and DRDC should support, as requested, DRDC Suffield's initiative to conduct a comprehensive external review of its safety and environmental stewardship programs	DRDC Suffield has initiated a multi-phased program aimed at modernizing its safety practices. A review of our allies' chemical safety programs and waste management processes has been completed and compared to established policies and programs. The recommendations from this process are undergoing an internal review, prior to forwarding to the DG of DRDC Suffield for approval. In addition, a comprehensive review of the planning and approval process for experimental and training activities has been completed. The result is a web-based system that will be implemented on 1 April 2012 and considers activities underway at DRDC Suffield. This system ensures that essential safety, regulatory, scientific integrity, ethical and resource requirements are identified and reviewed by line managers and safety experts before being approved. NDHQ recognizes the effort DRDC Suffield has put into its safety and environmental stewardship programs and commends them on this latest initiative. (March 2012)	Monitoring
6.	2011	The Chief of the Maritime Staff should investigate ways by which BCD equipment maintenance and training expertise can be	The RCN maintains dedicated CBRN sections which perform annual CBRN refresher training and maintain the capability to fully prepare units deploying to	Monitoring

No.	Year	Recommendation	DND/CF Response	BCDRC Comment
		maintained over the long term under low-threat conditions.	operations with a credible CBRN threat. The level of preparation for low threat conditions is consistent with the RCN's designated role and investment is managed realistically to deal with these very low probability events. (March 2012)	
7.	2011	Canadian Forces Health Services Group should support the initiative of the Central Medical Equipment Depot to introduce up-dated inventory management software and to establish a Quality Assurance staff position for the purpose of implementing pharmaceutical "good manufacturing practice" (GMP) at the Depot	The updated inventory management software (O&PEN) was implemented in August 2011 when the transition from the older CAMMS software to the newer O&PEN software was effected. This portion of the recommendation has been completed. CFHSG/DHSO/OpMed/Regulatory Affairs is currently leading the effort (with support from CMED) to bring CMED to Good Manufacturing Practices (GMP) compliance, which is a regulatory requirement under the Food and Drugs Act for the activities carried out at the Depot. Reg Affairs is currently still in the first of a three-stage process for this activity, the being the staffing of a Quality Assurance position at CMED. When the position is staffed, the development of an extensive set of SOPs and facility upgrades will follow. (March 2012)	Monitoring
8.	2011	NDHQ should evaluate the necessity for the licensed small scale synthesis facility at the Royal Military College of Canada. If the requirement remains, arrangements should be put in place for the exchange of laboratory best practices with DRDC Suffield	The research conducted at RMC is distinct from research conducted elsewhere. Exchange of information on best practices between RMC and DRDC Suffield is already occurring. Discussions are underway between the Chief of Military Personnel (CMP) and DRDC regarding the RMC infrastructure requirements in the area of chemical defence. The review will consider the BCDRC's recommendations. NDHQ supports and encourages continued information exchange between these vital organizations. (March 2012)	Monitoring

No.	Year	Recommendation	DND/CF Response	BCDRC Comment
9.	2011	NDHQ should consider the concerns and ideas voiced in the health services and defence research and development communities with respect to the future development and deployment of medical counter-measures	The Canadian Forces Health Services Group (CFHSG) and Defence Research and Development Canada (DRDC) support the development of a MedCM Consotium, which, with the interdepartmental support of the Public Health Agency of Canada, is garnering international interest. This effort is in keeping with the Government of Canada's role in the Global Health Security Initiative regarding the development of Medical Countermeasures to CBRN agents. NDHQ supports CFHSG and DRDC in this endeavour and continues to monitor developments. (March 2012)	Monitoring
10.	2011	NDHQ should support efforts by DRDC and DRDC Suffield to sustain the operation and maintenance of the Mobile Chemical Laboratory beyond 2012	Discussions are underway between DRDC and Public Safety Canada. It is expected that, at the end of the project, that DRDC Suffield will maintain the capability in a sufficient state of readiness to respond to planned events by re-assigning personnel. NDHQ recognizes the importance of the Mobile Chemical Laboratory to past support to operations and supports maintenance of this capability by DRDC Suffield as indicated. (March 2012)	Monitoring
11.	2011	NDHQ should clarify planned use of the All Hazards Triage Facility	Discussions are underway between DRDC and Public Safety Canada. (March 2012)	Monitoring

ACRONYMS AND ABBREVIATIONS

ADM: Assistant Deputy Minister; Associate Deputy Minister

ADM (S&T): Assistant Deputy Minister (Science and Technology)

