

2009 ANNUAL REPORT
OF
THE BIOLOGICAL AND CHEMICAL DEFENCE
REVIEW COMMITTEE

THE COMMITTEE

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

November 2009

TABLE OF CONTENTS

	<u>Page</u>
Introduction	3
Summary	4
Committee Activities -- 2009	4
Discussion	6
Conclusions	8
Recommendations	8

Annexes:

Annex A	Implementation of Barton Report Recommendations
Annex B	Implementation of BCDRC Report Recommendations
Annex C	Acronyms and Abbreviations

INTRODUCTION

The policy of the government of Canada is to press for global, comprehensive and verifiable treaties to ban all biological and chemical weapons. Even so, the threat from such weapons persists. Accordingly, Canada has an obligation to ensure that members of the Canadian Forces (CF) have adequate training and equipment to protect themselves against exposure to chemical and biological agents. This protection is required for deployments on foreign soil and, as the threat of terrorist action exists in Canada, it is also required for any military response to domestic emergencies.

The Canadian public has the right to be assured that Canada's policy of maintaining only a defensive capability in this field is fully respected at all times, and that any research, development and training activities undertaken pose no threat to public safety or the environment.

To facilitate this assurance, the Biological and Chemical Defence Review Committee (BCDRC) was established by the Minister of National Defence in May, 1990. The Committee is mandated to review annually the research, development and training activities in biological and chemical defence (BCD) undertaken by the Department of National Defence (DND) to ensure that they are defensive in nature and conducted in a professional manner with no threat to public safety or the environment.

The BCDRC is usually comprised of a chairperson and two members representing disciplines relevant to BCD such as chemistry, microbiology and toxicology. The Chairperson is appointed for a term of five years by the Deputy Minister of National Defence (DM) and the Chief of the Defence Staff (CDS) from amongst the existing Committee members. Committee members are recommended by learned Canadian scientific societies and are chosen by the Chairperson. The present members are:

Chair	Dr. Sheldon H. Roth	Professor University of Calgary (Toxicology and Pharmacology)
Member	Dr. Pierre G. Potvin	Professor York University (Chemistry)
Member	Dr. Julia M. Foght	Professor University of Alberta (Microbiology)

Commencing in 1990, Annual Reports have been submitted. All have been made available to the public and many are reproduced on the BCDRC Internet web page (<http://www.bcdrc-cepdbc.forces.gc.ca/index-eng.asp>). The reports use many military and government abbreviations and acronyms. The abbreviations are used only after the

full terms they represent are spelled out at least once. However, to make the reports easier for the reader, the abbreviations are summarized in Annex C.

SUMMARY

In this report, the BCDRC recounts its activities in 2009. Its assessments of the state of implementation of the 1988 Barton Report recommendations and of the progress made on its own recommendations from previous years are presented as annexes. Following a discussion about The Defence Research and Development Canada (DRDC) Defence and Security Science and Technology (S&T) Strategy and a review of some of BCDRC's previous recommendations and the progress that has been made to meet them, the BCDRC makes the following new recommendations:

- that a series of seminars be regularly held at DRDC Suffield to publicize current and proposed research and development (R&D) so that both DRDC and external audiences are fully aware of the research.
- that DRDC and the Canadian Forces Health Services Group (CF H Svcs Gp) work more closely to achieve Health Canada (HC) approval of medical countermeasures originating in DRDC laboratories.

COMMITTEE ACTIVITIES - - 2009

During 2009, the BCDRC made its annual visits to DND establishments involved in the BCD program. These establishments included:

- National Defence Headquarters (NDHQ) with briefings from or meetings with:
 - DRDC Corporate Centre, including meetings with the Assistant Deputy Minister (Science and Technology), and the Directors for S&T – Integrated Capability and S&T – Personnel and members of their staffs;
 - The Directorate for Arms Proliferation Control Policy (DAPC Pol) including a briefing about the Chemical Weapons Convention (CWC) and the Biological and Toxins Weapons Convention (BTWC) and Canada's participation in them;
 - The CF H Svcs Gp/Director Health Services Operations/Operational Medicine (CF H Svcs Gp Op Med or just Op Med);
 - The Directorate for Chemical, Biological, Radiation and Nuclear (CBRN) Defence which is replacing the Directorate for Joint

