
2018 ANNUAL REPORT

Biological and
Chemical Defence
Review Committee

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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, 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 Armed Forces (CAF) are adequately equipped and trained to protect themselves from exposure to biological and chemical warfare agents. Such protection is required not only during 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 Science 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 CAF with a view to assessing whether they are defensive in nature and conducted in a professional manner with minimal risk 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 based on nominations from such professional societies and associations as the Royal Society of Canada, the Canadian Society of Microbiologists, the Chemical Institute of Canada and the Society of Toxicology 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 2018, was as follows:

Dr. Heather Durham (Committee Chair)
Professor of Neurology and Neurosurgery
Montreal Neurological Institute and Hospital
McGill University

Dr. Heinz-Bernhard Kraatz
Professor of Chemistry
University of Toronto

Dr. Pierre Potvin
Professor of Chemistry
York University

Dr. Jonathan Van Hamme
Professor of Microbiology
Thompson Rivers University

Note: Dr. Kraatz took over from Dr. Potvin as the Committee's chemistry expert following this year's visit to the Suffield Research Centre.

Brigadier-General (Ret'd) James 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 Global Affairs Canada (GAC) on BCD issues
- Visits to selected CAF education and 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) research centre at Suffield, Alberta (which is visited every year)

- Attendance at selected BCD exercises, training courses, workshops, seminars, symposia, *etc.*, conducted by the CAF 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 its 2018 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 CAF.
- The BCD research, development and training activities undertaken by the DND and the CAF 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 CAF, as observed by the Committee, pose minimal risk to public safety or the environment.
- There is no coyness or duplicity within the BCD program.
- While the Committee does not offer any new recommendations this year, we are aware that there is considerable discussion within the defence and general scientific communities of the identification of Dual Use Research of Concern and mitigation of the associated risks. We acknowledge the guidelines that DRDC has put in place at Suffield Research Centre and will monitor their on-going implementation.

COMMITTEE ACTIVITIES 2018

During 2018, the Committee conducted the following briefings, visits and related activities:

- **DRDC Suffield Research Centre (SRC) (07-09 May)**. The Committee's visit to the SRC incorporated a full program of presentations, discussions, information exchanges and verification activities including the following:
 - An overview presentation by the Centre Director covering organization, infrastructure, resource allocation, notable initiatives and other activities

undertaken during the past year including inter-departmental and international involvements

- A presentation and discussion of both current BCD research and development program at the Centre and specialized BCD training at the Counter Terrorism Technology Centre (CTTC)
- A presentation and discussion of recent and current initiatives in their programs related to safety and environmental stewardship
- A presentation and discussion of infrastructure and other corporate services issues related to safety and environmental protection
- A review and discussion of local developments concerning relevant recommendations contained in the BCDRC 2017 Annual Report
- Review and discussion of various biological and chemical warfare agent (BWA and CWA) threat issues
- Review of Material Transfer Agreements executed between 1 May 2017 and 30 April 2018
- Review of all BCD contracts awarded to outside agencies
- Review and discussion of chemical holdings, including management protocols and procedures; an inspection of chemical holdings and laboratory facilities; and, video inspection of agent holdings in the Canadian National Single Small-Scale Facility (CNSSSF)
- Review and discussion of the Chemical Safety Program
- Review and discussion of microbiological, viral and toxin holdings, including management protocols and procedures, and an inspection of Biosafety Level 2 (BSL 2) microbiological, viral and toxin holdings and laboratory facilities
- Video inspection of selected agent holdings in the Biosafety Level 3 (BSL 3) facility
- Review and discussion of the transfer to authorized recipients of pathogenic biological materials between 1 May 2017 and 30 April 2018 including procedures for control and tracking by receiving agencies
- Review and discussion of the Biological Safety Program
- Contractor briefings
- Informal laboratory visits and research and development project briefings
- Review and discussion of the discovery and safe disposal of historical legacy munitions at CFB Suffield suspected to contain CWA

- Private meetings with the Acting General Safety Officer, Chair of the Biohazard Safety Committee and the Chair of the Chemical Safety Committee
 - Meeting with staff from the Base Medical Section
 - Meeting with the Acting Commander of CFB Suffield
 - An opportunity for SRC staff to meet in confidence with the Committee
 - In concluding the visit, the Committee debriefed the Centre Director and his executive management team on its initial observations and conclusions.
- **Maritime Forces Atlantic - Halifax (11 June).** BCD staff and instructors briefed the Committee on Royal Canadian Navy (RCN) BCD policy and doctrine; shipboard BCD organization; equipment; tactics, techniques and procedures; and, training. The Committee also toured the Damage Control Training Facility KOOTENAY, where BCD training takes place, and HMCS VILLE DE QUEBEC.
 - **Royal Military College of Canada – Kingston (12 June).** The Committee received a presentation on BCD research at the College as well as CBRN Defence-related academic offerings. A laboratory tour followed.
 - **Canadian Joint Incident Response Unit – Trenton (12 June).** The Committee discussed with the Commanding Officer and other staff the unit’s recent activities and current situation; witnessed a training exercise; and toured a display of in-service equipment all aimed at updating the Committee’s understanding of the capability of the CJIRU-CBRN and its approach to training and training safety.
 - **Assistant Deputy Minister Policy – NDHQ Ottawa (13 June).** With the assistance of GAC representatives, the Committee was updated 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 CAF. The Committee was also briefed on recent counter-proliferation support and other activities conducted under the auspices of the GAC-led Weapons of Mass Destruction Threat Reduction Program.
 - **Canadian Armed Forces Intelligence Command – NDHQ Ottawa (13 June).** The Committee was briefed on the current biological and chemical warfare agent threat assessment.

- **Chief of Force Development – NDHQ Ottawa (13 June).** Officers of the Directorate of Chemical, Biological, Radiological and Nuclear Defence (D CBRN D) updated the Committee on the role and changes to the organization of the Directorate; the status of the BCD equipment procurement projects; and, involvement of the Directorate in various national and international BCD-related activities.
- **Canadian Forces Health Services Group Headquarters (CFHS Group HQ) – Ottawa (14 June).** We met with the Deputy Surgeon General and operational medicine staff who briefed the Committee on their response and follow-up to our recommendations in recent annual reports; CFHS Group BCD-related activities over the past year including professional-technical training, operations and international collaboration, notably the Medical Counter-Measures (MCM) Consortium; operational medicine priorities for BCD research and development; regulatory affairs developments; and, the status of the Biological Weapons Threat Medical Counter-Measures (BWTMCM) project.
- **DRDC Centre for Security Science (CSS) - Ottawa (14 June).** The Committee received an update on the mandate and organization of the CSS and its current BCD related projects and initiatives including resource allocation and interface with other government departments and international partners.
- **DRDC Corporate Office - Ottawa (15 June).** The Committee briefly met the new Chief Executive Officer DRDC and Assistant Deputy Minister (Science & Technology), Ms. Isabelle Desmartis. We also met her Chief of Staff, Ms. Sophie Galarneau, and discussed current issues with DRDC Corporate Office subject matter experts. Agenda items included an update of DRDC's role and organization; a presentation on the current BCD-related research and development program including project charters, resource allocation and the provision of certificates of compliance with DND/CAF CBRN defence policy; discussion of corporate-level safety and risk management arrangements; DRDC infrastructure renewal; and, a summary of DRDC participation in BCD-related inter-departmental and international fora. We also discussed the status of the response to recommendations in the Committee's 2017 Annual Report. Finally, the Committee Chair de-briefed the Chief of Staff on preliminary observations made during our 2018 round of visits.
- **Exercise PRECISE RESPONSE – Suffield - (25 July).** The Committee observed the conduct of PRECISE RESPONSE, a NATO training activity carried out annually, at SRC's CTTC and aimed at further developing NATO's capacity for the detection, identification, sampling and decontamination of CBRN agents, and interoperability. This year's exercise involved 400 participants from ten nations.

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 Canadian Armed Forces Intelligence Command attested to continued credible biological and chemical warfare threats from both state and non-state actors, which necessitate appropriate defensive preparedness.

Defensive Capability. During 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 defensive functions of biological and chemical agent detection, identification and monitoring; information management (*e.g.*, warning and reporting); protection; hazard management (*e.g.*, decontamination); and, MCM. The Committee assesses such functions as being consistent with the maintenance of a purely defensive capability.

