
2023 ANNUAL REPORT

Biological and
Chemical Defence
Review Committee

Jonathan Van Hamme, Ph.D.
(Chair)

Heinz-Bernhard Kraatz, Ph.D.,
FRSC

Christine Vande Velde, Ph.D.

October 2024

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Biological and Chemical Defence Review Committee

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BIOLOGICAL AND CHEMICAL DEFENCE
REVIEW COMMITTEE

TABLE OF CONTENTS

INTRODUCTION	1
SUMMARY	3
COMMITTEE ACTIVITIES 2023.....	3
OBSERVATIONS.....	7
General.....	7
Threat.....	7
Compliance with Policy & International Conventions	7
Defensive Capability.....	8
Suspension or Restriction of Certain Chemical Defence-related Activities at SRC	8
Other Safety, Occupational Health & Related Observations.....	12
Risk Management Framework.....	12
High Potency Material Management.....	13
Safety & Health Committees	14
Safety Officers.....	16
Dual-use Research of Concern.....	17
Risk to Civilian Employees Supporting Live Agent Training	17
Fire Protection	18
Respiratory Protection.....	18
Acetylcholinesterase Monitoring.....	19
Medical Advisor	19
Infrastructure & Equipment.....	19
Security	20
Emergency Preparedness & Response	21
Environmental Protection.....	23
Due Diligence Environmental Effects Determinations	23

Incorporation of Environmental Considerations in OnTAP	23
Species at Risk.....	23
Contaminated Sites Management	23
Spill Response	24
DRDC Environment, Health & Safety Council	24
Other Observations.....	24
SRC/CFB Suffield.....	24
DRDC Toronto Research Centre.....	26
Centre for Security Science.....	28
DRDC Corporate Office	28
Canadian Forces Intelligence Command, ADM (Policy) & Global Affairs Canada	30
Strategic Joint Staff and Directorate of Joint CBRN Defence.....	33
CFHS Group Headquarters	35
Canadian Forces Fire & CBRN Academy	38
2 nd Canadian Mechanized Brigade Group.....	40
Canadian Science Centre for Human & Animal Health.....	42
CONCLUSIONS	42
RECOMMENDATIONS.....	43
STATUS OF COMMITTEE RECOMMENDATIONS.....	43
ANNEXES	43

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 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 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 or neurology. 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, the Society of Toxicology of Canada, and the Canadian Association for Neuroscience. The Chair also arranges for an administrative staff member to function as the Committee's Executive Officer.

Committee membership, as of 1 April 2023, is:

Dr. Jonathan Van Hamme (Committee Chair)

Professor of Microbiology

Thompson Rivers University

Dr. Heinz-Bernhard Kraatz, FRSC

Professor of Chemistry

University of Toronto

Dr. Christine Vande Velde

Professor of Neurosciences

Université de Montréal and Université de Montréal Hospital Research Centre

Brigadier-General (Ret'd) James Selbie serves as Executive Officer to the Committee.

The Committee's annual cycle of activity includes:

- briefings in Ottawa on BCD issues by officials from National Defence Headquarters (NDHQ) and Global Affairs Canada (GAC)
- visits to government (mostly DND) research and development (R&D) facilities such as the Defence Research and Development Canada (DRDC) research centre at Suffield, Alberta (which we visit every year) and to selected CAF education and training establishments, operational formations, and units where BCD activity takes place
- attendance at selected BCD exercises, training courses, workshops, seminars, symposia, etc., conducted by the CAF or DND
- publication in the public domain of an Annual Report with key observations, conclusions, 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 2023 visit and verification 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 covertness or duplicity within the BCD programme

While the Committee believes that the BCD programme is, by and large, conducted in a professional manner, it does, from time to time, discern the need for improvement to occupational health, safety, and environmental protection practices and procedures, or to other aspects of programme direction and management, which it expresses in the form of general observations or specific recommendations.

Of special importance this year, was the decision taken by ADM (DRDC), informed by Committee’s observations during its visit to the Suffield Research Centre, to suspend or restrict certain chemical defence-related research and development as well as training activities pending completion of a risk management review.

The Committee this year offers two new recommendations. We will also continue to pursue with DND and CAF authorities mutually satisfactory resolution of the seven open recommendations made in previous annual reports.

COMMITTEE ACTIVITIES 2023

Committee activities in 2023 comprised the following:

- **Canadian Science Centre for Human and Animal Health (Winnipeg 15 May)** The Canadian Science Centre for Human and Animal Health is home to the Public Health Agency of Canada’s National Microbiology Laboratory and the Canadian Food Inspection Agency’s National Centre for Foreign Animal Disease. We visited the Centre by kind invitation of the Centre’s scientific Director-General.
- **DRDC Suffield Research Centre (SRC) (Suffield 16-18 May)** Meeting with the Centre Director and staff, we followed a programme incorporating the following presentations and discussions:
 - 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 programme and associated projects underway at SRC
- a review of all BCD research and development contracts awarded to outside agencies and presentations on selected contracts by the contractors
- discussions of their work with members of the Bio-Threat Defence, Chemical Threat Defence, and Casualty Management Sections
- an update on the oversight of potential dual-use research of concern for biological work
- a classified discussion of aspects of the current BCW agent threat having a significant impact on current research and development activity
- a review and discussion of microbiological, viral, and toxin holdings, including management protocols and procedures
- inspection of selected microbiological, viral and toxin holdings and laboratory facilities
- a review and discussion of chemical holdings, including management protocols and procedures
- inspection of selected chemical holdings
- an update on the Centre's compliance with the Controlled Drugs and Substances Act and its attendant regulations
- a review and discussion of transfers from SRC of chemical agents or pathogenic biological materials during the period 1 Jun 22– 30 April 23
- a presentation and discussion of the BCD training programme and other activities at the Counter Terrorism Technology Centre
- a review and discussion of the current safety programme 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 fire protection programme
 - status of the respiratory protection programme
 - status of the agent worker certification programme
 - status of the acetylcholinesterase (AChE) surveillance programme
 - status of the Integrated Emergency Response Plan
 - status of the Safety and Environmental Management System

- a separate private meeting with the General Safety Officer and each of the Chairs of the Biological and Chemical Safety Committees
- a review and discussion of a Biological Threat Defence Section emergency response exercise conducted earlier in the year
- a meeting with the CFB Suffield Medical Officer for the purpose of updating our understanding of the readiness of the Suffield Medical Centre (1 Field Ambulance Detachment Suffield) to respond to chemical or biological warfare agent casualties
- a meeting with the Suffield Research Centre Medical Advisor for the purpose of updating our understanding the medical aspects of the Centre's health and safety programme
- a review and discussion of the current infrastructure development programme and other notable corporate services issues (to include the renovation of Building 10 and the related response to Canadian Council on Animal Care requirements)
- a review and discussion of the current environmental stewardship programme to include a separate private meeting with the Environmental Officer
- a review and discussion of the discovery and disposal of any legacy munitions suspected to contain chemical or biological warfare agent
- a review and discussion of the current physical and information security programme
- an update on the further development of SRC's CBRN Risk Management Framework
- a review and discussion of any recent local developments in connection with open recommendations contained in the BCDRC's 2022 Annual Report
- a meeting with the Base Commander
- a debriefing of the Centre Director on preliminary observations and conclusions
- **Canadian Forces Health Services Group Headquarters (VTC 19 May)** The Committee was briefed by staff of the Operational Medicine Section on BCD-related activities over the past year including clinical training initiatives, R&D; international collaboration, regulatory affairs, and the status of the Strategic Medical Countermeasures Program (SMCP). The Committee's recommendation that consideration be given to the replacement and relocation of the Central Medical Equipment Depot (CMED) was also discussed.

- **DRDC Toronto Research Centre (Toronto 29 May)** The Committee was briefed by the Centre Director and senior staff on the role of the Centre and its current work programme. We also visited two laboratories for explanations of research supportive of BCD and engaged in a discussion of current managerial issues around procurement, staffing and professional development.
- **Canadian Forces Firefighting & CBRN Academy (Borden 29 May)** The Committee met with the Academy's Commanding Officer and members of the instructional staff who provided an update on the Academy's BCD training programme. The Committee also viewed in-service detection, sampling, and identification equipment.
- **2 Canadian Mechanized Brigade Group (Petawawa 30 May)** The Committee received briefings from the Brigade Commander, his staff and unit representatives on BCD capability issues.
- **Directorate of Joint CBRN Defence (D JCBRN D) (NDHQ Ottawa 31 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; calls for R&D proposals; the evolution of policy and doctrine; and Exercise PRECISE RESPONSE – the live-agent training exercise for NATO nations normally held annually at SRC.
- **DRDC Centre for Security Science (NDHQ Ottawa 31 May)** The Committee received an update on the status of biological and chemical projects within the CBRNE Security line of effort of the Canadian Safety and Security Program (CSSP) as well as other Centre activities conducted with domestic and international partners.
- **Assistant Deputy Minister (Review Services) (NDHQ Ottawa 31 May)** The Committee met informally with the team charged with conducting a review of the Strategic Medical Countermeasures Programme for the purpose of sharing with them our recent observations regarding the programme.
- **Directorate of Scientific and Technical Intelligence (NDHQ Ottawa 1 June)** The Committee was briefed on the current biological and chemical warfare agent threat assessment.
- **Assistant Deputy Minister (Policy) (NDHQ Ottawa 1 June)** With the assistance of GAC representatives, the Committee was updated on changes to the strategic security environment as well as the status of the CWC and BTWC, including an update on compliance by the DND and the CAF. The Committee was also briefed on recent biological and chemical weapons counter-proliferation support and other activities conducted under the auspices of the GAC-led Weapons Threat Reduction Program.
- **Strategic Joint Staff (NDHQ Ottawa 1 June)** The Committee was briefed on the Strategic Joint Staff's perspective of the strategic level governance and management of biological and chemical defence functions including recent

developments in connection to the Committee's 2022 recommendation that a renewal initiative be undertaken that, *inter alia*, would review and update the CBRN defence DAODs; define the enterprise; and ensure the correct definition alignment and execution of authorities, responsibilities, and accountabilities.

- **DRDC Corporate Office (NDHQ Ottawa 2 June)** The Assistant Deputy Minister Defence Research and Development Canada (ADM (DRDC)) chaired a discussion of current issues with DRDC Corporate Office subject matter experts. Agenda items included an update on the implementation of the Defence and Security Science & Technology (DSST) Program; the CBRN defence and security lines of effort within the programme; corporate, domestic, and international research delivery vehicles; the status of responses to recommendations in the Committee's 2022 Annual Report; and preliminary observations made during the 2023 round of visits.
- **DRDC Environment, Health & Safety (EHS) Council (NDHQ Ottawa 13 June)** The Committee Executive Officer attended the Council's meeting as an observer. The Council meets, as required, to review and prioritize high-level EHS issues within DRDC, inform the ADM of emerging risks, and provide strategic direction and guidance to management action plans.
- **Exercise FIRE DRAKE (Suffield Research Centre 4 October)** Dr. Van Hamme, 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

Authorities at all the headquarters, units, and agencies we visited welcomed the Committee warmly and extended their complete and proactive cooperation. Presentations were relevant, focused, and detailed, and the discussions that followed were free-flowing and transparent.

Threat

The briefings that the Committee received from Canadian Armed Forces Intelligence Command/Directorate of Scientific and Technical Intelligence attested to continued credible biological and chemical warfare threats from both state and non-state actors, which speak to the importance of reliable intelligence and appropriate defensive preparedness.

Compliance with Policy & 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).

At the end of our visit to the DRDC Corporate Office on 2 June, the Committee received written certification from the Director General R&D Science and Engineering, Director General R&D Program and ADM (DRDC) that the projects in the FY 2023-24 DRDC R&D programme 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 asks for and receives information on current R&D projects including those undertaken by DRDC contractors. This information includes detailed project descriptions, resource allocations and progress reports. In our view, all projects are in keeping with the provisions of applicable conventions, defence policy, and the BCD programme.

In accordance with the provisions of the Chemical Weapons Convention, the Organization for the Prohibition of Chemical Weapons (OPCW), from time to time, conducts verification inspections of Canadian chemical defence R&D facilities. The most recent of these, two inspections of the Canadian National Single Small-scale Facility (CNSSSF) at the SRC, were conducted in September and October of 2019. During our 2021 visit to Suffield, we examined the reports of both and determined that the OPCW inspection team raised no issues of concern.

It should be noted that no equivalent verification regime exists with respect to the Biological and Toxin Weapons Convention.

Occasionally, due to historical activities at CFB Suffield, munitions meriting treatment as suspected 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 discovery of a suspect 4.2-inch mortar bomb during the summer of 2022 and its subsequent destruction on 3 May 2023.

Defensive Capability

During its discussions with DND and CAF officials, the Committee had occasion to receive information and ask questions about capability requirements and procurement plans; R&D 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 threat assessment; 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.

Suspension or Restriction of Certain Chemical Defence-related Activities at SRC

During this year's visit to SRC, the Committee made several safety-related observations. While some of these observations pertained to procedures and information management practices, others focused on infrastructure and equipment. Members noted a significant decrease in SRC employees' confidence in their ability to safely accomplish their duties

given the current state of the facilities in which they are required to work. Concerns centered on activities involving the handling of high toxicity chemicals and included:

- perceived inadequacy of available engineering risk controls
- lack of redundancy of engineering controls
- failure of engineering controls due to power failures, sometimes during critical laboratory procedures
- lack of real-time monitoring to validate that engineering controls effectively mitigate potential exposure to toxic chemicals.

We shared these observations with the Acting Centre Director at the conclusion of our visit and with ADM (DRDC) and his senior leadership team during our visit to DRDC HQ on 2 June.

