# 2012 ANNUAL REPORT

## Biological and Chemical Defence Review Committee

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# BIOLOGICAL AND CHEMICAL DEFENCE REVIEW COMMITTEE

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## 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 and Toxin Weapons Convention or BTWC) 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, have 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 basis of nominations from such professional societies and associations as the Royal Society of Canada, the Canadian Federation of Biological Studies, the Canadian Society of Microbiologists, the Chemical Institute of Canada and the Society of Toxicologists of Canada. The Chair also arranges for an administrative staff member to function as the Committee's Executive Officer.

Committee membership as of 1 April 2012 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)
- Attendance at selected BCD exercises, training courses, workshops, seminars, symposia, etc. conducted by the CF or DND

- 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 2012 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 BTWC 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 four new recommendations aimed at reinforcing the good management and effectiveness of Canada's BCD program.

## COMMITTEE ACTIVITIES 2012

During the course of 2012, the Committee conducted the following briefing, visit and related activities:

- **CBRN Personal Protective Equipment Standardization Workshop - Kingston (19-20 January)**
  The Committee Chair and Executive Officer attended this workshop sponsored by the DRDC Centre for Security Science's CBRNE Research and Technology Initiative (CRTI) and hosted by the DRDC/RMC Defence and Security Research Institute (DSRI). The objective of the workshop was to assess possible approval routes for CBRN Personal Protective Equipment against the newly released Canadian Standards Association/Canadian General Standards Board standard for "Protection of first responders from chemical, biological, radiological and nuclear events". (Note: 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.)

- **1st Regiment Royal Canadian Horse Artillery – CFB Shilo, Manitoba (30 April)** The Committee was briefed on the unit's BCD capability and observed a BCD training session involving chemical warfare agent simulant at the "gas hut" in the base training area. The Committee also met the Base Commander and discussed with him aspects of the local environmental protection programme.
- **Canadian Science Centre for Human and Animal Health - Public Health Agency of Canada's National Microbiology Laboratory and the Canadian Food Inspection Agency's National Centre for Foreign Animal Disease – Winnipeg (1 May)** The Committee was pleased to be invited to this Centre and to receive briefings on current CRTI projects.
- **Defence Research & Development Canada – Suffield Research Centre (2-4 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 the Deputy Director General, DRDC Suffield covering organization, resource allocation and notable activities and initiatives undertaken during the past year (Note: Dr. Cam Boulet, Director General DRDC Suffield, was absent on temporary duty during the Committee's visit. Committee members discussed their visit observations with Dr. Boulet during a tele-conference on 14 June.)
    - A status report, also delivered by the Deputy Director General, of the various projects that comprise the BCD research and development program at Suffield including those related to the CRTI
    - A presentation and discussion of recent and current safety and environmental stewardship program initiatives
    - A presentation and discussion of infrastructure and other corporate services issues related to safety and environmental protection
    - A review and discussion of local developments in connection with relevant recommendations contained in the BCDRC 2011 Annual Report
    - A review and discussion of various biological and chemical warfare agent threat issues
    - An inspection of chemical holdings and a discussion of holdings management and laboratory safety protocols and procedures. These discussions included chemical safety training activities and the detailed results of the comprehensive chemical safety review undertaken at Suffield in 2012.
    - A review of relevant viral, toxin and other biological holdings management procedures and systems and an update on the incineration of old non-essential stocks
    - A discussion of transfers of pathogenic biological materials between DRDC Suffield and other agencies including relevant control and tracking procedures
    - An inspection of Bio-Safety Level (BSL) II laboratories
    - A tour of the BSL III facility which was shut down for annual maintenance and recertification (Note: Dr. Foght returned to DRDC Suffield on 1 October, following completion of annual BSL III facility maintenance, in order to verify viral, toxin and other biological holdings stored in the BSL III facility. She also discussed progress in improving the holdings management information system.)

- A summary of live-agent training support activities conducted by DRDC Suffield's Counter-Terrorism Technology Centre (CTTC) and a discussion of related issues. The Committee also observed a live-agent training exercise involving personnel from the Canadian Joint Incident Response Unit – Chemical, Biological, Radiological and Nuclear (CJIRU-CBRN).
- Review of 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
- Private meetings with the General Safety Officer, the Acting Chair of the Chemical Safety Committee, Chair of the Biohazard Safety Committee and the Acting Environmental Officer
- A meeting with the Commander of CFB Suffield

At the end of its visit, the Committee debriefed the Deputy Director General and his executive management team on our initial observations and conclusions.

