

United States exports of biological materials to Iraq

Compromising the credibility of international law

By [Geoffrey Holland](#)

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Abstract

This paper argues that the United States breached the Biological and Toxin Weapons Convention (BTWC) by supplying warfare-related biological materials to Iraq during the 1980s, at a time when that nation was at war with its neighbour, Iran. It is further argued that the United Kingdom has an obligation, not least due to its published policy on the issue, to formally report this breach to the United Nations Security Council. The case is made that if the UK, as a State Party to the BTWC, will *not* report this matter, then the Convention is not the legally binding international instrument it is claimed to be, thus compromising the credibility of international law. It may come as some surprise to the reader to learn – and as far as the author is aware this information has not previously been made public – that the anthrax threat from Iraq, a repeatedly cited reason for the 2003 invasion of that country, actually originated from a dead cow in South Oxfordshire.

Introduction

In the study of law within International Relations, one of the first questions posed is: “Is international law really law?”[1] Based on the content of this paper, the answer would have to be a resounding “no”. The reason for this answer will be clarified in the following pages, which provide evidence of the export from the US to Iraq of the very biological materials that were later claimed – due to Iraq’s possession of them – to be the reason for the invasion of Iraq by the US and Britain in 2003.

Louis Henkin’s vague statement: “Almost all nations observe almost all principles of international law and almost all of their obligations almost all of the time”[2] may well be the fuzzy trend in a range of less vital matters, but insofar as the subject of this paper is concerned – and as a result of which, war and large scale loss of life have resulted – international law appears as a sham. It is described in academic literature as “a body of rules which binds states and other agents in world politics in their relations with one another”,[3] but if international law is really law, then where are its teeth, and if it has no teeth, then what is its point?

The subject of this paper hinges on a particular international treaty – the Biological and Toxin Weapons Convention – held to be a principal international and legally binding instrument, a highly dubious claim, based on the evidence gathered here. According to Article 38 of the Statute of the International Court of Justice, treaties are a main source of international law,[4] so it seems reasonable to contend that if a treaty is simply disregarded by the States which are party to it, then a main source of international law is discredited and, thus, the credibility of international law is very seriously compromised indeed.

The paper will first examine the wording of the BTWC before providing evidence in support of the twin arguments that not only has the Convention been breached by the US, but that the UK has an obligation to formally report that breach to the UN Security Council. The focus will then narrow specifically to anthrax, including revealing the historical origin of this particular threat – fear of which was repeatedly cited by the British Government as a primary reason for joining the US-led invasion.

The Biological and Toxin Weapons Convention

Properly entitled *The Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction*,

the BTWC was signed by Britain and the US on 10 April 1972 and ratified by both nations on 26 March 1975 – the day the Convention came into force.[5] The Treaty has been described as the first to ban an entire class of weapons, prohibiting, as it claims to do, the development, production, stockpiling and acquisition of biological weapons, and supplementing the prohibition on their use as contained in the 1925 Geneva Protocol.[6]

So far so good – at least the promise is there – but it is here argued that Article III of the BTWC has been breached by the US and that under Article VI of the Convention, Britain, having knowledge of that breach, should formally report the matter to the UN Security Council. Not only does this seem an obvious moral responsibility, but it corresponds with published UK policy. However, the British Government has refused to adhere to its own policy when it comes to reigning in its ally the United States, and the “intimate connection between the effectiveness of international law in international society and the functioning of the balance of power”[7] seems to mean, in fact, that international law is wholly *ineffective* when faced with US power as its adversary.

Rather than examining the whole document, we are here concerned with just three of the BTWC’s fifteen Articles – Articles I, III and VI, reproduced as follows:

Article I: Each State Party to this Convention undertakes never in any circumstances to develop, produce, stockpile or otherwise acquire or retain:

- (1) Microbial or other biological agents, or toxins whatever their origin or method of production, of types and in quantities that have no justification for prophylactic, protective or other peaceful purposes;
- (2) Weapons, equipment or means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict.

Article III: Each State Party to this Convention undertakes not to transfer to any recipient whatsoever, directly or indirectly, and not in any way to assist, encourage, or induce any State, group of States or international organizations to manufacture or otherwise acquire any of the agents, toxins, weapons, equipment or means of delivery specified in article I of this Convention.