We learned that these and related concerns were further communicated to the Director General Research and Development Science and Engineering (DG RDSE) by SRC section heads and safety officers during the former's visit to the Centre in early July. In general, we understand that the issues raised were consistent with past and repeated observations of the limitations imposed by infrastructure and equipment on compliance with modern hazardous chemical handling practices. Juxtaposed with these limitations is the reality that such standard risk controls as elimination, substitution, and isolation are at odds with the practical requirement to handle chemical warfare agent and other hazardous materials in order to accomplish the Centre's mission of providing scientific support to the CAF. It was also emphasized that administrative controls (policies, procedures, information management systems, training etc.) and personal protective equipment (PPE) are essential, however, to be fully effective, they must be accompanied by robust engineering controls.

We were also made aware of the results of a partial occupational hygiene hazard assessment conducted in July 2022 by a qualified occupational hygienist (on loan from another DND establishment). He observed that surveyed chemical risks assessed as "low" to "medium" after the application of controls could revert to their original assessment of "very high" should engineering controls fail. The report recommended the completion of chemical-specific occupational hygiene assessments; a quantitative assessment-based evaluation of the efficacy of existing engineering and administrative controls; and, in the meantime, the integration of regular air monitoring as a layer of control and quality assurance.

The key component of a definitive solution to these deficiencies is the recapitalization of the laboratories at Suffield. As explained in our past annual reports, DND has launched a major capital project to construct a new chemical/biological facility, however, it is not slated to be fully operational and certified until December 2034 (assuming that final funding is approved, and project timelines do not "slip").

In the meantime, efforts to maintain or improve existing engineering controls have been frustrated by an impaired government procurement system which sees long delays

attached to the supply of critical items such as fume hood filter cartridges and special services for their installation and repair

In view of this situation, ADM (DRDC), acting on the advice of the Acting Centre Director at Suffield and DG RDSE, decided at the end of July, to suspend or restrict certain chemical defence-related research and development as well as training activities pending completion of a risk management review. This suspension was expected to last a minimum of four months during which time an action plan, aimed at allowing the resumption of these activities in a confirmed safe manner, would be executed.

Central to this action plan has been the formation of a team operating under the guidance of the Acting Centre Director and Head of the Chemical Threat Defence Section and comprising local infrastructure engineers, scientists, technologists, safety officers, a project management specialist, and the Centre's corporate services head.

According to officials, the team's scope of work includes:

- conduct of targeted hazard assessments to determine the efficacy of existing and proposed risk controls
- examination of administrative and PPE controls to determine if modification to either would permit resumption of paused activities at a "low" level of risk
- review of the state of engineering controls to verify deficiencies and assess the projected impact of the currently forecasted programme of work on the resolution of stated issues
- development of alternative courses of action to address engineering control issues
- liaison with Real Property Operations Unit (West) to determine whether the infrastructure components of required engineering control improvements are within local authorities and resource allocations
- liaison with DRDC Director Corporate Services to identify and overcome barriers to the procurement support required to maintain laboratory facilities in operational status
- assistance with the development of communications products in support of the action plan
- assistance with the development of options for interim measures to allow the resumption of activities
- assistance with the mobilization of DND/CAF support for required actions

Similarly, officials have launched separate, parallel, or supporting initiatives including the following:

- a review and update of SRC's health and safety management system with a view to ensuring that SRC managers fully understand their health and safety responsibilities and accountabilities (led by the Acting Centre Director)

- creation of a repository of health and safety documents easily accessible by all employees (led by Associate Director – Centre Business Management)
- completion of the review of SRC’s respiratory protection programme (led by the Acting Centre Director)
- identification of options for the expansion of physicians on site at SRC with a view to guaranteeing continuity of medical support (led by the Head of the Casualty Management Section)
- a DRDC corporate level review of the procurement function with a view to ensuring that health and safety at SRC, including hazardous material management and animal care, are adequately supported (led by DG RDSE and the Chief of Staff (COS) to ADM (DRDC))
- a review of SRC’s organizational structure and positional roles and responsibilities with a view to ensuring that training activities are adequately supported (led by the Acting Centre Director)
- identification of all modifications to SRC’s Buildings 1 and 10 necessary for safe operations until such time as the new laboratory complex is completed (led by SRC’s Technical and Equipment Support Engineer)

In announcing his decision, ADM (DRDC) acknowledged that interruption of activities at Suffield challenges Canada’s chemical defence programme including international commitments in this realm. He further stated, however, that it is a necessary measure, in the short term, to prevent further erosion of safety with potentially catastrophic consequence. Moreover, it should provide an opportunity for focussed work to address safety concerns and thus ultimately strengthen DRDC’s ability to deliver the desired outcomes of its CBRN defence programme.

The BCDRC strongly commends and supports this decision representing as it does recognition of the seriousness of unmediated health and safety risks that we and others have repeatedly identified, as well as a determination to address them comprehensively and conclusively. The Committee appreciates the fact that we were fully briefed by DRDC officials in the lead-up to the decision and again, since its announcement, to keep us abreast of developments.

In this connection, we were delighted to learn that in accordance with our recommendation in our 2022 report, a qualified occupational hygienist has been hired to fill the new position of Technical Safety Officer (TSO), reporting directly to the Centre Director. Moreover, the information management function has been reinforced with two new employees who will make possible the creation of a permanent, up-to-date, and easily accessible repository of health and safety information for the benefit of new and veteran employees alike. These measures alone, we believe, will substantively alleviate the Committee’s concerns around maintenance of the requisite safety culture for a facility like SRC.

Maintenance of this momentum requires the tangible support of stakeholders and authorities outside of DRDC, which we trust will be forthcoming given what we believe to be SRC's status as a strategic national asset in a worryingly unstable global security environment. For our part, we have agreed with DRDC to meet for periodic updates of the various initiatives now underway. The Committee remains open to providing feedback, as requested.

Other Safety, Occupational Health & Related Observations

Risk Management Framework

The risks of harm to the workforce and environment at SRC or of damage or loss to other resources dedicated to its programme of work are multitudinous and often highly potent unless effectively controlled. As such, the conduct of Canada's BCD programme is subject to the provisions of a broad array of legislation, regulations, policy, standards, orders, directives, and guidance intended to uphold the safety and well-being of defence personnel and the public, and to protect and preserve the environment.

To manage the execution of its responsibilities in this connection, DRDC has formulated a Safety and Environmental Management System (SEMS) in accordance with ISO 45001:2018 (Occupational Health & Safety Management Systems) and ISO 14001:2015 (Environmental Management Systems). Moreover, it has directed the design and implementation of corresponding systems at each of its research centres including SRC. Given the complexities of the situation at SRC, separate occupational health and safety and environmental management systems are maintained.

The challenge confronting leaders in effectively tracking risks and ensuring the full implementation of all appropriate administrative and engineering risk controls, including ascertaining their effectiveness, is a formidable one with the demands of these functions often stretching or exceeding their capacity to respond. For some time, SRC has been seeking to develop an information management tool which would overlay the formal management systems with the purpose of flagging critical risk issues to the focussed attention of the Centre Director. During our visit, we were shown an outline of a proposed "risk management framework" that will incorporate the following key areas and indicators of risk:

- Infrastructure (facilities, inventory, permits, licenses, threat assessments)
- Procedures (health and safety, environment, incident reporting)
- Personnel (training, security)
- Activity oversight (programme planning, activity approval)

We believe this is a sensible initiative and look forward to its completion and adoption. In this regard, the creation of the Technical Safety Officer position and the hiring of additional information management personnel are welcome contributions to the effectiveness of risk management at SRC.

High Potency Material Management

The overriding safety concern of the Committee during its visits to SRC is the appropriate management of high potency and other hazardous materials used in BCD research and development, and in training activities. Such management follows a life-cycle approach, which addresses risks within the stages of initial selection, procurement or synthesis, transportation, handling, storage, use, decontamination, and disposal.

Inspections of Holdings

The Committee conducted physical inspections of CL2 microbiological and toxin holdings and remote audio-enabled inspections of holdings in the CL3 facility. Some discrepancies were detected, although our discussion with the Centre's bioarchivist indicated that work to update the database of holdings continues. As previously reported, the toxin inventory requires further effort to validate the integrity of current stocks and ensure they align with current and future programme requirements, integrate the inventory database with that of other biologicals, and to establish ownership by current researchers. These efforts are also in progress. A subset of toxins being used in current projects has been verified, aliquoted, and catalogued.

Control and accounting procedures for chemical holdings were verified by physical and remote video-enabled inspection and certain discrepancies identified. The amount of material used for training tripled in FY 2021-22 but still has not reached the "pre-COVID" level of use. This said, a deliberate attempt is being made to reduce amounts used in training by means of the modification of scenario requirements and the reuse of material.

The Committee continues to emphasize the importance of consistent compliance with the Centre's policy of recording agent use from "cradle to grave". Efforts to reduce old or surplus holdings are not without technical and administrative challenges. The Committee will continue to monitor this situation.

The Centre's licence under the Controlled Substances and Drugs Act has been updated and extended to 2024.

Update of Publications

Work continues to update the "Biological Laboratory Operating Manual" to ensure compliance with the provisions of the Human Pathogens and Toxins Act and with new Canadian Biosafety Standards.

Agent Worker Certification

Following the improvements we noted last year, the Agent Worker Certification programme continues to work well with one employee having recently been certified and four others currently enrolled in the programme.

Transfers of Material

There were no transfers of chemical agents or pathogenic biological materials in or out of the Centre during the period 30 April 2022 to 30 April 2023.

Hazardous Material Disposal

During FY 2022-23, 800 individual items of hazardous material were exported from SRC at a cost of \$25,000.

A master list of items identified for disposal in FY 2023-24 has been prepared and will be put out to tender.

Incinerator renovations are ongoing in response to last year's inspection and emission testing of same.

Safety & Health Committees

General Safety & Health Committee

The General Safety and Health Committee (GSHC), chaired by the Centre Director, deals with matters of policy and recommendations for improvements to safety and occupational health programmes. Amongst other responsibilities, it reviews reports of accidents and hazardous occurrences and directs actions necessary to eliminate unsafe conditions and/or prevent the reoccurrence of operating errors.

We learned that since our last visit, eleven biological or chemical-related hazardous occurrences have been reported to the GSHC:

- an employee accidentally self-injected with an autoinjector - employee was seen by a physician – no side effects were noted
- a fire alarm was activated in Building 1 while chemical agent was being synthesized – response (evacuation) was confused – a false alarm was declared by someone other than a firefighter
- difficulty in ensuring that sufficient MCM were available for Ex PRECISE RESPONSE 2022
- during live agent training, a CAF member removed his respirator before entering the hot zone – there was no exposure to agent
- twice during a serial of advanced CBRN defence training, it was perceived that an insufficient number of Chemical Training Safety Officers were present to perform agent dispensing and other functions
- during Ex PRECISE RESPONSE 2022, an exercise participant sampled a small quantity of nerve agent from a fume hood in the mobile chemistry laboratory; the sample vial leaked, and the material spilled on his gloves and on the floor
- during Ex PRECISE RESPONSE 2022 a quantity of a cyanide salt contained in a dummy improvised explosive device was left in a locker at the Cameron Centre – by a non-SRC, but qualified individual, who had been enlisted to oversee some aspects of training due to shortage of available SRC staff (This incident, which we were told was not reported until three months after its occurrence, is under separate investigation, by order of the Acting Centre Director)

- while cleaning a fan in the environmental testing chamber, an employee cut their hand on one of the fan blades - was treated and returned to work
- a fume hood malfunction (insufficient airflow due to incompatibility of a new controller and an old fume hood)
- a tear was discovered in a powered air-purifying respirator suit following its use

These reports testify to the existence at SRC of a formal system of recording hazardous occurrences and using this information to correct possible deficiencies in safety policy or practice. It should be noted that in some cases, occurrences are reported even though there was no actual safety infraction thanks to on-the-spot intervention. In other instances, situations that could give rise to a hazardous occurrence are reported with a view to their future avoidance. In all cases, the willingness of employees at SRC to report occurrences and effective and efficient follow-up by supervisors and managers should be viewed as leading performance indicators of a positive safety culture.

That said, the delayed reporting of the improper storage of a high-toxicity chemical (cyanide salt) is a major concern and a timely reminder that a strong 'safety culture' cannot be taken for granted. It requires constant vigilance of all contributing factors and resolute action in the face of any tendency that would weaken it.

Chemical, Biological & Radiological Joint Occupational Health & Safety Committee

In accordance with the Canada Labour Code, non-management employees make up at least half of the Chemical, Biological and Radiological Joint Occupational Safety & Health (CBR JOSH) Committee and one of these serves as committee co-chairperson. The Committee's responsibility is to advise the employer on work organization and work practices for safety, and to provide employees with leadership in protecting the health and safety of all. We believe the Committee functions satisfactorily.

Biological Safety Committee

We believe the Biological Safety Committee continues to operate effectively. The committee is currently seized of three issues: maintenance of a dynamic vaccination programme, management of potentially polio-infected materials, and cell culture designation in the CL1 and CL2 laboratories

Chemical Safety Committee

The Chemical Safety Committee is now operating effectively. The committee is seized of several issues:

- reviewing research and field trial proposals as part of the OnTAP system
- updating of local chemical safety-related policies and standard operating procedures (SOP) such as those related to the conduct of field trials and the movement of agent from the CNSSSF to other locations within SRC
- modelling and safety templating of training scenarios at the Cameron Centre
- new specifications for PPE and recommended PPE for scenarios

- conduct of BCD training activities in Building 600 (Counter Terrorism Technology Centre) with a view to verifying training objectives and design, and emergency response procedures during training
- decontamination procedures and return policy pertinent to trainees' equipment which has come into contact with live agent
- formation of a "Significant Quantities' Sub-committee" to review the type and amounts of compounds used in various research and training activities, and to determine what safety postures should therefore be assumed
- fume hood safety

Safety Officers

Technical Safety Officer

The position of General Safety Officer has been renamed Technical Safety Officer (TSO) and, as indicated above, incorporates an Occupational Hygienist qualification. This position has been filled. Moreover, the position has been re-situated in the Centre's organization such that the TSO will be able to access the Centre Director as required. The TSO plays a key role in assisting the Centre Director to maintain the components of a safety and occupational health programme:

- a signed safety policy statement
- a safety organization and committee structure with prescribed responsibilities
- an effective local indoctrination and continuing programme of safety, Workplace Hazardous Management Information System (WHMIS), and hazardous material training and safety education
- a system of periodic safety inspections and surveys
- an effective accident investigation and reporting system
- a programme to ensure awareness of, and compliance with, applicable safety directives, standards, and precautions
- a set of procedures to determine requirements for provision of, training on, and controlled use of, protective equipment for personnel

We look forward to meeting the incumbent during our next visit.