- **Chief of Defence Intelligence – NDHQ Ottawa (8 June).** The Committee was briefed on the current assessed biological and chemical warfare agent threat.
- **Assistant Deputy Minister (Policy) – NDHQ Ottawa (8 June).** With the assistance of representatives from DFAIT, the Committee was briefed on changes to the strategic security environment as well as the status of the CWC and BTWC, 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 (8 June)** 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.
- **Defence Research & Development Canada – Centre for Security Science (CSS) - Ottawa (8 June)** The Director General of the CSS, Dr. Anthony Ashley, briefed the Committee on the Centre's renewed mandate and responsibility for the leadership of the new Canadian Safety and Security Program (CSSP) that will incorporate, *inter alia*, CRTI BCD related projects.
- **Defence Research and Development Canada - Valcartier Research Centre (11 June).** The Committee received an overview presentation on the Valcartier Research Centre as well as a tour of facilities and presentations on BCD related projects in the realms of Tactical Survey & Reconnaissance and Spectral & Geospatial Exploitation. Aspects of the Centre's environmental stewardship and safety programs were also discussed.
- **5 Service Battalion – CFB Valcartier, Quebec (11 June).** The Committee was briefed on the battalion's BCD role and capability and its experience in providing decontamination support to the 2010 Winter Olympic Games and the 2010 G8/G20 Summits. The Committee also toured a display of decontamination equipment and discussed its operation with unit personnel.

- **CJIRU-CBRN – Trenton Ontario (13 June)** The Committee was briefed by the Commanding Officer and his staff on the role and capability of the unit. The unit's approach to training and training safety was also discussed and a demonstration was provided of some of the unit's specialized equipment.
- **Public Security Science & Technology Summer Symposium – Ottawa (14 June)** The Committee observed the conduct of the last day of this annual symposium. Individual Committee members attended selected presentations of CRTI sponsored projects bearing on BCD including "Detection and Typing of High Consequence Agro-bioterrorism Agents" and "Mitigating Dissemination of Bio-terrorism Agents in Canadian Food Systems".
- **Canadian Forces Health Services Group Headquarters - Ottawa (15 June).** Colonel Jean-Robert Bernier, Canadian Forces Surgeon General (Designate) and Director General Health Services (Designate), 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 approval for use of medical counter-measures
    - Biological Warfare Threat Medical Counter-Measures (BWTMCM) Project Update
- **Defence Research & Development Canada Corporate Office Ottawa (15 June)** The Committee met with Dr. Marc Fortin, Chief Executive Officer Defence Research & Development Canada and Assistant Deputy Minister for Science & Technology Department of National Defence and his senior staff for the purpose of sharing the Committee's preliminary observations from its visits and to obtain Dr. Fortin's views on current issues related to DRDC work in the realm of BCD.
- **CBRN Defence Workshop – Ottawa (22-23 November)** The Committee's Executive Officer attended this workshop which brought together representatives of the various stakeholders in CBRN Defence for the purpose of exchanging information on current activities and issues.
- **Senior Officer Chemical, Biological, Radiological and Nuclear (CBRN) Defence Course – Ottawa (3-7 December)**. The Committee's Executive Officer observed the conduct of this course aimed at familiarizing participants drawn from the DND and CF as well as other government departments and agencies with various aspects of CBRN Defence including:
    - CBRN threat
    - CBRN defence fundamentals
    - CBRN defence policies and training
    - CBRN defence evaluation
    - Basic science of biological and chemical warfare agents
    - CBRN Defence medical considerations
    - CBRN defence estimate and risk management
    - NATO CBRN defence concept
    - Royal Canadian Navy, Canadian Army and Royal Canadian Air Force CBRN defence issues
    - National Chemical, Biological, Radiological, Nuclear and Explosives Response Team
    - CJIRU-CBRN

- Public Safety Canada – Federal Chemical, Biological, Radiological, Nuclear and Explosives (CBRNE) Plan
- Centre for Security Science – Canadian Safety and Security Programme (successor programme to the CRTI)
- New CF CBRN Defence Operating Concept
- Office of the Ontario Fire Marshal – First Responder CBRN defence capabilities

## 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). On 15 October 2012, the Committee received written certification from the Acting Director General Science and Technology Operations that the projects in the 2011 DRDC Canada R&D program related to BCD and for which he is responsible, are in compliance with the provisions of DAOD 8006-0.

