

2006 ANNUAL REPORT
OF
THE BIOLOGICAL AND CHEMICAL DEFENCE
REVIEW COMMITTEE

THE COMMITTEE

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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. Kenneth L. Roy	Professor Emeritus University of Alberta (Microbiology)
Member	Dr. Pierre G. Potvin	Professor York University (Chemistry)
Member	Dr. Sheldon H. Roth	Professor University of Calgary (Toxicology and Pharmacology)

Commencing in 1990, Annual Reports have been submitted. All have been made available to the public and are reproduced on the BCDRC Internet web page (www.vcds.dnd.ca/bcdrc/index.html). 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 D.

SUMMARY

This report records the 2006 year activities of the BCDRC. Included in annexes are the Committee's review of the current state of the implementation of the recommendations made in the 1988 Barton Report and the progress made on the implementation of recommendations made in previous BCDRC reports. The BCDRC was itself organized as the result of a recommendation in the Barton Report. The Barton Report may be read on the BCDRC Internet web page.

The BCDRC has concluded that there are neither indications of duplicity within Canada's BCD program nor evidence that offence related activities are being conducted either on behalf of Canadian authorities or to comply with any multilateral treaty commitment.

Growth in the BCD program has put a severe strain on the infrastructure at Defence R&D Canada (DRDC) Suffield where R&D for biological and chemical defence takes place. A larger staff at the facility has outstripped the infrastructure. The cost of improvements to buildings at Suffield is estimated to be \$100 million but other laboratories within DRDC have similar needs. Money from the federal government is required for these improvements but the government also supports science in industry and academia. Therefore, the government's own science laboratories must compete with the private and university scientific sectors for money. DRDC Suffield shares areas of research with academia. However, Suffield also conducts research which is unique in Canada. It would be unfortunate if the Defence laboratories were starved for funds because of a government policy emphasizing support of industrial and academic research.

The nature of work done at Suffield has a wider scope than the two new BCDRC members anticipated. At DRDC Suffield, there is more research on medical therapies for endemic diseases and on counters to toxic chemicals than the BCDRC scientists expected. There was, therefore, considerable discussion during the visit about cooperation between DRDC Suffield and university science departments. There are evident opportunities to share research. The members of the BCDRC concluded that forming or expanding links with research academia would be beneficial to the universities and to DRDC Suffield. These links could lead to collaboration.

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.

At DRDC Corporate Headquarters, the BCDRC was advised that DRDC will become the Science and Technology (S&T) arm of Public Safety and Emergency Preparedness Canada (PSEPC). This cooperation will lead to the development of medical

countermeasures (MCM) to biological and chemical hazards. The approval for use of these countermeasures by Health Canada (HC) will be an important part of this work. For DRDC to become the S&T arm of PSEPC will be beneficial to national Chemical, Biological, Radiation and Nuclear (CBRN) defence. However, to protect the Canadian public in the case of a CBRN terrorist attack, approval from HC for the use of MCM is necessary. PSEPC might find it beneficial to work closely with the CF Health Services Group Operational Medicine (CF H Svcs Gp Op Med) Section which has considerable experience with HC in gaining access to unlicensed CBRN medical products via the HC Special Access Programme and in the development and filing of CBRN medical product regulatory submissions.

The initiative for DRDC to become the S&T arm of PSEPC is encouraged. The BCDRC recommends that the partnership include the Regulatory Affairs Section of CF H Svcs Op Med.