Compliance with Policy and International Conventions

DND/CAF chemical and biological defence policy is set out in Defence Administrative Order and Directive (DAOD) 8006-0 (accessible on the Internet). During our visit to the DRDC Corporate Office on 15 June 2018, the Committee received written certification from the Director-General S&T Centre Operations, Director General S&T Force Employment and ADM S&T that the projects in the FY 2018-19 DRDC R&D program related to BCD, for which they are responsible, are compliant with the provisions of DAOD 8006-0 (Chemical, Biological, Radiological and Nuclear Defence) and DAOD 8006-1 (Chemical, Biological, Radiological and Nuclear Defence Operations, Training and Capability Development and Sustainment).

The Committee maintains copies of the CBRN Research Program Project Charters, which include detailed project descriptions and resource allocations. The current programme is due for reformulation and, as such, the Committee expects to receive copies of the new project charters during its next visit.

It should be noted that occasionally, due to historical activities at CFB Suffield, legacy munitions meriting treatment as suspected historical legacy chemical weapons are found on the restricted-access experimental proving ground or in the military training area at Suffield. These munitions are reported to NDHQ and the OPCW and permission requested for their destruction. The latest information the Committee has in this connection is the report of the destruction on 11 May 2016 of the suspect aerial spray tank discovered on

24 July 2015, noted in the BCDRC 2015 Annual Report. There have been no further discoveries since that time of which we are aware.

From time to time, the Organization for the Prohibition of Chemical Weapons (OPCW) conducts verification inspections of Canadian chemical defence research and development facilities. The most recent of these, an inspection of the Canadian National Single Small-scale Facility (CNSSSF) at the SRC, was conducted 16-19 October 2017. A second inspection team visited SRC 14-15 December 2017 to review the records of destruction for all suspected historical legacy chemical warfare munitions found since 2013. During our visit to Suffield in May 2018, we examined the reports of these inspections and noted that the OPCW teams were pleased with the cooperation they received and that they expressed no concerns.

Safety

The Committee observed that at all units and locations visited in 2018, there exists a positive safety culture.

Holdings of microbiological, viral and toxin samples at SRC were inspected and verified. There were neither significant discrepancies nor any associated safety concerns. Biological holdings, including soil samples and particularly toxins, continue to be reduced to the minimum required for current defensive research. We did, however, observe that there exist multiple databases for the toxins inventory. As resources permit, these databases should be unified and integrated with that of the other biologicals.

On 1 December 2015, new regulations under the Human Pathogens and Toxins Act came into effect. New Canadian Biosafety Standards are also now in force. We understand that SRC continues to revise its laboratory procedures for compliance and look forward to receiving from the Centre a copy of their updated biological laboratory operating manual when this work is done.

The Committee observed that control and accounting procedures for chemical holdings remain satisfactory, strengthened as they were in 2016 by the establishment of limits on the amount of agent that can be synthesized on strictly local authority, and by new provisions for the tracking of the destruction of samples or sub-stocks of agent upon the completion of projects and exercises. Our verification of the chemical holdings revealed no discrepancies.

We learned that SRC is now licenced by Health Canada to hold controlled substances and precursor chemicals for use in its research. The Centre Director suggested, and we agree, that during its next visit, the Committee examine the Centre's compliance with the Controlled Drugs and Substances Act and its attendant regulations.

During our 2012 visit to SRC, we were briefed on the launch of a Chemical Safety Review, the mandate of which was 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 recommendations of the since-completed Review were proposals to establish a Chemical Safety Officer position; to standardize safety procedures and equipment across laboratories; to improve training and certification procedures for chemical agent workers; to increase agent security; to better define risks associated with various laboratory operations; to dedicate resources to ensuring consistent compliance with chemical safety policies; to modify certain emergency response procedures; to consider provisions for the enhanced assurance of appropriate medical support; and, to investigate the implementation of a Medical Surveillance Program to include monitoring of acetylcholinesterase (AChE) levels in pertinent laboratory personnel.

We are pleased to report that implementation of these recommendations is nearing completion. A Chemical Safety Officer has been hired and has taken up her duties. Also, the recent contracting of a local physician to act as Medical Advisor to SRC Director should permit Special Access approval of the proposed AChE monitoring programme with commencement of the programme now envisioned in early 2019 with a comprehensive presentation to staff. Lastly, the agent-worker certification programme continues to operate at the basic level while training and testing materials for higher levels of certification are in the final stage of preparation. The Committee will monitor the execution of these last steps.

Based on our discussions with the SRC Acting General Safety Officer (Acting GSO) and the Chairs of the Biohazard and Chemical Safety Committees, we believe that these committees continue to operate effectively.

The Acting GSO indicated that he had received and investigated eighteen hazardous occurrence reports over the year, all of which were of a minor nature for which appropriate responsive and follow-up action was taken. He also reported that a training day was held on 18 January 2018, which addressed, *inter alia*: safety culture; the Workplace Hazardous Materials Information System; environmental protection; contractor safety and, with the assistance of the Base Surgeon, biological and chemical agent medical counter-measures. Regarding fire safety, implementation is on-going of the recommendations made by the Canadian Forces Fire Marshal following his last inspection in February 2016; specifically, replacement of hazardous chemical storage cabinets, replacement of fire doors, and imposition of a 1000 litre limit on flammable liquids kept in Building 1. We will check on the status of these items during our 2019 visit.

The Chair of the Biosafety Committee was pleased to report that the Medical Advisor had received Special Access to the BioThrax anthrax vaccine and that vaccinations are due to commence in January 2019.

Two concerns were also raised. The first pertains to Dual-Use Research of Concern (DURC). The Human Pathogens and Toxins Regulations, as administered by the Public Health Agency of Canada (PHAC), require that institutions undertaking research involving pathogens and toxins prepare a Plan for Administrative Oversight (PAO). This PAO must cover ten elements, including those that describe identification, assessment, management, and control of risks associated with DURC.

We were given a copy of the guidance developed to meet this requirement at SRC. It seems a reasonable approach and we understand that the assessment procedure is working well. Moreover, helpful feedback has been provided to PHAC. This said, there is a desire for some additional guidance with respect to what constitutes DURC and what to do if DURC is identified in the context of biosecurity versus biosafety. This is the subject of current consultation with allies. It is obviously a complex issue. Given the Committee's mandate around assuring the Canadian public and the international community of the defensive nature of Canada's Biological and Chemical Defence programme, it is one that we intend to monitor closely.

The second was the risk to safety posed by the additional workload resulting from recent staff reductions. Efforts are underway to mitigate this risk until new staff can be hired and trained.

The Chair of the Chemical Safety Committee pointed to the on-going challenges with respect to the storage and disposal of ventilation filters from the fume hoods in Building 1. We will follow up during our next visit.

Emergency response exercises continue to be regularly conducted at SRC. A Building 1 evacuation drill was satisfactorily executed on 11 April, and on 9 May we were pleased to be able to observe a chemical emergency response exercise based on a spill of agent in a Building 1 laboratory.

The accident response we witnessed went well with the full cast of participants, including laboratory colleagues, the Building 1 emergency response team, the base fire department, military police, medical staff, ambulance, decontamination team and management playing their roles knowledgeably and confidently. We afterwards sat in on the exercise "hot wash-up" involving all participants. The response was deemed effective and efficient; however, a few aspects were identified for improvement, notably radio communications and the control of emergency responder entry into the "hot zone". Certain of the communication deficiencies can be linked, as with similar issues during last year's exercise, to aging telecommunications infrastructure at Suffield and some apparent SRC-user equipment issues. Both the Base Commander and the Centre Director are seized of this matter and are pursuing initiatives aimed at recapitalizing the radio system.

More generally, we observed a high level of commitment to emergency preparedness by all participants, including the conduct of such exercises on a quarterly basis. To this end,

we understand that a large base-level exercise was held in August involving a CBRN-related trauma injury in the training area.

The live-agent training that we observed during Exercise PRECISE RESPONSE, we believe, was conducted in a safe and professional manner and illustrated effective collaboration amongst participants, as well as between the training audience and the exercise control and safety staff.