From time to time, the OPCW conducts verification inspections of Canadian chemical defence research and development facilities. The Committee was informed that no such verification inspections of Canadian facilities were conducted in 2012. 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 from time to time, due to past activities at CFB Suffield, unexploded munitions are found at DRDC Suffield and are treated as suspected Chemical Weapons. These munitions are reported to NDHQ and the OPCW to obtain permission for their destruction. DRDC Suffield informed the Committee of the discovery, on 1 and 21 November 2012, of two such munitions in the form of unexploded artillery projectiles suspected possibly to contain mustard or phosgene chemical warfare

agent. Determination of the contents of these projectiles is pending. Moreover, it is understood that destruction of the projectiles will occur in the spring of 2013 and that the OPCW has indicated its intention to send a team to witness the destruction of at least one of the shells.

**Safety**

The Committee observed that at all units and locations visited in 2012, there existed a positive culture of safety and environmental stewardship. We appreciate that our concern over the necessity for the licensed small scale synthesis facility at the Royal Military College and for its safe operation, raised in our 2011 report, has been noted by authorities at NDHQ and that an on-going review of the matter will take into account our 2011 recommendation. We look forward to learning of the outcome of this review.

Holdings of viral, toxin and other biological samples at DRDC Suffield were verified. There has been further commendable progress in reducing holdings to the minimum required for current defensive research. We were also pleased to learn that all toxin holdings are now consolidated and stored centrally and securely in one building. The Committee further understands that a post-consolidation comprehensive inventory of toxin holdings is underway. We look forward to reviewing the results of this inventory during our 2013 inspection and determining whether consolidation has permitted further reductions in total holdings. The Committee notes that the inventory management software discussed during our 2011 visit has been procured but is not yet fully functional pending resolution of problems with its associated barcoding software.

The Committee observed that control and tracking procedures for chemical holdings remain in good order.

The individual BCD training employing CS gas that the Committee witnessed 1 RCHA conduct at CFB Shilo was executed knowledgeably and safely.

The live agent training we observed at DRDC Suffield was conducted in a safe and professional fashion. We understand that with respect to increasing training challenges or to permit the conduct of exercises in other locations, the use of non-hazardous agent simulants is being investigated. We commend this initiative.

The bio-hazard and chemical safety committees at DRDC Suffield continue to operate effectively, with the biological safety committee deemed to be especially proactive. The Committee noted the view of the bio-hazard committee that additional vaccines and anti-toxins, not currently approved for use in Canada, should be made available to defence scientists whose work may place them at increased risk. We understand that this issue has been brought to the attention of the CFMS and Health Canada with a request for their assistance in addressing the bio-hazard safety committee's concern.

In accordance with the intention stated by the Dr. Boulet during our 2011 visit, a comprehensive review of safety policies and procedures is well underway at Suffield. A leading example of this initiative is the ongoing Chemical Safety Review the mandate of which is to compare current local procedures with best practices in allied defence laboratories with a view to identifying gaps or deficiencies at Suffield and

making recommendations for their rectification. Amongst the review's recommendations are proposals to standardize safety procedures and equipment across laboratories; improve training and certification procedures for chemical agent workers; increase agent security; better define risks associated with various laboratory operations; dedicate resources to ensuring consistent compliance with chemical safety policies; and, to modify certain emergency response procedures. The Committee understands that Dr Boulet has approved in principle the Review's initial recommendations and that a working group of chemical scientists is developing a plan for their implementation. The Committee will ask to be briefed, during its 2013 visit to Suffield, on the progress of implementation.

The Committee noted that reviews of the DRDC Suffield Chemical Safety Manual and BSL III Safety Manual were completed in 2012 and that a new Standard Operating Procedure for the CTTC's Cameron Centre was completed in December 2011.