Capability Production (DJCP); specifically DJCP 5: CBRN Requirements and Projects; and

- The Chief of Defence Intelligence (CDI)
 - DRDC Suffield, Alberta, with briefings about the responsibilities, resources and activities of the research establishment and the BCD program. The Committee also heard about the status of the Counter Terrorism Technology Centre (CTTC) and was briefed about some CBRN Research and Technology Initiative (CRTI) projects in which Suffield participates. The Committee toured some facilities and met with scientists from several research groups in the establishment. Time was made available to allow any member or groups of members to approach the Committee to discuss matters of concern. While at DRDC Suffield, the BCDRC met with the Director General, the Deputy Director General/Head of CTTC, the acting head of the BCD program and other members of the senior staff. The Committee held discussions with the General Safety Officer and the Environmental Safety Officer;
 - DRDC Toronto where the Committee reviewed the ethics policy for human subjects in experimental trials;
 - the Canadian Joint Incident Response Unit – CBRN (CJIRU – CBRN);
 - 1 Canadian Air Division, Winnipeg and 17 Wing, Winnipeg; and
 - the Canadian Forces Firefighter Academy/Canadian Forces Nuclear Biological and Chemical School (CFFA/CFNBCS), at CFB Borden, Ontario.

The BCDRC also visited:

- the Department of Foreign Affairs and International Trade (DFAIT) in Ottawa where the members received briefings about the Global Partnership Program; and
- the Canadian Science Centre for Human and Animal Health (CSCHAH) in Winnipeg for briefings about CRTI projects conducted in partnership with DRDC.

The BCDRC reviewed DND's 2009 BCD R&D Program and determined that it was in accordance with current Canadian Government policy. Current R&D contracts and publications lists were examined. In addition, the DRDC accountability document was scrutinized.

To enhance the perspective of the concerns of Canadians in Canada's BCD activities, the Committee invites any group of concerned citizens to meet and discuss

issues. Any group or individual that wishes to make representation to the Committee should contact the executive officer. Contact information is found in the Introduction section of the web site.

In the past, during meetings with groups of citizens and of the media, some concerns about DND's BCD program have been identified and reasoned responses were given by the Committee at those times. These comments were repeated in the BCDRC annual report until 2001 (the 2001 and earlier reports are available on this web site). Please refer to these reports for explanations of the difference between offensive and defensive biological and chemical research and means of obtaining information about BCD from DND.

DISCUSSION

The BCDRC wishes to thank all of the organizations that it visited in 2009. The Committee received cordial welcomes and was able to engage in open and honest discussions at all establishments visited. During the visit of the Committee to the CSCAH, the Operation Centre and staff were fully involved with the first phase of the swine flu (H1N1 virus) pandemic yet people still took time out to discuss their research with the members of the BCDRC.

During visits, staff at DRDC Suffield, DRDC Toronto and the DRDC Corporate Headquarters informed the BCDRC about the DRDC Defence and Security Science and Technology (S&T) Strategy. The aim of this initiative is to maximize the impact of S&T on the Canadian defence and security capacity and on the nation's innovation capacity. The strategy broadens the scope of the Defence S&T Strategy enunciated in 2006, basically expanding it from a departmental scope to one focusing on national issues. This is a logical development for DRDC as it has been integrated with 21 government departments or agencies to identify, assess and address Canada's public security threats. DRDC has become the principle R&D agency for Public Safety Canada (PSC). In that role, as a national resource, its relationship with industry and academia in Canada will change. That is one of the goals of the new S&T Strategy. A part of the public security threat in Canada a CBRNE (the final E representing energetics or explosives) threat is identified.

This focusing on a broader philosophy at DRDC should not directly affect the mandate of the BCDRC where it interacts with DRDC. However, implementation of the Defence and Security S&T Strategy will be an important factor in the way R&D for the DND BCD programme is delivered. DRDC Corporate Headquarters has completed an internal reorganization. Partner Groups have become an important element of the new structure. R&D in the fields of BCD is the work of two Partner Groups: Partner Group 0, Integrated Capability, supporting the Chief of Force Development and Partner Group 4, Personnel, supporting the Chief of Military Personnel. In broad terms, Partner Group 0 develops equipment for CBD and Partner Group 4 develops medical countermeasures (MCM) for soldiers.

