
2019 ANNUAL REPORT

Biological and
Chemical Defence
Review Committee

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January 2020

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Biological and Chemical Defence Review Committee

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**2019 ANNUAL REPORT
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 (BCW) 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 2019, 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. Jonathan Van Hamme
Professor of Microbiology
Thompson Rivers University

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 2019 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.
- In addition to its principal conclusions, the Committee, drawing upon its observations made during the course of its visits to DND and CAF education and training establishments, operational formations, units and research and development facilities, offers three new recommendations aimed at reinforcing the good management and effectiveness of Canada's BCD program.

COMMITTEE ACTIVITIES 2019

During 2019, the Committee conducted the following briefings, visits and related activities:

- **CBRNe Convergence Canada Conference – Ottawa (16-17 April).** Dr. Van Hamme and the Executive Officer attended this event aimed at providing a forum for the exchange amongst Canadian and international military, first responder and scientific experts of experiences, doctrine and best practices as well as information on research and new products all related to the countering of chemical, biological, radiological, nuclear and explosives (CBRNE) related threat and risk. Dr. Van Hamme delivered a presentation on the work of the BCDRC.

- **DRDC Suffield Research Centre (SRC) (06-08 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 and discussion of SRC's role, mission and tasks; organization; infrastructure; resource allocation; staffing, notable activities and initiatives undertaken over the past year; inter-departmental and international involvements; and, other issues of note
 - An overview presentation and discussion of the current BCD research and development program and associated projects underway at SRC
 - A presentation and discussion of the BCD training program and other activities at the Counter Terrorism Technology Centre
 - A review of all BCD research and development contracts awarded to outside agencies
 - Briefings by selected contractors engaged in BCD research or development or the Technical Authorities overseeing these contracts
 - Visits to the Bio-Threat Defence Section, the Chemical and Biological Assessment and Protection Section and, the Casualty Management Section including informal project briefings and laboratory visits with selected scientists
 - Visit to the vivarium
 - An update on the local development and implementation of the mandated Plan for Administrative Oversight of potential Dual Use Research of Concern (DURC)
 - Presentation and discussion of aspects of the current BCW agent threat having a significant impact on current research and development activity and which may be discussed at security classification Level II
 - Review and discussion of microbiological, viral and toxin holdings, including management protocols and procedures
 - Visual inspection of Containment Level 2 microbiological, viral and toxin holdings and laboratory facilities
 - Visit to the Containment Level 3 laboratory
 - Review and discussion of chemical holdings, including management protocols and procedures
 - Visual/video inspections of chemical holdings and laboratory facilities

- A presentation on the Centre's compliance with the Controlled Drugs and Substances Act and its attendant regulations
- A review and discussion of any transfers from SRC of chemical agents or pathogenic biological materials during the period 1 May 18 – 30 Apr 19 and, procedures for the control and tracking of their use by the receiving agency
- An update on the application of the DRDC Chemical, Biological, Radiological and Nuclear (CBRN) Risk Management Framework at SRC
- An update of the integration of the existing Health and Safety and Environmental Management Systems with DRDC's Corporate Safety and Environmental System
- Review and discussion of the current safety program and related issues including:
 - a summary of any biological or chemical hazardous occurrences or "near misses" over the past year and the action taken in response to same
 - status of the implementation of the recommendations in the 2016 Fire Marshal's report
 - status of the issue of storage and disposal of ventilation filters from the fume hoods in Building 1
- A private meeting with the General Safety Officer and the Chairs of the Biosafety Committee and the Chemical Safety Committee
- Observation of a biological laboratory emergency response exercise
- Review and discussion of the current infrastructure development program and other notable corporate services issues
- Review and discussion of the current environmental stewardship program including a private meeting with the Environmental Officer
- Review and discussion of the discovery and disposal of any legacy munitions suspected to contain BCW agent
- Review and discussion of the current physical and information security program
- A meeting with the Acting Base Commander
- An opportunity for any staff member to meet with the Committee in private and in confidence
- Review and discussion of recent local developments in connection with relevant open recommendations contained in the BCDRC's 2018 Annual Report

- At the conclusion of the visit, a Committee debriefing of the Centre Director and his executive management team on its initial observations and conclusions
- Notes:
 - Video inspection of holdings in the Containment Level 3 laboratory was not conducted this year due to the containment system being shut down for annual maintenance; however, this situation provided an opportunity for the Committee to tour the facility.
 - We had asked for a meeting with the CFB Suffield Medical Officer for the purpose of updating our understanding of the readiness of the Suffield Medical Section to respond to chemical or biological agent casualties. Unfortunately, the Medical Officer was not available to meet with us.
- **1 Canadian Mechanized Brigade Group - Wainwright (9 May).** The Committee received briefings from the Brigade Commander, his staff and unit representatives on BCD capability issues.
- **Canadian Forces Firefighting and CBRN Academy (CFFCA) - Borden (27 May).** The Committee met with the Academy's Chief Instructor and other senior instructors who provided an update on the Academy's BCD training programme. The Committee also viewed in-service detection, sampling and identification equipment and one of the newly acquired personnel, equipment and vehicle decontamination systems. On departure, we met with the Chief of Staff of the Commander of the Canadian Forces Support Training Group to whom the Commandant CFFCA reports.
- **1 Canadian Field Hospital – Petawawa (28 May).** The Committee met with the Commanding Officer who explained the hospital's mission and tasks; personnel disposition; continuum of care; modularization of surgical care; deployability; and, capabilities and limitations with respect to the treatment of BCW agent casualties. We also discussed her assessment of the practical utility of the recently acquired transportable collective protection (COLPRO) system.
- **Central Medical Equipment Depot (CMED) - Petawawa (28 May).** The Committee met with the Acting Commanding Officer and staff of the Depot and toured its pharmaceutical procurement, storage, packaging and distribution facilities with an emphasis on arrangements for BCD-related Medical Countermeasures (MCM).
- **Canadian Armed Forces Intelligence Command – NDHQ Ottawa (29 May).** The Committee was briefed on the current biological and chemical warfare agent threat assessment.