A new Integrated Emergency Response Plan was also nearing completion at the time of our visit. In this connection, we were pleased to note that a series of emergency response exercises had been scheduled for conduct in key buildings and facilities during the first half of 2012. The Committee received a detailed explanation of the response exercise conducted in the licensed small-scale synthesis facility in Building 1 on 8 March 2012 and were impressed by the thorough, realistic and challenging design of the exercise. We look forward to observing, at first hand, the conduct of selected emergency response exercises during future visits.

The Committee noted the pending implementation in July 2012 of the locally developed On-line Turbo Approval Process (ONTAP) for research and development work. ONTAP will replace paper-based Study Approval Forms, Field Trial Plans and associated documents and is intended to make more effective and efficient the process for ensuring that all essential safety, regulatory, scientific integrity, ethical and resource requirements are fulfilled prior to the commencement of new research or development initiatives or supporting activities.

The Committee observed that Dr. Boulet has approved for implementation the Safety and Health Management System (SHMS) developed for DRDC Suffield by Vicinia Corporation of Barrie, Ontario. The purpose of the SHMS is to ensure that activities performed by DRDC Suffield are conducted in a safe and sustainable manner and that they are consistent with DRDC Corporate policies, procedures and requirements which in turn reflect National Defence and Canada Labour Code directives and regulations. The system is based on Occupational Health and Safety Advisory Services (OHSAS) Standard 18001 and existing DRDC Suffield safety manuals. It defines objectives and activities and sets out procedures for the performance management of some 27 occupational health and safety programmes including biological safety, chemical safety, field safety and contractor safety programmes. The SHMS will stand alongside the DRDC Suffield Environmental Management System also developed by Vicinia Corporation. The Committee holds a copy of the system documentation and looks forward to learning more about its implementation and effectiveness during future visits.

During past visits to DRDC Suffield, the Committee has followed progress toward establishment of the Good Laboratory Practice (GLP) system in the Centre's Casualty Management Section. As such, we were

pleased to learn that the system was inspected by the Canadian GLP administering authority (the Canadian Standards Council) in May 2011 and subsequently awarded full Organisation for Economic Cooperation and Development GLP accreditation in February 2012. This accreditation will provide the Casualty Management Section with the capability to conduct pre-clinical GLP studies for toxicity, pharmacokinetics and efficacy with a focus on medical countermeasures to chemical warfare agents.

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-the art laboratory complex to be located on the Experimental Proving Ground at a distance from structures housing administrative functions. We understand from discussions during our visits to Suffield and to the DRDC Corporate Office that while the new laboratory project is a priority for DRDC, it will likely be several years yet before the complex is completed and occupied. As such, the Committee believes that consideration should be given to temporarily re-locating administrative personnel until such time as all laboratory functions are transferred to the new complex.

The laboratories we visited at DRDC Valcartier were well run and gave the Committee no cause for concern. Specifically, we were entirely satisfied with the procedures in place for the importation and safe use of micro-organisms and biological simulants in connection with stand-off bio-detection research.

**Environmental Protection**

DRDC Suffield continues its concerted effort to improve its waste stream management practices. A new Hazardous Material Management Plan was published in November 2011 and the standard operating procedure for Hazardous Waste Management and Disposal is undergoing a complete review which is to take into account contractor and allied nations' best practices. Dr. Boulet reported recent success in reducing the backlog of laboratory and training waste. Consequently, we understand that the existing incinerator, which had been leased on a trial basis, has been determined as adequate to the needs of solid waste disposal and purchased outright. Attention has now turned to identifying new options for the disposal of liquid waste.

The Committee will continue to monitor implementation of the DRDC Suffield plan for the management of contaminated sites on the Experimental Proving Ground (EPG). In this regard, we note that the project to remediate contaminated soil at selected sites on the EPG was placed on hold in February 2012 due to the transfer of the Project Manager to a higher priority task. We look forward to receiving an update on this activity during our next visit.

The Committee commends the environmental assessment process in use at DRDC Valcartier which offers a simple but thorough and effective means of helping to ensure that for all field tests, risks to the environment; eco-system components which may be impacted; and, suitable mitigation measures are identified, considered and as appropriate, implemented.