BCDRC: Biological and Chemical Defence Review Committee

BCD: Biological and Chemical Defence

BCW: Biological and Chemical Warfare

BTWC: Biological and Toxins Weapons Convention

CBRN: Chemical, Biological, Radiation and Nuclear

CBRNE: Chemical, Biological, Radiation, Nuclear and Explosives

CDI: Chief of Defence Intelligence

CDS: Chief of the Defence Staff

CISTI: Canadian Institute for Scientific and Technical Information

CF: Canadian Forces

CFB: Canadian Forces Base

CFFA: Canadian Forces Firefighter Academy (located at CFB Borden, Ontario)

CFNBCS: Canadian Forces Nuclear, Chemical and Biological School (located at CFB Borden, Ontario (CFNBCS and CFFA are joined under a single commanding officer)

CF H Svcs Gp: Canadian Forces Health Services Group

D H Svs Ops/Op Med: Canadian Forces Health Services Operations/ Operational Medicine: the organization in CF H Svcs Gp that supervised the development of Medical Countermeasures;

CG: Client Group

CJIRU – CBRN: Canadian Joint Incident Response Unit – CBRN (replaced JNBCD Coy in 2007)

CMBG: Canadian Mechanized Brigade Group

CMED: Central Medical Equipment Depot

CO: commanding officer

CRTI: Chemical, Biological, Radiological and Nuclear Research and Technology Initiative (for details, please refer to the web site: http://www.css.drdc-rddc.gc.ca/crti/index-eng.asp).

CT: Counter-terrorism

CTTC: Counter Terrorism Technology Centre

CWC: Chemical Weapons Convention

DAOD: Defence Administrative Orders and Directives (see the web site at http://www.admfincs.forces.gc.ca)

DAPC Pol: Director of Arms Proliferation Control Policy. The abbreviation also refers to the directorate.

DCBRND: Director Chemical, Biological, Radiation and Nuclear Defence (a directorate being formed from an expanded DJCP 5) (2009)

DCSEM: Directorate for Combat Systems Engineering and Management; DCSEM 5 manages CBRN projects

DFAIT: Department of Foreign Affairs and International Trade

DGHS: Director General Health Services

DJCP: Directorate for Joint Capability Production; DJCP 5 directs CBRN requirements and projects

DM: Deputy Minister

DNBCD: Director of Nuclear, Biological and Chemical Defence. The abbreviation also refers to the Directorate. The directorate disbanded with CF Transformation in 2006.

DND: Department of National Defence

DRDC: Defence R&D Canada (see the web site at http://www.drdc-rddc.gc.ca/)

DRE: Defence Research Establishment

DREO: Defence Research Establishment Ottawa; in 2002 became DRDC Ottawa

DRES: Defence Research Establishment Suffield; in 2002 became DRDC Suffield

DSAB: Defence Science Advisory Board

DSTIC: Director Science and Technology – Integrated Capability

DSTP: Director Science and Technology - Personnel

EPG: Experimental Proving Ground

GLP: Good Laboratory Practice

JNBCD Coy: Joint Nuclear Biological and Chemical Defence Company; replaced by CJIRU – CBRN in 2007.

HC: Health Canada

HREC: Human Research Ethics Committee

IED: Improvised Explosive Device

Level III Containment or Level III: A high level of physical containment requiring a dedicated laboratory with independent air supply and security features. For more information please see http://www.phac-aspc.gc.ca/publicat/lbg-ldmbl-96/lbg5_e.html#5.3

LFCA: Land Force Central Area (Toronto)

LFWA: Land Force Western Area (Edmonton)

MARLANT: Maritime Forces Atlantic (Halifax, N.S.)

MARPAC: Maritime Forces Pacific (Esquimalt, B.C.)

MCM: Medical Countermeasures

MOU: Memorandum of Understanding

NATO: North Atlantic Treaty Organization

NDHQ: National Defence Headquarters

NBC: Nuclear, Biological and Chemical

NML: National Microbiology Laboratories (located at the Canadian Science Centre for Human and Animal Health in Winnipeg)

OCIPEP: Office of Critical Infrastructure Protection and Emergency Preparedness

OPCW: Organization for the Prohibition of Chemical Weapons

PCB: polychlorinated biphenyls

PSEPC: Public Safety and Emergency Preparedness Canada

PWGSC: Publics Works and Government Services Canada

R&D: Research and Development

RSDL: reactive skin decontamination lotion

SLA: Service Level Agreement

SWE: Salary and Wage Envelope

TICs: Toxic Industrial Chemicals

TPD: Health Canada Therapeutic Products Directorate

VCDS: Vice Chief of the Defence Staff