Partner Groups are not universally popular. Doubt has been expressed that they will be sufficiently responsive to the needs of the users of equipment and medical countermeasures: the soldiers, sailors and airmen involved in military operations. DRDC is poised to broaden the scope of its R&D but it must continue to pay attention to the BCD needs of the elements (Army, Navy and Air Force) and the commands (Special Forces and commands for Canadian internal and overseas operations). These users provide their priorities to DRDC and monitor progress of research and development as part of the partner group. They may question whether their priorities will be considered as strongly as they were when the Army, Navy and Air Force were employers of R&D resources rather than partners in their use.

Previous BCDRC Recommendations are listed in Annex B. Some of the recommendations were made almost two decades ago. For example, the first recommendation in the annex was made in 1990. It concerns the need for good flow of information at the defence research establishments. With the adoption of partner groups, the need for good communication remains critical. A partner group is made up of a matrix of people, some who are working on projects full-time but others who participate in partner group work a small part of their time. Some of these people cannot see the value of the partner group system. The BCDRC found that senior people at both DRDC Suffield and DRDC headquarters were receptive to having seminars in which scientists would review their work for other members of their establishment, for staff doing comparable or related work at other DRDC facilities, for members of the responsible partner group, for the BCDRC and for other interested parties.

Another early recommendation from the BCDRC, the second on the list in Annex B, dating from 1993, concerns the inventory of agents at DRDC Suffield. Recent work at Suffield on the organization of its inventory of agents is producing excellent progress. In 2009, there was a marked reduction in the number of biological samples. Material which had become redundant to BCD research had been eliminated. However, the evident improvement in the chemical and biological inventories of agents is not reflected in the toxins stocks where more control and organization remains necessary.

Less satisfactory progress has been made on a recommendation from 2006 that is related to the development and implementation of medical countermeasures. Considerable, successful research and initial development in MCMs is conducted at DRDC Suffield but it is difficult to take the product beyond these early stages. It is very costly to move the product through development to achieving Health Canada approval so that it can be used on human subjects as an MCM. DRDC Suffield has completed work on a “good laboratory practices” (GLP) facility in which data can be collected to satisfy some HC requirements. However, clinical trials with human or animal subjects, or both, are often also necessary but very expensive and, usually, with no mass market for the final product, pharmaceutical companies are not interested in either participating in trials or paying for the work. The BCDRC now recognizes that the complete solution to this problem is beyond the resources of DND. Therefore, BCDRC will drop its 2006 recommendation. The integration of DRDC, PSC and HC in the current effort to counter

the domestic terrorist threat may lead to a solution without the involvement of the CF Health Services. The use of a product developed in a DRDC establishment for use by soldiers could, potentially, be effective as an MCM for the general public. The broader use would make the investment in clinical trials more palatable and possible. The partnership of DRDC and CF H Svcs is still desirable for the development of MCMs for strictly military use.

Information gathered during a visit to the CJIRU-CBRN allowed the Committee to determine that the unit is well integrated into the military force structure and the shortcomings of its predecessor, the Joint NBCD Company, noted in a 2004 recommendation, have been overcome.

The success of the CJIRU-CBRN has led to a plan to form a new military trade for service people employed in CBRN defence work. A dedicated trade has been discussed for years as a solution to the problem of finding experienced and qualified people to be employed in CBRND work at the CFNBC School and within units and formation headquarters. The BCDRC welcomes such a development insofar as it would foster competence and continuity in training standards and readiness levels, and help secure the required staffing.

CONCLUSIONS

Although the introduction of the DRDC Defence and Security Science and Technology Strategy will cement partnerships as the basis for future R&D, DRDC must meet the BCD needs of the Elements (Army, Navy and Air Force) and the Commands (Special Forces and Canadian internal and overseas operations). The need for good, two-way communications is of utmost importance.