Article VI: (1) Any State Party to this convention which finds that any other State Party is acting in breach of obligations deriving from the provisions of the Convention may lodge a complaint with the Security Council of the United Nations. Such a complaint should include all possible evidence confirming its validity, as well as a request for its consideration by the Security Council.

(2) Each State Party to this Convention undertakes to cooperate in carrying out any investigation which the Security Council may initiate, in accordance with the provisions of the Charter of the United Nations, on the basis of the complaint received by the Council. The Security Council shall inform the States Parties to the Convention of the results of the investigation.

Article III is quite clear: there are to be no transfers and no state, or any other entity, is to be assisted in the manufacture or acquisition of biological weapons by any State Party to the Convention. That a range of biological materials was transferred to Iraq from the United States is certain – we shall come to the evidence of that in a moment – but Article III first directs us back to the specification in Article I in order to determine the relevance of those transfers under the terms of the Convention. According to Part (1) of Article I there are three factors to consider, namely:

- (i) Types of material.
- (ii) Quantities.
- (iii) Justification for prophylactic, protective or other peaceful purposes.

Regarding the first of these, there can be no doubt that the *types* of materials exported to Iraq are of the *greatest possible* concern, as they comprise some of the most deadly materials on earth. One batch of anthrax alone makes this point, as shall be shown.

Regarding the second factor, in the case of biological materials such as anthrax *quantities* are irrelevant, so long as the material may be replicated from the amount supplied – however small or large that amount may be. Just to confirm this, Dr Desmond Turner MP, a biochemist, has stated that “the biological materials exported from the US to Iraq were quite sufficient to fuel a biological weapons programme, as a starter culture can be scaled up to any quantity”.[8]

So, having dispensed with (i) and (ii), we are left with factor (iii), which should be the only remaining factor to be dealt with prior to the issuance of a formal complaint to the UN Security Council regarding the subject US exports.

It could, of course, be said that there is potential justification for *any substance whatsoever* to be exported to *any country whatsoever*, for the purposes of research. However, if this is the argument in defence of the US exports – and there would seem to be no other – then what is the point of Article III in the first place? Should we conclude, thirty years after the BTWC came into force, that the Article was inserted into the document by its drafters for no reason, and that there would never be grounds for invoking it? It is certainly hard to envision any circumstances more extreme than those which have just taken place in Iraq, and the loss of life and global disruption that have occurred on account, as was alleged, of Iraq’s possession of weapons of mass destruction, and in particular anthrax. It is here contended that if these extreme circumstances are not of sufficient import to at least warrant investigation, then none could ever be, and in that case the Convention is meaningless and should not be regarded as law at all.

The unequivocal evidence of the Riegle Report

'The Riegle Report' details the findings of US Senate hearings chaired by Senator Donald Riegle in 1994 - hearings which were set up to investigate 'Gulf War Syndrome',

a term coined by Senator Riegle to describe the mystery illnesses of US military Veterans following the first Gulf War in 1991. Among its many other findings, the Report provides precise invoicing details, including eleven addresses in Iraq to which warfare-related biological materials were sent by the American Type Culture Collection (ATCC) between February 1985 and November 1989.[9] Anthrax, which will be the prime example used for illustration in this paper, was supplied in May 1986 and September 1988, ostensibly to the Ministry of Higher Education and the Ministry of Trade.

Figure 1

Extract from the Riegle Report showing that Iraq's anthrax was shipped from the United States.

Date: May 2, 1986

Sent to: Ministry of Higher Education. Materials Shipped:

Bacillus Anthracis Cohn (ATCC 10)

Batch # 08-20-82 (2 each)

Class III pathogen.

Bacillus Subtilis (Ehrenberg) Con (ATCC 82)

Batch # 06-20-84 (2 each)

Clostridium botulinum Type A (ATCC 3502)

Batch# 07-07-81 (3 each)

Class III Pathogen

Clostridium perfringens (Weillon and Zuber)

Hauduroy, et al (ATCC 3624)

Batch# 10-85SV (2 each)

Bacillus subtilis (ATCC 6051)

Batch# 12-06-84 (2 each)

Francisella tularensis var. tularensis Olsufiev

(ATCC 6223)

Batch# 05-14-79 (2 each)

Avirulent; suitable for preparations of

diagnostic antigens.

Clostridium tetani (ATCC 9441)
Batch 03-94 (3 each)
Highly toxigenic.