COMMITTEE ACTIVITIES - - 2006

During 2006, 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:
 - Defence R&D Canada (DRDC) Corporate Centre, including meetings with the Assistant Deputy Minister (Science and Technology), the Director for Human Performance and several members of his staff and the Portfolio Manager for chemistry at the Chemical, Biological, Radiological/Nuclear Research and Technology Initiative (CRTI), a federal government program led by DRDC;
 - The Commanding Officer of the Canadian Forces (CF) Joint Imagery Centre and members of his unit;
 - The Directorate for Arms Proliferation Control Policy (DAPC Pol) including a meeting with the acting director and members of his staff;
 - The Canadian Forces Health Services Group/Director Health Services Operations/Operational Medicine (CF H Svcs Gp Op Med);
- 4 Wing Headquarters (Cold Lake, Alberta) including meetings with the Wing Operations Officer and the officer responsible for BCD;
- The Aerospace Engineering Test Establishment (AETE) (Cold Lake) where the committee saw the difficulty of marrying BCD equipment with the cockpit;
- Land Forces Central Area Headquarters (Toronto, Ontario), including a meeting with the Commander and his Chief of Staff;
- Canadian Forces Support Training Group (CFSTG) (Borden, Ontario) including a meeting with the commander;
- Canadian Forces Nuclear, Biological and Chemical School (CFNBCS) (Borden, Ontario) with briefings about its responsibilities, resources and training;
- 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 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 acting deputy director general, the 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.

Outside of DND, the BCDRC met with officers in Foreign Affairs Canada to discuss the Chemical Weapons Convention (CWC) and the Biological and Toxins Weapons Convention (BTWC) and Canada's participation in them.

In June, Dr. Potvin attended a seminar about CRTI projects and in July Dr. Roy and Dr. Roth attended visitors' day at a large North Atlantic Treaty Organization (NATO) Chemical, Biological, Radiation and Nuclear (CBRN) Exercise, Precise Response, at Canadian Forces Base (CFB) Suffield, Alberta. In December, they attended a CBRND Workshop sponsored by NDHQ.

The BCDRC reviewed DND's 2006 BCD Research and Development (R&D) Program and determined that it was in accordance with current Canadian Government policy. The latest version of the DRDC Service Level Agreement (SLA) for BCD and current R&D contracts and publications lists were examined. In addition, the DRDC accountability document was scrutinized. The SLA and the accountability document require renewal.

To enhance our 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 concerned 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.

TERMINOLOGY

In its reports, the BCDRC attempts to conform to terminology that is used in the DND. In the field of Nuclear, Biological and Chemical warfare and defence, the Department has used the initials NBC to describe it. Hence, the directorate at NDHQ was the DNBCD and the school remains CFNBCS. However, the Canadian Forces are undergoing a transformation and responsibilities are changing. There is more attention being paid to national security. Therefore, the CF has begun to adopt terminology for NBC that is more commonly used by civilian agencies in Canada and internationally. The term is Chemical, Biological, Radiation and Nuclear or CBRN. The BCDRC has no responsibility for radiation or nuclear warfare and so it will not change its name or change the term it uses for biological and chemical defence, BCD. The term CBRN will appear in the text of this report if the term was used in briefings to the Committee. Chances are the term will appear more frequently in the future.

DISCUSSION

The members of the BCDRC wish to thank all the organizations for their hospitality during the 2006 program. For two of the three members of the Committee, the tour was their first round of visits to military establishments. They were made to feel welcome at all places. That is not to say that they did not have some difficulty adapting to the environment. The new Committee members were somewhat overcome by “information overload”. Throughout DND, people use many acronyms and often assume a listener has a better understanding of the military ethos than should be expected from a member of the Canadian public. Also, the members had roughly ten working days to assimilate the complete program for BCD within the Department. That was a difficult task but they were able to gain a good knowledge of the program and form some fresh opinions about it. Some impressions of the new members of the Committee are attached as Annex C. The remarks should not be considered a BCDRC critique of DND but be taken for what they are: first impressions of an institution with which the writers have very little experience. Preconceived impressions changed rapidly during the visits. Members of DND may find Annex C to be informative.