The BCDRC will drop its 2006 recommendation for the integration of CF H Svcs Gp into product development projects involving other government departments. There is still a need for CF H Svcs Gp Op Med to work with DRDC on the development and approval of MCM for purely military use.

RECOMMENDATIONS

The BCDRC recommends that a series of seminars be regularly held at DRDC Suffield to publicize current and proposed R&D so that both DRDC and external audiences are fully aware of the research.

The BCDRC recommends that DRDC and CF H Svcs work more closely to achieve Health Canada approval of medical countermeasures originating in DRDC laboratories.

IMPLEMENTATION OF BARTON REPORT RECOMMENDATIONS

The current implementation status of the Barton Report recommendations was ascertained to be:

GENERAL

1. **In the course of the annual program and budgetary process, the authorizing officer at each level be required to sign a certificate of compliance with Departmental policies.**

Certificates of Compliance for 2009 were reviewed and found to be in order.

2. **A senior Review Committee be established in association with the Defence Science Advisory Board (DSAB).**

The BCDRC constitutes such a Committee. In 1997 the Committee was removed from the aegis of the DSAB and established as a self-administering agency. In 2005, it became an organization reporting to the Canadian public rather than to the Chief of the Defence Staff and the Deputy Minister of National Defence.

3. **"Second opinions" should be obtained from outside sources on some of the potentially controversial test programs.**

The BCDRC suggested that the most effective way to obtain credible second opinions would be to establish external committees and to encourage collaboration through workshop type conferences. Defence Research and Development Branch (which became Defence R&D Canada in 2000) held a Technology Investment Workshop on biotechnology in November 1996. Also an independent Peer Review of the DRES (DRDC Suffield) BCD R&D program was conducted in June 1997. In 2000, DRDC established a permanent Advisory Board. It is co-chaired by the Chief of Defence Staff and the Deputy Minister of National Defence and has as members the Vice Chief and Deputy Chief of Defence Staff, the Chiefs of Air, Maritime and Land Staffs, and other individuals at the associate deputy minister level. The Director General Health Services is also a military member. Industry, academia and medicine are also

represented. The BCDRC will verify the status of the Advisory Board in 2010.

4. **A document be prepared annually which would set out the nature of the research and development work under way, the number of people involved, and allocated funding.**

The branch produced its first annual report covering the fiscal year 1998/99. DRDC has continued this practice. These reports satisfy this recommendation. The most recent annual report describes the year ending 31 March 2007. It is on the DRDC web site under publications. There has not been an annual report published on the web site in 2009.

5. **A layman's pamphlet be published which would help improve public understanding about Biological and Chemical Defence.**

The web site (<http://www.drdc-rddc.gc.ca/>) has been established and provides the public with information on biological and chemical defence work. The DRDC Suffield web site is useful although a conversion of the site in 2008 has reduced the amount of information available to the public. The CB Defence work at Suffield is summarized under "News Archives" at http://www.suffield.drdc-rddc.gc.ca/Home-accueil/index_eng.html. From the main DRDC web site the searcher can go to Research Centres and then Suffield. The information about the CBD programme is now two years old. (2009)

6. **A DND directive on policies and procedures regarding the use of volunteers and animals be published.**

DND Policy - Animal Use in R&D was issued on 15 June 1989. Defence Administrative Orders and Directives (DAOD) 5061-0 and 5061-1, Research Involving Human Subjects, were issued on 20 August 1998. These administrative orders may be viewed on the DAOD web site at: <http://www.admfincs.forces.gc.ca> Click on DAODs on the left side of the page. These are the last two DAODs in the 5000 block.

DRES (DRDC Suffield)

1. **A procedure be established to ensure that the DRES Safety Manual is reviewed at prescribed regular intervals of not more than three years. Safety drills should also be conducted at prescribed regular intervals.**

An effective, dynamic safety program has been established. Drills and exercises are conducted and any safety related issues are resolved quickly.

2. **An automatic annual review and certification procedure be instituted to confirm that stocks of toxic agents are being kept to the minimum level necessary for the conduct of an efficient research and development program.**

The annual inventory audit was reviewed by the BCDRC in May 2009. Chemical and biological agent holdings were verified then. The committee agrees that stocks are being properly maintained at a minimum level, which in most cases is only a fraction of the authorized levels. Old stocks have recently been removed. (2009)

3. **The arrangements being implemented to improve security and access controls be expedited.**

With the possibility of terrorist attacks on critical infrastructure, security and access at DRDC Suffield are reviewed continuously.