Clostridium botulinum Type E (ATCC
9564) Batch# 03-02-79 (2 each)
Class III pathogen

Clostridium tetani (ATCC 10779)
Batch# 04-24-84S (3 each)

Clostridium perfringens (ATCC 12916)
Batch# 08-14-80 (2 each)
Agglutinating Type 2.

Clostridium perfringens (ATCC 13124)
Batch# 08-14-80 (3 each)
Type A, alpha-toxigenic, produces

lecithinase C.J. Appl,

Bacillus Anthracis (ATCC 14185)

Batch# 01-14-80 (3 each) G.G. Wright (Fort Detrick) V770-NPI-R.

Bovine anthrax, Class III pathogen

Bacillus Anthracis (ATCC 14578)
Batch# 01-06-78 (2 each)
Class III pathogen.

Bacillus megaterium (ATCC 14581)
Batch# 04-18-85 (2 each)

Bacillus megaterium (ATCC 14945)
Batch# 06-21-81 (2 each)

Clostridium botulinum Type E (ATCC 17855)
Batch# 06-21-71
Class III pathogen.

Bacillus megaterium (ATCC 19213)
Batch# 3-84 (2 each)

Clostridium botulinum Type A (ATCC 19397)
Batch# 08-18-81 (2 each)
Class III pathogen

Brucella abortus Biotype 3 (ATCC 23450)
Batch# 08-02-84 (3 each)
Class III pathogen

Brucella abortus Biotype 9 (ATCC 23455)
Batch# 02-05-68 (3 each)
Class III pathogen

Brucella melitensis Biotype I (ATCC 23456)
Batch# 03-08-78 (2 each)
Class III pathogen

Brucella melitensis Biotype 3 (ATCC 23458)
Batch# 01-29-68 (2 each)
Class III pathogen

Clostridium botulinum Type A (ATCC 25763)
Batch# 8-83 (2 each)
Class III pathogen

Clostridium botulinum Type F (ATCC 35415)
Batch# 02-02-84 (2 each)
Class III pathogen

The list in Figure 1 is merely one extract from the invoice details supplied to Senator

Riegle by the ATCC. One item is particularly notable in this list, for it is the strain of anthrax which will be shown to be the exclusive strain of anthrax used in the Iraqi biological weapons programme. Before focusing on anthrax, however, consider the range of materials exported to Iraq. The Riegle Report confirms that from 1985:

“Pathogenic (meaning ‘disease producing’), toxigenic (meaning ‘poisonous’), and other biological research materials were exported to Iraq pursuant to application and licensing by the U.S. Department of Commerce....These exported biological materials were not attenuated or weakened and were capable of reproduction. According to the Department of Defense’s own Report to Congress on the Conduct of the Persian Gulf War, released in April

1992: "By the time of the invasion of Kuwait, Iraq had developed biological weapons. It's advanced and aggressive biological warfare program was the most advanced in the Arab world... The program probably began late in the 1970's and concentrated on the development of two agents, botulinum toxin and anthrax bacteria... Large-scale production of these agents began in 1989 at four facilities near Baghdad. Delivery means for biological agents ranged from simple aerial bombs and artillery rockets to surface-to-surface missiles." [10]

The Report finds that among the US exports to Iraq were the following, and it notes their associated disease symptoms: [11]

- **Bacillus Anthracis:** anthrax is a disease producing bacteria identified by the Department of Defense in The Conduct of the Persian Gulf War: Final Report to Congress, as being a major component in the Iraqi biological warfare program. Anthrax is an often-fatal infectious disease due to ingestion of spores. It begins abruptly with high fever, difficulty in breathing, and chest pain. The disease eventually results in septicemia (blood poisoning), and the mortality is high. Once septicemia is advanced, antibiotic therapy may prove useless, probably because the exotoxins remain, despite the death of the bacteria.
- **Clostridium Botulinum:** a bacterial source of botulinum toxin, which causes vomiting, constipation, thirst, general weakness, headache, fever, dizziness, double vision, dilation of the pupils and paralysis of the muscles involving swallowing. It is often fatal.
- **Histoplasma Capsulatum:** causes a disease superficially resembling tuberculosis that may cause pneumonia, enlargement of the liver and spleen, anemia, an influenza-like illness and an acute inflammatory skin disease marked by tender red nodules, usually on the shins. Reactivated infection usually involves the lungs, the brain, spinal membranes, heart, peritoneum, and the adrenals.
- **Brucella Melitensis:** a bacteria which can cause chronic fatigue, loss of appetite, profuse sweating when at rest, pain in joints and muscles, insomnia, nausea, and damage to major organs.
- **Clostridium Perfringens:** highly toxic bacteria, which cause gas gangrene. The bacteria produce toxins that move along muscle bundles in the body killing cells and producing necrotic tissue that is then favorable for further growth of the bacteria itself. Eventually, these toxins and bacteria enter the bloodstream and cause a systemic illness.