- **Assistant Deputy Minister Policy – NDHQ Ottawa (29 May).** 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 Threat Reduction Program. At our request, a representative of the Public Health Agency of Canada Office of Biosafety Programs and Planning kindly provided an update on the administration and enforcement of the provisions of the Human Pathogens and Toxins Act and its attendant Human Pathogens and Toxins Regulations. Of particular relevance was the Office’s role in overseeing DURC in the Canadian scientific community.
- **Defence Research and Development Canada Centre for Operational Research and Analysis (CORA) – NDHQ Ottawa (29 May).** The presentation explained current work to provide rigorous, risk-based, quantitative support to BCD capability investment decisions by estimating and aggregating the relative likelihood of the occurrence and impacts of specific events in time.
- **Directorate of Joint CBRN Defence (D JCBRN D) – NDHQ Ottawa (29 May).** The Director of JCBRN D updated the Committee on the role and 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 (30 May).** 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 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 Corporate Office - Ottawa (31 May).** Ms. Sophie Galarneau, Chief of Staff to the Assistant Deputy Minister Science and Technology (ADM S&T), chaired a discussion of current issues with DRDC Corporate Office subject matter experts. Agenda items included an update of DRDC’s role and organization; a presentation on the future BCD-related research and development program (which is being re-formulated this year), 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 2018 Annual Report. Finally, the Committee Chair de-briefed the Chief of Staff on preliminary observations made during our 2019 round of visits.

- **Exercise FIRE DRAKE – Suffield - (18 September).** Dr. Kraatz, accompanied by the Executive Officer and on behalf of the Committee as a whole, observed the conduct of FIRE DRAKE, an exercise carried out annually at DRDC Suffield's Counter-Terrorism Technology Centre (CTTC) in support of the RCMP-led National CBRNE Response Team.

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 BCW 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 31 May, 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 2019-20 DRDC R&D program related to BCD, for which they are responsible, are compliant with the provisions of DAOD 8006-0 (CBRN Defence) and DAOD 8006-1 (CBRN 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 program is being reformulated. The Committee expects to receive copies of the new project charters during its next visit.

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 (EPG) or in the military training area at Suffield. These munitions are reported to NDHQ and the OPCW and permission is 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 and 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 2019, there exists a positive safety culture.

Holdings of viral and toxin samples at SRC were inspected and verified. There were neither significant discrepancies nor any associated safety concerns. We were unable to physically inspect the biological holdings due to the shutdown of the Containment Level 3 laboratories for annual repair and maintenance. We did, however, review the updated holdings inventory. Biological holdings, including soil samples and particularly toxins, continue to be reduced to the minimum required for current defensive research. The toxin inventory requires further work to validate current stocks, integrate the inventory database with that of other biologicals, and establish ownership by current researchers, given that most of these stocks have not been used for some time.

The shutdown of the containment system afforded us the opportunity to tour the Containment Level 3 labs and to be briefed on procedures, in addition to our usual visit to the Containment Level 2 laboratories.

Completion of the revision of SRC's biological laboratory operating manual to ensure compliance with the provisions of the Human Pathogens and Toxins Act and with new

Canadian Biosafety Standards awaits receipt of information regarding operating procedures for a new autoclave.

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 chemical holdings in Building 1 revealed no discrepancies. The importance of consistent compliance with the Centre's policy of recording of agent use from "cradle to grave" was emphasized.

Last year, we learned that SRC is now licenced by Health Canada to hold controlled substances and precursor chemicals for use in its research. This year, we asked for and received a briefing on the controls and procedures in place to ensure the Centre's compliance with the licensing provisions of Controlled Drugs and Substances Act and its attendant regulations.

In our 2018 report, we closed, as having been largely implemented, our recommendation pertaining to support of the Chemical Safety Review launched in 2012. We continue, however, to follow the implementation of two of the review's recommendations:

- The first is the introduction of a Medical Surveillance Program to include monitoring of acetylcholinesterase (AChE) levels in pertinent laboratory personnel. This initiative remains problematic due to restrictions on access to, and use of, the unlicensed AChE monitoring device in the context of an occupational health monitoring program for public servants.
- The second is the agent-worker certification (AWC) program. We were told that this program is operating at the basic level while training procedures and evaluation materials for higher levels of certification are in the final stage of preparation. It was also mentioned that some have questioned the length of training and suggested a need for balance between initial training and refresher training. This said, we have been made aware of an apparently widely held view among staff that the framework of the program is poorly defined and does not facilitate skill- or competency-based evaluation. It is reported that some statements in the document are unambiguously outdated and were inadvertently carried over from previous drafts. As a result, the certification program is viewed as an arbitrary set of rules that can be bent and reinterpreted at will. It is alleged that changes and reinterpretations of the AWC requirements are made with each staff member's 'graduation' from a given AWC level. These changes are not systematically documented in the AWC framework, and therefore the existing AWC draft document does not capture the way AWC is implemented. To ensure that agent-handling staff achieve a consistent skill and confidence level in order

to operate safely, it is recommended that the AWC framework be verified and thereafter continuously maintained and updated under document control.