**Other Observations**

In visiting 1 RCHA and 5 Service Battalion, the Committee achieved its aim of gaining an understanding of the BCD capabilities possessed by units of the Canadian Army. That said, we also left with the impression that unit BCD training is a low priority – perhaps understandably so, given the Army's recent focus on operations in Afghanistan. Similarly, we gathered that 5 Service Battalion's impressive decontamination capability is not typical of similar units but rather a unique and residual one stemming from the battalion's assigned mission in support of the 2010 Olympic Games and the G8/G20 meetings later that year, and that this capability has been maintained on the initiative of local commanders. Leaders in both units expressed a belief in the need for renewed command guidance with respect to the level of BCD capability to be maintained by the Army's formations and units.

The Committee was pleased to learn that the mandate of the Centre for Security Science has been renewed. During our attendance at the CBRN Personal Protective Equipment Standardization Workshop and also the Public Security Science and Technology Summer Symposium, we witnessed the beneficial impact of the Centre in serving as a catalyst for productive multi-agency collaboration not only in the realm of BCD but also in support of Canada's broader public safety and national security priorities.

Cooperation with Canadian universities has been a longstanding aspect of work undertaken by DRDC's Research Centres. The Committee was pleased to note further examples of this partnership during the course of this year's visits. We do believe, however, that there is as yet unexplored potential for significantly increased cooperation. We encourage DRDC to explore this possibility especially in times of reduced "in-house" capacity.

Given its specialized capability in the realm of detection, identification and mitigation of chemical, biological and other hazards, the CJIRU-CBRN is a distinctively valuable national asset. The aim of the Committee's visit was to update its understanding of the unit's role and capability and its approach to maintaining the safety of its members and the public during training. This aim was easily achieved thanks to the comprehensive visit programme prepared for us and the informative discussions we enjoyed with the many unit members we met. The expertise, dedication and maturity exhibited by all struck us as being of a very high standard. During our visit, we did, however, hear concern expressed about authorization and liability issues pertaining to the administration by unit medical personnel of post-exposure medical counter-measures to non-CF members in potential training or operational situations wherein an emergency need could arise. While we understand that these concerns have been conveyed to the appropriate authorities, we share the unit's view that they should be addressed as a matter of priority.

Last year, during our visit to the headquarters of the Canadian Forces Health Services Group, the Committee learned of the formidable array of scientific, medical, regulatory, industrial/business, international, resource and program/project governance complexities involved in efforts to develop medical counter-measures to the effects of biological and chemical warfare agents. We also heard expressed the need for renewed national strategic level leadership of MCM development and the advisability of periodic purpose and structure reviews. As such, we are pleased to note the significant recent progress reported to us by the Surgeon-General's staff. Specifically, the granting of Treasury Board approval in June 2012 to the Biological Warfare Threat Medical Counter-Measures Project is a

major step toward the goal of providing protection to deployed CF units against the use of biological weapons such as the smallpox virus (Variola), plague and anthrax. In a similar vein, the Committee was informed of further progress toward the establishment of a Medical Countermeasures Consortium aimed at promoting communication, cooperation and collaboration nationally, between DRDC, Health Canada and the Public Health Agency of Canada, and internationally, between Canada, Australia, the United Kingdom and the United States. It was also reported that the Regulatory Affairs Section has been strengthened. The Committee views this positively in light of the concern expressed by the bio-hazard safety committee at DRDC Suffield over access to vaccines and anti-toxins not currently approved for use in Canada and the MCM usage liability issues raised during our visit to the CJIRU-CBRN. Finally, we were informed of continuing efforts to establish a Quality Assurance position at the Central Medical Equipment Depot at CFB Petawawa. We understand that this position is essential to the implementation of other measures necessary to obtain Good Manufacturing Practices accreditation for that facility.

In its 2011 Annual Report, the Committee observed that no plan was in place to sustain beyond 2012 the operation and maintenance of the impressive 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. Nor could we determine the existence of a plan for the use of the All-Hazards Triage Facility recently located at DRDC Suffield and available to support security agencies across the country. We understand that these issues remain the subject of discussions internal to DRDC and between DRDC and Public Safety Canada. As both of these facilities appear to us to be valuable national CBRN defence assets, we urge that a plan for their utilization and maintenance be agreed as soon as possible.