Figure 1 provides details of a single shipment sent on 2 May 1986. Note the emboldened entry for **Bacillus anthracis (ATCC 14578)**, which the Iraq Survey Group has since determined was the exclusive strain of anthrax used in the Iraqi biological weapons programme. [12] This, then, is the source of the anthrax threat which was repeatedly promoted both inside Parliament and through the news media to the British People, prior to the decision being made for Britain to take part in the invasion of Iraq.

UK policy and the avoidance of responsibility

According to a House of Commons Library Research Service paper, produced by the International Affairs and Defence Section in May 2003, one reason for the British

Government's failure to respond to calls to report these US exports to the UN Security

Council is that under the terms of the BTWC (article VI) a State Party "may" lodge a complaint with the Security Council if another State Party is in breach, but is under no "obligation" to do so.[13]

However, in its Biological Weapons Green Paper of April 2002 - presented to Parliament by command of Her Majesty the Queen - the Government confirmed that under UK Policy, the Biological and Toxin Weapons Convention is a "principal international and legally binding instrument" and "those at every level responsible for any breach of international law will be held personally accountable".[14] It is here argued, therefore, that the "will" in this UK policy necessarily turns the "may" of the Convention's Article VI into a "will".

During the last two sessions of Parliament, 162 of Britain's 655 sitting MPs shared this view and signed two House of Commons Motions to the effect,[15] - a fact which, strangely, has been entirely overlooked by the mainstream news media. The matter has also been raised in the House of Lords, where on 15 March 2004, after reading the first of these Motions (EDM 300), the Bishop of Oxford asked the Government:

"Whether, in accordance with the Biological and Toxin Weapons Convention, they will report to the Security Council of the United Nations the reported sale of biological weapons to Iraq by the United States." [16]

In response, Foreign Office Minister Baroness Symons replied as follows:

"My Lords, no. The materials were exported by the United States in accordance with export controls in place at the time. The United States did not believe that they would be used for anything other than legitimate research purposes and therefore did not knowingly export the materials to assist a biological weapons programme. There are therefore no grounds for reporting a breach of the Biological and Toxin Weapons Convention." [17]

Thus, the Government acknowledges that the materials were sent to Iraq from the United States and that a breach of the Convention would be reported if there were grounds for doing so, but it avoids the responsibility by providing two inadequate reasons for *not* doing so. Consider the two parts of the Minister's answer:

1. "The materials were exported by the United States in accordance with export controls in place at the time"

The implication here is that some form of US export controls were in place, but a report prepared in 1994 by the United States General Accounting Office (GAO) - the audit, evaluation and investigative arm of Congress - for the Chairman of the Foreign Affairs

Committee shows this to be false:

"Because Iraq was removed from antiterrorism controls and because controls on missile technology and chemical and biological warfare were not in place until the late 1980s, few foreign policy controls were placed on exports to Iraq during the 1980s...this, along with the lack of national security controls, resulted in a long list of high technology items being sold to Iraq during the 1980s." [18]

Just to be clear on this, the United States' own General Accounting Office says that controls "were not in place". The House of Commons Library Research Service also quotes this same GAO document, saying that US policy "was not constrained by export controls until the late 1980s - early 1990s".[19]

2. "The United States did not believe that they would be used for anything other than legitimate research purposes and therefore did not knowingly export the materials to assist a biological weapons programme"

It is all very well for the Government to make this claim but it is now known that the materials were licensed for export by the US Department of Commerce at a time when

the United States secretly supported Iraq in its eight-year war with Iran, and that in

February 1982 the US Administration removed Iraq from its list of 'terrorist states' in order to do so.[20] Furthermore, there is the astonishing fact that, among the various agencies of the Government of Iraq listed in the Riegle Report, one repeated recipient of these deadly materials was no less than the Iraqi nuclear weapons research facility, the Iraq Atomic Energy Commission.[21] So, on what grounds is this UK Government assertion made, and how can the conclusion possibly be reached that between 1985 and 1989 anthrax and other warfare-related biological materials were exported from the US to Iraq for "legitimate research purposes"? The claim sounds highly implausible and under the terms of the BTWC the only entity charged with conducting an investigation into its veracity is the UN Security Council.