Biological & Chemical Safety Officers

The continuous monitoring of laboratory protocols aimed at ensuring they are equal to the task of countering existing or emergent hazards is a vital aspect of a positive safety culture. To this end, we have encouraged the Biological and Chemical Safety Officers to take part in the routine activities of all laboratories including those in the Casualty Management Section in Building 10 in order to develop good relationships with staff, observe laboratory practices at first-hand, respond to concerns informally, or formally when necessary, and assess biological and chemical safety culture across SRC. It is crucial

that the performance management agreements for these positions be modified to include this vital aspect of their role and that management ensures that all personnel understand and support this mandate. We understand that this work is nearing completion. The CSO has requested that she be afforded opportunities to interact with counterparts with similar responsibilities in other institutions. We agree this would be beneficial for SRC and are pleased that management at SRC is looking at ways to make this happen.

We were surprised to learn that an acting CSO was not formally appointed while the incumbent was on a prolonged leave of absence with the result that there may have been gaps in the exercise of the CSO's various functions. We believe that the CSO should be a fulltime position which should always be backfilled in times of absence.

Dual-use Research of Concern

The Human Pathogens and Toxins Regulations (HPTRs), 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 Dual-Use Research of Concern (DURC).

The Biological Safety Committee on 24 May 2023 issued an updated document describing the DURC review process for biological work conducted at DRDC SRC (or elsewhere under DRDC's direction) and providing guidance for evaluation by the Committee of DURC as part of OnTAP. This guidance is applied to Statements of Work (SoWs) and similar documentation for DURC work conducted externally to DRDC, including that which involves only theoretical work or paper studies (i.e., no laboratory-based activities). The application of this guidance helps to ensure that the biological research conducted at DRDC SRC or elsewhere under its direction remains defensive in nature.

We were told that OnTAP review revealed no case of DURC at SRC during the past year.

Risk to Civilian Employees Supporting Live Agent Training

As reported last year, there is concern over the risk borne and accumulated by civilian personnel involved in live-agent training activities at the Cameron Centre (*e.g.*, safety officers and decontamination team members). Specific issues include:

- whether civilians should be required to endure the same risks as military members during live-agent training
- the transitory risk faced by military members compared to longer exposures and accumulated risk experienced by civilian staff
- risk threshold definitions, assessments, and monitoring
- modelling and risk assessment of training scenarios, including real-time environmental modelling
- differences in military and civilian operating concepts

- matching appropriate PPE to specific hazards and risks
- requirement for the inclusion of periods of rest during training
- health-related decision-making during field exercises
- approaches for collecting and storing data on individual activities over a career

The Head of the Chemical Threat Defence Section and the Chemical Safety Officer are championing the need to address this concern. It is argued that a legislatively and policy compliant, adequately resourced, bespoke integrated safety and health system is required for the benefit of civilians involved in live agent training. The Committee recommends that this proposal be reviewed by central authorities and a formal health and safety system for affected civilian employees be implemented, as deemed appropriate.

Fire Protection

Given that the 70-year-old main building is not up to modern building code standards, attention to all aspects of a comprehensive fire protection programme is crucial. While we were pleased to hear this year of improved compliance with fire warden reporting requirements, we were also told that fire safety training requests made to the CFB Suffield Fire Department could not always be met due to a lack of capacity on the part of the latter.

Respiratory Protection

In 2021, we observed that as required by law, SRC had started work to implement a respiratory protection programme applicable to employees required to wear supplied air breathing systems or filtering respirators during the performance of their duties. Components of this programme include:

- programme administration roles and responsibilities
- occupational and workplace risk assessments and inspections to determine what devices are required to be worn and by whom
- initial and periodic occupational health assessments from Health Canada to gauge the fitness of employees to wear a stipulated device
- user training
- mask fit testing
- provisions for procurement, cleaning, inspection, maintenance, and storage of respirators
- appropriate record keeping

Occupational and workplace assessments have not yet been completed nor have these and other aspects of the programme been reviewed by the Chemical Safety Committee. The Acting Centre Director will lead the work necessary to complete the design and

implementation of this programme as part of the activity suspension action plan mentioned above.

Acetylcholinesterase Monitoring

The AChE monitoring programme for chemical agent workers mentioned in previous reports is now at steady state with an evolved policy, demonstrated test capability, and a good set of baseline data. We understand that manufacture of the current monitoring instrument has been discontinued. Alternative devices under development by or already licensed in allied nations have been identified and will be procured for evaluation and potential use at SRC.

Medical Advisor

Essential to the operation of an occupational health programme at SRC is access to a licensed physician who, in addition to advising the Centre Director on medical and occupational health matters, is in a position to fulfill the requirements of provincial and federal public health authorities for the authorization and procurement of such components of the programme as specialized vaccines, and medical countermeasures appropriate to ongoing research and instruments such as that used for AChE monitoring.

At present, the SRC Medical Advisor is a contracted physician with excellent knowledge and experience of the medical aspects of biological and chemical warfare agents. He is also a contracted physician with the CFB Suffield medical section and has recently volunteered to serve on the Province of Alberta's CBRN Working Group.

The Medical Advisor's contract has been extended by three years. SRC is exploring options for the further sustainment of this critical function. Ideally, the Medical Advisor would be an indeterminate full or part-time employee instead of a contractor and thus able to access computers and networks. Available working hours and access to controlled substances would also be improved.

Infrastructure & Equipment

Laboratory Modernization

The project schedule estimates that project development and definition activities (including completion of design) will continue until June 2026 when a submission will be made to cabinet seeking approval for project implementation with a response to same expected by March 2027. As such, the project remains at risk until then. Should approval be forthcoming, the new facilities are planned to achieve initial operating capability (IOC) by December 2032 and be fully operational and certified by December 2034. We will continue to follow closely and report on the progress of this project.

Given the concerning state of engineering controls in the existing main laboratories (Building 1), it is the opinion of the Committee that barring a major intervention to bring the most affected parts of the building up to modern safety standards, or the identification and acceptance of alternative interim solutions, the future of Canada's BCD programme is at steadily increasing risk. In fairness to the CAF's real property operations

organization, we acknowledge that within the past year there have been some necessary repairs completed.

While chemical engineering control deficiencies are the critical current concern, significant work is also required to keep the CL3 laboratory in safe operating condition including, at present, upgrade of the facility's duct work.

Other Infrastructure Projects

SRC's Casualty Management Section is housed in Building 10 – a structure separate and at a distance from Building 1. While the Section will eventually be housed in the new laboratory complex, as an interim measure, significant renovations to the building have been launched to address instances of non-compliance with Canadian Council on Animal Care (CCAC) standards; in particular, the requirement for separation of laboratories and offices from the vivarium and the separation of species therein. The vivarium is also meant to see additional improvements including individually ventilated cages with in and out HEPA filters, separate and redundant ventilation systems for rodent animal handling rooms (AHR), night lighting for rodent AHR, and 'Arcoplast' washable ceilings for rodent AHR.

Disturbingly, during this year's visit we learned that work on this project has essentially halted due to major cost increases which have triggered new approval requirements. There may also be a necessity to retender the design work. In the meantime, it has been determined that the newly installed HVAC system does not work properly resulting in unacceptable temperature fluctuations in the vivarium and elsewhere.

In view of this situation, there is, to our mind, well-founded concern that the CCAC may return this laboratory to probationary status.

The proposed new neurobehavioural facility valued at \$45 million remains under design. Should project implementation be approved, the facility is expected to achieve IOC sometime in 2025.

Equipment

The Head of the Chemical Threat Defence Section was happy to report the procurement of a high-resolution mass spectrometer and the replacement of the section's nuclear magnetic spectrometer – both of which are of great assistance in analytical work.

Security

As does fit-for-purpose infrastructure, effective physical and information security programmes contribute importantly to the safety of activities at SRC.

Improving the Centre's capability and capacity for secure computing and communications remains a priority objective given its "reach-back" support role, and the "new normal" of less travel and more on-line meetings. Accordingly, work has started on a secure VTC facility with completion to occur not later than the end of 2024. This will obviate the current need to drive to Edmonton to access this capability.

As reported last year, updates of the fire alarm system in Building 1 and implementation of a text message-based mass notification system for employees continue.

The public address system in Building 1 remains inoperative. A new contractor has been engaged to undertake repair/replacement work pending an acceptable cost estimate.

We heard that the time required to repair building access controls system malfunctions far exceeds the stated security standard due, again, to slow procurement.

The individual security clearance system is also not meeting the advertised standard of service with Enhanced Reliability clearances taking 12-24 months to obtain and Level 2 clearances taking more than two years.

International visitors are also challenged to secure visit request approval in a timely manner.

On the bright side, the threat assessment system continues to work well, and the Centre's Critical Incident Response programme has been implemented to include individual training and an exercise.

Emergency Preparedness & Response

Emergency Medical Support

Given the nature of the R&D undertaken at SRC, not only the occupational health but also the potential emergency medical support needs of the Centre are specialized and complex. For several years, we have, in our reports, underlined the essential importance of maintaining an emergency medical response capability at SRC tailored to its distinctive needs. During past annual visits, we have observed problematic aspects of the Centre's situation in this regard and, notwithstanding the diligent efforts of authorities to overcome associated challenges, have noticed a tendency for issues to re-emerge due to changed circumstances; the *ad hoc* or temporary nature of solutions to problems; or, more fundamentally, the lack of a shared and accepted understanding of requirements, roles, and responsibilities by both the providers and recipients of support services.

These observations led to the inclusion in the Committee's 2016 report of the recommendation that an appropriate high-level authority, with the participation of relevant stakeholders, conduct a comprehensive assessment of occupational health and emergency medical support needs, including verification that these needs are being met. The objective of this undertaking would be to ensure the long-term adequacy and stability of these essential supports to the work of SRC. We further suggested this same authority should take the lead in designing and implementing cooperative, long-term solutions to any gaps so identified.

While this recommendation *per se* has not been acted upon, we were pleased, during our 2022 visit to hear the SRC Director, the Base Commander, and CAF medical authorities agree on the need for, and express their intention to put in place, a service level agreement (SLA) covering provision of emergency medical support to SRC. As such, we have closed our 2016 recommendation in favour of a new recommendation urging the rapid negotiation and implementation of the intended SLA. This said, we are surprised

and disheartened that eighteen months later and seven years after we first raised the issue, the SLA has yet to be concluded.

Notwithstanding this prolonged delay, we were told during our meeting with the SRC Medical Advisor and the Base Surgeon (senior medical officer) that from a practical perspective, the medical support situation is good. Emergency medical support to SRC civilian personnel, if required, will be provided by CAF physicians who possess the appropriate training. Communication on this point between SRC and CAF medical authorities is much improved. A pharmacist has been retained who works half days throughout the week. Stocks of MCM are sufficient with no deficiencies and immunization of BTDS personnel is also sufficient.

The SRC Medical Advisor reported that he believes that the ability and readiness of the Medicine Hat Regional Hospital are better than they have been for some time. Apparently, however, the hospital has not been able to obtain a supply of Reactive Skin Decontamination Lotion (RDSL) due to a provincial health ministry policy that stipulates that if such an item is provided to one hospital, it must be provided to all hospitals. The Medical Advisor has recently taken a seat on the Alberta Health CBRN Board that is currently looking at decontamination issues and the stocking of “crash carts”, and so the prospect of this deficiency being addressed is good.

Integrated Emergency Response Plan

An updated Integrated Emergency Response Plan (IERP) was issued in September 2022.

Emergency Response Exercise – Biological Threat Defence Section

Exercises are vital to the validation of the IERP and to maintain the effectiveness and efficiency of response. During this year’s visit, we were briefed on a Biological Threat Section exercise which occurred on 28 February 2023.

The exercise scenario was the first of its kind in that it involved not an accident, but rather a critical incident in the form of a distraught employee holding hostage a fellow employee in the CL 3 laboratory. The scope of play comprised responses from SRC management and staff, CFB Suffield agencies and the Medicine Hat Police Service negotiating team. Notably, it was initially a “blind exercise” for the Head of the BTDS and the Base Medical Section. Its duration, at two hours and fifteen minutes, was also exceptional.

A “hot wash-up” session was conducted with all participants after the exercise was ended during which lessons were identified and discussed freely and professionally. The list of these lessons was long and included ones identified for the first time such as the need for managers to receive incident command training and the requirement to integrate local terminology with that used by responding external agencies. Regular exercises such as this are an invaluable contribution to rebuilding and maintaining a strong safety culture. The Acting Centre Director reinforced this point by stating his belief that converting a “lesson identified” to a “lesson learned” requires careful analysis of the lesson identified to fully understand its meaning and several applications of the “lesson” to the activity that gave rise to it. The comparatively rapid turnover of base military personnel adds to this challenge.

It remains an SRC ambition to include evacuation to and reception at Medicine Hat Regional Hospital as the major component of a future chemical emergency response exercise. This would require significant effort; however, the Committee believes that it would be in keeping with the goal of maintaining a validated comprehensive IERP.