The implications of budget cuts arising from the results of the Government's Strategic Review of program spending and Deficit Reduction Action Plan were leading topics of discussion during the Committee's visits to DRDC Suffield and Valcartier and to the DRDC Corporate Office. It is our sense that cuts are being managed as carefully as possible and with a view to minimizing the disruption of programs and attendant negative impacts on personnel. That said, the Committee, during its next round of visits, hopes to observe no signs of unintended detrimental effects in such areas as safety, environmental protection, training effectiveness and scientific or corporate expertise.

## CONCLUSIONS

Having detected no evidence to the contrary during the course of its 2012 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 BTWC 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 2012 briefing and visit activity, the Committee makes the following recommendations:

1. **DRDC and CFHS should, as soon as possible, address the concern of the DRDC Suffield bio-hazard committee with respect to making available to defence scientists, whose work may place them at increased risk, additional vaccines and anti-toxins not currently approved for use in Canada.**
2. **DRDC Suffield should consider temporarily re-locating administrative personnel from Building 1 until such time as all laboratory functions are transferred to the proposed new laboratory complex.**
3. **Commander Canadian Army should consider issuing renewed command guidance with respect to the level of BCD capability to be maintained by the Army's formations and units.**
4. **NDHQ should, as soon as possible, address the concerns of the CJIRU-CBRN pertaining to the administration, in emergency situations, of post-exposure medical counter-measures to non-CF personnel.**

## STATUS OF COMMITTEE RECOMMENDATIONS

Please see Annex A for DND/CF responses to Committee recommendations.

## ANNEXES

A – Status of Recommendations

B – Acronyms and Abbreviations

# STATUS OF COMMITTEE RECOMMENDATIONS

| No. | Year | Recommendation | DND/CF Response & BCDRC Comment | Status |
|---|---|---|---|---|
| 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 | **DND/CF Response (March 2012):** "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."<br><br>**BCDRC Comment (November 2012)**: Good progress is being made but some work remains to be done with respect to further reductions and inventory management tools. We will continue to monitor.<br><br>**DND/CF Response (April 2013)**: "DND/CF DRDC Suffield continues to annually review holdings of bacterial, viral and toxin stocks, and reduce the number of redundant stocks to minimal amounts sufficient to support current and future program requirements. The updates to the inventory management software have been implemented and improvements and progress continue to be made." | **OPEN** |
| 2. | 2011 | DRDC should facilitate the implementation as soon as possible of plans for the relocation of laboratories at DRDC Suffield | **DND/CF Response (March 2012)**: "This major construction project has a dedicated project manager, has a signed Synopsis Sheet (Identification) and is moving towards the definition phase. The project remains a priority in the Agency." | **CLOSED** |

| No. | Year | Recommendation | DND/CF Response & BCDRC Comment | Status |
|---|---|---|---|---|
| | | | **BCDRC Comment (November 2012)**: Subsumed by Recommendation 13 (2012) | |
| 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 | **DND/CF Response (March 2012)**: "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 the Assistant Deputy Minister (Infrastructure & Environment) 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 operate on the EPG and supports their continued vigilance"<br><br>**BCDRC Comment (November 2012)**: Response accepted. We further note that a Contractor Safety Programme is now included in the DRDC Safety & Health Management System. | **CLOSED** |
| 4. | 2011 | 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 | **DND/CF Response (March 2012)**: "The incinerator at the Cameron Centre is on lease and 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 | **OPEN** |

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| | | | research and training programs that are currently being run at DRDC Suffield."<br><br>**BCDRC Comment (November 2012)**: We understand that the existing incinerator has now been purchased and that efforts are underway to help reduce the backlog of solid waste by means of transfers to other disposal facilities. New options for the disposal of liquid waste are now been investigated. We will continue to monitor.<br><br>**DND/CF Response (April 2013)**: "DRDC Suffield has purchased the incinerator at the Cameron Centre and recently concluded a contract to segregate the backlogged waste. All backlogged waste has been segregated and is prepared for disposal either through the on-site incinerator or through a commercial company. A Statement of Work is being prepared to move all back-logged waste off-site for destruction. The current incinerator has proven capable of handling the current waste being generated by the research and training programs; however, in order to get rid of the accumulated waste from the time the incinerator was down, management decided the off-site destruction was more expedient." | |
| 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 | **DND/CF Response (March 2012):** "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 | **OPEN** |