Some historical facts [22]

The extent of US knowledge during the 1980s is revealed in a 1997 CIA report:

"CIA's support for US military forces in the Gulf war began long before Iraq invaded Kuwait. CIA carefully monitored Iraqi military developments throughout the 1980s and wrote hundreds of reports for US political and military leaders on the threat Iraq posed to its neighbours, Iraq's relations with terrorists and insurgents, and Iraq's acquisition of weapons and military technology. Much of CIA's basic research and reporting from before the invasion proved vital to US military forces deploying to the Gulf....CIA provided the US military copies of published CIA research papers on Iraq. Some of the topics included: The status and capabilities of Iraq's ballistic missile forces and its chemical, biological, and nuclear weapons programs." [23]

As noted, the CIA "carefully monitored Iraqi military developments throughout the 1980s and wrote hundreds of reports for US political and military leaders", and its reports included: "The status and capabilities of Iraq's...biological ...weapons programs". This explains why, when countering Iraq's 1990 invasion of Kuwait, both the US and the UK were sufficiently well-informed that they prepared their troops for biological attack, as described in another GAO report of April 2001:

"Both the United Kingdom and United States considered biological warfare a threat during the Gulf War.....both the United States and United Kingdom regarded anthrax and botulinum toxin as potential threats.....the United States and United Kingdom made widespread use of vaccines specific to particular biological agents that they believed Iraq might have employed.....the US inoculated certain troops with a vaccine for botulinum toxin.....both the

US and UK made extensive use of drugs and vaccines. Both took medical countermeasures (i. e., drugs and vaccines) against exposures to biological and chemical warfare agents..."[24]

Similarly, according to the 1994 Riegler Report:

"The United States military planned for the use of chemical and biological weapons by Iraq by: discussing the chemical/biological threat in pre-war threat assessments; designating chemical/biological production facilities priority bombing targets; conferring with the U.S. national laboratories about the hazards associated with the bombings of the chemical, biological and nuclear weapons facilities; made preparations for the expected use of chemical/biological weapons by Iraq, including: acquiring German-made FOX NBC detection surveillance vehicles shortly before the war; administering anthrax vaccines, an experimental botulinum toxin vaccine, and pyridostigmine bromide as a nerve agent pretreatment pill."[25]

It seems perfectly clear that those at the highest level in the US were aware of the Iraqi biological weapons programme. By January 1988, reports of Iraqi germ warfare capabilities were appearing in the US press, including in *Jane's Defense Weekly*,[26] America's leading independent provider of intelligence and analysis on national and international defence. "Everybody knows", a US Government official was quoted as saying, "the Iraqis are trying to develop biological weapons".[27]

In March 1989, Secretary of State James Baker had received a memo from the State Department, informing him that Iraq "is working hard at chemical and biological weapons",[28] and by then the statement concerning *chemical* weapons was rather old news - a US Department of State memorandum to the Secretary of State, dating from five years earlier, entitled "Iraq Use of Chemical Weapons", opens with the words: "We have recently received additional information confirming Iraqi use of chemical weapons".[29] The memorandum refers to Iraq's "almost daily" use of chemical weapons and states that the issue will be on the agenda of a National Security Council meeting at the White House that same week.