Given the nature of the research and development undertaken at SRC, the occupational health and potential emergency medical support needs of the Centre are relatively specialized and complex. During recent annual visits, we have become aware of several seemingly problematic aspects of the Centre's situation in this regard and the challenges to which they, from time to time, give rise. We have also learned of the diligent and effective efforts of the many stakeholders involved to confront and overcome these challenges with a view to maintaining the completeness and consistency of the required support system. This said, we have also noticed a tendency for issues to re-emerge due to circumstances beyond local control *e.g.*, the retirement of the contracted medical advisor, changes in military medical personnel, treatment protocols, and the commercial availability of MCM.

We are therefore happy to report the substantial and enduring improvements that have occurred this year. Foremost amongst these, as already mentioned, has been the engagement of a Medical Advisor by SRC, thus making possible leverage of Health Canada's Special Access Program to procure and utilize anthrax vaccine and an AChE monitoring device.

During an informative and encouraging meeting with the outgoing Base Surgeon, we learned that her replacement, who is already licensed as a physician in Alberta, will receive specialized CBRN-related medical training before arrival at Suffield and that there will be overlap with the incumbent before the latter's departure.

The active support of the CFHS Gp HQ was cited as an important component of these outcomes and speaks to better communications between SRC and the Surgeon General's staff.

Relations with the Medicine Hat Hospital have also improved, with several casualty management training and information exchange sessions between Base, SRC and Hospital physicians and scientists having occurred. Medical technicians from the Base Medical Section, thanks to the support of the Chief of Emergency Medicine, are being employed on a casual basis at the hospital. They have also received live tissue trauma training from the SRC Casualty Management Section.

Arrangements with 1 Field Ambulance for the provision of "back-fill" during absences of the Base Surgeon are proving more satisfactory for both sides.

Discussions have been launched aimed at upgrading the qualifications of Suffield Fire Department personnel from Emergency Medical Responder to Emergency Medical Technician. Similarly, the possibility of the Fire Department staffing the Base Ambulance during quiet hours is being investigated.

During its 2017 visit to the Canadian Science Centre for Human and Animal Health in Winnipeg (CSCHAH), the Committee heard of what was described as an excellent emergency response relationship between the CSCHAH and the Winnipeg Health Sciences Centre. We were also impressed by the dimensions of the Centre's biosafety programme. We continue to ask if there would be value in CFB Suffield and SRC approaching the Centre for information on their protocols.

Notwithstanding the advances cited, the Committee remains steadfast in its belief that a comprehensive assessment of occupational health and emergency medical support needs, including verification that these needs are being met, is worth conducting by an appropriate high-level authority, with the possible participation of relevant stakeholders (*e.g.*, SRC, CFB Suffield, CFHS Group, 3rd Canadian Division, Health Canada, Alberta Health Services, *etc.*), the objective of this undertaking being to ensure the long-term adequacy and stability of these essential supports to the work of the SRC. This same authority should also take the lead in designing and implementing cooperative, long-term solutions to any gaps so identified.

This Committee, as evidenced in past reports, has regularly and consistently expressed the view that the SRC is a strategic national asset and, as such, its infrastructure deserves commensurate care and attention. The main laboratory building, Building 1 (which also houses the Centre's administrative offices), is close to sixty years old and, as long ago as the Barton Report of 1988, was identified for replacement. Apart from the age of the building, the Committee has harboured a long-standing safety concern about the co-location of scientific and administrative functions – a concern exacerbated by the advanced age of the BSL 3 laboratories. Our unease has been mitigated, to an extent, by the diligent attention of SRC management and employees to building maintenance and safety including emergency response exercises; by the prospect of the construction of a new laboratory complex; and, most important, by the proposal to place new modular BSL 3 laboratories in the shell of a nearby building (the so-called Modular Biological Containment Facility (MBCF)) pending their ultimate relocation to the new complex. The Committee follows closely the progress of both projects.

Last year, we were told that with the transfer in 2014 of Suffield real property responsibilities from the Army to ADM Infrastructure and Environment (ADM IE), these projects were subjected to a re-definition of requirements and, also, re-prioritization in competition with other projects from across the country. We also learned that the DRDC Corporate Office had assumed the Project Director role for these projects, with which responsibility comes a small budget to assist with the definition of requirements.

While both projects are gaining momentum, there is concern that despite their intimate connection, the MBCF project risks becoming de-linked from the longer-range laboratory re-capitalization (which is ranked as DND's number one priority project within its price range). Were this to occur and the MBCF project abandoned, the continuity of the biological defence programme would be threatened, given the likelihood that the aging current bio-containment facility will fail before the laboratory recapitalization project is completed. The lack of a bio-containment facility at SRC, even temporarily, would jeopardize Canada's ability to meet its domestic responsibilities and international commitments.

In our 2017 report, we suggested that senior regional and national ADM IE officials should visit Suffield with a view to developing a personal understanding of SRC's specialized requirements, the distinctive consequences of infrastructure failures in settings where hazardous biological and chemical material are kept, the need for attentive preventative maintenance, and the urgency of repair. We were therefore pleased by the news that the Director General Infrastructure and Environment, the newly appointed ADM S&T and the Associate Deputy Minister of National Defence had together visited SRC in May.

SRC staff also reported improved relations with the local Real Property Operations Unit and progress on several smaller infrastructure projects facilitated by the hiring of a second engineer, a higher cap of \$2.5 million for local project management and, the allocation by ADM IE of seven percent of its maintenance budget to ADM S&T facilities. These developments bode well for SRC's ability to maintain its current infrastructure in a safe condition pending its replacement.

SRC's CBRN Material Risk Management Framework, described in our 2017 report, remains an effective way of describing the Centre's organizational assets; categorizing the threats to these assets; assigning responsibilities for risk management; and, establishing a set of facility, personnel and material risk indicators and corresponding risk management performance indicators. The performance indicators are commendably comprehensive and maps well to our Committee's inspection and verification mandate.

Work continues at Suffield to integrate the existing Health and Safety and Environmental Management Systems with DRDC's Corporate Safety and Environmental System. We will ask for an update on this integration during our next visit.

Environmental Protection

As with safety, the Committee observed that, at all units and locations visited in 2018, there exists a positive environmental protection culture.

The SRC Environment Officer reported that the Historic Review of Suffield Experimental Proving Ground Contaminated Sites project has been completed. The status of 35 existing and seven new sites were determined as being “contaminated”, “suspect” or, “uncontaminated”. All existing information is now contained in a single document that provides a snapshot of current site conditions, which in turn may be used for the planning of remediation and infrastructure projects.

Almost all the legacy hazardous waste and surplus hazardous chemicals have been disposed, including the legacy lewisite we noted as an issue last year. The sole remaining challenge is the disposal of used filters from fume hood ventilation systems in Building 1 mentioned earlier in this report.

Regarding environmental impact assessment, due-diligence environmental effects determination reports have been developed for major trial sites on the experimental proving ground and for all activities at the Cameron training centre.

Environmental review of every field trial undertaken at SRC continues to be integral to the local On-line Turbo Approval Process (ONTAP). Twenty reviews were conducted in FY 17/18.

A major HAZMAT spill table-top exercise was conducted on 5 December 2017.

Other Observations

- **SRC/CFB Suffield**
 - Year after year, we continue to be impressed by the professionalism of the staff of SRC and the quality of their contributions to Canada’s BCD programme. Agility and innovation in the face of rapidly evolving circumstances denote the Centre’s operations.
 - Management and staff greatly appreciated the recent visit by the new ADM S&T and officials from ADM IE and the opportunity to explain the special needs of SRC.
 - Productive relations between SRC and CFB Suffield are essential. During our visit last year, we heard the Acting Base Commander describe “fragmented planning, communications and authority” as the principal risk to the attainment of the Base’s objective of being a “sustainable, world-class military estate for training and defence research with integrated development of strategic national resources”. This led to a stimulating discussion of how to achieve and maintain mutually advantageous levels of cooperation between the Base and an entity such as SRC. This year, during our meetings with the Acting Base Commander, the Centre Director, the Assistant Director for Corporate Services Operations and

other SRC staff, a common message was that relations are much improved of late and growing stronger with a focus on common goals and mutually beneficial outcomes. In this connection, we were provided a copy of a Statement of Common Intent (SCI) signed in 2016 by the Commander Canadian Army and ADM S&T. The purpose of this SCI is to renew the relationship between the Base (an Army entity) and SRC (an ADM S&T entity) and to provide a solid foundation and guidance for the development of a Service Level Agreement (SLA) between the organizations. Further, the SCI outlines their mutual responsibilities toward the pursuit of DND priorities and establishes the authority for them to codify the support provided each other in the form of an SLA. An SLA for infrastructure and environment services is nearing finalization.