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

During our visit to the DRDC Corporate Office, we were informed that the DRDC CBRN Oversight Committee which had been established in 2016 to oversee the management of risks associated with CBRN material would be stood down in favour of integration of its function with the DRDC Corporate Environment, Health and Safety Committee. We were invited to sit in on meetings of this Committee as an observer, as we had previously for the CBRN Oversight Committee.

We detect a strong safety culture at Suffield. The willingness of staff to report incidents, even if minor, is indicative of this. The GSO indicated that he had received and investigated eleven hazardous occurrence reports since our last visit. Five of these were infrastructure related: three incidents of loss of electrical supply to laboratory safety systems and two malfunctioning fume hoods. Three more involved improper chemical storage. No injury or significant damage was sustained as a result of these incidents and appropriate follow-up corrective action has been taken.

Implementation of the recommendations in the 2016 Canadian Forces Fire Marshal's inspection report calling for replacement of hazardous chemical storage cabinets, replacement of fire doors, and imposition of a 1000 litre limit on flammable liquids kept in Building 1 is now complete.

Storage and disposal of ventilation filters from the fume hoods in Building 1, however, remain issues.

A new fire alarm system is slated for installation in Buildings 1 and 10.

The Chair of the Biosafety Committee was pleased to report that the BioThrax anthrax vaccine had now received full regulatory approval from Health Canada and that vaccinations of at-risk staff are up to date.

The Biosafety Committee is developing a list of MCM relevant to current work and is conducting a training needs assessment for staff working in the Containment Level 2 and 3 laboratories.

In light of staff vacancies, workload is being monitored with a view to mitigating the risk of adverse consequences of over-tasking of individuals.

Last year we were alerted to the increased attention being paid to 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 and is incorporated in ONTAP (the Centre's on-line research, experiment and trial approval system). Moreover, helpful feedback has been provided to PHAC.

This said, there is a desire for some additional guidance within the regulatory framework 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.

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 program, we have chosen to monitor closely this issue. To this end, we requested of PHAC, and were kindly provided during our visit to Ottawa, an update on the implementation of the provisions of the Human Pathogens and Toxins Act and its attendant regulations, with special reference to biosecurity including oversight of DURC. PHAC recognizes the need and desire of researchers and research institutions for more education and amplified guidelines in this realm and has or is producing and disseminating several resources including an on-line introductory course on "Dual Use in Life Science Research". We found the presentation, delivered by the Director of PHAC's Office of Biosafety Programs and Planning, most helpful to our understanding of this subject.

During our visit, we learned of the impending retirement of the SRC Biosafety Officer. This position is crucial to the safe conduct of biological defence research and development activities. As such, it is highly desirable that a replacement be appointed and in place prior to the departure of the incumbent with a view to ensuring a proper handover of responsibilities and avoiding any capability gap. This is a compelling example of the need for succession plans for key personnel as capability gaps could constitute noncompliance with legislative requirements or imperil the ability of the Centre to complete critical tasks.

On a brighter note, the new Chemical Safety Officer provided a detailed briefing on her activities since joining SRC in 2018. Clearly, her presence has strengthened the chemical safety program and is highly appreciated.

The live-agent training that we observed during Exercise FIRE DRAKE, 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.

Emergency response exercises are regularly conducted at SRC. Two drills (chemical spill response and evacuation of a person from a “hot zone”) were held in June 2018 in preparation for NATO live agent training. In September, an integrated emergency response (SRC, CFB Suffield, British Army Training Unit Suffield (BATUS) and Alberta Health Services) to a boiler room explosion was exercised, while medical response to a simulated incident in the experimental proving ground was practiced in October.

On 8 May 2019, we were pleased to observe an emergency medical response exercise based on the collapse of an employee in a Building 1 laboratory. The exercise went well and provided evidence of strong cooperation between SRC and the responding agencies.

During the de-briefing session which followed, fire department participants stated they would value more information with respect to the chemical hazards they could potentially encounter when responding to calls at SRC facilities. This concern relates particularly to chemicals with elevated safety and security considerations.

In reply, mention was made of the utility of a first responders’ guidance document pertaining to nerve agents. We also heard that the US is providing to first responders detailed information and instructions via the internet and that Canadian agencies are consulting these sources notwithstanding differences in US and Canadian personnel protective equipment and medical countermeasures.

In this connection, we believe there is need for clarity around security policy provisions regarding discussion of novel threat agents, considering the increase of information that is circulating publicly.

We also agree that it is important that first responders at Suffield be provided enough authoritative information for them to feel comfortable with their rules of engagement during an emergency.

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.

These observations led to the inclusion in the Committee’s 2016 report the recommendation that a comprehensive assessment of occupational health and emergency medical support needs, including verification that these needs are being met, be conducted by an appropriate high-level authority, with the participation of relevant

stakeholders. The objective of this undertaking would be to ensure the long-term adequacy and stability of these essential supports to the work of the SRC. We further suggested this same authority should also take the lead in designing and implementing cooperative, long-term solutions to any gaps so identified.

In the years since, notwithstanding this recommendation *per se* has not been acted upon, we have noted, as recorded in last year's report, several substantial and enduring improvements commendably effected locally by SRC, CFB Suffield and others with the support of regional and national level authorities. Foremost amongst these was the engagement of a Medical Advisor by SRC. Consequently, our major concerns have been alleviated – at least temporarily.

We continue to believe, however, that the components of an occupational health program and an emergency medical response capability that meet the needs of SRC (and which already exist in large measure) should be locally defined, integrated and incorporated in a tool such as the existing SRC Risk Management Framework and their status monitored. Moreover, where appropriate, these components should be cemented in place by officially promulgated policy or formal agreements between parties including non-DND or non-CAF parties. As soon as the first of these steps is completed, the Committee would be inclined to close the recommendation as having been superseded by other actions.