Environmental Protection

Due Diligence Environmental Effects Determinations

We were told that completed Due Diligence Environmental Effects Determinations (DDEED) do not have an expiry date and may be applied to new activities at the same site with the same scope and which are not subject to any new legal or policy requirement. Existing DDEED are being reviewed to determine if there has been a change in scope in the associated activities and to updated approving signatories. Effects determinations are being conducted for sites without valid DDEED. New impact assessments may incorporate a requirement to consult potentially impacted Indigenous communities.

Incorporation of Environmental Considerations in OnTAP

Environmental considerations are incorporated in the On-line Turbo Approval Process (OnTAP) for the approval and renewal of R&D field trials and other activities. These considerations include existing DDEED, potential impact on historical and active species at risk, soil and vegetation management, spill prevention and response, and waste disposal.

Species at Risk

SRC produces an annual work plan in conjunction with CFB Suffield aimed at mitigating the impact of Centre operations on Species at Risk (SAR) notwithstanding the local applicability of exceptions under Section 83 of the Species at Risk Act regarding Burrowing Owls and Ferruginous Hawks.

The Western Tiger Salamander is a current SAR concern. A population of these was relocated from an underwater explosive test pond in 2019. Informal surveys of the test pond and the relocation area in 2020, 2021 and 2022 resulted in zero observations. We learned that funding has been secured and a statement of work drafted for the conduct of a formal survey to include water sampling for environmental DNA analysis to assess further the continued presence of this species in either location.

Also of concern, are reports of Ferruginous Hawks being electrocuted on high-risk electrical poles. Real Property Operations have been asked to investigate ways of protecting the hawks from this hazard. A DDEED is being conducted on the demolition of a 300-foot communications tower which Ferruginous Hawks have been known to use as a nesting platform.

Contaminated Sites Management

DND policy with respect to contaminated sites located on SRC's Experimental Proving Ground is that they be fenced and signed. Since 2020, twenty-three registered and suspected sites have been reviewed for required repairs to fences and signs and necessary work completed.

Spill Response

No hazardous spills have been reported to the Environmental Officer since our last visit. With the assistance of CFB Suffield, spill response training is provided to SRC employees.

DRDC Environment, Health & Safety Council

The Committee appreciates the invitation extended to it to participate in this high-level forum chaired by ADM (DRDC). The Acting Centre Director took advantage of the June meeting to update his colleagues on the results of our visit to SRC, the occupational hazard assessments conducted in conjunction with the implementation of the respiratory protection programme, and the subsequent decision to suspend or restrict certain chemical defence-related activities pending completion of a risk management review. He also emphasized the connection between operational taskings, procurement impediments and the potential erosion of safety, and admitted the need to complete work on SRC's risk management framework.

DG RDSE amplified the gravity of the suspension decision and the critical need to enlist the support of the most senior DND and CAF authorities for the work required to correct, as soon as possible, risk controls deficiencies which have been identified in order to minimize the suspension's impact on the chemical defence programme.

The BCDRC Executive Officer stated that the Committee is seized by the significance of the suspension decision and reiterated our willingness to assist DRDC officials by acting as a sounding board for risk remediation proposals.

Other Observations

The following observations pertain to the professional conduct of Canada's BCD programme. The Committee defines "professional conduct", in this context, as the effective, efficient, and economical application of requisite expertise and resources to defence of the CAF against biological and chemical warfare agents be it with respect to capability, capacity, or readiness.

SRC/CFB Suffield

Base Relations

Productive relations between SRC and CFB Suffield authorities are essential to the success of their respective missions. As in recent years, our meetings with the Base Commander, the Centre Director, the Corporate Services Manager 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.

Both authorities are attempting to discern what will be the impact on the United Kingdom's decision to draw down British Army activities at CFB Suffield. While it is too soon to be certain, negative effects could be felt in such areas as base support services, range control, road maintenance, range firefighting, ammunition management, and regulation of oil and gas access. On the plus side, there could be opportunities for

additional Canadian activity at the base and the repurposing of buildings, including for SRC purposes.

Support to Readiness

As we reported again last year, as valued as SRC's support to readiness appears to be, tension persists between the delivery of training and the conduct of the science and technology research and development programme. We continue to believe that a high-level examination of the role of the SRC in supporting the readiness of the CAF and other domestic and allied entities is warranted. Should its readiness support role be verified, the Centre should be appropriately organized and adequately resourced to do so without impinging on its research and development function.

During this year's visit, we heard that there is a growing demand for live agent training in the context of conventional military operations as opposed to counter-terrorism scenarios. There is also renewed interest in the provision of training in a broader range of topics to military laboratory personnel, and to domestic first responder organizations via the Centre for Security Science and the RCMP. SRC is examining the use of high-fidelity patient simulators for casualty care training.

There is also a desire to exploit Exercise PRECISE RESPONSE (live agent training for NATO and allied forces) as a test bed for various BCD research and development initiatives in collaboration with allied science and technology establishments. We hope to learn more about this idea during our next attendance at the exercise.

Exercise FIRE DRAKE

The purpose of Exercise FIRE DRAKE, held annually at SRC, is to allow the RCMP-led National Chemical, Biological, Radiological, Nuclear Explosives (CBRNE) Response Team to practice its tactics, techniques, and procedures in a controlled live-agent environment. The role of the National CBRNE Team is to conduct high-risk assessments and searches, to secure and render safe a CBRNE event, and to provide forensic examination related to national-security incidents involving a CBRNE threat. This year's exercise was reduced in scope with participation limited to elements of the RCMP and components of the Response Team drawn from the CAF's Canadian Joint Immediate Response Unit – CBRN (CJIRU-CBRN).

Committee representatives observed the combined start of day briefing of the training audience and safety staff and viewed, from the exercise control centre via video link, members of the RCMP execute their tasks in the "hot zone." We also spoke at length with members of the exercise control and safety staff. We gained the impression of a valuable training activity executed safely by highly competent personnel.

Staffing

As we have observed in past reports, given its relatively remote location, funding restrictions, and other factors, the maintenance of the required level of knowledge, skill, and experience amongst the research and support staff at SRC is a formidable task.

This year, therefore, we were pleased to learn of recent hirings including, in addition to the highly qualified Technical Safety Officer mentioned earlier, a new synthetic chemist. We also met a CAF warrant officer, recently arrived from CJIRU-CBRN, who will fill the position of Canadian Special Operating Forces Command Liaison Officer to provide a permanent 24/7 direct line of communication between SRC and CJIRU-CBRN, as well as other elements of the Command, with a view to facilitating scientific reach-back, research and development guidance and training design and coordination.

Procurement

Problems with the timely procurement of laboratory supplies and other goods and services continue to severely hamper scientific and training productivity and, consequently, employee morale is also suffering due to frustration over their critical work being slowed or halted. (Apparently, at the time of our visit, at SRC alone, there was a backlog of 600 procurement orders.) Moreover, funds provided to SRC to undertake work on behalf of the Canadian Forces Health Services Group and others were “lost” when spending authority lapsed at the end of the fiscal year before they could be spent on their intended purpose. An example cited was that of \$100,000 provided to SRC by the Surgeon General for auto-injector testing and evaluation in FY 2022-23, \$70,000 was returned at the end of the fiscal year.

DRDC’s Associate Director, Procurement and Materiel Management (formerly the Associate Director for Corporate Services at SRC) explained that the impact of virtualization (i.e., remote work) across government and industry has led to procurement staff leaving Suffield and the Government of Canada, writ large, for other departments and industries resulting in a 30-40% vacancy rate amongst procurement positions.

He described the following initiatives which have been launched to improve the procurement situation:

- movement toward commodity-based national procurement teams rather than regional teams
- allowing procurement card use by non-procurement staff
- focused effort to hire more procurement staff
- introduction of a procurement prioritization tool
- encouragement of direct engagement between procurement staff and their clients to facilitate customer feedback

The Committee asked how it was intended the results of these measures be measured. Are there, for instance, key performance indicators? Conclusive answers to these questions were not available and so we will follow up during our next visit.

DRDC Toronto Research Centre

The Toronto Research Centre (TRC) is DRDC’s Centre of Excellence for human effectiveness research and development in the defence and national security domains.

During our visit, the first in many years, we learned that TRC executes its role by means of the provision of science and technology advice aimed at:

- optimizing CAF member performance through improvement of human-technology interaction, human systems engineering, and training methods
- supporting the development, acquisition, employment, and evaluation of various technical systems as well as operational clothing and equipment
- understanding and exploiting psychosocial factors that influence the effectiveness of the CAF in operating and achieving advantage in the information environment along four complementary lines of effort: intelligence, cyber, influence, and engagement
- understanding, preventing, and treating illness and injury associated with military operations, including their impact on mental and social health
- improving CAF members' mental and physical performance and resilience in extreme physical environments and under high cognitive load or emotional stress

Resources at the disposal of the Centre include personnel possessed of an impressive array of academic, scientific, and technological backgrounds, and specialist equipment and facilities including field portable human physiology instrumentation, various environmental chambers, and Canada's only human-rated centrifuge. These are currently deployed on a wide range of projects such as weapons effects simulation modernization; vision enhancement; human-autonomous systems teaming issues; integrating gender and culture perspectives with influence and engagement activities; and determination of optimal strategies to track, mitigate, and treat cold weather injuries.

Of specific BCD interest was the Centre's longstanding investigation of heat stress injuries in relation to work-rest cycles and personnel protective equipment (PPE). We note the opportunity for collaboration with SRC on their current work on low-burden CBRN PPE and with respect to their concern over the susceptibility of safety staff to heat stress injury during live agent training.

We observed that TRC, in addition to cooperating with other CAF entities and allies, especially as regards operational health and performance, takes advantage of its location to collaborate with regional universities and research hospitals.

We finished our visit with a valuable open discussion with the Centre Director and section heads about their work and some of the opportunities and challenges they face. Amongst the salient points most strongly made were:

- understanding of defence, by defence scientists, is key to programme effectiveness
- scientific consideration of human factors needs to occur earlier in the decision-making process when it comes to procurement of new technology for the CAF. DRDC needs to "foresight" technology in anticipation of it becoming a subject of force development interest.

- strategic relationships with academia and industry are vital
- it is often difficult to access serving CAF members for study purposes
- Capability and capacity gaps due to position vacancies erode work-life balance amongst adjacent employees. DRDC is not well known outside DND/CAF circles making it difficult to attract candidates for open or new positions. The high cost of living in the Greater Toronto Area also deters potential applicants. A bright spot is the recent increase in co-op students and junior hires.
- The impact on productivity and job satisfaction due to an impaired procurement function, including the letting of contracts, is as sorely felt at TRC as it is at SRC and indeed, may be a Government of Canada-wide problem. TRC is looking to make better use of existing challenge-based or contribution-based collaboration schemes to counter delays in contracting.

Centre for Security Science

The Canadian Safety and Security Program (CSSP) traces its origins to the aftermath of the September 2001 terrorist attacks. The programme, co-managed by the CSS and Public Safety Canada, not only remains relevant, but also compellingly demonstrates the leverage to be gained from modest expenditures when these are coordinated with other agencies and allied nations in pursuit of common interests across public safety, national security, and even defence domain boundaries.

We received an overview of the public safety and national security roles of the CSS followed by an update of the Centre's projects in the CSSP's biological and chemical defence portfolios and of its contribution to capability-based planning and inter-agency incident response exercises by way of highly realistic scenario development.

We heard that with respect to international safety and security collaboration, Canada is holding its own, within available resources.

DRDC Corporate Office

Defence and Security Science & Technology Programme

CBRN Defence is a "line of effort" within the Defence and Security Science & Technology (DSST) Programme; DSST's so-called "People" Strategic Focus Area (SFA). There is also CBRN-related activity in the "Domestic Security" SFA aimed at enabling safety and security and led by the CSS (as described above).

The scope of activity on this line of effort comprises:

- provision of critical evidence-based information on CBRN threats/hazards to enable planning and development of policy, doctrine, and tactics
- delivery of enabling, integrated technologies that provide rapid detection, identification, and monitoring of CBRN threats/hazards
- development of protection technologies that minimize the harm to personnel, equipment, and infrastructure from exposure to CBRN material

- provision of specialized CBRN training and reach-back capability as needed to support CAF readiness for, and conduct of operations
- provision of science and technology to mitigate and reduce the immediate and long-term health effects of exposure to these hazards

Specific investments are, or will be made, in the following areas:

- risk analyses on CBRN threats/hazards and capability gap assessments
- threat characterization
- support to acquisition to fill any immediate capability gaps for CBRN detection
- novel technologies for rapid detection, identification, and monitoring of CBRN threats/hazards
- development of innovative materials, systems, and prototypes for next generation CBRN combat uniforms including novel solutions for the provision of CBR protection to personnel requesting religious/spiritual accommodation (i.e., facial hair or headdress)
- development of technologies for decontamination and hazard management
- individual and collective CBRN defence training incorporating live-agent and live-tissue
- support to operations, including reach-back expertise
- MCM against biological threats (broad spectrum)
- MCM against chemical threats
- diagnostic technologies
- novel platforms for MCM development

DRDC delivers CBRN science and technology via five vehicles:

- DRDC Research Centres at Suffield and Valcartier, and the DRDC Centre for Security Science for joint public safety and security requirements
- national innovation programmes including the Innovation for Defence Excellence and Security Program (IDeAS) and Innovation Solutions Canada (ISC)
- Public Health Agency of Canada National Microbiology Laboratory in the case of animal efficacy studies for counter-COVID MCM
- National Research Council in the case of novel chemical and biological agent sensor work
- SLAs/MOUs with other Government departments, industry, and academia

The CBR MOU between Australia, Canada, the United States, and the United Kingdom remains DRDC's primary mechanism for chemical and biological defence strategic

alignment and collaboration with allies. Working groups in the threat and hazard assessment (Assess), decision-making support (Inform), and physical protection and decontamination (Protect), and medical countermeasures domains identify research and development tasks and coordinate their execution by the member nations. The CBR MOU is up for renewal in 2025. An additional working group, with the inclusion of Sweden, has been recently formed to address the threat posed by pharmaceutical-based agents.