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| | | | 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."<br><br>**BCDRC Response (November 2012)**: Reviews are ongoing. Safety manuals have been updated. Safety and Health Management System is being implemented. Good progress is being made. We will continue to monitor.<br><br>**DND/CF Response (April 2013)**: "The internal ONTAP web-based review process has been fully implemented within the Centre and is working well. The Chemical Safety Committee continues to work through the recommendations from the review committee and has started implementation of those approved by the DG. The BCDRC will be updated during their next visit to Suffield." | |
| 6. | 2011 | The Chief of the Maritime Staff should investigate ways by which BCD equipment maintenance and training expertise can be | **DND/CF Response (March 2012)**: "The RCN maintains dedicated CBRN sections which perform annual CBRN refresher training and maintain the capability to fully prepare units deploying to | **CLOSED** |

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| | | 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."<br><br>**BCDRC Comment (November 2012)**: Response accepted. We note that the RCN makes use of the live agent training on offer at DRDC Suffield. | |

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| 7. | 2011 | Canadian Forces Health Services Group should support the initiative of the Central Medical Equipment Depot (CMED) 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 | **DND/CF Response (March 2012)**: "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."<br><br>**BCDRC Comment (November 2012)**: Response is noted. Good progress is being made. We will continue to monitor.<br><br>**DND/CF Response (April 2013)**: "CMED has implemented the new inventory management software. No progress has been made on establishing a Quality Assurance position, as the Defence Reduction Action Plan (DRAP) has effectively halted such staffing activities." | **OPEN** |
| 8. | 2011 | NDHQ should evaluate the necessity for the licensed small scale synthesis facility at the | **DND/CF Response (March 2012)**: "The research conducted at RMC is distinct from research conducted elsewhere. Exchange of | **OPEN** |

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| | | 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 | 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."<br><br>**BCDRC Comment (November 2012)**: We understand this issue remains active. We will continue to monitor.<br><br>**DND/CF Response (April 2012)**: "There have been some additional discussions between DRDC Suffield and RMC and they have de-conflicted their activities, but little has been established in terms of ongoing information exchanges." | |
| 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 | **DND/CF Response (March 2012)**: "The Canadian Forces Health Services Group (CFHSG) and Defence Research and Development Canada (DRDC) support the development of a Medical CM Consortium, 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."<br><br>**BCDRC Comment (November 2012)**: We are encouraged by the good progress that is being made in the realm of MCM. Treasury | **OPEN** |

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| | | | Board (TB) approval of the BWTMCM Project represents a major step forward. We will continue to monitor.<br><br>**DND/CF Response (April 2013)**: "Areas of common interest have been identified: Antimicrobial Resistance, Diagnostics, Anti-virals, and Anti-toxins. Department of National Defence (DND) and Public Health Agency of Canada (PHAC) are working together to support Quadrilateral requirements in these areas." | |
| 10. | 2011 | NDHQ should support efforts by DRDC and DRDC Suffield to sustain the operation and maintenance of the Mobile Chemical Laboratory beyond 2012 | **DND/CF Response (March 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."<br><br>**BCDRC Comment (November 2012)**: We understand that discussions continue and hence this remains an open issue. We will continue to monitor.<br><br>**DND/CF Comment (April 2013)**: "Public Safety was unable to provide the means (annual funding to cover personnel and maintenance costs) by which DRDC Suffield could support the operational readiness of the Mobile Chemical Laboratory (MCL). Our ADM indicated in 2012 that DRDC does not have a response mandate except for in support of Canadian Forces' (sic) activities. The MCL will be maintained (minimum effort and funds) and | **OPEN** |