While at Suffield this year, we were notified of an additional contribution to a robust and comprehensive emergency medical response system, that being the development of information cards defining MCM for specific biological and chemical agents for use as a guide to therapy by staff at Medicine Hat Regional Hospital.

We were also made aware of an incident wherein laboratory work was ordered to stop upon receipt of information that MCM held by SRC no longer met specifications. MCM with the same lot number held at the Central Medical Equipment Depot were rated non-compliant with set standards as a small decrease in efficacy was identified in the course of routine testing. Standard operating procedures should be in place to monitor the status of MCM held at SRC in relation to the latest testing data.

This Committee 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 Containment Level 3 biological laboratories. Our unease has been mitigated over the years, 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 Containment Level 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 has followed closely the progress of both projects.

In 2017, we were told that with the transfer in 2014 of Suffield real property responsibilities from the Army to the Assistant Deputy Minister Infrastructure & 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 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 program would be threatened, given the likelihood that the aging 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.

There appears to be stronger appreciation that safety and service delivery are increasingly compromised by the aging infrastructure at Suffield and that any temporary solution involving the renovation or upgrading and then maintenance of existing buildings will incur a large cost that will grow as construction on the new complex is delayed. This year, we heard that the temporary MBCF could be sidelined in favour of building the new laboratory complex in stages. It was further explained that single-stage and multi-stage approaches would be differently funded and hence it is important to remain nimble and prepared to exploit different approaches to realizing the goal of re-capitalization.

We also learned this year that a major near-term upgrade of Building 10, which houses the Casualty Management Section, is planned to address significant instances of non-compliance with Canadian Council on Animal Care standards; in particular, the requirement for separation of laboratories and offices from the vivarium.

We will look forward to updates. In the meantime, we will continue to stress the importance of infrastructure renewal to program safety and continuity.

Environmental Protection

As with safety, the Committee observed that, at all units and locations visited in 2019, there exists a positive environmental protection culture.

The SRC Environment Officer reported that the Centre's ability to properly dispose of hazardous waste and surplus hazardous chemicals is now essentially equal to the rate of its creation. The sole remaining challenge is the disposal of used filters from fume hood ventilation systems in Building 1 mentioned earlier in this report.

Work continues at Suffield to integrate the local Health and Safety and Environmental Management Systems and to do so in accordance with the stipulations of DRDC's Corporate Safety and Environmental System. The integrated system is scheduled for external validation in the autumn of 2019.

Some previously reported environment projects, however, are on hold such as the development of a contaminated site management plan.

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.

Perhaps we will see specific indicators of environmental protection performance included in the Framework, similar to our previous suggestion with respect to risk management of occupational health and emergency medical response.

Other Observations

- **SRC/CFB Suffield**
 - The professionalism of the staff of SRC and the quality of their contributions to Canada's BCD program remain impressive; this despite increasingly restrained resource allocations, both human and financial, and longstanding infrastructure deficiencies.
 - Staff have greatly appreciated recent visits by senior leadership and the opportunity to exchange explanations of corporate initiatives and the special needs of SRC. One such initiative is SCInergy, which is motivated by the Strong, Secure and Engaged Defence Policy and aimed at reducing top-level governance burden, increasing the flexibility and agility of the Defence Science and Technology Program and demonstrating enhanced relevance to clients.
 - The Committee has observed that maintenance of an appropriate level of knowledge, skill and experience amongst the research and support staff at the SRC is an acute challenge. Indeed, SRC senior management has stated that the looming retirements of some of the Centre's most experienced and knowledgeable staff in crucial positions, 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. Succession planning is a complex problem involving the forecasting of retirements and absences; recruiting; security clearances; deployment; training; knowledge transfer; depth and redundancy of expertise; and, budgets. There are also major safety and staff morale aspects to be considered in light of the work associated with some of the positions requiring immediate attention. In certain instances, positions left vacant or filled by underqualified persons could constitute non-compliance with legal requirements. DRDC leaders are aware of these problems and are actively seeking solutions. For our part, given the safety dimension, we believe this matter falls squarely within our mandate and, as such, recommend that leaders up to and including ADM S&T take deliberate note of this issue, carefully examine its components, and then redouble their efforts to implement an enduring solution.
- Meetings with the SRC Security Officer responsible for both physical and information security are now a standard item in our visit agenda. Upgrading of the Centre’s capability and capacity for secure computing and communications remains a priority concern as does aging telecommunications infrastructure more generally. Unreliable radio communications are often cited as problems during joint emergency response exercises. Work is in hand to address these deficiencies including the recently completed installation of a new CFB Suffield communications network backbone to which the SRC network will link, and the procurement of new classified processing computer workstations.
- Other security related initiatives include an upgrade to the Building 1 access control system, the establishment of an emergency response planning team, the drafting of new critical incident response protocols and the creation of a Short Message Service (SMS) mass notification system with excellent take-up by staff. As indicated earlier in this report, emergency plans are regularly exercised with the involvement and close cooperation of SRC, Base and other entities.
- Both the physical and information security programs are working well. As with the general safety program, a proactive reporting culture exists. There have been no major incidents in the reporting period.
- Productive relations between SRC and CFB Suffield and ADM IE Real Property Operations authorities are essential. Our meetings over the past three years with the Acting Base Commander, the Centre Director, the Assistant Director for Corporate Services Operations and other SRC staff have been denoted by

a common refrain, that being that relations are good and growing stronger with a focus on common goals and mutually beneficial outcomes. In this connection, we were pleased to learn that a Service Level Agreement (SLA) between SRC and the Base has been ratified and that an SLA for infrastructure and environment services between SRC and the Commander of Canadian Forces Real Property Operations Group West has been drafted and is awaiting signature.