- Last year we met with the newly appointed Security Officer at SRC who strongly felt that the major security issue facing the Centre was an inadequate secure communications backbone. The nearest secure video-tele-conferencing facility is in Edmonton. Given the often-classified nature of the work undertaken at SRC, the importance of scientists being able to easily share information with their Canadian and international colleagues and the existing budgetary restrictions on travel, the placement of a similar capability at Suffield would seem compelling. We understand that some of the communications problems we have observed during recent emergency response exercises are also related to the age of existing infrastructure. Our discussion this year with SRC's Assistant Director for Corporate Services Operations revealed that, at the Base and DRDC levels, initiatives have been launched that are aimed at both the secure communications requirement and the related need to renew and strengthen the Base's telecommunications backbone. Solutions are expensive and will likely take some time to implement.

- Sign-off by the Security Officer is now a required step in the approval process (ONTAP) for new research activity including field trials. As such, the Security Officer will do more to help lead scientists identify and mitigate potential security risks associated with their work.
- With respect to Corporate Services more generally, we were told that, in response to dissatisfaction with the results of the centralization of services, especially procurement, the DRDC Director General Science and Technology Corporate Services has directed further adjustments to the centralized or so-called “transformation” model of service delivery that will see local procurement staff reinforced and provided more functional authority and better training.
- In the opinion of the Acting Centre Director, the looming retirements of some of SRC’s most experienced and knowledgeable staff, together with the Centre’s aging infrastructure, remain the leading risks to the execution of its mission. An orderly succession plan, including the timely hiring and training of new staff, constitutes the obvious mitigation strategy for the “retirement risk”. Overlap with retirees will preserve critically important corporate memory and ensure continuity of operations. Implementation of this strategy deserves continued active DRDC corporate support and follow-up by the Committee during future visits.
- Another staffing-related concern is the growing demand on staff time exerted by support to training and the provision of reach-back support to operations. Both training facilitation and reach-back are integral aspects of the DRDC S&T programme; however, there is increasing anecdotal evidence of an imbalance in the allocation of resources between “Readiness” and other programme projects to the detriment of the latter and to the work/life balance of staff. There is need to clarify expectations versus capability in terms of personnel numbers as well as expertise. The Acting Centre Director intends to carry out a quantitative analysis of this issue with a view to pushing, during the on-going reformulation of the DRDC BCD S&T programme, for recognition of this apparent imbalance and a consequent dedication of resources conducive to favourable working conditions for personnel while discharging the scientific research mandate of the Centre. On a related note, he will also advocate that the first year of the programme projects be devoted to the set-up of contracts and other preparations to better reflect the reality of implementing new projects.
- The uncertainty around who has responsibility for the funding of additional activities, such as support to the G7 meeting and certain aspects of Exercise PRECISE RESPONSE, significantly compromises the Centre

Director's ability to effectively manage financial risk. Similarly, clarification of the role of DRDC in supporting international fora (*e.g.*, G7) and timely involvement are important for maintaining readiness and management of personnel.

- **RCN Maritime Forces Atlantic.**

- During its visit to Maritime Forces Atlantic in Halifax, the Committee obtained good insight into RCN BCD policy, doctrine, organization, equipment, tactics, techniques, procedures and training. Taken together, these would seem to constitute a reasonable capability to sustain operations and uphold command flexibility in a biological or chemical warfare environment. We note that BCD capability readiness is included as an integral component of mission “work-up” training conducted at sea and that BCD “battle problems” are evaluated by specialized “sea training” and damage control staff. This said, we ask if enough naval officers are receiving the appropriate training and qualification at the CFFCA to provide the essential BCD advice and expertise to apply this concept in all naval units, establishments and headquarters – both afloat and ashore. Currently, we were told, there are insufficient qualified personnel on the East coast to evaluate readiness without help from the West coast. Apparently, one member on each coast who has been qualified through the CBRN Defence Advisor Course would suffice for the purposes of sea training certification.
- Naval Combat Information Operators and Officers, it was explained, perform the CBRN warning and reporting function in ships. Modularization of the CBRN Defence NCO and CBRN Defence Officer courses to match these responsibilities would make it easier for the Navy to maintain the requisite number of qualified personnel.
- In a similar vein, it was suggested that qualifying more junior personnel (*i.e.*, Master Seamen versus Petty Officers 1st Class) as CBRN Defence NCOs would help alleviate shortages of CBRN Defence-trained sailors ashore and afloat.
- Two of the recently procured vehicle and personnel decontamination systems have been issued to the RCN – one per coast. Apparently, there are questions as to how the Navy will store, use and maintain them.
- Finally, it was mentioned that Fixed Site Detectors, being wireless, could pose problems under certain Emission Control conditions. A wired option would make sense, but only if provision were made for CITADEL conditions.

- **RMC**

- During our last visit in 2016 we observed that the RMC was seeking to add to the scope and value of its contribution to Canadian security and defence by supplementing its CBRNE academic course offerings with a certificate-level programme. This year, we learned that the programme is on hold pending verification of demand.
- We had also noted the expert participation of the Analytical Sciences Group in evaluations of chemical agent legacy sites in the region. This activity has ceased, given the belief that support to any further investigations is within the capability of commercial laboratories.
- We were also informed during this year's visit that RMC's licence to hold small quantities of chemical agent for defensive research purposes was returned on 17 May 2018 to the Canadian National Authority as being no longer required. Concurrently, all remaining agent was destroyed.
- A significant amount of development and test work is conducted by Defence Scientists embedded at RMC in the realm of protective capability and the design and procurement of respirators, clothing systems and equipment. They have also contributed to the creation of a national first responder CBRN protection standard in collaboration with the Standards Council of Canada.

- **CJIRU-CRBN**

- Given its specialized capability in the realm of detection, identification and mitigation of chemical, biological and other hazards, the CJIRU-CRBN 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 unit members we met. The expertise, dedication and maturity exhibited by all struck us as being of a very high standard. The inclusion this year of the chance to observe a training exercise based on a typical mission scenario allowed us to view unit members "in action" and provided excellent insight to how the various roles, skill-sets and technologies combine to achieve the desired outcome. We were pleased to hear that the relationship between the unit and SRC is strong and productive, including the use by the unit of equipment and procedures developed by DRDC, conduct of live agent training and exploitation of SRC's reach-back

expertise. We understand that the unit will post a liaison officer to Suffield with the aim of deriving even further benefit from what SRC offers.

- As part of a Canadian Special Operation Forces Command project to publish a pan-Command training safety manual to augment existing Canadian Armed Forces publications, CJIRU-CBRN has drafted a CBRN chapter, which deals with specialized personal protective equipment, agent simulants and unconventional techniques and procedures. The Committee commends this initiative.

- **NDHQ**

- As in previous years, transparency and frankness typified our talks with intelligence and policy staff at NDHQ and with personnel from GAC. They provided briefings not only on the threat landscape and the status of the BTWC and CWC, but also, as they have generously done before, the Weapons Threat Reduction Programme, which is Canada's contribution to the Global Partnership Program Against the Spread of Weapons and Materials of Mass Destruction.
- As stated earlier in this report, the intelligence staff briefings we received attested to continued credible biological and chemical warfare threats from both state and non-state actors, which necessitate appropriate defensive preparedness. We were informed that the monitoring and ongoing assessment of the threat landscape relies upon the expertise of an exceedingly small number of experts whose ranks will soon further diminish due to retirement. During our visit to the DRDC Corporate Office, we heard expressed the desire for more CBRN intelligence input to the formulation of the research and development programme and that the inference of adversarial intent deserves more attention. As such, it would seem to the Committee that an enhancement of Canada's ability to assess biological and chemical threats would be welcome.
- We have, for several years, been impressed by the extent and impact of our country's involvement and applaud the growing number of projects in the Middle East, Africa and South-East Asia aimed at strengthening both global chemical and biological security. We were therefore pleased to learn that the mandate of the Weapons Threat Reduction Programme has been extended for five years with an annual budget of \$73.4 million. We were also happy to learn that Canada will hold the presidency of the Global Partnership in 2018.
- The updates of the BTWC and the CWC both touched on growing concern over DURC and how to control the proliferation of knowledge associated with such research. As stated earlier, the Committee intends to monitor

this issue more closely as it pertains to the Canadian defence research and development community.