The House of Commons Library Research Service corroborates the fact:

"Indications that chemical weapons were being used in the conflict between Iran and Iraq began to emerge during late 1983 after a number of Iranian casualties suffering from severe burns and lung damage were evacuated to Western Europe for treatment.....In March 1984 the UN Secretary-General sent a team of specialists to investigate Iranian claims in an attempt to secure an impartial and objective opinion. The team, in a unanimous verdict, reported that chemical weapons had indeed been used against Iranian troops."[30]

This hardly sounds like a regime to which the export of deadly warfare-related biological agents should have been approved, yet the United States Department of Commerce did so time and time again. Why? There are numerous press references that indicate a motive: The US was actively supporting Iraq in its war with Iran. Take, for example, a December 1986 article by Bob Woodward in the Washington Post:

"The Central Intelligence Agency has been secretly supplying Iraq with

detailed intelligence, including data from sensitive U.S. satellite reconnaissance photography, to assist Iraqi bombing raids on Iran's oil terminals and power plants in the war between the two nations, according to informed sources. The information has been flowing to Iraq for nearly two years.”[31]

In case there is any doubt that direct involvement in the arming and support of Saddam

Hussein extended to the very highest level in the United States, in a sworn declaration in 1995 to the US District Court, Southern District of Florida, former US National Security

Council Advisor (1982-1987) Howard Teicher, who accompanied President Reagan's

Middle East envoy Donald Rumsfeld to Baghdad in 1983, stated:

“While a Staff Member to the National Security Council, I was responsible for the Middle East and for Political-Military Affairs. During my five year tenure on the National Security Council, I had regular contact with both CIA Director William Casey and Deputy Director Robert Gates...CIA Director Casey personally spearheaded the effort to ensure that Iraq had sufficient military weapons, ammunition and vehicles to avoid losing the Iran-Iraq war. Pursuant to the secret NSDD (National Security Decision Directive), the United States actively supported the Iraqi war effort by supplying the Iraqis with billions of dollars of credits, by providing U.S. military intelligence and advice to the Iraqis, and by closely monitoring third country arms sales to Iraq to make sure that Iraq had the military weaponry required. The United States also provided strategic operational advice to the Iraqis to better use their assets in combat. For example, in 1986, President Reagan sent a secret message to Saddam Hussein telling him that Iraq should step up its air war and bombing of Iran. This message was delivered by Vice President Bush who communicated it to Egyptian President Mubarak, who in turn passed the message to Saddam Hussein. Similar strategic operational military advice was passed to Saddam Hussein through various meetings with European and Middle Eastern heads of state. I authored Bush's talking points for the 1986 meeting with Mubarak and personally attended numerous meetings with European and Middle East heads of state where the strategic operational advice was communicated.”[32]

The conflation of culture collection strain samples and “weapons”

Over a period of several weeks, this writer has corresponded with some of the world's leading authorities on anthrax. These include Milton Leitenberg, Senior Research Scholar at the University of Maryland and Professor Emeritus Martin Hugh-Jones, of the School of Veterinary Medicine, Louisiana State University. The reason for the specific focus on anthrax is due to the fact that on 30 September 2004, when the findings of the Iraq Survey Group were published, it was revealed that the exclusive strain of anthrax used in the Iraqi biological weapons programme was ATCC strain 14578 – the anthrax strain shipped to Iraq by the American Type Culture Collection on 2 May 1986.[33] To quote the Iraq Survey Group Report: “Iraq declared researching different strains of B. anthracis, but settled on the American Type Culture Collection (ATCC) strain 14578 as the exclusive strain for use as a BW”. [34] Being as the threat we were told we faced from Iraq (at one point within 45 minutes) was, according to the British Government, principally the threat of anthrax, it follows that this specific strain – the exclusive strain used – constituted that very threat.

Having already read an earlier report published by this writer, Milton Leitenberg responded

to an enquiry by e-mail thus:

“That there were no specific US BW export controls in place at the time – which your report notes, does not as you there claim, turn it into a violation. Your report also conflates culture collection strain samples and “weapons” on several occasions, as I recall. I will grant you two things: given that there was a war on, and that Iraq had used CW, and that one of the locations Iraq listed as a recipient was its Atomic Energy Commission, it would have been wiser to send them nothing.”[35]

Mr Leitenberg is an acknowledged expert on this subject and, of course, he is quite correct in noting that the absence of specific US BW export controls does not mean that the action by the ATCC constituted a violation. No, it was the absence of US BW export controls that was the fault, and the US Administration must, therefore, bear the blame for permitting the exports. Otherwise, what is the point of signing up to and ratifying what is held to be an international legally binding instrument? Either it *is* legally binding on states or it is not. It obviously cannot be both, and if it is *not* legally binding it can hardly be regarded as law.