Canada is cooperating with the UK and the Netherlands on the development of a new nerve agent countermeasure.

Tri-lateral MOUs also exist, or are planned, with Sweden and the Netherlands for research project arrangements for areas not being directly addressed under the CBR MOU including aspects of biological and chemical hazard assessment, safer handling of highly toxic compounds, and the medical management of chemical casualties.

With respect to NATO, Canada participates in panels revising publications related to CBRN decontamination requirements and the sampling and identification of CBR agents. It also represented on a NATO Science and Technology Organization Research Task Group looking into Surface and Ground Chemical Contamination Detection and Avoidance.

There are 46 full-time equivalent science workers dedicated to the CBRN defence programme at DRDC laboratories and approved funding for the programme increased from \$7.066 million in FY 2022-23 to \$7.546 million in FY 2023-24 – an increase of 6.8%.

Discussion with ADM (DRDC) & Staff

Following presentation of the DSST Programme, the Committee shared its observations made during its visits to DRDC entities including, first and foremost, our concern over safety at SRC. The ensuing discussion clearly indicated that our stated concern was received seriously, attentively, and appreciatively. As reported above, our meeting prompted a follow-up visit to SRC by the Director General Research & Development Science and Engineering to verify the situation and upon his return, the decision by the ADM (DRDC) to suspend or restrict conduct of certain chemical defence-related research and development as well as training activities pending completion of a risk management review.

Canadian Forces Intelligence Command, ADM (Policy) & Global Affairs Canada

Transparency and frankness once again denoted 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, the Weapons Threat Reduction Programme (WTRP). The WTRP encapsulates Canadian activities undertaken in support of our country's membership in the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction.

Threat & Threat Analysis Capability

The briefings the Committee received from the intelligence staff attested to continued credible BCW agent threats from both state and non-state actors, which necessitate appropriate defensive preparedness. In recent years, we have noted that the monitoring

and ongoing assessment of the threat landscape relies upon the expertise of an exceedingly small number of experts – a situation exacerbated by the retirement of employees without replacement. We were most pleased, therefore, to learn of the new or impending hiring of additional analysts. We hope that this development will position CFINTCOM to respond positively to the desire we have heard expressed during our visits to the DRDC Corporate Office and CFHS Group Headquarters, for more CBRN and medical intelligence input to the formulation of the Defence and Security Science & Technology Program and the direction of the Strategic Countermeasures Program. During our next round of visits, we will endeavour to reassess this situation with a view to closing as having been implemented, our recommendation on this subject made in our 2022 annual report.

Biological & Toxins Weapons Convention

As a State Party to the Biological & Toxins Weapons Convention (BTWC), Canada is obliged to:

- neither develop, possess, nor acquire biological weapons (BW) nor facilitate their production by another
- put in place national implementation legislation, extending the BW prohibition to citizens
- provide assistance if another State is attacked with a BW
- provide fullest possible exchange in the life sciences

GAC officials told us that the following issues continue to limit the effectiveness of the BTWC or otherwise give rise to concern:

- lack of universality of adherence – 14 states remain outside the Convention and not all States Parties have effectively implemented it
- lack of the institutional infrastructure and verification regime possessed by the CWC – instead, it essentially relies on good-faith adherence by States. (A three-person Implementation Support Unit serves as treaty secretariat and “declaration” of confidence building measures (CBM) by States improves transparency by sharing information on CL4 laboratories, biological defence research programs, disease outbreaks that deviate from normal patterns, scientific publications of relevance, declarations of past offensive programs post-1946, and vaccine production capacity. Canada regularly submits CBMs and makes them available to the public.)
- financial viability – lack of a working capital fund
- biological research intended for peaceful purposes could be misused or exploited to develop or to produce biological weapons – so-called dual use research of concern or DURC. It is also becoming difficult to prevent biological weapons proliferation without impeding research in the life sciences. Canada now funds a position in the World Health Organization dedicated to this issue.

Canada's policy is to continue to look for ways to support the financial, technical, and operational well-being and effectiveness of the Convention.

Chemical Weapons Convention

The Chemical Weapons Convention (CWC) is a global disarmament treaty which bans development, production, acquisition, stockpiling, retention, transfer, and use of Chemical Weapons (CW). It has provisions for declarations and inspections of CW production facilities, and oversees the destruction of CW and CW production facilities.

The Organisation for the Prohibition of Chemical Weapons (OPCW) administers the Convention and operates a comprehensive verification scheme which incorporates declarations of compliance; on-site inspections of permitted facilities that produce, process, or consume, import, or export certain listed chemicals; and investigations of allegations of use of CW. The OPCW records that 98% of all States Parties' declared CW has been destroyed.

Canada's Weapons Threat Reduction Program

We remain impressed by the Weapons Threat Reduction Program (WTRP) and the extent of its projects and activities undertaken in conjunction with partner countries, international organizations, NGOs, and other government departments aimed at mitigating threats posed by CBRN weapons and related materials. (The wider international collaboration is known as the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction (GP)).

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
- building partner capacity to meet international obligations.

It has delivered more than \$1.6 billion in programming since 2002 and is currently funded at \$73.4 million annually.

With respect to BW, the WTRP pursues collaboration between the security and health sectors at the "health-security" interface where respective interests and responsibilities coincide *i.e.*, strengthened public health capability to respond to natural outbreaks equals strengthened preparedness for deliberate outbreaks. Its portfolio includes:

- securing and accounting for biological pathogens
- prevention of the deliberate misuse of pathogens
- enhancement of regional surveillance networks
- reinforcement of biological non-proliferation instruments

- promotion of responsible conduct in biological sciences.

The WTRP's top priority in FY 2023-24 is leadership of the GP's signature initiative to mitigate biological threats in Africa. Other leading efforts are:

- countering disinformation
- sustainable biosafety and biosecurity (by way of funding the World Organisation for Animal Health's "Grand Challenge for Sustainable Diagnostic Laboratories")
- strengthening the BTWC and the UN Secretary General's Mechanism for responding to and investigating deliberate use of disease

Regarding CW, the WTRP's portfolio includes assisting States Parties to the Chemical Warfare Convention to implement their obligations, addressing emerging threats posed by chemical weapons, and supporting chemical weapons destruction activities. Recent initiatives and projects have included:

- strengthening of the OPCW's capabilities
- assessing North Korea's chemical weapons capability
- prevention of and response to chemical terrorism in the Middle East and West Africa.

In addition to supporting the OPCW's investigation, forensics sampling, and attribution capabilities by helping to fund construction of its new Centre for Chemistry and Technology, priority issues are:

- countering misinformation around the Russian invasion of Ukraine
- innovative use of distributed ledger technology (blockchains) to track chemical materials of proliferation concern
- promotion of enhanced counter-proliferation collaboration between the Global Partnership and the Australia Group

Strategic Joint Staff and Directorate of Joint CBRN Defence

During our visit to Canadian Joint Operations Command Headquarters in 2022, we heard that the war in Ukraine, specifically Russian threats to employ weapons of mass destruction and the consequent need to meet the CBRN defence needs of Canadian forces deployed on Operation REASSURANCE (as part of NATO's deterrence and assurance measures in central and eastern Europe), had drawn the attention of force protection staff to the state of the CBRN defence "enterprise" within the CAF.

They were of the strong opinion that a strategic level vision of required CBRN defence capability, capacity, and readiness on the part of the CAF, especially amongst the conventional forces, is lacking. This applied to both potential domestic and continental, as well as expeditionary operations. Also missing, it was suggested, was a definition of the CBRN defence enterprise and clarity around high-level authority, responsibility, and accountability for implementation of the vision and governance of the enterprise. It was

also stated that there is seemingly no designated point of contact for CBRN defence matters within the Strategic Joint Staff – that element of NDHQ responsible for the provision of military analysis and advice to the Chief of the Defence Staff (CDS) within the realms of operations, plans, support, and strategic initiatives.

Director Joint CBRN Defence (D JCBRN D) echoed and amplified the concerns voiced by the CJOC HQ force protection staff during our visit, the next day, to his directorate. Direction and guidance for the conduct of CBRN defence by DND and the CAF are contained in two keystone documents (last updated in 2019):

- Defence Administrative Orders & Directives 8006-0 Chemical, Biological, Radiological & Nuclear Defence
- Defence Administrative Orders & Directives 8006-1 Chemical, Biological, Radiological & Nuclear Defence Operations, Training and Capability Development and Sustainment

Notwithstanding the reasonable thoroughness and clarity of this direction and guidance, we heard the view that the CBRN defence enterprise has been performing activities across the force governance functions (force development, force generation, force employment, force sustainment, and force management) in an *ad hoc* manner without a coherent purpose or desired end-state. The force management function, responsible for the orchestration of the other functions, in accordance with strategic-level direction and guidance, is impaired. Consequently, the enterprise has been allowed to erode, resulting in a widening capability gap that threatens the CAF's ability to operate in a CBRN threat environment.

Aggravating factors were said to include:

- CBRN defence is a low priority
- lack of CBRN defence expertise at operational and strategic levels
- key stakeholders are not being held accountable for their DAOD-stipulated CBRN defence responsibilities
- some responsibilities and authorities are misaligned with current CAF organization
- commanders are not adequately identifying capability deficiencies nor defining requirements resulting in poor investment decisions
- little or no collective CBRN defence training is occurring resulting in widespread skill fade
- since the disbandment of the Nuclear, Biological and Chemical (NBC) Defence Company in favour of investment in the special operating forces' CJIRU CBRN, the conventional forces have lacked a CBRN defence general support capability

To rectify this situation, D JCBRN D advocated the launch of a CBRN defence enterprise renewal initiative led by the Strategic Joint Staff that, *inter alia*, would review and update the CBRN defence DAODs; define the enterprise; ensure the correct definition and alignment of authorities, responsibilities, and accountabilities (ARA); and then, most importantly, hold authorities accountable for the discharge of their responsibilities. It was further advised that the initiative take close account of the ongoing NATO CBRN policy review in which ADM (Policy) and GAC were participating. Noting that the CJOC HQ staff had independently expressed a similar need, we saw merit in this proposal and included a recommendation to that effect in our 2022 report.

During our 2023 visit, in the company of D JCBRN D, we met with the Strategic Joint Staff's Director General Operations who concurred with the 2022 characterization of the situation. We heard that general knowledge of CBRN defence is lacking, and that readiness is poor due to lack of equipment, training, and qualified staff. It was further indicated that the root causes of this situation may include:

- lack of common understanding of the desired end state (which is essential to the effectiveness of an ends, ways, and means-based strategy)
- lack of understanding of threat and capabilities and corresponding CAF vulnerabilities
- lack of alignment of authorities, responsibilities, and accountabilities with the interests/priorities of various stakeholders
- inadequacy of force structure for general support CBRN defence

We were left to understand that the SJS will prepare advice for the CDS that defines the problem facing the CBRN defence portfolio and proposes issuance of a CDS/DM Directive which would explain the necessity of re-energizing the CBRN defence function, define the relevant strategic end-state, stipulate the necessary alignment of governance, guide the implementation of new NATO CBRN policy, adjust DAODs, and state the requirement for an appropriate CBRN defence capability development roadmap.

We will continue to monitor this issue and look forward to gauging progress during our next round of visits.

CFHS Group Headquarters

Surgeon General

The Surgeon General explained that the COVID pandemic and the war in Ukraine have served to awaken interest in CBRN defence and re-energize efforts to prepare the health services to support operations in CBRN environments based upon a modernization of the CAF's medical CBRN defence concept. Awareness of the Strategic Medical Countermeasures Program (SMCP) is growing.

Operational Medicine Section

Responsibility for medical CBRN defence matters within CFHS Group HQ lies with the Operational Medicine Section which, additionally, is responsible for combat casualty care issues, the military blood supply programme, and regulatory affairs (including the regulation of BCD-related pharmaceuticals and medical devices). It also provides direction and guidance for the management of the SMCP. During our visit, we received the following news and updates about the Section's activities during the past year.

Auto-injectors

Work continues to restore the integrity of the CAF's auto-injector stocks. We were told that international auto-injector standards are being upgraded and that US auto-injector manufacturer, Meridian Medical Technologies, is returning to full production.

Medical CBRN Doctrine

Efforts to revitalize operational medicine doctrine continue including, with respect to collective protection (COLPRO), consideration of Allied doctrine. The US is looking at a trailer solution while European NATO Allies are examining a better tent. The current Canadian system is accepted as not fit for purpose.

CBRN Clinical Training

Last year we were told that CFHS Group will send medical personnel abroad (UK and US) for CBRN clinical training although there may be *ad hoc* opportunities for team-based training of medical technicians posted to CFB Suffield.

This year we learned that the Medical Technician military occupation is undergoing a formal "Occupational Review" that could result in a specialized CBRN training component.

We will continue to monitor this issue.

CBRN Collective Training

There is a push to better integrate CBRN considerations in planning and exercises. As an example, at the NATO level, Exercises TOXIC TRIP 24 and VIGOUROUS WARRIOR/CLEAN CARE 24 will be run concurrently. Collective defence exercise scenarios are becoming the norm as opposed to scenarios featuring peace support operations.

CBRN Research & Development

Notable research and development activities currently under the direction of CFHS include contribution to the development of a 3-in-1 (atropine, HI-6 and azivafone) auto-injector, clinical trial of an intravenous HI-6 formulation, evaluation of potential prophylaxis against SARS-CoV-2, and the development of a bioscavenger therapeutic for post-exposure treatment of nerve agent poisoning.