4. **Pending the destruction of the excess agent stocks now stored in the Experimental Proving Ground (EPG), the adequacy of existing physical security arrangements be reviewed with a view to strengthening them.**

Completed.

5. **The incinerator which is to be acquired for the program be considered for use in the destruction of other dangerous industrial chemicals, including PCBs.**

The Alberta Provincial Government legislated this recommendation unimplementable. The incinerator was sold and its removal from DRES was completed by 6 August 1992.

6. **The Experimental Proving Ground (EPG) operation and maintenance be given "project" status within the CRAD program.**

Implemented. Thus positive visibility is given to all activities, funding and personnel involved in the EPG and ensures an annual review as a separate program component.

7. **The scope of the safety and environmental requirements governing outdoor testing at DRES be determined by the provisions of the Canadian Environmental Protection Act.**

Although the present Act does not include such express provisions, the Federal Minister of Environment has said that the department will develop

the requisite guidelines as and when necessary. In addition, a staff control system is in place and functioning to ensure compliance with all constraints.

8. **A full environmental audit of DRES be commissioned as soon as possible and that it be repeated at regular intervals of, say, five years.**

Acres Consultants Ltd, having completed the audit under a Supply and Services Canada contract, submitted their final report in February 1992. An internal staff agency was created to initiate recommendation compliance. All the Report's recommendations have been addressed and full compliance is anticipated. The Acres' report has been deposited with the Canada Institute for Scientific and Technical Information (CISTI), the National Library and major university libraries throughout the country. The first follow-on audit was conducted by Acres International Ltd in early 1997 and the report was received at DRES on 31 March 1997. A second five year audit was not conducted by May 2002. However, the Auditor General has conducted an Environmental Audit and Suffield has implemented an Environmental Management System. Also, significant progress has been made on recommendations in the previous independent audit. A full assessment of DND hazardous sites is underway, including those at Suffield. The study that is underway is developing a methodology for cleaning up the various sites. At Suffield, there is a potential hazard from old munitions containing mustard and nerve gas. In 2009, cleaning the subsoil and handling material buried in it remain challenges at Suffield.

DREO (DRDC Ottawa)

The entire Defence Research Establishment Ottawa (DREO) chemical agent inventory has been destroyed, all storage and handling facilities removed, laboratories dismantled and the facility decommissioned. The BCDRC ceased reporting on DREO (DRDC Ottawa) activities in 1994.

IMPLEMENTATION OF BCDRC REPORT RECOMMENDATIONS

Note: Once a recommendation has been complied to the satisfaction of the Committee it will cease to be included in subsequent Reports. However, if the recommendation is of a continuing nature it will be subject to periodic monitoring by the Committee.

1. **The flow of information within the Defence Research laboratories between sections, management and staff might be improved -- possibly through occasional informal meetings and discussions with senior managers. (1990)**

There is always room for improvement in communications. The number of staff at DRDC Suffield is increasing. New people must be kept informed of the work being conducted in the establishment and how it is contributing to the missions and priorities of DRDC, DND and Public Safety Canada. Also, all staff should be fully informed of the security threat state, potential safety hazards and security and safety practices. The 2009 BCDRC report recommends that DRDC sponsor seminars to disseminate information regarding research projects. These seminars will improve the flow of information. Monitoring of the flow of information at DRDC Suffield and DRDC Headquarters will continue. (2009)

2. **The Annual Agent Inventories Audit Reports be restructured as follows:**

- a. **biological agents used for research purposes are to be identified by complete strain or antigenic designator;**
- b. **stocks of biological agents are to be quantified in meaningful terms; i.e., infectious titres or colony-forming units per given volume;**
- c. **stocks of biological agents that are clearly not agents of biological warfare should be identified as such with an accompanying statement to the effect that such agents may be found in Public Health, University and Industrial laboratories. (1993)**