- While in Suffield we were briefed on Centre support to the imminent conduct of a large-scale field trial aimed at validating the tactics, techniques and procedures for the employment of the new ambulatory and non-ambulatory personnel and equipment decontaminations system. Mention of issues identified by SRC staff in the lead-up to the trial gave rise to discussion of the desirability of providing DRDC scientific input to equipment program inception and definition, project development, and procurement rather than after the fact.
- The Head of the Chemical and Biological Assessment and Protection Section has proposed that one or more of the Section's laboratories obtain ISO 17125 certification. We believe that this proposal merits formal consideration with a view to comprehensively balancing benefits against the not insignificant costs of implementation and sustainment. Given the mandate of SRC, having this credential is reasonable and potentially of national strategic value. However, if DRDC, and specifically SRC, is to serve the needs of other agencies based on this accreditation, the costs of obtaining and maintaining accreditation should be shared by its clients or funding included in the Centre's baseline budget for this purpose.
- This view also applies to the current Good Laboratory Practice (GLP) accredited facility in the Casualty Management Section. We understand that given the high cost of maintaining the facility and limited demand for its services, SRC has inquired of the regulatory authority if the accreditation might be withdrawn temporarily until such time as a requirement for GLP study emerges.
- **1 Canadian Mechanized Brigade Group**
 - During our visit to 1st Canadian Mechanized Brigade Group in Wainwright, the Brigade recalled the Army's initiative launched in 2012 to rejuvenate its CBRN Defence capability as it shifted from a focus on counterinsurgency operations to preparation for conventional operations against a peer adversary. While progress has been made in several areas, *e.g.*, decontamination capability, gaps remain. We noted that CBRN Defence functions often remain secondary duties of designated personnel and that required organizational structures

such as CBRN collection centres at brigade group and unit headquarters are assembled only on an *ad hoc* basis. To address such shortfalls, we understand that consideration is being given to assignment of CBRN defence mission tasks to selected Army Reserve units.

- With respect to individual and collective training, it was explained that individual refresher training was accomplished annually; however, the Brigade's high operating tempo and competition to fill course vacancies at CFFCA impedes the attainment of advanced qualifications. Collective training was described as episodic. As such, it was suggested that more collective CBRN defence training be imbedded in the Army's managed readiness program, *i.e.*, the "road to high readiness". Participation by brigade personnel in the NATO live agent training Exercise PRECISE RESPONSE at Suffield is valued. Exercise BRAVE BEDUIN, conducted annually in Denmark was cited as an under-utilized opportunity for the Army to improve its command of NATO CBRN defence warning and reporting procedures.
- During our participation in a forum with brigade staff, unit CBRN CC personnel and representatives from units with special responsibility for CBRN reconnaissance, decontamination and casualty treatment, we learned a great deal more about the Brigade's capability. Discussion included equipment holdings, a theoretical CBRN threat assessment, incident planning, battle drills, training, *etc.* Brigade participants reiterated a desire for more dedicated CBRN Defence personnel to staff collection centres; greater access to advanced training qualifications; and, increased availability of vehicles capable of assisting with agent detection, marking, sampling and identification.
- It was evident that 1 Service Battalion and 1 Field Ambulance have carefully assessed their decontamination and casualty treatment tasks. A locally produced "Decontamination Playbook" was shared with us that usefully lays out capabilities, tactics, techniques and procedures in the face of anticipated CBRN incidents or threats. We were told that the Service Battalion and the Field Ambulance conduct monthly joint CBRN-related training sessions. Subsequent discussion touched on a plethora of subjects such as contact with civilian first responders; disposal of hazardous decontamination by-products; cold weather decontamination; exported training; clinician training; the language of instructions on foreign-sourced MCM; and, the management of personal protective equipment once opened – given its limited "life-span".

- **Canadian Forces Fire & CBRN Academy**
 - In FY 2018-19, the CFFCA conducted twelve CBRN Defence courses with 250 graduates with eleven courses and 262 graduates forecast for FY 2019-20.
 - We were pleased to learn that the CBRN defence wing of the Academy now has 17 of 19 of its authorized staff positions filled. There are more French-language instructors and a Bio-science Officer is now posted to the Academy. While there are no CBRN Operators from CJIRU on staff, we were assured that a good relationship persists between the units marked by the sharing of lessons identified in operations and training and other information.
 - The updating of qualification standards, training plans and courseware continues with the help of well qualified contractors. More on-line course modules and distance learning options are being included.
 - The Academy has hosted more foreign students of late, while staff members have availed themselves of the opportunity to attend overseas training such as the Swedish Winter Chemical Defence Course.
 - The entry into service of the new personnel, combat equipment and vehicle decontamination system is aided by means of user observations submitted to relevant authorities by the Academy.
 - A meeting with the Chief of Staff to the Commander of the Canadian Forces Support Training Group brought to our attention the conduct of joint exercises involving the CFFCA and local first responders during which the value of the military's operational planning capability was underlined. It was also emphasized that any training courses "exported" for conduct by field units – as is, from time to time, requested - must be authorized and regulated by a Service Level Agreement.

- **1 Canadian Field Hospital**
 - Since 2015, we have been following the DND/CAF response to our recommendation, made in that year, that the Canadian Forces Health Services Group (CFHS 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 BCW agent casualties. A follow-up visit to the Hospital in 2017; our annual meetings with CFHS Group staff; and, their responses to this open recommendation in 2015, 2016, 2017 and 2018, indicate that several actions have been taken to address our initial concern. Further to these, we have learned from CFHS Group Headquarters that a Decontamination Guide has been drafted and circulated to stakeholders for review. Shortly, upon finalization, it will be issued as a Standard Operating

Procedure. One setback was admitted – a 75% cut this year to funding for CBRN clinical training. However, we understand this is a temporary reduction that will be mitigated by the employment of existing trained personnel.