- The Army's Directorate of Joint CBRN Defence (D JCBRN D) is responsible for the development of joint CBRN defence capabilities to enable the armed forces to survive and operate in a CBRN-contaminated environment at home or abroad. In this connection, one of its principal tasks is the provision of guidance to DRDC with respect to the BCD R&D program. The Directorate remains most helpful to the work of the Committee, having this year provided us with an update of completed, divested, active and proposed projects.
 - This is a critical year for the future of BCD capability development as the current "omnibus" project comes to an end and work begins to define a new project based on the provisions of the Strong, Secure and Engaged defence policy. The involvement of a high-level BCD "champion" will be crucial to ensuring that BCD requirements receive the attention they merit.
 - We also observed that a significant personnel shortfall at the CFFCA (50%) remains a perennial issue necessitating augmentation of the instructor cadre there by D JCBRN D personnel.
- **CSS**
 - At the CSS, we were again provided with a comprehensive and insightful update of the CSSP with an emphasis on its BCD aspects. The program's mandate is to strengthen Canada's ability to anticipate, prevent, mitigate, prepare for, respond to, and recover from natural disasters, serious accidents, crime, and terrorism through the convergence of science and technology with policy, operations, and intelligence. The CSSP supports federal, provincial and municipal government-led projects (including events such as the G7 Summit) in collaboration with response and emergency management organizations, non-governmental agencies, industry, and academia. It does this by establishing and maintaining frameworks for collaboration; incentivizing partnerships; and, providing S&T knowledge and advice. It is also able to fund projects directly and undertake strategic acquisition of technology. Since 2015, the CSSP has targeted challenges in four focus areas: critical infrastructure, border security, operator capability and, community resilience. Public Safety Canada provides policy direction for the programme.
 - We were impressed by the array of recently completed, on-going and proposed projects in the realms of surveillance, risk assessment, and the countering of biological and chemical threats, as well as by the inter-departmental and/or international collaboration that characterizes them

all. We also observed that new projects are emerging from the positive outcomes of previous work.

- Of special note this year was the support provided to the Scientific and Technical Intelligence Group (STIG) meeting and table-top exercise held in Ottawa. The STIG is a component of the Quadrilateral Group on CBRN Counter-Terrorism charged with producing an annual CBR terrorism threat assessment (compiled, *inter alia*, from meeting contributions and exercise results), which in turn can be used to inform research and development efforts.
- **CFHS Group HQ**
 - Three open recommendations from past Committee reports apply to the CFHS Group HQ. The first, dating from 2015, suggests clarification of the Health Services Group Commander's expectations of 1 Canadian Field Hospital with respect to its capability to operate in a BCD environment, including the provision of treatment to biological and chemical warfare agent casualties. We agree with the Operational Medicine staff that much has been accomplished in response to this recommendation. Relevant tasks are now included in the Commander's Annual Planning Guidance and, gaps in doctrine and in training have been, or are being filled, including the provision of specialized CBRN-related individual training opportunities. The only aspect of this recommendation that remains to be addressed is completion of an evaluation of the utility of the collective protection (COLPRO) shelter system that was issued to the unit as part of the omnibus CBRN Defence project. 1 Canadian Field Hospital is to conduct this evaluation in conjunction with CFHS HQ. However, the high operational tempo of the Hospital has and continues to preclude this activity. The Committee intends to visit the Hospital again in 2019 and refresh its understanding of this issue from the unit's perspective. In the meantime, we will keep this recommendation open while acknowledging that, apart from the COLPRO issue, it has been satisfactorily addressed.
 - The second recommendation, from our 2016 report, calls for a comprehensive assessment of SRC's unique occupational health and emergency medical support needs. As explained earlier in this report, there have been several positive developments on this front in recent months (*e.g.*, contracting of a medical advisor; special access to an AChE monitoring device and anthrax vaccine; CBRN-related training courses for base medical staff; and, back-fill support from 1 Field Ambulance) brought about with the essential help of CFHS Gp HQ staff. While the situation is much improved, the Committee believes that a comprehensive assessment is still merited in order to stabilize and sustain appropriate

occupational health and medical support programmes and systems. We were pleased to note that CFHS Gp HQ shares this view and are prepared to participate in this assessment as a stakeholder.

- In 2017, we recommended the replacement and relocation of the CMED. We are encouraged by the support voiced for this recommendation by CFHS Gp HQ and other NDHQ authorities. CMED replacement is now identified as a requirement and is included as priority 32 of 144 departmental infrastructure projects. Notwithstanding this placement, construction is many years off. In the meantime, we commend the Group's intention to continue to strengthen its partnership with PHAC and in so doing, look for opportunities to mitigate some of the risks associated with CMED's current situation. We will closely monitor developments beginning with our next visit to CMED in 2019.
- The mandate of the CFHS Group HQ Regulatory Affairs Section is to ensure adherence to Health Canada and DND regulations for the reporting, accounting and handling of unlicensed medical products; to advise on regulations for their use; and, to seek Canadian regulatory approval for them, where feasible. We observed that the section remains proactively, energetically and fully engaged in obtaining regulatory approval under Health Canada's Extraordinary Use New Drug policy and Special Access Program covering an impressive range of BCD-related products. The worldwide shortage of auto-injectors, due to a manufacturing stoppage in the US, remains a concern. We therefore commend the Regulatory Affairs Section for their success in locating an alternative source for nerve agent MCM auto-injectors.
- We salute the steady progress of the BWTMCM project. Two Smallpox MCM, one Botulinum and one Anthrax MCM have been licensed and procured and licensing of a second Anthrax vaccine is imminent. The Committee was pleased to note that provisions have been made in the procurement contracts negotiated on behalf of the project for the provincial authorities to purchase stocks on the same terms for their local stockpiles. The rigorous attention to regulatory requirements and proceeding to full licensure makes these MCMs available for both military and civilian use to treat both endemic or intentional exposure. We were also informed that a Treasury Board submission is underway to seek a project timeline extension to 2021 with increased funds to meet all tasks mandated by the 2017 Defence Policy.

- **PRECISE RESPONSE**

- In hosting Exercise PRECISE RESPONSE, Canada continues to honour its commitment, made at the 2002 NATO Summit in Prague, to provide our Allies with a safe and secure site for live-agent CBRN Defence training. Based on our interviews with members of several of the multi-national teams formed for the exercise (of which there were ten comprising 400 participants) this is a unique and highly-valued opportunity. The Committee was impressed by the seamless interaction between participants from different nations facilitated by the exercise and which underlines its importance.
- We understand there is concern over the sharing of costs of the exercise between Canada and NATO and, amongst the Canadian entities involved. Moreover, the increasing demand for live-agent training puts added-pressure on SRC staff. To our mind, PRECISE RESPONSE especially and live-agent training generally constitute invaluable Canadian and DRDC contributions to the readiness of national and Alliance forces to deal with a real and growing threat. We therefore urge the responsible authorities to negotiate a solution to these issues – which again, in our view, do not seem intractable.

CONCLUSIONS

Having detected no evidence to the contrary during its 2018 briefing and visit activities, 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 CAF.
- The BCD research, development and training activities undertaken by DND and the CAF 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 DND and the CAF pose minimal risk to public safety or the environment.
- There is no covertness or duplicity within the BCD program.

RECOMMENDATION

While the Committee does not offer any new recommendations this year, we are aware that there is considerable discussion within the defence and general scientific communities of the identification of Dual Use Research of Concern and mitigation of the associated risks. We acknowledge the guidelines that DRDC has put in place at SRC and will monitor their on-going implementation.

STATUS OF COMMITTEE RECOMMENDATIONS

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

ANNEXES

A – Status of Committee Recommendations

B – Acronyms and Abbreviations

STATUS OF COMMITTEE RECOMMENDATIONS

1. (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/CAF 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 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."

BCDRC Comment (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.

DND/CAF 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."

BCDRC Comment (December 2013): Notwithstanding the departure, due to restructuring, of some of the personnel involved in the original review, we trust that the impetus behind the review will be sustained and we look forward to receiving a report of further substantial progress during our 2014 visit. We will continue to monitor.