Since this recommendation was made, DRDC Suffield has created a detailed inventory of agent stocks and the use of any part of it is accurately documented. In recent years, the inventory has been substantially reduced, partly because investigation of some older stocks showed they had deteriorated but also because

the inventory revealed some stocks were redundant and could be eliminated. The reductions are continuing. The audit of biological agents in 2008 was error-free and there was only one minor fault in 2009. The improvement in the biological inventories of agents is not reflected in the toxins stocks. More control and organization is necessary. Work is progressing but this remains a multi-year task. (2009)

3. **The BCDRC be contractually guaranteed access to all private sector laboratories that become involved in the Biological and/or Chemical Defence Research and Development program either under the prevailing contracting system or through the auspices of the industrial partnership proposal. (1994)**

Contractors routinely provide formal briefings to BCDRC during their annual visits to DRDC Suffield and DRDC Toronto. Circumstances have yet to arise when BCDRC has considered an on-site visit absolutely necessary. The BCDRC will schedule a visit to a private sector laboratory in the future.

4. **The skills of the present DRDC Suffield Staff be reviewed to ensure that no critical imbalances have been created that might affect productivity, safety or responsiveness. (1996)**

The DRDC Suffield staff is under continual review by the management of the research establishment. In 2008 and 2009, as part of the development of the Defence and Security S&T Strategy, DRDC Corporate Headquarters did a complete review of staff balance at its centres. DRDC Suffield received an increase of positions and is in the process of reviewing its capabilities and the allotment of staff to them. A balance of skills is actively sought. (2009)

5. **The DRDC Suffield Safety Manual and Emergency Response Plans be updated and tested at least annually. (1996)**

Monitoring will continue. The DRDC Suffield General Safety Officer conducts a dynamic program. He has added computer-based training and uses the DRDC Suffield local area network to circulate safety information. He is conscious that new staff is trained in safety procedures and he has brought the issue of the need for thorough safety training for new staff to the attention of management.

6. **The BCDRC mandate be amended to include an annual visit to Health Canada's Canadian Science Centre for Human and Animal Health in Winnipeg whenever research is being conducted there either by or directly for DRDC Suffield. (1999)**

Health Canada and DND have signed a memorandum of understanding for

collaborative work. The Winnipeg laboratory is involved in some CRTI projects and the BCDRC visited the centre in 2004. Annual visits are not required. The BCDRC made a second visit to the HCCHC in 2009, while the laboratory was heavily involved in the first swine flu (H1N1 virus) outbreak. This recommendation will be removed after the 2009 report and BCDRC will continue to make periodic visits. (2009)

- 7. To facilitate the Health Canada approval process for new medical countermeasures against chemical and biological agents, it is recommended that eventual regulatory requirements be considered at early stages of R& D and all data be collected and records maintained according to Good Laboratory Practice (GLP) guidelines. (2000)**

DRDC is paying more attention to the need for GLP because it is important to the regulatory process. In 2005, DRDC Suffield reported that laboratories were being reconfigured to be suitable for GLP work. New positions required to implement GLP were filled. In 2008, work was completed on a GLP laboratory. Standard operating procedures for the new laboratory were in place and the laboratory is in use. The BCDRC visited the GLP laboratory for the second time in 2009. Research at Suffield on the HI-6 Nerve Agent Antidote for intravenous use has become a GLP compliant project. (2009)

- 8. It is recommended that doctrine be developed for the provision of medical care in biological and chemical warfare (BCW) conditions. (2002)**

A staff officer has been appointed within CF H Svcs and doctrine is being formalized. Canada is involved with other nations in NATO in the development of doctrine and CF H Svcs is actively working on improving the NATO doctrine for the CF. NATO publication STANAG 2954 is titled *Training of Medical Personnel for NBC Defense Operations* and STANAG 2358 is titled *CBRNMED-First Aid and Hygiene Training in a CBRN or TIH Environment*. DND nurses, physicians and medical assistance have access to more courses that include CBRND as a result of the adopted doctrine. (2009)

- 9. The BCDRC recommends that research in BCD be given the utmost priority in DRDC Suffield. Rather than employing researchers to supervise training, other arrangements should be found. Therefore, the BCDRC encourages the completion and manning of the CTTC if that will permit scientists to conduct more research. (2003)**