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| | | | utilized by the Chemical Biological Assessment and Protection section (CBAP) for DRDC Suffield training and research activities but it could be brought up to operational readiness through a request and associated funding from the Canadian Forces." | |
| 11. | 2011 | NDHQ should clarify planned use of the All Hazards Triage Facility | **DND/CF Response (March 2012)**: "Discussions are underway between DRDC and Public Safety Canada."<br><br>**BCDRC Comment (November 2012)**: We understand that discussions continue and hence this remains an open issue. We will continue to monitor.<br><br>**DND/CF Response (April 2013)**: "As additional funds and personnel resources are not available to support this program, the facility will be placed into abeyance until such time as sufficient resources are available to sustain a viable program." | **OPEN** |
| 12. | 2012 | DRDC and CFHS should, as soon as possible, address the concern of the DRDC Suffield bio-hazard committee with respect to making available to defence scientists, whose work may place them at increased risk, additional vaccines and anti-toxins not currently approved for regular use in Canada. | **DND/CF Response (April 2013)**: "While the CF is not mandated to provide healthcare to DRDC Defence Scientists, certain difficult-to-procure, CF-held, chemical and biological medical counter-measures (e.g. HI6/Atropine and Diazepam auto-injectors, RSDL, Anthrax Vaccine) have been, and continue to be, provided to DRDC Suffield via a Service Level Agreement (SLA). CFHS does not stock other vaccines which may be required by DRDC Suffield; therefore, DRDC Suffield would be responsible for acquiring them."The advance provision of anti-toxins is not appropriate. If a Defence Scientist is exposed to a toxin, they will require hospitalization. | **OPEN** |

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| | | | They would not receive any substantial treatment at DRDC Suffield. They will be admitted to a civilian healthcare facility and then be the responsibility of the civilian healthcare system. That facility will seek Special Access Permit access to the appropriate antitoxin. If it is determined that the closest source of antitoxin is that held by the CF, we already have an SOP in place to address civilian requests for CF-owned, SAP-accessed unlicensed medical products." | |
| 13. | 2012 | DRDC Suffield should consider temporarily re-locating administrative from Building 1 until such time as all laboratory functions are transferred to the proposed new laboratory complex. | **DND/CF Response (April 2013)**: "Capacity to move administrative staff from Building 1 is not possible for the foreseeable future. Despite the co-location of administrative staff with the laboratories, DRDC Suffield remains committed to providing the highest quality health and safety environment for their employees." | **OPEN** |
| 14. | 2012 | Commander Canadian Army should consider issuing renewed command guidance with respect to the level of BCD capability to be maintained by the Army's formations and units. | **DND/CF Response (April 2013)**: "Since July 2012, the CA has issued iterative guidance on the Force Generation (FG) of a Chemical, Biological, Radiological, Nuclear (CRBN) capability within the Canadian Army (CA). Specifically, the following guidance was released:<br>• Domestic Contingency Plan, 23 July 2012<br>• Non-Combatant Operations (sic) (NEO) CBRN, 10 August 2012<br>• NEO CBRN Decontamination Phases 1&2, 18 October 2012<br>• Interim Directive on Land CBRN, 23 October 2012<br>• NEO CBRN Decontamination Phases 3&4, 5 February 2013<br>• Interim Directive on CBRN Decontamination, TBI | **OPEN** |

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| | | | While some of the guidance is acute direction in response to emergent operational demands, the two interim directives marshal the personnel, training and equipment to produce durable CA CBRN capability." | |
| 15 | 2012 | NDHQ should, as soon as possible, address the concerns of the CJIRU-CBRN pertaining to the administration of post-exposure medical counter-measures to non-CF personnel in emergency situations. | **DND/CF Response (April 2013)**: "CANSOF Command Surgeon Briefing Note seeking Ministerial approval being completed in consultation with Command LegAd and will be staffed up for appropriate signatures." | **OPEN** |

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# ACRONYMS AND ABBREVIATIONS

ADM: Assistant Deputy Minister

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

ADM (IE): Assistant Deputy Minister (Infrastructure and Environment)

BCDRC: Biological and Chemical Defence Review Committee

BCD: Biological and Chemical Defence

BCW: Biological and Chemical Warfare

BTWC: Biological and Toxin 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)

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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.

D CBRN D: 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

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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

NEO: Non-Combatant Evacuation Operation

NDHQ: National Defence Headquarters

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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

CSSP – Canadian Safety and Security Program

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

TIC: Toxic Industrial Chemical

TPD: Health Canada Therapeutic Products Directorate

VCDS: Vice Chief of the Defence Staff