As far as conflating culture collection strain samples and “weapons” is concerned, conflation certainly seems justifiable in respect of anthrax strain ATCC 14578, for this strain has a substantial military pedigree which is well known to the US Government, as will shortly be detailed. Indeed, its military potential is so well documented that anyone with any sense would never have allowed it to be sent to Iraq. If we assume that the US Government has any sense – which, presumably, the Administration itself would argue – then by logical extension the suspicion arises that the decision to allow it was a conscious decision. And if not, then at the very least it was a case of gross negligence.

In his 2004 book *The Problem of Biological Weapons*, Milton Leitenberg examines the question of offensive/defensive distinctions in biological weapons-related research, noting, among other comparative examples, that the use of pathogenic or toxic strains is an indication of a biological weapons facility, whereas the use of non-pathogenic or non-toxic strains is an indication of a legitimate facility (ie: one engaged in research for ‘peaceful’ purposes).[36] Another comparison made is between military/state funded activities, which he suggests are indicative of a BW facility, as against private/corporate funded activities, which suggest a legitimate facility. These examples are cited because the biological materials exported to Iraq from the United States *included* pathogenic or toxic strains, and these were sent by ATCC to *agencies of the government of Iraq*. [37]

Mr Leitenberg inserts a useful schema in his book, which he notes was presented in testimony to the US Congress in 1989 by Colonel David Huxsoll, a former director of the US Army Medical Research Institute of Infectious Diseases (USAMRIID), [38] and which is reproduced here as figure 2. This he suggests is a schematic representation of a paragraph in a 1969 National Security Study Memorandum – ie: some years before the subject materials were exported. It is considered relevant to the case made herein because it shows where the separation comes between what may be considered offensive (ie: *prohibited* by the BTWC) and defensive (ie: *permitted* by the BTWC). Note that attenuated (or weakened) materials are in the permitted category, whereas more virulent materials are in the prohibited category.

It should be noted that the 1994 Riegle Report states that the ATCC exports “were *not* attenuated or weakened and were capable of reproduction”, [39] an observation also made by the Bishop of Oxford in the House of Lords ten years later:

“Those who know about these matters point out the significance of the phrase that these biological materials ‘were not attenuated or weakened and were capable of reproduction’. This seems to suggest that they might have been used for other than purely therapeutic purposes.”[40]

An extremely interesting point in Mr Leitenberg’s book is his reference to research reports which were mysteriously declassified in the mid 1980s (corresponding with the period of the subject exports to Iraq) and subsequently reclassified again. As he puts it:

“How and why these reports should ever have been declassified in the first place is a mystery. They most certainly should never have been released at all. They are not “basic science,” but frequently technical production and process information, including the detailed processes for producing some of the most dangerous BW pathogens that exist. Their previous declassification makes no more sense than would the release of detailed specifications for producing a nuclear weapon....it is absolutely certain that the reports which had been released would directly and substantially assist the development of any nation’s offensive BW program.”[41]

One cannot help but wonder whether these documents may have been de-classified in order to aid the Iraqi biological weapons programme. After all, it is now beyond doubt that at that time the US Administration was covertly supplying considerable assistance to Iraq in its war against Iran. Without a paper trail, such conjecture will remain filed under the heading of ‘conspiracy theory’ but this writer is here reminded of an answer given by the UK’s Secretary of State for Defence on 1 July 2004, in answer to a Parliamentary Question from Mike Hancock MP. This exchange went as follows:

Mike Hancock MP: “To ask the Secretary of State for Defence pursuant to the answer of 23 June

2004, Official Report, column 1446W on Iraq, what the origin was of the foreign technology and technical assistance critical to the progress of Iraqi weapons of mass destruction.”

Rt Hon Geoff Hoon MP: “I have already confirmed that Iraq was holding discussions with North Korea, and Her Majesty’s Government 2002 dossier on Iraq’s weapons of mass destruction mentions an Indian chemical engineering company. *I am withholding further information under exemption 1 (Defence, Security and International Relations) of the Code of Practice on Access to Government Information.*” [42]

Why was this information withheld? As the quoted ‘exemption 1’, tends to be used as a blocking device when US or UK military interests are involved, and as Mr Hoon had no problem referring to North Korea or to an Indian company, the inference seems to be that either Britain or the US supplied the “foreign technology and technical assistance critical to the progress of Iraqi weapons of mass destruction”.

