JIC Current Intelligence Group Assessment, 28 October 2002

GLOBAL CHEMICAL AND BIOLOGICAL WEAPONS SURVEY

Key Judgements

I. There are few significant technical problems in the production or dissemination of many chemical warfare (CW) and biological warfare (BW) agents.

II. Ballistic missiles and most conventional munitions, such as artillery shells, rockets and aerial bombs can be modified to deliver agent. It can also be sprayed from land or marine platforms and a variety of aerial systems.

III. BW agents are less suitable for some battlefield roles than CW because they generally act more slowly. CBW could play an increasing role in military thinking, especially asymmetrically. The use of even small quantities of CW could help redress conventional superiority on the battlefield. BW agents have the potential for covert, deniable delivery which is particularly suited to terrorist-type attacks and asymmetric warfare.

IV. The potential for proliferation of CBW is increasing. Arms control treaties and export regimes hinder, but cannot stop these trends.

V. There is a growing risk of secondary proliferation between countries of concern. […]

VI. States are increasingly using sophisticated denial, deception and concealment methods, including the use of dual-use and/or underground facilities, to hide their activities.

GLOBAL CHEMICAL AND BIOLOGICAL WEAPONS SURVEY

At the request of MOD this paper provides an overview survey of national chemical and biological weapons programmes.

Introduction

1. Production of many chemical warfare agents is well within the capabilities of any country with a chemical industry. There are few significant technical problems in the production or dissemination of most chemical warfare (CW) and biological warfare (BW) agents. Equipment and materials used in the production of CW and BW agents are subject to international export controls imposed by some countries but all are dual use. They can therefore be imported for legitimate purposes. Once in country it is difficult to prevent such equipment and materials being diverted to offensive CBW programmes.

2. Ballistic missiles and most conventional munitions, such as artillery shells, mortar rockets, aerial bombs and land mines, can be modified to deliver agent, which can also be sprayed from land or marine platforms and a variety of aerial systems. The very large quantities of CW agent required for a significant military attack (of the order of one tonne, optimally disseminated, is needed to contaminate 2.5 sq km of territory) mean that a large-scale delivery capability is needed. The effectiveness of an attack depends on the lethality and persistency of the agent, the delivery system, terrain, weather conditions, and protection available to the targets.

3. BW agents are more potent than CW agents, cheaper, easier to produce and usable against a wider range of targets. A country does not need a sophisticated biotechnology industry to produce BW. Their potency means that the quantities required for an effective large-scale attack are relatively small – just a few kilograms – and have the potential to cause more casualties. If effectively disseminated in unprotected urban population centres some BW agents could cause casualties on a scale similar to that of a nuclear attack. Of particular concern are agents that are not just virulent, but highly infectious and capable of causing an epidemic. Agent can be delivered by missile, aircraft or even covertly by an individual. CW and BW can also be used to attack livestock and crops (such acts of economic sabotage could also have a strategic impact), or to kill individuals. BW agents, however, are less suitable for some battlefield roles than CW because they generally act more slowly and effective delivery is difficult to guarantee.

4. Many BW agents can be produced cheaply and within weeks in a small facility (in contrast to the bulk supplies of chemicals and large industrial-scale facilities needed to produce large quantities of CW agent) with limited knowledge of microbiology and the basic laboratory equipment found in many developing countries. Many potential BW agents are legitimately studied in these, and other developed countries, for public health reasons where the diseases are endemic. All of the materials required for BW agent production have uses in civil facilities, making such trade difficult to regulate.

National CBW capabilities

5. The following paragraphs set out a summarised assessment of the status of key CBW programmes. Such programmes can contain defensive (for the protection of own troops and population) and offensive elements. The defensive elements are legitimate, (see box) although those countries that wish to maintain an offensive programme often conduct some of their offensive activities under the guise of defensive work.