The visit schedule first took the Committee to DRDC Suffield. The members were introduced to the BCD program from the perspective of the research and development work done there, an environment with which the new members were familiar. They met scientists doing research similar to their own. At Suffield, the members were impressed with the academic qualifications of the scientific and technical staffs. They were impressed with some of the advanced equipment and facilities that have been recently obtained. Many of these resources are new acquisitions acquired through money provided by the Chemical, Biological, Radiological/Nuclear Research and Technology Initiative (CRTI). In CRTI, DRDC works closely with Public Safety and Emergency Preparedness Canada (PSEPC), the federal agency responsible for National Security against biological and chemical warfare (BCW) threats. Partly because of CRTI, the nature of work done at Suffield has a wider scope than the BCDRC scientists expected to see and hear about. There is more work on medical therapies for endemic diseases and on counters to toxic chemicals than they expected. There was,

therefore, considerable discussion during the visit about cooperation between DRDC Suffield and university science departments. There are evident opportunities to collaborate on research projects. DRDC Corporate Headquarters in Ottawa is working on developing ties with academia and the discussions about collaboration continued during the visit there a few weeks later.

At Suffield, the Committee members heard that in the past five years, the growth in research and increased emphasis on training with chemical agents are activities that have led to an increase in the staff in the BCD program from 50 to 150. The Committee heard how this growth has put a severe strain on the infrastructure at the Suffield R&D centre and it was briefed on plans to build the laboratories and other facilities needed to catch up. In 2004 and 2005, BCDRC annual reports have noted some of these deficiencies. The bill for infrastructure improvements at DRDC Suffield is estimated to be \$100 million. It was explained to BCDRC at DRDC Corporate Headquarters in Ottawa that other laboratories have similar needs. The estimate to improve DRDC Valcartier is also \$100 million and for DRDC Toronto it is \$60 million. It is evident that DRDC needs financial help from the DND and the federal government to undertake this work in its totality. DRDC competes with scientific staffs in other federal departments for public funding. Also, the government supports science in industry and academia. The government's own science laboratories must compete with the private and university scientific sectors for federal money. As is mentioned above, DRDC Suffield shares areas of research with academia. However, Suffield also conducts research which is unique in Canada. The existence of Canada's Single Small Scale Facility for holding chemical agents and Suffield's extensive collection of biological samples and the BSL 3 laboratories needed to work with these samples facilitate this research in BCD. Suffield shares this type of research with Allied defence laboratories in the United States and Great Britain and elsewhere. These links are not available to industrial and academic laboratories. It would be unfortunate if the defence laboratories were starved for funds because of a policy for supporting industrial and academic research.

From DRDC Suffield, the Committee visited AETE in Cold Lake and saw how difficult it is to take clothing and equipment designed for chemical warfare conditions and utilize it for a pilot or navigator working in the confined space of a cockpit. One member of the committee tried using image intensifying night vision goggles over top of the mask a soldier wears in a chemical or biological alert. That experience was difficult enough. A pilot is expected to fly a helicopter wearing the same equipment.

The Committee visited 4 Wing, Cold Lake, the CFNBC School and Land Force Central Area Headquarters. Many of the Committee's hosts spoke with passion about their work. They talked freely about problems they encounter and proudly of their accomplishments and those they share with their co-workers. The Committee members were impressed with the enthusiasm, professionalism and morale of career soldiers working in the BCD field but were somewhat amazed by the frequency of personnel turnover which is the routine of military life.

The CFNBCS had moved into new accommodations since the BCDRC visit in 2005. The new facility was a renovated public school which is a great improvement over the World War II style building that had been the School's previous home. At Land Force Central Area Headquarters, the BCD staff is developing a model for a Reserve CBRN Defence Company. They are seeking more direction about how the company should be organized and manned.

The final phase of the Committee's travel in 2006 was a visit to NDHQ. At the Director General of Health Services Branch, the BCDRC members spent an afternoon with members of the small CF H Svcs Op Med section that is responsible for medical aspects of BCD including preventive medications and treatment of medical casualties. The section has responsibility for the development of doctrine for handling both trauma casualties contaminated with agents and casualties from biological or chemical attacks alone. CF H Svcs Op Med is working on doctrine developed in accordance with NATO standardization directives (STANAGs) but also, with NATO panels, is working on the development of new STANAGS. BCDRC commented on a lack of doctrine in its 2002 report and is gratified to see that action is being taken.