- Indeed, the only aspect of our recommendation that remains a significant issue is the question of the utility of the CBRN collective protection kit (COLPRO) issued to the Hospital under the CBRN Defence omnibus equipment program in allowing the Hospital to execute the following tasks:
 - 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 (*e.g.*, surgery) in the event of a local CBRN attack (through the use of collective protection)
 - Small-scale decontamination of patients in the vicinity of the medical facility
- These tasks have been interpreted by the Hospital's Commanding Officer as requiring the COLPRO to accommodate a facility for Initial Surgery Response Capability (including staff, equipment and supplies) that could function for 72 hours. In June 2018, the COLPRO was set up and filled with the requisite quantities of equipment and supplies, and the medical staff's ability to provide damage control resuscitation and damage control surgery was assessed. For reasons of inadequate space and shortfalls with respect to the flooring (*i.e.* it lacks load-bearing capacity, stability and suitability for appropriate clean-up and containment of biohazardous body fluids), the ability of the COLPRO to fulfill its stipulated purpose is deemed by the Commanding Officer to be "problematic".
- Insofar as the CFHS Group has clarified its expectations of 1 Canadian Field Hospital and has implemented supporting measures in the way of CBRN medical doctrine and clinical training, the Committee will close its recommendation as having been implemented. It will be up to the CFHS Group to now determine the future of COLPRO and any adjustments that may subsequently need to be made to the Hospital's assigned tasks or capabilities.
- **Central Medical Equipment Depot**
 - This year's visit permitted the Committee to reinforce its understanding of limitations on the CMED's further progress toward Good Manufacturing Practices (GMP) accreditation – a status essential to the Depot's qualification to import or export drugs and to collaborate with PHAC on the potential provision of reciprocal back-up capability for the storage and distribution of

MCM and other medical items. As we learned during our visit in 2017, the presence on staff of a long-sought quality assurance specialist has served to illuminate several issues standing in the way of accreditation - most of these relate to the age and condition of the existing warehouse. The mission-essential air-conditioning system dates to 1960 and is subject to break-down. Asbestos is present; installation records pertaining to fixtures, fittings and utilities are absent; and, the temperature-control alarm system is prone to malfunction. A related challenge is finding suppliers willing to serve the Depot's relatively remote location with refrigerated tractor-trailer combinations equipped with temperature-control systems meeting the exacting GMP standards.

- With respect to potential collaboration with the PHAC, we have been led to believe that PHAC considers not only lack of GMP accreditation to be an impediment, but so too the Depot's distance from a major airfield.
- These observations led us to recommend in 2017 the replacement and relocation of this facility – a recommendation which has been well received by DND/CAF (and by PHAC) but which, we understand, for funding reasons, will take some time to implement.
- In the meantime, as we learned during our visit, renovations to mitigate the shortfalls of the existing facility continue including an upgraded adjacent room equipped with new freezers and a proposal to construct a GMP-certifiable room, which would permit exchange of products with PHAC. We encourage expedient funding of this proposal.
- **CF Intelligence Command, ADM Policy and Global Affairs Canada**
 - 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 Program, which is Canada's contribution to the Global Partnership 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 BCW agent threats from both state and non-state actors, which necessitate appropriate defensive preparedness. We were informed last year 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 also heard expressed the desire for more CBRN intelligence input to the formulation of the research and development program and that the ability to infer 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 with partner countries, international organizations, NGOs and other government departments aimed at mitigating threats posed by CBRN weapons and related materials. We were, therefore, pleased to learn that the mandate of the Weapons Threat Reduction Program has been extended indefinitely with a funding level of \$73.4 million. Key activities are prevention, detection and response to weapons of mass destruction threats; securing or destroying dangerous CBRN materials; improvement of security at facilities; strengthening of global networks; and building partner capacity to meet international obligations.
- The update on the CWC outlined efforts by the OPCW to secure international agreement to include nerve agents of the type used in Salisbury UK within the CWC control regime. The BTWC update again this year touched on growing concern over DURC and how to control the proliferation of knowledge associated with such research.
- **DRDC Centre for Operational Research and Analysis (CORA).** The presentation on current work to provide rigorous, risk-based, quantitative support to BCD capability investment decisions by estimating and aggregating the relative likelihood of the occurrence and impacts of specific events in time provided a helpful insight to CORA's contribution to the BCD enterprise.
- **Directorate of Joint CBRN Defence**
 - 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.
 - BCD capability development is paused this year as the current "omnibus" equipment procurement project comes to an end and work begins to define new projects based on direction in 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 and funds they merit.