DND/CAF Response (February 2014): "The comprehensive chemical safety review resulted in 11 recommendations. A majority of these recommendations resulted in changes to DRDC Suffield's safety manuals and standard operating procedures. There are a few recommendations still in the review and implementation process. BCDRC will receive a detailed status update of all 11 recommendations during their 2014 visit."

BCDRC Comment (December 2014): We acknowledge the essential or imminent implementation of all but one of the Chemical Safety Review recommendations – that being the adoption of AChE testing in support of a Medical Surveillance Program. We look forward to an update on this issue during our next visit.

DND/CAF Response (July 2015): "The recommendations continue to be implemented, with the remaining effort focused on a certified agent worker standard and AChE testing. The lowest level of agent worker standards has been established and certification is

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underway. The next level is now under development. The AChE testing protocols have been designed and are being reviewed as part of an experimental process involving the use of human subjects. As well, the results of a chemical worker workplace risk assessment have been presented to Health Canada in order to establish occupational health assessment guidelines (OHAG) that will also be implemented.”

BCDRC Comment (December 2015): We commend this progress and look forward to a report of the completed implementation of the certified agent worker program, AChE testing protocols and hiring of a full-time Chemical Safety Officer.

DND/CAF Response (September 2016): “The recommendations continue to be implemented, with the remaining effort focused on worker certification, Acetylcholinesterase (AChE) testing, and the hiring of a chemical safety officer. Agent worker certification at the first level has been completed, and the second level assessment tools are being finalized, with testing to begin shortly. AChE testing was completed in July 2016, and the full program is expected to be implemented by the end of 2016. The process to hire a full-time chemical safety officer has also been initiated.”

BCDRC Comment (December 2016): We now understand that while an AChE Monitoring Program based on a UK model has been endorsed and a pilot program approved and executed, full implementation of the program is now expected in 2017. We look forward to completion of the definition of the higher agent certification level criteria and to meeting the new CSO.

DND/CAF Response (April 2017): “DRDC is expecting a staffing classification decision to be made soon, which will permit the start of the hiring process for the chemical safety officer. The Acetylcholinesterase (AChE) monitoring report has been submitted for review, and draft standard operating procedures are being developed that take into account issues raised during the pilot project. The full program is planned for use in July during Exercise Precise Response 2017, a NATO CBRN live training exercise. The evaluation material for Level 2 Agent Worker Certification is undergoing final review.”

BCDRC Comment (December 2017): We understand that the classification of the CSO position has been determined, candidate interviews conducted, and a job offer made with a starting date of 16 July 2018. We await confirmation of offer acceptance. With respect to AChE monitoring, we acknowledge that regulatory issues have arisen that must be addressed before this initiative is implemented. We look forward to a report of the completed development and implementation of the Agent Worker Certification Programme.

DND/CAF Response (April 2018): “DRDC has hired a Chemical Safety Officer who will be in place by mid-July 2018. The Acetylcholinesterase (AChE) monitoring report has been submitted for review, and draft Standard Operating Procedures (SOPs) are under development and will take into account issues raised during the pilot project. The monitoring program was used in July during Exercise Precise Response 2017, a NATO CBRN live training exercise, and no adverse events were reported. Extension of this monitoring program to DRDC and CAF personnel is dependent upon the establishment of

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a contract for a Medical Advisor who will be able to apply for Special Access to use the ChE Check device. This contract is expected to be in place in 2018. The evaluation material for Level 3 Agent Worker Certification is undergoing final review.”

BDRC Comment (December 2018): We were pleased to meet the new Chemical Safety Officer during our last visit to Suffield in July. We also applaud the signing of a contract with a physician to serve as Medical Advisor and the actions he has already taken under the Special Access Programme to utilize the AChE testing device. Finally, we acknowledge that the last elements of the Agent-Worker certification programme are on the verge of completion. We will therefore close this recommendation as having been implemented.

DND/CAF Response (February 2019): “DRDC has hired a Chemical Safety Officer who started in July 2018. A scientific report on the Acetylcholinesterase (AChE) monitoring program was published in April 2017, and a Standard Operating Procedure (SOP) is available for instrument users. The monitoring program was used in July during Exercise PRECISE RESPONSE 2018, a NATO CBRN live training exercise, and no adverse events were reported. Extension of this monitoring program to DRDC and CAF personnel is being pursued now that a Medical Advisor has been contracted and can apply for Special Access to use the AChE Check device. An extensive review of the Agent Worker Certification (AWC) program and training requirements for all levels has been done and all workers who handle chemical warfare agents at the Suffield Research Centre have been either grandfathered into the appropriate level, or are undergoing training to achieve the required level. A formal document outlining AWC scope and requirements has been submitted for approval and publication.”

Status: CLOSE

2. (2014) *We encourage acceleration of the final approval and funding of the project to replace DRDC Suffield’s BSL 3 suites in Building 1 with new modular BSL 3 laboratories to be located in a separate nearby building pending completion of a new laboratory complex.*

DND/CAF Response (July 2015): “During 2014, DRDC reviewed the original 2004 requirement and has invested significant effort to revise the Statement of Requirement (SOR), update the project identification documents (SS(ID)), and review the main options for presentation to a senior review board (SRB) in April 2015. This will be the first official stage in getting what amounts to a new \$14M project into the DND infrastructure investment plan.”

BCDRC Comment (December 2015): We commend this effort and will closely monitor further progress of this vital undertaking. In the meantime, we urge that the maintenance of critical systems in Building 1 continue to receive diligent attention.

DND/CAF Response (September 2016): “DND/CAF has initiated a process for the replacement of the biological laboratories at the DRDC Suffield Research Centre for handling of risk group 2 and 3 biological agents. This project has been identified in internal development and acquisition plans and is undergoing options analysis and review. Taking into account administrative processes, the anticipated timeline to update

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existing facilities is 3-5 years. While this process continues, DRDC continues to exercise its extensive preventative maintenance program”

BCDRC Comment (December 2016): We acknowledge the additional complications introduced by the transfer of real property responsibilities to ADM IE but continue to urge priority attention to this project. We will continue to monitor and report progress.

DND/CAF Response (April 2017): “During the transfer of responsibilities to ADM (IE), the review of outstanding infrastructure projects resulted in a significant improvement in the recapitalization of the Suffield Chemical and Biological Laboratories as it has become the highest rated ADM(S&T) project within the ADM(IE) major construction queue. While it still remains in the unfunded queue, it is expected that this improvement will result in concrete action in the near future. The interim replacement of the biological laboratories continues through the capital equipment program.”

BCDRC Comment (December 2017): Continuing to see, as we do, serious infrastructure issues, we applaud the appointment of a Project Manager who will be instrumental to moving the project forward.

DND/CAF Response (April 2018): “During the transfer of responsibilities to ADM (IE), the review of outstanding infrastructure projects resulted in a significant improvement in the recapitalization of the Suffield Chemical and Biological Laboratories, as it has become the highest rated ADM (S&T) project within the ADM (IE) major construction queue. While it still remains in the unfunded queue, it is expected that this improvement will result in concrete action in the near future. The interim replacement of the biological laboratories continues through the capital equipment program; a Statement of Requirements is currently being drafted for this replacement.”

BCDRC Comment (December 2018): While both projects are gaining momentum, there is concern that despite their intimate connection, the MBCF project risks becoming delinked from the longer-range laboratory re-capitalization (which is ranked as DND’s number one priority project within its price range). Were this to occur and the MBCF project abandoned, the continuity of the biological defence programme would be threatened, given the likelihood that the aging current bio-containment facility will fail before the laboratory recapitalization project is completed. The lack of a bio-containment facility at SRC, even temporarily, would jeopardize Canada’s ability to meet its domestic responsibilities and international commitments.

DND/CAF Response (February 2019): “During the transfer of responsibilities to ADM (IE), the review of outstanding infrastructure projects resulted in a significant improvement in the recapitalization of the Suffield Chemical and Biological Laboratories, as it has become the highest rated ADM (S&T) project within the ADM (IE) major construction queue. While it still remains in the unfunded queue, it is expected that this improvement will result in concrete action in the near future. SRC was visited by ADM (IE)’s Project Director for SRC’s recapitalization project and a member of his support team from Defence

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Construction Canada to meet key staff and discuss the information needed over the next 24 months that will form the package required to enable project definition. The interim replacement of the biological laboratories continues through the major capital equipment program; however, there are currently insufficient human resources within ADM (S&T) to complete the requirements needed to advance progress to the next stage with ADM (Mat).”