International Collaboration

International collaboration continues within two frameworks. The first is that of NATO's Committee of Chiefs of Medical Services (COMEDS) where contributions are made to the CBRN Medical Working Group, which conducts "deep dive" CBRN medical risk assessments and capability gap analysis. The Working Group's current "deep dive" is in

support of NATO's new CBRN Defence Policy Implementation Plan with tasks to develop CBRN Medical Support Guidelines, CBRN Medical Education, Training, Exercise and Evaluation (ETEE) Guidelines and a Biological Preparedness/Response Concept.

The second framework is that provided by the Chemical, Biological and Radiological Memorandum of Understanding (CBR MOU) between Australia, Canada, the United Kingdom, and the United States within which the CBRN Medical Counter Measures Consortium operates, and research and capability development efforts are coordinated.

We heard that the European Union has established a new agency, the Health Emergency Preparedness and Response Authority (HERA), whose mission is to prevent, detect, and rapidly respond to health emergencies. Created in the aftermath of the COVID-19 pandemic, HERA will anticipate threats and potential health crises, through intelligence gathering and building the necessary response capabilities and capacities. The procurement and stockpiling of medical countermeasures (MCMs) are core areas of work within HERA's mandate. By acquiring stocks of critical medical items such as medicines, vaccines, and personal protective equipment through different procurement mechanisms, including by acting as a central purchasing body for Member States, HERA will help ensure that the EU maintains a high level of preparedness for future cross-border health threats. Against this background, the CBRN Medical Working Group is examining the creation of a NATO stockpile of CBRN MCM to be shared with nations as required.

CMED Replacement

We remain strong in our support of the stated need to replace and relocate the CMED with a view, *inter alia*, to its being granted a Health Canada Drug Establishment Licence (DEL). We were told that a DEL is essential to ensuring the efficacy and safety of the medical products the CFHS imports, stores, distributes, and potentially shares with other government departments and allies. However, we continue to understand this may not occur for many years – the project being 18th on the relevant list of CAF infrastructure priorities.

This year, we learned that notwithstanding efforts to prolong the albeit limited usefulness of the current CMED building, its inadequacies are increasingly apparent. Both walk-in freezers have been decommissioned, necessitating the relocation of some \$10 million in holdings to a refrigerated trailer in the parking lot where they will be stored for up to two years awaiting replacement of the freezers inside the Depot. We understand that there is renewed interest by PHAC in collaborating with DND and the CAF around the issues of storage and distribution of medical supplies. Signature of a letter of intent is in the offing. In the meantime, CMED is looking at renting facilities for the shortage of non-pharmaceutical holdings such as PPE or transferring some such stocks to the CAF general supply depots in Edmonton or Montreal.

Regulatory Affairs

In our view, Regulatory Affairs remains proactive, diligent, and effective in ensuring adherence to Health Canada and DND regulations and policies for the reporting, accounting, and handling of unlicensed medical products; advising on regulations for their

use; and seeking regulatory approval for them, where applicable and feasible. The section is also effective in providing product development support to the Strategic Medical Countermeasures Program (SCMP), DRDC research, the Medical Countermeasures Consortium, manufacturers, and allies.

This year, we received an updated and thorough explanation of the regulatory environment, regulatory challenges associated with the small market for CBRN MCM and the unique situation of the CAF vis a vis securing access now for use in unknowable future conflict or emergency situations, Health Canada regulatory mechanisms for accessing unlicensed drugs, and the status of Surgeon General Restricted Products.

We also received a summary of Regulatory Affairs section activities in support of its mandated functions.

One issue of concern mentioned again this year is the urgent requirement to revamp the system for tracking, from “cradle to grave”, unlicensed medical products. Health Canada mandates such a system and can ask for an accounting of authorized products at any time they deem appropriate.

Strategic Medical Countermeasures Program

We were comprehensively briefed on Strategic Medical Countermeasures Program (SMCP) administration, and activities pertaining to the identification, definition, sustainment, and regulatory compliance of medical products in the strategic stockpile of medical countermeasures. We were updated on the status of the stockpile with respect to biological and chemical threats and told of recent deployment of countermeasures in support of the CFHS public health response to the 2022 mpox (monkeypox) outbreak, the May 2023 non-combatant evacuation operation in Sudan, and of Canadian forces in Eastern Europe.

The SMCP continues to progress well in the direction of its operational targets due to its solid governance and management, support from the senior echelons of CFHS Group and Military Personnel Command and extensive networking across DND/CAF and other government departments.

This said, certain impediments to the full desired effectiveness of the programme were mentioned. These include continued baseline funding uncertainty, deficient stockpile storage capability and capacity (see observations related to CMED above) and limited medical intelligence support regarding evolved or emerging threats. All of these were noted in last year’s report. A new challenge this year is the degraded ability of SRC to support funded research and development tasks due to DRDC’s impaired procurement function. In each of these cases, remedies are being pursued the success of which we look forward to discerning during our next visit.

As noted earlier in this report, ADM (Review Services) is currently conducting a formal evaluation of the SMCP within the context of Joint CBRN defence. We understand that a preliminary evaluation report will be released in early 2024.

Canadian Forces Fire & CBRN Academy

The Canadian Forces Fire and CBRN Academy (CFFA) is the national centre of excellence and the primary source for joint advanced individual CBRN defence training and for training of the Fire Service of the Department of National Defence.

The Academy's CBRN Training Squadron offers the following courses:

- CBRN Defence Advisor (5 days duration)
- Advanced CBRN Defence Officer (36 days duration)
- Unit CBRN Defence Officer (23 days duration)
- Unit CBRN Defence NCO (23 days duration)
- CBRN Defence Centre Operator (22 days duration)
- CBRN Decontamination Operator (18 days duration)
- Radiation Safety Specialist (on-line course)
- Enhanced Modelling* Operator (5 days duration)

* Refers to the prediction of the time-phased impact of CBRN events and effects

All courses are conducted in accordance with approved NATO and CAF policy, doctrine, tactics, techniques, and procedures. Non-lethal chemicals, simulators and a training radiation source are used for CBRN detection training. An environmentally friendly substitute solution is used for decontamination training. CS gas riot control agent is used for training in the proper use of personal protective equipment (including respirator). No biological or chemical warfare agents are used at any time at the Academy's facilities at CFB Borden, however, students on the Advanced CBRN Defence Officer Course do participate in live-agent training at DCRC's Suffield Research Centre.

In FY 2022-23, the CFFCA conducted 30 CBRN Defence courses with 492 graduates. In FY 2023-24, it expects to conduct 30 courses and graduate 580 students.

We were told that CFFCA personnel have also participated in the following NATO collective training exercises:

- Exercise BRAVE BEDUIN – Training of CBRN Collection Centres in CBRN calculating, warning, and reporting procedures and in the provision of CBRN defence advice to commanders
- Exercise PRECISE RESPONSE – Multi-national live agent training at DRDC SRC
- Exercise TOXIC TRIP – Training to conduct air operations in a CBRN contaminated environment

The CBRN Training Squadron is staffed by regular and reserve military members and civilians in equal proportion. It still suffers from a shortage of French speaking instructors.

The Academy admits being challenged by the existence of over-lapping responsibilities and authorities between Military Personnel Generation Group, D JCBRN D, and the Navy,

Army, and Air Force with respect to individual training, prioritization, advertisement, and coordination.

The CBRN Defence Senior Advisor Course aimed at providing CAF senior officers with general knowledge of CBRN defence matters with a view to enabling them to assess CBRN incidents, has not been conducted since 2018. This may be a reason for assertions we have heard of a lack of awareness of CBRN defence within the CAF and for reports of gaps between CBRN defence policy and practice.

The Committee was surprised to learn that the CFFCA has not been allocated one of the CAF's seven recently acquired decontamination systems, given that the Academy is responsible for the establishment and maintenance of training standards for the system.

Academy staff are collaborating with a subject matter expert at DRDC SRC on the improvement of hazard effects modelling techniques.

We were fortunate this year to hear from the Academy Commandant of his experience attending, for the first time by a Canadian, the NATO-sponsored International Commandants and Commanders Conference for CBRN Defence in the Netherlands in May 2023. He said that the focus of the conference was on civil-military cooperation and that he was left with the impression that other nations better integrate conventional, special operating forces, and civil agency capability in preparing to confront CBRN threats. Moreover, he gained valuable insights from the discussion of the responses of others to common challenges. In his formal trip report, he recommends that the Director Joint CBRN Defence attend this conference in future.

2nd Canadian Mechanized Brigade Group

The Committee's purpose in visiting 2nd Canadian Mechanized Brigade Group (2CMBG) in Petawawa was to update our understanding of the Army's tactical-level capability, capacity, and readiness to operate in a CBRN environment. We fully achieved our purpose thanks to a thorough, forthright, and generous programme of presentations and discussion delivered by the Brigade Commander, his principal staff officers, and representatives of brigade units with leading CBRN defence roles.

The Brigade Commander began by explaining that 2 CMBG exists to help Canadians in their time of need, protect and advance national interests, and fight and win Canada's wars. As such, its enduring mission is to be ready to answer these calls and, therefore, "readiness" is the Brigade's priority. Operational readiness is defined as a combination of "tactical readiness" (soldiers trained to perform individual battle tasks with routine administrative requirements in order) and "mission readiness" (unique deployment administrative requirements such as immunization and visas met; theatre and mission specific individual and collective training completed; and, as required, a deployed force structure mission readiness exercise successfully executed). It was further explained that in accordance with the Army's managed readiness system, each of its three brigade groups rotates through a three-year cycle during which they spend, in turn, one year intensively building readiness; one year maintaining a high-readiness posture prepared to

respond to any contingency – domestic or expeditionary; and, one year during which required numbers of its troops are deployed on current overseas operations.

Achieving and maintaining the readiness of a military formation comprising ten units, more than 4700 soldiers and 2200 vehicles located in two provinces 1200 kilometres apart is a formidable challenge in an era denoted by resource scarcity and a high and growing demand for service. As we heard it expressed, “we can’t get after all our readiness tasks, all the time”. CBRN defence readiness is reliant on the maintenance of individual qualifications for what is often a “secondary duty” and the availability of stocks of personal protective and other equipment. Qualifications are susceptible to “skill fade” and operations stocks are held centrally, at some remove from the brigade. Both factors can be addressed given sufficient warning of an impending mission, but in the meantime, they constitute a readiness risk of which the Army and CJOC must remain aware.

The Brigade seems commendably mindful of the varied and changing nature of potential CBRN threats. They have identified not only the re-emerging possibility of deliberate employment of chemical or biological warfare agents or nuclear/radiological weapons by an adversary but also, the inadvertent contamination of domestic or overseas operating environments or indeed, the biological hazard associated with support to the health care system in a pandemic, as contingencies requiring CBRN defence capability.

The Brigade Group service battalion (2 Service Battalion) is responsible for generating the required high readiness decontamination platoon. This platoon has a strength of fifteen personnel, drawn chiefly from the battalion. The platoon makes use of one of the two decontamination systems held by the battalion. A system comprises a personnel decontamination line (including provision for the wounded), a personal equipment decontamination line, and a vehicle decontamination line. The entire system is stored in four sea containers which are moved on specialist load-handling vehicles. We received a detailed explanation of the process by which the platoon achieves readiness for operations during the “build” phase of the managed readiness cycle. This included, in the case of the platoon drawn from 2 Service Battalion, participation in live agent training Exercise PRECISE RESPONSE 22. We heard that this experience, although it yielded several improvements to the platoon’s existing tactics, techniques, and procedures, also pointed to several aspects of exercise design that should be addressed to meet better the specific needs of Canadian or allied conventional forces decontamination organizations. Based on discussion during our visits to SRC and D JCBRN, we believe this requirement is recognized and look forward to our visit to PRECISE RESPONSE 24 as an opportunity to gauge to what extent it has been addressed.

We gained the impression that 2 Service Battalion had done an excellent job of generating a decontamination platoon ready for operations. This said, we were also told there is consideration being given to assigning this task in future to a reserve force brigade or, assigning it permanently to one of the three regular force service battalions. Whatever decision may be taken on this point, it seems to the Committee that the risk of unduly restricting or isolating the knowledge and skills associated with decontamination is a factor that should be taken into account.

Both the Brigade Group's armoured regiment and infantry battalions are meant to provide a certain CBRN detection, capability, and monitoring capability. In the case of the armoured regiment (Royal Canadian Dragoons), we heard that this capability is impaired, at present, due to the lack of up-to-date tactics, techniques, and procedures for armoured CBRN reconnaissance, skill fade and loss of corporate knowledge regarding CBRN defence, uncertainly around the future reconnaissance role of armoured regiments, and a lack of equipment in armoured vehicles.

The representative from the 3rd Battalion, The Royal Canadian Regiment, explained that the battalion's reconnaissance platoon can conduct dismounted CBRN reconnaissance, survey and surveillance tasks using in-service detection devices – a capability that will be enhanced with the arrival of new detection systems. As with the armoured regiment, maintenance of CBRN defence expertise is a challenge.

Finally, the representative of 2nd Field Ambulance explained that a unit level CBRN medical workshop is conducted at least annually. That said, the unit could do with more access to CBRN medicine clinical training which at this time is only available in the US or the UK.

Canadian Science Centre for Human & Animal Health

During our visit, we received explanations from scientists from the Canadian Food Inspection Agency's National Centre for Foreign Animal Disease (NCFAD) and the Public Health Agency of Canada's National Microbiology Laboratory (NML) of their organizations' recent involvement with Canadian Safety and Security Program (CSSP)-funded projects aimed at improving capability and capacity to detect and identify human, animal, zoonotic, and synthetic pathogens.

In the case of the NML, we also learned of the role played by their Bioforensics Assay Development and Diagnostics Section in ensuring efficient bioterror/biocrime/outbreak response by way of their provision of diagnostic and reference services to the Canadian Laboratory Response Network, and their generation of the federal Microbiological Emergency Response Team which can be deployed independently or in support of the RCMP-led National CBRNE Team.