- A member of the Directorate is now employed at the NATO Joint CBRN Centre of Excellence in Vyskov, Czech Republic. This arrangement should serve as a valuable conduit for the exchange of expertise including as a “reach back” tool during operations.
- **CFHS Group HQ**
 - During our visit, in addition to receiving updates on our medically related open recommendations reflected elsewhere in this report, we were briefed on the state of the medical aspects of BCD collaboration with our Allies, and on the Surgeon General’s priorities for medically related BCD research and development. These priorities include assessment of BCW agent hazards; point of care diagnostics; new or improved MCM; clinical treatments to lessen tissue damage and restore function after chemical warfare agent exposure; an evidence base for chemical and biological medical assessment and treatment protocols; research that enhances MCM production or facilitates regulatory approval for CAF use; and, greater emphasis on host-directed and/or broad spectrum therapies.
 - 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.
 - We salute the continued progress of the BWTMCM project, which saw the licensing in 2018 of a second Anthrax MCM. Treasury Board and DND have agreed to transition this project (which, by definition, requires Treasury Board approval for any changes in scope) to an internally managed program within the DND-funded business plan. The program’s work will be expanded to include development and acquisition of chemical and radio-nuclear MCM and sustainment of the countermeasure stockpile. It has been allocated \$92M for FY 19-20 through FY 22-23. A governance structure for the program will be established within the CFHS Group and provision made for the validation and approval of further expansion of scope in the face of any emerging threats.
- **DRDC Corporate Office**
 - The focus of the new five-year program for both CBRN Defence and MCM research and development will be on the enduring problems associated with operating in a CBRN environment with an emphasis on emerging threats and

pharmaceutical-based agents in addition to classic CBRN materials. We should also expect to see increased engagement with academia, industry and other government departments.

- Last year we voiced our belief that Exercise 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 also acknowledged unease amongst the Canadian entities involved over the sharing of costs of the exercise. Moreover, we noted that the increasing demand for live-agent training puts added pressure on SRC staff. We therefore urged the responsible authorities to negotiate a solution to these issues – which again, in our view, do not seem intractable.
- This year, we heard that while debate persists over the PRECISE RESPONSE funding mechanism as does concern over the impact that supporting the exercise has on the science and technology program, ideas are being put forward as to how to exploit the exercise to the benefit of research and development.

CONCLUSIONS

Having detected no evidence to the contrary during its 2019 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.

RECOMMENDATIONS

The Committee this year offers three new recommendations:

- To ensure that staff handling agent achieve a consistent level of skill and confidence in order to operate safely, the AWC framework should be verified and thereafter continuously maintained and updated under document control.
- Authoritative information on the management of incidents involving unique risk factors at Suffield should be provided to first responders such that they may effectively and safely operate during an emergency.
- DRDC senior leadership should take action to ensure that an appropriate succession plan is in place to address the turnover of personnel in critical positions at SRC.

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. (2014) *We encourage acceleration of the final approval and funding of the project to replace DRDC Suffield's BSL 3 suites in Building 1 in an expedient manner compatible with safe continuation of the biological program in both the short and long term. [This recommendation has been reworded to better reflect the situation in 2019]*

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 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

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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 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).”

BCDRC Comment (December 2019): At DRDC Corporate Office, the Committee was updated on potential strategies for the replacement of the aging Containment Level 3 suites. The recommendation will remain open. The Committee will continue to stress the critical importance of infrastructure renewal to safety of operations and continuation of the programs.

DND/CAF Response (April 2020): “The efforts towards recapitalization of the Suffield Chemical and Biological Laboratories (Recap) are continuing, with the ‘Identification’ and ‘Options Analysis’ phases occurring to develop a Statement of Requirements and cost estimation, respectively. This is planned to occur over a 24-month period beginning in Fall 2020. Both of these will result in the selection of a course of action for the ‘Design’ phase. Additionally, a site for the new facility has been selected and approved. With Recap now advanced, its timeline is converging with that anticipated for the Modular Bio Containment Facility (MBCF). As such, options for coordinating the two efforts are currently under consideration.”

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Status: OPEN

2. (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.

DND/CAF Response (April 2017): "The Canadian Forces Health Services Group (CF H Svs 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;

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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 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

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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."

BCDRC Comment (December 2019): In June 2018, the COLPRO was set up and filled with the requisite quantities of equipment and supplies, and the medical staff's ability to provide damage control resuscitation and damage control surgery was assessed. For reasons of inadequate space and shortfalls with respect to the flooring (*i.e.* it lacks load bearing capacity, stability and suitability for appropriate clean-up and containment of biohazardous body fluids), the ability of the COLPRO to fulfill its stipulated purpose is deemed by the Commanding Officer to be "problematic". In so far as the Canadian Forces Health Services Group has clarified its expectations of 1 Canadian Field Hospital and implemented supporting measures in the way of CBRN medical doctrine and clinical training, the Committee will close its recommendation as having been implemented. It will be up to the Health Services Group to now determine the future

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of COLPRO and any adjustments that may subsequently need to be made to the Hospital's assigned tasks or capabilities.

Status: CLOSE

3. (2016) *A comprehensive assessment of Suffield Research Centre's unique occupational health and emergency medical support needs should be conducted under the leadership of DRDC in order to identify gaps and to design and implement long terms solutions involving relevant stakeholders. [This recommendation has been reworded to reflect the situation in 2019]*

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)

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“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, 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.”

BCDRC Comment (December 2019): Notwithstanding that this recommendation *per se* has not been acted upon, we have noted, as recorded in last year's report, several substantial and enduring improvements commendably effected locally by SRC, CFB Suffield and others with the support of regional and national level authorities. Foremost amongst these was the engagement of a Medical Advisor by SRC. Consequently, our major concerns have been alleviated – at least temporarily. We maintain, however, that the components of an occupational health programme and an emergency medical response capability that meet the needs of SRC (and which already exist in large measure) should be locally defined, integrated and incorporated in a tool such as the existing SRC Risk Management Framework and their status monitored. Moreover, where appropriate,

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these components should be cemented in place by officially promulgated policy or formal agreements between parties including non-DND or CAF parties. As soon as the first of these steps is completed, the Committee would be inclined to close the recommendation as having been superseded by other actions.