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8. We continue to judge (JIC paper 15 March 2002) that **Iraq** has an offensive CW programme and intelligence indicates that it has continued to produce chemical agent. Iraq used CW on a large scale during its war with Iran in the 1980s and Saddam Hussein has also used CW to suppress the Kurdish population. Despite UNSCOM's efforts, we believe Iraq retained some production equipment, small stocks of agent precursors, and small quantities of agents and weapons, including warheads for the Al Hussein 650km ballistic missile. Apart from this hidden capability, Iraq also retained documentation on CW agent production and experienced key personnel. Despite the constraints that have been put in place to restrict Iraq's access to dual use equipment, the chemical industry has been built up and could be used to support an offensive CW programme.

Arms Control

- The 1925 **Geneva protocol** prohibited the use of chemical agents in war, but not production, storage and testing.
- It has been supplemented by the 1972 **Biological and Toxin Weapons Convention (BTWC)** and the 1993 **Chemical Weapons Convention (CWC)**. Both prohibit the production, acquisition, stockpiling, retention and transfer of agents for anything other than peaceful/defensive purposes.
- Several states which are believed to have current offensive CW and/or BW programmes are members of CWC or BTWC.
- Both the CWC and BTWC promote the sharing of knowledge and technology amongst members for peaceful purposes.
- The **Australia Group** (an export control body), to which the UK belongs, restricts the movement of selected items of CBW utility to countries which are known or believed to divert them to offensive CBW programmes, irrespective of whether they are BTWC or CWC members.

9. We assess that Iraq has continued with an offensive BW programme. Research, development and production is assessed to continue under cover of a number of outwardly legitimate institutes and covert facilities. Confirmed intelligence reveals that transportable BW production facilities have been constructed. Iraq has possibly already made significant quantities of BW agents and intelligence indicates it has continued to produce biological agents. We judge that Iraq is self sufficient in its BW programme and currently has available, either from pre Gulf War stocks or more recent production, anthrax spores, botulinum toxin, aflatoxin, and possibly plague and ricin.

10. Iraq also researched a number of other agents within its offensive programme, some of which may be available for production. Iraq can weaponise CBW agents into missile warheads, bombs, artillery rockets and shells, and could adapt helicopters, manned and un-manned aircraft fitted with sprayers, to disseminate agent. CBW plays an important role in Iraqi military thinking. As compensation for its conventional military weakness Iraq is determined to retain CBW in order to dominate its neighbours. Intelligence indicates that Iraq is ready to use CBW weapons and that munitions could be with military units and ready for firing within 20-45 minutes.

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Future Trends

25. **The potential for proliferation of CBW is increasing.** As chemical and biotechnological infrastructures develop within countries it becomes increasingly easy to hide programmes in an ostensibly legitimate commercial industry and provide justification for the procurement of CBW applicable technology and equipment. Arms control treaties and export regimes work against, but cannot stop these trends. In addition, states are increasingly using sophisticated denial, deception and concealment methods, including the use of dual-use and/or underground facilities, to hide their activities.

26. There is a **growing risk of secondary proliferation** of technical knowledge and experience as well as equipment and hardware between countries of concern. […]

27. **The delivery options for CBW are developing.** The typical CW and BW munition has tended to be the artillery shell, mortar round and aerial bomb. The development of chemical and biological warhead options for ballistic missiles is increasing as states strive for longer-range and more accurate delivery means. Other potential delivery means include cruise missiles, and spray systems on land or marine platforms and a variety of aerial systems such as helicopters, unmanned aerial vehicles (UAVs) and aircraft.

28. We judge that **CBW weapons could play an increasing role in military thinking**, especially asymmetrically. The use of even small quantities of CW could help redress conventional superiority on

the battlefield and persistent agents could be used to help shape the battlefield to the user's advantage denying space and territory to an opponent's military forces. By virtue of the relatively small quantities of some agents that are required to produce large effects, and the delay between delivery and effect, BW agents have the potential for covert, deniable delivery which is particularly suited to terrorist-type attacks and asymmetric warfare. Also, the trend could be towards the development of non-lethal agents or agents designed to have economic impact (anti-crop, anti-livestock) which might complicate the retaliatory options of the target country.

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