Finally, we met with the Centre's Director, Biorisk and Occupational Safety Services who updated our understanding of best practices applicable to the safety and security of biological containment laboratories.

The Committee left the CSCHAH with reinforced respect and appreciation for the expertise and capability of its personnel and the contribution they make to the well-being of Canadians.

CONCLUSIONS

Having detected no evidence to the contrary during its 2023 visit and briefings, 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
- while there is always room for improvement, the BCD programme is conducted in a professional manner
- there is no covertness or duplicity within the BCD programme

RECOMMENDATIONS

The Committee this year offers two new recommendations. We will continue, however, to pursue with DND and CAF authorities the mutually satisfactory resolution of the seven open recommendations made in the reports of previous years.

1. Given the status of DRDC’s Suffield Research Centre as a strategic national asset in a worryingly unstable global security environment, and thus deserving of superior stewardship, we support the decision of ADM (DRDC) to suspend or restrict certain chemical defence activities at SRC pending completion of a risk management review. Moreover, we commend the remediation action plan that has been launched and recommend that it receive the prompt and tangible support of stakeholders and authorities outside of DRDC with a view to restoring, as quickly as possible, and maintaining a safe environment for all working at, or making use of its facilities.
2. Given the concerns voiced by employees and local managers over the risk borne and accumulated by civilian personnel (e.g., safety officers and decontamination team members) involved in live-agent training at the Suffield Research Centre, consideration should be given to the creation and implementation of a bespoke health and safety system for the benefit of civilian personnel so-employed.

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 Update (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 Update (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 Update (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

ANNEX A
to BCDRC 2023 Annual Report

construction queue. While it still remains in the unfunded queue, it is expected that this improvement will result in concrete action in the near future. The interim replacement of the biological laboratories continues through the capital equipment program; a Statement of Requirements is currently being drafted for this replacement.”

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

DND/CAF Response Update (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 Update (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.”

ANNEX A

to BCDRC 2023 Annual Report

BCDRC Comment (December 2020): This year, we were told that the separate MBCF project has been side-lined in favour of building the new laboratory complex, possibly in stages. The rationale for this change is that the planned completion date for the two projects has been converging with the MBCF due to be commissioned only a few years before the larger project. The new, unified endeavour is titled the Laboratory Modernization Project. A modified site has been selected and contracts for preliminary studies (environmental impact, topographic, geophysical, *etc.*) have been awarded. Current estimated cost is \$275-350M with occupancy anticipated to occur within 12-15 years. Given this timeline, contingency plans for catastrophic failure of the existing infrastructure are apparently being developed. We will be interested to learn more about these plans as we believe that it is likely the aging biocontainment facility will fail before the modernization project is completed. The lack of a such a facility at SRC, even temporarily, would jeopardize Canada's ability to meet its domestic responsibilities and international commitments.

DND/CAF Response Update (April 2021): "The efforts towards the Modernize Chemical and Biological Research Laboratories DRDC Suffield project are continuing. The 'Identification' and 'Options Analysis' phases to develop a Statement of Requirements and cost estimation, respectively, are planned over a 24-month period via contract which has been awarded. The contractor that will carry out this work is currently completing the security process. Both phases will result in the selection of a course of action for the 'Design' phase. The Modular Bio Containment Facility (MBCF) project is currently on hold since the Modernize project is making progress. Both projects draw on the same scientific staff. Their timelines are converging and their commissioning is expected to be a few months apart. The Independent Review Panel for Defence Acquisition (IRPDA) provided advice on the 'Modernize' project, which resulted in bolstering the project documents with a better description of the capability gaps. The Panel also emphasized the urgency of moving this project forward with an accelerated timeline, if possible."

BCDRC Comment (December 2021): The February 2020 chemical spill incident made more acutely apparent than ever before, the present-day inadequacies of the design of the 66-year-old main laboratory/administration building at Suffield - and how these deficiencies heighten the risk of the occurrence of accidents of this sort and the possibility of consequent serious injury or death. The Committee has long underlined these inadequacies and recommended the acceleration of the project to modernize the biological and chemical research laboratories at SRC. The Independent Review Panel for Defence Acquisition has also emphasized the urgency of moving this project forward. We understand that the Associate Deputy Minister of National Defence having been briefed on this incident by DRDC senior leadership, is now seized of the same imperative. We therefore hope this project will proceed swiftly to completion. DND's ADM (IE) has invited us to discuss this project when we next visit NDHQ. We welcome this opportunity and will share what we learn in our 2022 report.

DND/CAF Response Update (August 2022): "The efforts towards the Modernize Chemical and Biological Research Laboratories DRDC Suffield (Modernize) project are continuing.

ANNEX A

to BCDRC 2023 Annual Report

The 'Identification' and 'Options Analysis' phases to develop a Statement of Requirements (SOR) and cost estimation, respectively, are planned over a 24-month period via contract to an infrastructure consulting firm. Both phases will result in the selection of a course of action for the 'Design' phase. Thus far, the selected firm has held numerous discussions with DRDC Suffield Research Centre (SRC) and Assistant Deputy Minister (Infrastructure and Environment) (ADM(IE)) staff to gather pertinent information, leading to development of a draft Statement of Operational Requirements for which feedback has been provided. Additional meetings and discussions are scheduled between DRDC SRC and the Contractor over the coming weeks and months to further refine the document. Further, the Contractor is tasked with conducting a Business Case Options Analysis, wherein four options are presented. Finally, the Independent Review Panel for Defence Acquisition (IRPDA) provided advice on the 'Modernize' project at the IRP1 meeting; DRDC and ADM(IE) are now preparing for the IRP2 meeting. Overall, this project is progressing ahead of schedule given that the original deadline for SOR development was October 2022."

BCDRC Comment (January 2023): Our meeting with the Chief of Staff to the ADM (IE), confirmed that solid progress is being made. The project schedule estimates that development and definition activities (including completion of design) will continue until June 2026 when a submission will be made seeking approval for project implementation with a response to same expected by March 2027. As such, the project remains at risk until then. Should approval be forthcoming, the new facilities are planned to achieve initial operating capability (IOC) by December 2032 and be fully operational and certified by December 2034. We commend the work behind these recent advances will continue to follow closely and report on further progress.

DND/CAF Response Update (March 2024): "The efforts towards the Modernize Chemical and Biological Research Laboratories DRDC Suffield Research Centre (Modernize) project are continuing. The 'Identification' and 'Options Analysis' phases to develop a Statement of Requirements (SOR) and cost estimation, respectively, are nearing completion. A detailed functional space program has been developed that addresses all relevant scientific research needs of DRDC's Suffield Research Centre. This work will result in a selection of a course of action for the 'Design' phase. The project team is preparing documentation required to seek Ministerial approval in order to commence Design work. Finally, DRDC and ADM(IE) are now preparing for another engagement with the Independent Review Panel for Defence Acquisitions to allow the Panel to provide advice to the Minister of National Defence on the work conducted to date."

BCDRC Comment (March 2024): We will continue to monitor and report the progress of this project.

DND/CAF Response Update (September 2024): The efforts towards the Modernize Chemical and Biological Research Laboratories DRDC Suffield Research Centre (Modernize) project are continuing and have seen good momentum this past year. The 'Business Case Options Analysis' phase to develop a cost estimation has been completed and the construction of a replacement modern laboratory facility is the most prudent

ANNEX A
to BCDRC 2023 Annual Report

course of action. The project has had steady progress, is supported at a senior level and has an IOC/FOC in the early 2030s.

Status: OPEN

2. (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.

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.

ANNEX A
to BCDRC 2023 Annual Report

DND/CAF Response Update (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.

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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 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 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 Update (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.”

ANNEX A
to BCDRC 2023 Annual Report

BCDRC Comment (December 2020): We remain strong in our support of the need to replace and relocate the CMED, but understand this may not occur for many years – the project being 35th on the relevant list of CAF infrastructure priorities. In the meantime, we are happy that renovations to bring the laboratory room up to GMP standards are underway. We commend the efforts of CFHS Group to address the risk to which this situation gives rise and hope that the current heightened public awareness of the importance of appropriate medical equipment and pharmaceutical supply and distribution facilities will be of benefit in this connection.

DND/CAF Response Update (April 2021): “Initial design requirements developed in 2018 delineated the need for the facility to be compliant with current Good Manufacturing Practices as described in GUI-0069 Health Canada Guideline. The project staff have been engaged in the identification of potential siting locations, and are currently working with DND Real Property Managers as to the footprint best suited to the facilities’ requirements. However, completion of the project depends on where it figures on the list of Departmental priorities and availability of funds. DND is maintaining engagement with the Public Health Agency of Canada (PHAC) about possible collaboration with the construction of this facility that could serve both organisations’ purposes. Of note, renovations are nearing completion on the CMED laboratory room with temperature mapping scheduled for February 2021 and again in summer 2021. It will be used as an interim approach while the capital project for a new facility continues to progress through the DND project process.”

BCDRC Comment (December 2021): We remain strong in our opinion that the location, condition, and capacity of the CMED merit its replacement and relocation noting that the direction of the Strategic Medical Countermeasures Program (SMCP) suggests that even more demands will soon be placed on this unit. This said, we were impressed by the interim measures that have been, or soon will be implemented at the Depot to address the most pressing concerns over condition and capacity.

DND/CAF Response Update (August 2022): “The Central Medical Equipment Depot (CMED) remains highly prioritized for a new building project on the Military Personnel Command list of priority projects, but with the current capital pressure on ADM(IE), the timeline for the CMED project is in the 10-year range. The Department of National Defence continues to pursue the building replacement project, and the Canadian Forces Health Services Directorate of Health Services Delivery has re-engaged with the Public Health Agency of Canada on the feasibility of interoperability for storage of critical medical counter-measures. CMED is also actively pursuing increasing its storage capacity in the current facility by re-occupying space currently used by other units.”

BCDRC Comment (January 2023): We understand this project is now 18th on the relevant list of CAF infrastructure priorities, but that the timeline for completion remains in the ten-year range. We look forward to an update on interim renovations and expanded storage space during our next in-person visit to the Depot.

DND/CAF Response Update (March 2024): “The Central Medical Equipment Depot (CMED) continues to be highly prioritized on the Military Personnel Command list of

ANNEX A
to BCDRC 2023 Annual Report

priority projects for a new building project, but due to ongoing capital pressure on ADM(IE) the timeline for the CMED project is still in the 10-year range. The Department of National Defence continues to pursue the building replacement project, and the Canadian Forces Health Services (CFHS) Directorate of Health Services Delivery has been re-engaging with the Public Health Agency of Canada (PHAC) on the feasibility of developing new common warehouse infrastructure and capabilities. CFHS has initiated a formal analysis of the current and future infrastructure requirements of CMED. CFHS is committed to sharing its medical warehouse infrastructure requirements with PHAC so that they may be included during the identification and options analysis phase for any new infrastructure project(s) under consideration by PHAC. CMED is also actively pursuing increasing its storage capacity in the current facility by re-occupying space currently used by other units.”

BCDRC Comment (March 2024): We commend efforts to collaborate with PHAC over the long-term as well as short-term initiatives to sustain the Depot’s capability pending its recapitalization. We will visit CMED again in 2024.

DND/CAF Response Update (September 2024): The Central Medical Equipment Depot (CMED) continues to be a high priority project. However, due to concurring high priority projects, CMED has not received any funding. As a result, we are evaluating alternative infrastructure options for the short-, medium-, and long-term to meet the demands of various programs and the primary lines of effort supported by CMED to provide medical logistics support to CAF operations. The Department of National Defence continues to pursue the building replacement project, and has been re-engaging with the Public Health Agency of Canada (PHAC) on the feasibility of developing new common warehouse infrastructure and capabilities.

Status: OPEN

3. (2022) *Given the distinctive nature and complexity of risks and hazards present in the work environment at the Suffield Research Centre, and in light of the founding of DRDC’s Safety & Environmental Management System on International Standards Organization (ISO) criteria, Occupational Hygienist Registration should be a required qualification for employment as the General Safety Officer (GSO). Moreover, the classification of the position of GSO should be reviewed in consideration of the addition of this new requirement and the skills, knowledge, experience, and responsibilities it entails.*

DND/CAF Response (March 2024): “DRDC is currently in the process of staffing a replacement for the Suffield GSO position, due to the impending (31 March 2023) retirement of the incumbent. Occupational Hygienist Registration will be considered in evaluation of candidates. If such registration is not achievable at hire, DRDC will pursue it through enabling subsequent formal education. The classification of the position will be reviewed within the context of its location, competencies and responsibilities, including the addition of those related to occupational hygiene.”

BCDRC Comment: (March 2024): We have been pleased to learn that the General Safety Officer Position has been retitled to “Technical Safety Officer” and the newly hired

ANNEX A
to BCDRC 2023 Annual Report

incumbent is a qualified Occupational Hygienist and reports directly to the Centre Director.

Status: CLOSE

4. ***(2022) Given the nature of the R&D undertaken at the Suffield Research Centre, a service level agreement for the provision by the CAF of emergency medical support to the Centre should be implemented as rapidly as possible.***

DND/CAF Response (March 2024): “A service level agreement to govern the provision of CAF emergency medical support to Suffield Research Centre is being drafted. In the interim, emergency medical support to the Centre by the CAF will continue to be facilitated through ministerial approval and direct coordination between the Centre and CAF Health Services elements in Suffield and Edmonton.”

BCDRC Comment (March 2024): It is now seven years since we raised the issue of emergency medical support to SRC and eighteen months since we were informed of the intention to conclude a service level agreement (SLA). While we acknowledge the interim measures that are in place, we hope to learn during our next visit that a more formal and enduring solution in the form of an SLA is in place.

DND/CAF Response Update (September 2024): A service level agreement to govern the provision of CAF emergency medical support to Suffield Research Centre is still being drafted. In the interim, emergency medical support to the Centre by the CAF will continue to be facilitated through ministerial approval and direct coordination between the Centre and CAF Health Services elements in Suffield and Edmonton. In addition, a new contract was implemented for the CBRN Medical Officer coverage, to ensure continuity.