DND/CAF Response (April 2020): “The Health & Safety Management System (HSMS) Manual has been completed and is available to all Suffield Research Centre (SRC) staff. This is an overarching document describing the various elements of the SRC Health and Safety Program as well as their interdependencies; it was designed to meet the CAN/CSA OHSAS 18001:07 Standard (ISO 45001:2018 equivalent) for health and safety management best practice. Additionally, an external audit was performed in September 2019 on the Safety and Environmental Management System (SEMS) and went very smoothly; the report is currently in draft and SRC is awaiting its release to review and implement any recommended actions. Further, a job hazard analysis was initiated in September 2019, with the data collection completed by a scientist from the Defence Research and Development Canada Toronto Research Centre. The data are now with a contractor for analysis. The Integrated Emergency Response Plan (IERP) is also complete, including emergency response plans for a variety of incidents. CF Health Services will continue to support SRC’s occupational health and emergency medical support needs. DND/CAF considers this recommendation completed.”

Status: OPEN

4. (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 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.

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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 scope 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 Gp 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 prevent a full realization of the benefits of this partnership. The ideal solution to the problem would be

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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.

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."

BCDRC Comment (December 2019): Renovations to mitigate the shortfalls of the existing facility continue including a proposal to construct a GMP certifiable room to permit exchange of products with PHAC. We encourage expedient funding of this proposal.

DND/CAF Response (April 2020): "The replacement of the Central Medical Equipment Depot (CMED) continues to be a high priority for the CF Health Services. A number of joint activities between CF Health Services and the Public Health Agency of Canada have occurred in support of the new CMED facility. Site options in Trenton have been developed and are pending final review. Overall, good progress has occurred in the project to construct a new CMED facility."

Status: OPEN

5. ***(2019) To ensure that staff handling agent achieve a consistent level of skill and confidence in order to operate safely, the AWC framework should be verified and thereafter continuously maintained and updated under document control.***

DND/CAF Response (April 2020): "The Agent Worker Certification (AWC) framework was established and first implemented with existing senior staff in the chemical defence program. One of the most challenging issues facing the AWC process is the relatively small size of the Canadian chemical defence program, and work with chemical warfare agents, or other emerging threat agents, which does not occur on a daily basis. In fact, it is not unusual for several weeks to pass without any activities involving agent handling. In the past three years a number of new staff have been hired and introduced to the AWC process and are currently at various stages in their training. As the new personnel began to move through the various levels of the AWC program it became evident that infrequent agent handling opportunities and different degrees of laboratory experience and skill-sets within the new hires necessitated a more flexible application of the AWC process. Many of the current challenges only became evident as the new staff started their AWC training. The AWC framework is being reviewed and verified against the requirements to prepare new staff to work safely with chemical warfare agents. A final version will be produced in 2020 and complete document/version control will be put in place."

Status: OPEN

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- 6. (2019) *Authoritative information on the management of incidents involving unique risk factors at Suffield should be provided to first responders such that they may effectively and safely operate during an emergency.***

DND/CAF Response (April 2020): “A Suffield Research Centre (SRC) document on safety advice and guidance for DND/CAF personnel and operators regarding nerve agents is being drafted for publication. The intent of this guide is to provide DND/CAF personnel with the most up-to-date knowledge of highly toxic nerve agents and special considerations for responding to and managing incidents where they may be involved. Once published, it could then be provided to emergency personnel and stakeholders responsible for incidence response at CFB Suffield should the need arise to inform decision making on hazard assessment and exposure routes; toxicity, symptoms and health monitoring; detection and identification; protection, contamination control; decontamination and casualty management; and medical treatment. The document is expected to be published in June 2020.”

Status: OPEN

- 7. (2019) *DRDC senior leadership should take action to ensure that an appropriate succession plan is in place to address the turnover of personnel in critical positions at SRC.***

DND/CAF Response (April 2020): “The DRDC Director General Science & Engineering has developed and implemented a multi-phase succession plan, which commenced in July 2019. All forecasted retirements at Suffield Research Centre have been reviewed and approved for replacement, with inclusion of a hand-over period for those positions with unique and critical knowledge and skillsets (e.g., Bio-Safety Officer).”

Status: OPEN

ACRONYMS AND ABBREVIATIONS

AChE – acetylcholinesterase

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

ADM IE – Assistant Deputy Minister – Infrastructure and Environment

AWC – Agent Worker Certification

BATUS – British Army Training Unit Suffield

BCD - Biological and Chemical Defence

BCDRC - Biological and Chemical Defence Review Committee

BCW – Biological and Chemical Warfare

BTWC - Biological and Toxin Weapons Convention

BWTMCM - Biological Warfare Threat Medical Countermeasures

CAF - Canadian Armed Forces

CBRN - chemical, biological, radiological and nuclear

CBRNE - chemical, biological, radiological, nuclear and explosive

CFB - Canadian Forces Base

CFFCA - Canadian Forces Firefighting and CBRN Academy

CFHS Group – Canadian Forces Health Services Group

CFHS Group HQ - Canadian Forces Health Services Group Headquarters

COLPRO – Collective Protection

CMED - Central Medical Equipment Depot

CNSSSF - Canadian National Single Small-scale Facility

CTTC - Counter Terrorism Technology Centre

CWC - Chemical Weapons Convention

DAOD - Defence Administrative Order and Directive

DND - Department of National Defence

DRDC - Defence Research and Development Canada

DURC – Dual Use Research of Concern

EPG - Experimental Proving Ground

FY - fiscal year

GAC – Global Affairs Canada

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GLP – Good Laboratory Practice

GMP – Good Manufacturing Practice

GSO – General Safety Officer

MBCF – Modular Biological Containment Facility

MCM - medical countermeasures

NATO – North Atlantic Treaty Organization

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

PAO – Plan for Administrative Oversight

S&T - science and technology

SLA - Service Level Agreement

SRC – Suffield Research Centre