Status: OPEN

3. (2015) *The Canadian Forces Health Services Group should clarify its expectations of 1 Canadian Field Hospital with respect to the Hospital’s capability to operate in a BCD environment including the provision of treatment to biological and chemical warfare agent casualties.*

DND/CAF Response (September 2016): “In the event of a chemical, biological and [sic] nuclear (CBRN) incident, there are four tasks that would be expected of 1 Canadian Field Hospital:

- provision of medical and surgical care to CBRN casualties;
- protection of medical personnel and their patients in the event of a local CBRN attack;
- protection and maintenance of critical capabilities (i.e., surgery) in the event of a local CBRN attack (through the use of collective protection); and
- small scale decontamination of patients in the vicinity of the medical facility.

1 Canadian Field Hospital possesses the specialized equipment needed to operate in a Biological and Chemical Defence (BCD) environment. Regarding the provision of treatment in a BCD environment, the Canadian Forces Health Services Group (CFHSG) currently sends clinicians to clinical biological and chemical warfare training courses in the United Kingdom and the United States. Non-clinical CBRN courses are also available in Canada to further support the unit’s ability to operate in a CBRN environment. As well, the CFHSG units, including 1 Canadian Field Hospital, are required annually to achieve individual CBRN training for the Individual Battle Task Standards for Land Operations, Individual Standard Level 2.

CFHSG will include specific collective training standards for 1 Canadian Field Hospital in the 2016/2017 Commander’s Annual Planning Guidance, which should be available in fall 2016. Furthermore, 1 Canadian Field Hospital will be requested to review the four tasks listed above in order to identify any additional resource requirements (e.g., personnel/equipment/training) needed to further support the unit in providing the expected capabilities.”

BCDRC Comment (December 2016): We look forward to learning of the results of these actions during our next visits to 1 Canadian Field Hospital and to CFHS Group HQ.

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DND/CAF Response (April 2017): “The Canadian Forces Health Services Group (CF H Svcs Gp) has provided guidance to 1 Canadian Field Hospital, which will be reiterated in the Commander’s Annual Planning Guidance, tentatively set to be released in April 2017. This includes the identification of the following tasks expected of a deployed medical facility:

1. Provision of medical and surgical care to CBRN casualties;
2. Protection of medical personnel and their patients in the event of a local CBRN attack;
3. Protection and maintenance of critical capabilities (i.e. surgery) in the event of a local CBRN attack (through the use of collective protection); and
4. Small scale decontamination of patients in the vicinity of the medical facility.

Furthermore, CF H Svcs Gp was able to significantly increase access to the Clinical CBRN course in the United Kingdom, which will greatly enhance the unit’s ability to perform the tasks identified above. Ten clinical personnel, nine of which are from 1 Canadian Field Hospital and the other from another CF H Svcs Gp unit, have been selected to receive this training between January and April 2017.”

BCDRC Comment (December 2017): We commend these initiatives and look forward to learning of the outcome of the intended assessment of the Hospital’s ability to perform these tasks.

DND/CAF Response (April 2018): “Provision of medical and surgical care to CBRN casualties was actioned through the intentional selection of 1 Cdn Fd Hosp personnel for clinical CBRN training. This will be maintained through inclusion of 1 Cdn Fd Hosp staff on these courses as necessary. A draft training plan has been produced, which will help identify priority individual training requirements and provide some basic guidance on collective CBR training at the unit level. DND considers that this item is complete.

Small scale decontamination – CF H Svcs HQ Op Med staff have developed doctrine related to casualty decontamination. A draft document has been completed and will soon be circulated to our operational units, including 1 Cdn Fd Hosp, for their input. It is anticipated that approval of this doctrine will be achieved within the next year and such approval should constitute completion of this sub-item. In the interim, this sub-item should remain open.

Individual and collective protection – Efforts on these items were deferred due to the high operational tempo of 1 Cdn Fd Hosp. This elevated tempo is anticipated to remain a factor for the upcoming year which may affect the Group’s ability to definitively address this item. The subject of COLPRO will remain an item to be actioned if an opportunity presents itself, but it should remain an open sub-item until actioned.”

BCDRC Comment (December 2018): We acknowledge and commend the actions taken and the results achieved to date with respect to this recommendation – especially training. We will visit 1 Canadian Field Hospital in 2019 at which time we will note the

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status of the new casualty decontamination doctrine and the outlook for the use of the collective protection (COLPRO) system.

DND/CAF Response (February 2019)

“Notes from DRDC Suffield:

Provision of medical and surgical care to CBRN casualties was actioned through the intentional selection of 1 Canadian Field Hospital (1 Cdn Fd Hosp) personnel for clinical CBRN training. This will be maintained through inclusion of 1 Cdn Fd Hosp staff on these courses as necessary. A draft training plan has been produced that will help identify priority individual training requirements and some basic guidance on collective CBRN training at the unit level. DND/CAF considers that this sub-item is complete.

Small Scale Decontamination: Canadian Forces Health Services Group Operational Medicine staff have developed doctrine related to casualty decontamination. A draft document has been completed and will soon be circulated to operational units, including 1 Cdn Fd Hosp, for their input. It is anticipated that approval of this doctrine will be achieved within the next year, and DND/CAF considers that such approval should constitute completion of this sub-item. In the interim, this sub-item should remain open.

Individual and collective protection: Efforts on these items were deferred due to the high operational tempo of 1 Cdn Fd Hosp. This elevated tempo is anticipated to remain a factor for the upcoming year, which may affect the Group’s ability to definitively address this item. The subject of collective protection (COLPRO) will remain an item to be actioned if an opportunity presents itself but it should remain an open sub-item until actioned.

Notes from Canadian Forces Health Services:

Small Scale Decontamination: The Canadian Forces Health Services Headquarters Op Med Staff have completed a draft casualty decontamination guide. It is currently undergoing the review process with all stakeholders, since resourcing for this capability comes from external organizations. These stakeholders include D CBRN D, the Canadian Mechanized Brigade Groups, 1 Canadian Field Hospital and the Field Ambulance units. After the review process is complete, the guide will be published as a CF H Svcs Gp Standard Operating Procedure and disseminated to the relevant organizations. The anticipated timeline for this is within FY 19/20. This item should remain open until final published is complete.

1 CFH Individual and Collective Protection: 1 CFH continued to have a very high operational temp [sic] during FY 18/19. This again prevented a detailed assessment of the status of the COLPRO system currently held by the unit. With an anticipated reduction in tempo, it is hoped that an evaluation of this capability will be possible in the upcoming FY.”

Status: OPEN

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4. (2016) *A comprehensive assessment of Suffield Research Centre’s unique occupational health and emergency medical support needs should be conducted under the leadership of an appropriate high-level authority with the possible participation of relevant stakeholders (e.g., SRC, CFB Suffield, 3rd Canadian Division, CFHS Group, Health Canada, Alberta Health Services, etc.). This same authority should also take the lead in designing and implementing cooperative, long-term solutions to any gaps so identified.*

DND/CAF Response (April 2017): “As the national authority responsible for the oversight and provision of direction related to the compliance, control and risk management of CBRN S&T activities, the Chief of Staff (Science and Technology) will undertake an assessment of Suffield Research Centre’s occupational health and emergency support needs during Fiscal Year 17/18. The assessment will be designed to engage all relevant stakeholders in identifying any potential gaps and providing options to address them.”

BCDRC Comment (December 2017): We look forward to learning of the outcome of this assessment during our next visits to SRC and the DRDC Corporate Office.

DND/CAF Response (April 2018): “The Health and Safety Management System (HSMS) at Suffield Research Centre is comprised of an overarching Health and Safety manual with annexes for each safety area, including chemical and biological safety. The HSMS is reviewed on a bi-annual basis and is currently under review by relevant Section Heads and safety staff. In addition, the Suffield Research Centre has established a more comprehensive Integrated Emergency Response Plan, involving the Base Medical Centre and the CFB Suffield Fire Department. To reflect this, modifications to the current Service Level Agreements (SLA) are taking place. Further, the Suffield Research Centre has a scheduled audit of its entire safety system for later in 2018. Moving forward, there is an initiative to examine the feasibility of integrating the HSMS into the framework of our Environmental Management System. Over the last years, significant internal efforts have been made to establish a more integrated H&S Program, indicating that a comprehensive review via an external organization may not be needed. However, once the current HSMS review and safety audit are complete, the Suffield Research Centre will re-evaluate the need to conduct any additional reviews.