Status: OPEN

5. ***(2022) Given the key role of intelligence in steering research and development, resources dedicated to the analysis of the biological and chemical threat facing the CAF should be reviewed to ensure their sufficiency.***

DND/CAF Response (March 2024): “Staffing actions are underway to hire personnel in both the chemical and biological expertise areas in the Directorate of Technical and Scientific Intelligence. Due to security clearance requirements, the incoming personnel will likely take up to two years to become fully operational. In the interim, resource deficits are being mitigated through several actions: retaining a retired expert intelligence analyst on casual contract to maintain some level of continuity, continued collaboration with other national intelligence agencies as well as with other DND/CAF organization (D JCRBN D for instance) to maintain awareness of threats as well as increased collaboration and information sharing with FVEY agencies in this area.”

BCDRC Comment (March 2024): We commend the determined staffing actions that have recently been undertaken and look forward to learning of their full completion.

DND/CAF Response Update (September 2024): Within the Directorate of Technical and Scientific Intelligence, a new Team Lead for Countering Weapons of Mass Destruction was

ANNEX A
to BCDRC 2023 Annual Report

hired in early 2023, and has been fully operational for the past 12 months. Staffing actions to hire additional personnel in both the chemical and biological expertise areas within the Directorate are ongoing with one bio position being filled in 2023. Due to security clearance requirements, the incoming personnel will likely take up to two years to become fully operational. In the interim, resource deficits are being mitigated through several actions: retaining a retired expert intelligence analyst on casual contract to maintain some level of continuity, continued collaboration with other national intelligence agencies as well as with other DND/CAF organization (D JCRBN D for instance) to maintain awareness of threats as well as increased collaboration and information sharing with FVEY agencies in this area.

Status: OPEN

6. (2022) *The role of the Suffield Research Centre in supporting the readiness of the CAF and allied entities should be verified and if confirmed, the Centre should be appropriately organized and adequately resourced to do so without impinging on its research and development function.*

DND/CAF Response (March 2024): “DRDC is part way through a multi-year process of improving program governance, including converging demands into a common operating picture. As part of this process, efforts are ongoing to define long-term requirements in both research and training areas of activity, as they pertain to CBRN defence. Additionally, Director General (Research and Development) Science and Engineering is currently implementing a new capability management process that will be fully in place during the course of FY23-24. This process will be applied to confirm the scientific capability requirements at each DRDC research centre, including Suffield, and ensure that they have the required resources and are appropriately configured to fulfill their mandate.”

BCDRC Comment (March 2024): We are pleased that this issue is acknowledged and that a solution is being sought. During our 2023 visit to SRC, we heard that there is a growing demand for live agent training in the context of conventional military operations as opposed to counter-terrorism scenarios. There is also a desire to exploit Exercise PRECISE RESPONSE (live agent training for NATO and allied forces) as a test bed for various BCD research and development initiatives in collaboration with allied science and technology establishments. Such emerging factors should be considered during any reassessment of SRC’s research and training capability requirements. We will observe PRECISE RESPONSE again in 2024 and look forward to discerning further developments regarding this topic.

DND/CAF Comment Update (September 2024): DRDC is part way through a multi-year process of improving program governance, including converging demands into a common operating picture. As part of this process, efforts are ongoing to define long-term requirements in both research and training areas of activity, as they pertain to CBRN defence through engagement with CAF stakeholders. Additionally, Director General (Research and Development) Science and Engineering is continuing to implement its new capability management process. This process will be applied to confirm the scientific capability requirements at each DRDC research centre, including Suffield, and ensure that they have the required resources and are appropriately configured to fulfill their

ANNEX A
to BCDRC 2023 Annual Report

mandate. In addition, SRC continues to explore opportunities to leverage training activities for enhancement of the research program.

Status: OPEN

7. (2022) *Given that problems with the timely procurement of laboratory supplies and other goods and services are severely hampering scientific and training productivity at SRC, the procurement function within DRDC should be examined and reformed as necessary, with a view to ensuring that procurement processes, assigned resources, and authorities are congruent with the needs of front-line staff.*

DND/CAF Response (March 2024): “DRDC Procurement has undergone a year of significant transition where we have seen a number of major change events including staff tum-over, limited hiring capability due to salary pressures, a new procurement service delivery model, interim restructuring and a new prioritization tool. Outside of DRDC, there have been other factors which have impacted procurement operations. Specifically, DND enacted an update to its Defence Resource Management Information System (DRIMS) which records and enables financial, procurement and asset management transactions, among other functions. The modifications resulted in considerable additional effort to codify all assets prior to procurement. While this will result in better accounting of the Department's asset holdings, the operational impact was a significant slowdown of procurement processing times.

As with any major transition period, this one presents significant opportunities for reinventing/modifying our tools and processes to better support front-line staff. Of note is an expanded use of payment cards; a centre-led model for managing procurement resources to allow flexibility and facilitate the reallocation of resources to the organization's highest priorities; a new tool to allow individual requests to be prioritized equitably across all of the organization and recent approvals to start staffing vacant procurement positions. Most of these initiatives have been under development since the middle of FY22-23 and will be implemented in FY23-24.”

BCDRC Comment (March 2024): This is clearly a challenging situation, and we commend the thought and determination behind the initiatives that have been launched to ameliorate it. That said, we wonder how their effectiveness will be measured and will pursue the answer to this question during our next visit.

DND/CAF Response Update (September 2024): DRDC Procurement has undergone a year of significant transition. A number of new measures have been implemented in order to increase support, including at Suffield Research Centre. Overall procurement staffing has increased to 80% and three (3) positions have been hired to execute low-dollar value procurements and client- support functions at Suffield. These positions are now completing training and will be responsive to local priorities, as defined by the Centre Director. The expanded use of payment cards; a centre-led model for managing procurement resources to allow flexibility and facilitate the reallocation of resources to the organization's highest priorities has also been highly effective.

ANNEX A
to BCDRC 2023 Annual Report

To further support and improve the communications between the procurement staff and the clients in all Centres, the Procurement Section has been staffing Client Service positions who will become the point of contact for the Centre in all procurement matters. The position for SRC was staffed in January 2024 and the incumbent will be starting to fulfill their role in June. It is fully anticipated that SRC will see the positive impacts of these procurement changes this fiscal year as new procurement employees become fully operational.

Status: OPEN

8. (2022) *Given reported issues with the governance and management of the CBRN defence enterprise, support should be given to the proposal for a renewal initiative led by the Strategic Joint Staff that, inter alia, would review and update the CBRN defence DAODs; define the enterprise; ensure the correct definition and alignment of responsibilities, authorities, and accountabilities; and then, most importantly, hold authorities accountable for the discharge of their responsibilities. In so doing, it is further advised that close account be taken of the ongoing NATO CBRN policy review in which ADM (Policy) and GAC are participating.*

DND/CAF Response (March 2024): "The efforts to keep the DAOD 8006 series effective and relevant are ongoing. In October 2022, a routine staff and stakeholder review of the DAOD was conducted. Change proposals will be considered routinely by the appropriate offices of responsibility. Specific changes will be duly considered and appropriate action taken. NATO's Chemical, Biological, Radiological and Nuclear (CBRN) Defence Policy (2022) issued and agreed by all NATO members in July 2022 will be implemented by the CAF through existing planning processes and its capability plans. Canada is fully in agreement with the core principles and commitments of enhancing its military CBRN capabilities and resilience, which are consistent with the Government of Canada's Defence Policy. The Government notes and endorses, in particular, that "national capability development plans will support the full and timely implementation of CBRN defence capabilities, in particular those required by the Alliance in line with the NATO Defence Planning Process""

BCDRC Comment (March 2024): During our 2023 meeting with the Strategic Joint Staff (SJS) we were given to understand they will prepare advice for the CDS that defines the problem facing the CBRN defence portfolio and proposes issuance of a CDS/DM Directive which would explain the necessity of re-energizing the CBRN defence function, define the relevant strategic end-state, stipulate the necessary alignment of governance, guide the implementation of new NATO CBRN policy, adjust DAODs, and state the requirement for an appropriate CBRN defence capability development roadmap. We will continue to monitor this issue and look forward to gauging progress during our next round of visits.

DND/CAF Response Update (September 2024): The efforts to keep the DAOD 8006 series effective and relevant are ongoing. DAOD change proposals are being reviewed and considered for submission. NATO's Chemical, Biological, Radiological and Nuclear (CBRN) Defence Policy (2022) issued and agreed by all NATO members in July 2022 will be implemented by the CAP through existing planning processes and its capability plans. Canada is fully in agreement with the core principles and commitments of enhancing its

ANNEX A
to BCDRC 2023 Annual Report

military CBRN capabilities and resilience, which are consistent with the Government of Canada's Defence Policy. The Government notes and endorses, in particular, that "national capability development plans will support the full and timely implementation of CBRN defence capabilities, in particular those required by the Alliance in line with the NATO Defence Planning Process.

Status: OPEN

9. (2023) *Given the status of DRDC's Suffield Research Centre as a strategic national asset in a worryingly unstable global security environment, and thus deserving of superior stewardship, we support the decision of ADM (DRDC) to suspend or restrict certain chemical defence activities at SRC pending completion of a risk management review. Moreover, we commend the remediation action plan that has been launched and recommend that it receive the prompt and tangible support of stakeholders and authorities outside of DRDC with a view to restoring, as quickly as possible, and maintaining a safe environment for all working at, or making use of its facilities.*

DND/CAF Response (September 2024): An extensive review of the risks associated with chemical defence activities has taken place and adjustments, primarily to administrative controls, have been implemented. In addition, a conditions-based resumption plan has been developed, was endorsed by ADM(DRDC) and is currently being executed for implementation. Over the past 12 months, DRDC has had significant engagement with stakeholders and external authorities with a view to securing support for improvements of engineering controls at SRC. Support is being provided with considerable uplift in maintenance and momentum of work on the Chemical/Biological laboratory recapitalization project. While progress is being made, challenges remain due to the high cost of infrastructure and lengthy timelines involved in design work and procurement.

Status: OPEN

10. (2023) *Given the concerns voiced by employees and local managers over the risk borne and accumulated by civilian personnel (e.g., safety officers and decontamination team members) involved in live-agent training at the Suffield Research Centre, consideration should be given to the creation and implementation of a bespoke health and safety system for the benefit of civilian personnel so-employed.*

DND/CAF Response (September 2024): Suffield Research Centre has made significant effort to modify and improve its health and safety system, including changes being implemented primarily with civilian personnel in mind. This corresponds with a training acceptance of risk vice an operational acceptance of risk (i.e. acceptable level of risk is lower due to ability to preplan and less moral imperative to achieve exercise objectives). A series of documents have been developed to outline risk management approaches and communicate them to employees for transparency. The risk management approaches that were developed consider the risk of exposure in an occupational context and include measures designed to prevent cumulative effects.

Status: OPEN

ACRONYMS AND ABBREVIATIONS

AChE – acetylcholinesterase

ADM (DRDC) – Assistant Deputy Minister – Defence Research and Development Canada

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

ADM (RS) – Assistant Deputy Minister (Review Services)

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

BTDS – Biological Threat Defence Section

BTWC – Biological and Toxin Weapons Convention

CAF – Canadian Armed Forces

CSSP – Canadian Safety and Security Program

CSCHAH – Canadian Science Centre for Human and Animal Health

CBM – Confidence Building Measures

CBRN – chemical, biological, radiological, and nuclear

CBRNE – chemical, biological, radiological, nuclear, and explosive

CSS – Centre for Security Science

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

CJIRU-CBRN – Canadian Joint Immediate Response Unit - CBRN

COLPRO – Collective Protection

CMED – Central Medical Equipment Depot

CMS – Casualty Management Section

CNSSSF – Canadian National Single Small-scale Facility

CDTS – Chemical Threat Defence Section

CTTC – Counter Terrorism Technology Centre

ANNEX B
to BCDRC 2023 Annual Report

CWC – Chemical Weapons Convention

DAOD – Defence Administrative Order and Directive

DCTF – Damage Control Training Facility

DG RDSE – Director General Research and Development Science and Engineering

D JCBRN D – Director Joint CBRN Defence

DND – Department of National Defence

DRDC – Defence Research and Development Canada

DSSTP – Defence and Security Science & Technology Program

DURC – Dual Use Research of Concern

DDEED - Due Diligence Environmental Effects Determinations

EPG – Experimental Proving Ground

FY – fiscal year

GAC – Global Affairs Canada

GLP – Good Laboratory Practice

GMP – Good Manufacturing Practice

GP - Global Partnership Against the Spread of Weapons and Materials of Mass Destruction

GSO – General Safety Officer

MBCF – Modular Biological Containment Facility

MCM – medical countermeasures

NCFAD - National Centre for Foreign Animal Disease

NML – National Microbiology Laboratory

NATO – North Atlantic Treaty Organization

NDHQ – National Defence Headquarters

ONTAP – On-line Turbo Approval Process

OPCW – Organization for the Prohibition of Chemical Weapons

PPE – Personal Protective Equipment

PAO – Plan for Administrative Oversight

PHAC – Public Health Agency of Canada

RCMP – Royal Canadian Mounted Police

ANNEX B
to BCDRC 2023 Annual Report

S&T – science and technology

SEMS – Safety and Environmental Management System

SLA – Service Level Agreement

SOP – Standard Operating Procedure

SMCP – Strategic Medical Countermeasures Program (formerly BWTMCM – Biological Warfare Threat Medical Countermeasures project)

SRC – Suffield Research Centre

SJS – Strategic Joint Staff

TSO – Technical Safety Officer

TRC – Toronto Research Centre

VRC – Valcartier Research Centre

WTRP – Weapons Threat Reduction Program