The Committee observed improvement in 2007. The CTTC was reducing the load on the R&D program placed by training activities. However, growth of the CTTC resulted in more users of the training facilities. Demands placed on the scientific staff for such tasks as the synthesis of chemical agents used in training were not eliminated. In 2007, the BCDRC received some briefings about a

reorganization of functions at DRDC Suffield. The reorganization was implemented and part of the CTTC was reintegrated into the BCD organization. This has moved some additional training load back onto research scientists and technologists. The previous Director General at Suffield said that the reorganization was made necessary by the increased demand for training required for better handling of casualties in Afghanistan. In 2009 the DRDC Suffield staff said that the CTTC has brought in money that pays for more research positions. Although the scientists' time is still needed for training purposes, management at DRDC Suffield says there is a net increase of research work because of the larger staff. BCDRC will continue to monitor this recommendation. (2009)

- 10. The BCDRC recommends that a suitable balance be kept among increases in the number of researchers and increases in laboratory space and equipment within the BCD program during the current period of growth to meet research commitments. (2004)**

At DRDC Suffield, infrastructure is under pressure from overcrowding and obsolescence because of increases in staff and equipment. This issue is discussed in the 2007 report and recommendation number 15 was the result. In 2009, at DRDC Suffield, DRDC is commencing a ten-year \$500 million upgrade of laboratories and office space. Also, modular BSL 3 Laboratories are coming on line, starting in 2011, to alleviate the existing lack of research facilities. These laboratories will have a ten year life span and will provide needed laboratory space until the permanent buildings are completed. (2009)

- 11. The BCDRC recommends that some attention be paid to shortcomings in the working relationships of the Joint NBC Defence Company. (2004)**

In 2007, the JNBCD Coy was expanded and became the Canadian Joint Incident Response Unit – CBRN (CJIRU – CBRN). The unit is part of Canada Special Forces Command. This organizational change has formalized the working relationships of the unit. This recommendation has been satisfied and will be removed after the 2009 report. (2009)

- 12. The BCDRC encourages DND to retain and utilize the knowledge and expertise it has in the fields of equipment and manpower decontamination. (2005)**

During its annual visits in 2006, the BCDRC was informed about plans to organize Land Force Reserve CBRN Defence Companies. This plan was not implemented. It is likely that DND will retain a capability to decontaminate men and equipment until after the 2010 Olympics. The BCDRC believes that, after 2010, a capability should be maintained which exceeds that of the CJIRU – CBRN. The BCDRC will continue to monitor the situation. (2008)

- 13. The BCDRC recommends that DRDC Corporate and DRDC Suffield continue efforts to develop links with academia. Members of the BCDRC will assist by promoting this activity within their institutions. (2006)**

Links with the University of Calgary have become stronger during the two years since the recommendation was made. There is one collaborative research program that is currently in progress between DRDC Suffield and the Faculty of Veterinary Medicine at the University of Calgary. This program is focused on developing improved anesthetic techniques for animal models. Since this project is not directly within the mandate of the BCDRC, it will only be revisited if the results prove of interest to the Committee. Discussions have also continued between researchers at the University of Calgary and DRDC Suffield over the past two years that may lead to the initiation of joint ventures in examining mechanisms of specific toxins and developing new inhalation procedures.

- 14. The initiative for DRDC to become the Science and Technology arm of PSEPC is encouraged. The BCDRC recommends that the partnership include the Regulatory Affairs Section of Operational Medicine in the Canadian Forces Health Services Group. (2006)**

In 2003, PSEPC evolved from the Office of Critical Infrastructure Protection and Emergency Preparedness (OCIPEP) which was originally formed only two years earlier under a deputy minister in DND. Now PSEPC has been folded into Public Safety Canada, a separate ministry under the Minister of Public Safety. CF H Svcs Op Med is restricted to work on DND projects and is not mandated to work with PSC. DRDC still requires expertise for the approval of MCMs by Health Canada and Op Med has gained a staff officer to help with that work. However, this recommendation will be removed after the 2009 report because PSEPC does not exist as an entity under the Minister of National Defence. (2009)