BCDRC Comment (December 2018): As stated in our 2018 report, the occupational health and emergency medical support situation has improved substantially over the past year. Nevertheless, the Committee believes that a comprehensive assessment is still merited in order to stabilize and sustain appropriate occupational health and medical support programmes and systems for the future. It may be that the current Health and Safety Management System Review will achieve the same goal. As such, we will ask for a report on the Review’s results during our 2019 visit to SRC, after which we will revisit this recommendation.

DND/CAF Response (February 2019)

“Notes from DRDC Suffield:

The Health and Safety Management System (HSMS) at Suffield Research Centre is comprised of an overarching Health and Safety manual with annexes for each safety area,

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including chemical and biological safety. The HSMS is reviewed on a bi-annual basis and is currently under review by relevant Section Heads and safety staff.

The Suffield Research Centre has established a more comprehensive Integrated Emergency Response Plan, involving the CFB Suffield Medical Centre, the CFB Suffield Fire Department, CFB Suffield Military Police, and Alberta Health Services. To reflect this, modifications to the current Service Level Agreements are taking place. Indeed, a comprehensive Integrated Emergency Response Exercise (IERE) organized by DRDC Suffield and conducted at CFB Suffield on September 5, 2018 demonstrated the cooperation by DRDC Suffield to bring relevant stakeholders together, including DRDC Suffield, CFB Suffield Fire Department, CFB Suffield Field Ambulance, CFB Suffield Military Police, Medics from the British Army Training Unit Suffield (BATUS), and Alberta Health Services, to successfully complete one of the most advanced emergency exercise cross the agency [*sic*]. Any news of the IERE was posted on the Government Canada website by ADM Public Affairs on September 7, 2018 (<https://www.canada.ca/en/department-national-defence/news/2018/09/successful-integrated-emergency-response-exercise-conducted-at-cfb-suffield.html>). Further, the Suffield Research Centre has an external audit of its entire safety system scheduled for Fall 2019. Moving forward, there is an initiative to examine the feasibility of integrating the HSMS into the framework of our Environmental Management System.

Over the last several years, significant internal efforts have been made to establish a more integrated H&S Program at the Suffield Research Centre which is consistent with ADM (S&T)'s Environment, Health and Safety Policy, indicating that a comprehensive review via an external audit organization may not be needed. However, once the current HSMS review and safety external audit are complete, the Suffield Research Centre will re-evaluate the need to conduct any additional reviews.

Notes from Canadian Forces Health Services:

Not related to Canadian Forces Health Services. Canadian Forces Health Services would participate in a comprehensive review but are not the primary stakeholder.”

Status: OPEN

5. ***(2017) Given the unique and essential capability of the Central Medical Equipment Depot, the operational importance of its gaining Good Manufacturing Practice accreditation; and, the potential value of collaboration with the Public Health Agency of Canada; consideration should be given to the replacement and relocation of this facility with a view to overcoming the shortfalls and impediments posed by its current state and location.***

DND/CAF Response (April 2018): “CF H Svcs Gp appreciates that BCDRC is emphasizing this in its report and fully agrees with this recommendation. The current condition, capacity and location of the CMED facility poses several risks to the ongoing management of our medical stockpile.

A Good Manufacturing Practices-compliant (GMP) facility and a Health Canada issued Establishment License are essential to ensuring the quality of the various medical

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products that the Group imports, stores, distributes and potentially shares with other government departments and allied partners. A licensed facility, with a robust quality assurance system in place should minimize the risk of operationally essential medical resources becoming compromised.

A strategic level partnership between CF H Svcs Gp and PHAC has recently been formalized between the Surgeon General and the VP of Health Security Infrastructure Branch at PHAC. Ongoing efforts will be applied to exploring short term solutions while scoping an ongoing collaborative partnership that would be focused on common infrastructure requirements and coordinated inventory management and procurement.

CMED replacement has been identified as a requirement and has been included in the DND infrastructure plan. However, given the current prioritization of the project, we anticipate that it will be at least ten years before the facilities are replaced and relocated. CF H Svcs must accept and manage these risks but our ability to mitigate them remains limited. Although our strengthened partnership with PHAC may introduce other risk mitigation opportunities, the limitations of the current CMED facility may prevent a full realization of the benefits of this partnership. The ideal solution to the problem would be an acceleration of the approval and funding of this project and early efforts are taking place to elevate its position on the departmental prioritization list.”

BCDRC Comment (December 2018): We are encouraged by the support voiced for this recommendation by CFHS Gp HQ and other NDHQ authorities. CMED replacement is now identified as a requirement and is included as priority 32 of 144 departmental infrastructure projects. Notwithstanding this placement, construction is many years off. In the meantime, we commend the Group’s intention to continue to strengthen its partnership with PHAC, and, in so doing, to look for opportunities to mitigate some of the risks associated with CMED’s current situation. We will closely monitor developments beginning with our next visit to CMED in 2019.

DND/CAF Response (February 2019)

“Notes from Canadian Forces Health Services:

Canadian Forces Health Services Group (CF H Svcs Gp) appreciates that BCDRC is emphasizing this in its report and fully agrees with this recommendation. The current condition, capacity and location of the CMED facility poses several risks to the ongoing management of our medical stockpile. A Good Manufacturing Practices-compliant (GMP) facility and a Health Canada issued Establishment License are essential to ensuring the quality of the various medical products that the Group imports, stores, distributes and potentially shares with other Government departments and allied partners. A licensed facility, with a robust quality assurance system in place should minimise the risk of operationally essential medical resources being compromised.

A strategic level partnership between CF H Svcs Gp and PHAC has recently been formalized between the Surgeon General and the VP of Health Security Infrastructure Branch at PHAC. Ongoing efforts will be applied to exploring short term solutions while

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In November 18, a briefing note was sent to ADM (IE) requesting approval to engage in a strategic infrastructure collaboration between DND and the Public Health Agency of Canada (PHAC) on a shared medical warehouse on CFB Trenton. This project continues to be 35th on the priority list for ADM (IE) and 3rd for Military Personnel Command's infrastructure requirements. The importance of this project to CF H Svcs and the CAF will continue to be emphasized."

Status: OPEN

ACRONYMS AND ABBREVIATIONS

AChE – acetylcholinesterase

ADM S&T - Assistant Deputy Minister – Science and Technology

ADM IE – Assistant Deputy Minister – Infrastructure and Environment

BCD - Biological and Chemical Defence

BCDRC - Biological and Chemical Defence Review Committee

BSL - Bio-safety Level

BTWC - Biological and Toxin Weapons Convention

BWTMCM - Biological Warfare Threat Medical Counter-measures

CAF - Canadian Armed Forces

CBRN - chemical, biological, radiological and nuclear

CBRNE - chemical, biological, radiological, nuclear or explosive

CFB - Canadian Forces Base

CFFCA - Canadian Forces Firefighting and CBRN Academy

CFHS Gp HQ - Canadian Forces Health Services Group Headquarters

CJIRU - Canadian Joint Incidence Response Unit

CMED - Central Medical Equipment Depot

CNSSSF - Canadian National Single Small-scale Facility

CSS – Centre for Security Science

CSSP - Canadian Safety and Security Program

CTTC - Counter Terrorism Technology Centre

CWA - chemical warfare agent

CWC - Chemical Weapons Convention

DAOD - Defence Administrative Order and Directive

DND - Department of National Defence

DRDC - Defence Research and Development Canada

DURC – Double-Use Research of Concern

FY - fiscal year

GAC – Global Affairs Canada

GSO – General Safety Officer

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HMCS - Her Majesty's Canadian Ship

MBCF – Modular Biological Containment Facility

MCM - medical countermeasures

NATO – North Atlantic Treaty Organization

NCO – non-commissioned officer

NDHQ - National Defence Headquarters

ONTAP - On-line Turbo Approval Process

OPCW - Organization for the Prohibition of Chemical Weapons

PAO – Plan for Administrative Oversight

PHAC - Public Health Agency of Canada

RMC - Royal Military College

RCN – Royal Canadian Navy

S&T - science and technology

SCI – Statement of Common Intent

SLA - Service Level Agreement

SRC – Suffield Research Centre

STIG – Science and Technology Intelligence Group