The Regulatory Affairs Section of CF H Svcs Op Med is responsible for shepherding through the Health Canada (HC) approval process, medical countermeasures (MCM) developed in DND and DRDC. In the past, the BCDRC has commented on the HC process and made recommendations concerning it. This work is described in Annex B to this report under Recommendation number 14. Progress is being made. BCDRC has a responsibility to protect the interests of the Canadian public. It is partly for that reason that the Committee has paid close attention to the work of the Regulatory Affairs Section. The Section works toward obtaining authority from HC for the CF to use BCD MCM to protect its members. The Canadian public profits from this work because the special access to MCM granted by HC also applies to first responders, the public's first line of defence when a CBRN terrorist attack occurs. PSEPC is responsible for the training of first responders in CBRN Defence. What is lacking is a process to obtain HC authority to employ MCM on ordinary members of the Canadian public who have been caught up in a CBRN attack.

At DRDC Corporate Headquarters, the BCDRC was advised that DRDC will become the Science and Technology (S&T) arm of PSEPC. PSEPC was developed from the Office of Critical Infrastructure Protection and Emergency Preparedness (OCIPEP) which was part of the DND. When OCIPEP became PSEPC in 2003/04, it became an independent entity outside of the DND umbrella. However, a program involving PSEPC and DRDC was developed. The CRTI program uses the PSEPC budget and DRDC management resources to develop counters to CBRN terrorist threats. CRTI is completing its first five year mandate and has had many successful projects. There are abstracts on the CRTI web site at <http://www.crti.drdc-rddc.gc.ca>.

At DAPC Policy, a directorate in NDHQ, the Committee was briefed about the Chemical Weapons Convention and Canada's participation in reducing the threat of chemical weapons around the world. It heard that one of Canada's major efforts is to

help Russia destroy its large stockpiles of these weapons and chemical agents. Towards this effort Canada is contributing \$1 billion over ten years. The Committee also heard about Canada's efforts to have a new biological and toxins weapons convention implemented.

Dr. Pierre Potvin attended the 4th Annual CRTI Summer Symposium which had 253 registered participants. These included many first responders, military people and representatives from science and technology. The conference was not typical of the scientific meeting that he was used to attending because the registrants had such varied experience and some had very limited scientific knowledge. Information tended to flow one way, from speakers to the audience. A serious, productive, scientific question and answer period would have been over the heads of many people in the audience. The seminar did include a day of practical exercises in which the varied experiences of the audience was put to use. Dr. Potvin found the seminar was more richly funded than most purely scientific conferences which usually are run on tighter budgets than the CRTI symposium.

CONCLUSIONS

The dynamic work atmosphere at DRDC Suffield led the members of the BCDRC to the conclusion that forming or expanding links with research academia would be beneficial to the universities and to DRDC Suffield. These links could lead to collaboration.

The project to improve infrastructure at DRDC Suffield is a long-term initiative. Suffield scientists have demonstrated the ability to develop effective BCD tools that other organizations in Canada are incapable of producing. It would be unfortunate if the defence laboratories were starved for funds because of a government policy for emphasizing support for industrial and academic research.

Servicemen and service women working in the BCD field are generally enthusiastic about it. The establishment of reserve CBRND Companies will increase pressure on CFNBCS and the CTTC in Suffield to train the growing numbers. The new companies will be a boost to national security against a CBRN threat.

For DRDC to become the S&T arm of PSEPC will be beneficial to national CBRN Defence. However, to protect the Canadian public in the case of a CBRN terrorist attack, approval from HC for the use of MCM is necessary. PSEPC might find it beneficial to work closely with the CF Health Services Group Operational Medicine (CF H Svcs Gp Op Med) Section which has considerable experience with HC in gaining access to unlicensed CBRN medical products via the HC Special Access Programme and in the development and filing of CBRN medical product regulatory submissions.

RECOMMENDATIONS

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.

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.