- 15. The BCDRC recommends that steps be taken to rectify the problem of overcrowded and deteriorating infrastructure at DRDC Suffield before the conditions become dangerous. (2007)**

In 2009, at DRDC Suffield, DRDC is beginning a ten-year \$500 million upgrade of laboratories and office space. BCDRC will continue to monitor progress until the upgrades are completed. (2009)

- 16. It is recommended that the BCDRC continue to function after 2010 so that it can continue to monitor the BCD programme, provide external perspective, comment and make suggestions on it. (2008)**

At the time of the drafting of this report, a Treasury Board Submission is being prepared that proposes the continuation of the BCDRC for five years until 2015. (2009)

- 17. It is recommended that the research work in DRDC Suffield and DRDC Valcartier be closely coordinated and the scientists involved have the opportunity to see first-hand the work being conducted at the other establishment. (2008)**

Scientists at DRDCs Suffield and Valcartier are becoming increasingly aware of the S&T at the other centre. The 2009 BCDRC recommendation for additional information sessions will help this communication between the centres. (2009)

- 18. It is recommended that the CF NBC School consider periodically sending a French-speaking instruction team to CFB Valcartier to conduct school courses. (2008)**

The CF NBC School is a bilingual facility that often runs French language series of courses with the minimum number of participants. The BCDRC accepts that the school is aware of the problems that units at CFB Valcartier have in receiving national level training and will remove this recommendation after the 2009 report. (2009)

- 19. It is recommended that DND continue to offer support and encouragement to DFAIT to maintain the effectiveness of the Chemical Weapons Convention. (2008)**

There is no indication that DND will discontinue support to DFAIT. The Director Arms Proliferation Control provides this support. (2009)

ACRONYMS AND ABBREVIATIONS

ADM: Assistant Deputy Minister; Associate Deputy Minister

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

BCDRC: Biological and Chemical Defence Review Committee

BCD: Biological and Chemical Defence

BCW: Biological and Chemical Warfare

BTWC: Biological and Toxins Weapons Convention

CBRN: Chemical, Biological, Radiation and Nuclear

CBRNE: Chemical, Biological, Radiation, Nuclear and Explosives

CDI: Chief of Defence Intelligence

CDS: Chief of the Defence Staff

CISTI: Canadian Institute for Scientific and Technical Information

CF: Canadian Forces

CFB: Canadian Forces Base

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

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

CF H Svcs Gp: Canadian Forces Health Services Group

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

CG: Client Group

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

CMBG: Canadian Mechanized Brigade Group

CMED: Central Medical Equipment Depot

CO: commanding officer

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

CT: Counter-terrorism

CTTC: Counter Terrorism Technology Centre

CWC: Chemical Weapons Convention

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

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

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

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

DFAIT: Department of Foreign Affairs and International Trade

DGHS: Director General Health Services

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

DM: Deputy Minister

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

DND: Department of National Defence

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

DRE: Defence Research Establishment

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

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

DSAB: Defence Science Advisory Board

DSTIC: Director Science and Technology – Integrated Capability

DSTP: Director Science and Technology - Personnel

EPG: Experimental Proving Ground

GLP: Good Laboratory Practice

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

HC: Health Canada

HREC: Human Research Ethics Committee

IED: Improvised Explosive Device

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

LFCA: Land Force Central Area (Toronto)

LFWA: Land Force Western Area (Edmonton)

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

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

MCM: Medical Countermeasures

MOU: Memorandum of Understanding

NATO: North Atlantic Treaty Organization

NDHQ: National Defence Headquarters

NBC: Nuclear, Biological and Chemical

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

OCIPEP: Office of Critical Infrastructure Protection and Emergency Preparedness

OPCW: Organization for the Prohibition of Chemical Weapons

PCB: polychlorinated biphenyls

PSEPC: Public Safety and Emergency Preparedness Canada

PWGSC: Public Works and Government Services Canada

R&D: Research and Development

RSDL: reactive skin decontamination lotion

SLA: Service Level Agreement

SWE: Salary and Wage Envelope

TICs: Toxic Industrial Chemicals

TPD: Health Canada Therapeutic Products Directorate

VCDS: Vice Chief of the Defence Staff