And there is a further twist to the intrigue which demonstrates why anthrax strain 14578 should never have been sent to Iraq on 2 May 1986, and suggests that someone may well have known what they were doing by supplying it, and/or that failing to prevent that supply was a matter of gross negligence on the part of the US Government. It also shows, however, Britain’s own responsibility in the matter – a responsibility thus far hidden from the British People: the anthrax came from Britain in the first place.

The British origin of anthrax strain 14578 - "Vollum" strain

Anthrax strain 14578 may be found listed in past ATCC catalogues, in which the company's ordering procedures explain that any request for it (and other pathogenic agents) "should be made on the institution's official stationery (purchase order) and signed by the director of the institution, the chairman of the department concerned, or the scientist in charge of the project".[43] So, presumably, ATCC files will hold copies of Iraq's original purchase orders. Such back-up documents do not appear to have been supplied to Senator Riegle in 1994, but should now be produced during a proper investigation under the auspices of the United Nations Security Council.

Each strain in the ATCC catalogue is listed together with its known history - or rather the individuals who have maintained the strain over the years are named in succession. Anthrax strain 14578 appears to have been deposited with ATCC after being held by P H A Sneath, H M Darlow, P Fildes, R L Vollum, and originally Dunkin.[44] So, who are these people through whose hands this anthrax apparently passed en-route to the ATCC and thence to Saddam Hussein's Iraq, from where it became the principal element in the widely trumpeted 'forty-five minute threat' which provided the pretext for the invasion of Iraq in 2003?

Prof P H A Sneath, now of Leicester University, has recently stated (by e-mail) that he was never in charge of the strain, or a collection that included it. Instead, he suggests that "it was probably sent to ATCC by the National Collection of Type Cultures, Central Public Health Laboratory, Colindale Avenue, London".[45] However, the ATCC catalogue entry references a paper co-authored by Prof Sneath, which was published in 1964 in the Journal of General Microbiology. The article discusses the anthrax strain and notes that it was isolated from bovine anthrax, has retained its virulence, and was previously in the care of the Microbiological Research Establishment (MRE), Porton Down, Wiltshire.[46] According to the article, Prof Sneath was then at the National Institute for Medical Research, Mill Hill, London NW7.

Figure 3

ATCC catalogue entry from 1968, indicating that Iraq's anthrax originated in Britain.



Dr H M Darlow was a senior officer at MRE, Porton Down. A formerly classified document shows that in 1952 the MRD Type Culture Collection was transferred to his care from the laboratory of Dr D W Henderson and became his responsibility as Head of MRE's Safety Section.[47] (Dr Henderson had been Chief Superintendent of MRE Porton Down after the end of World War Two, having previously been second-in-command under Dr (later Sir) Paul Fildes.)

During WW2, Dr Paul Fildes, acting - through Sir Maurice Hankey - upon the orders of Winston Churchill, was charged with developing a biological weapon for use against Germany. Anthrax was the weapon of choice and between 1942 and 1943 his team from Porton Down took over the remote Scottish island of Gruinard, where they exploded a series of anthrax-laden bombs, testing their killing efficiency using sheep:

“The aim of the first trials in July 1942 was “to ascertain the feasibility of producing lethal effects by the explosion of a modified 30 lb Chemical/HE bomb charged with a suspension of anthrax spores” (ref). This was to be the first realistic trial of a prototype BW weapon filled with a pathogenic bacterial agent. Anthrax (code named “N”) had been selected as a suitable agent because its capability to produce infection and death after the inhalation of spores had been demonstrated in the laboratory.”[48]

Dr Fildes obtained this anthrax from Prof R L Vollum – Professor of Bacteriology at Oxford University – who had ‘isolated’ the anthrax strain, which was consequently named after him. According to Martin Hugh-Jones:

“Fildes, as a result of perceived German BW research, was asked to initiate research at MRE Porton on *B. anthracis* as a possible BW weapon strain; probably 1941. I suspect that it was through the establishment old boy net, and Oxford being Oxford, he approached Vollum for any cultures, who sent him the culture from this dead Oxfordshire cow. And in the usual way of microbiologists that culture was then labeled “Vollum.” For some 18+ months it was used in animal experiments with sheep at Porton with modest success. Then they moved to the experiments at Gruinard island, on south Wales beaches, and elsewhere, and the development of the 4-lb bomb configuration, US involvement and so on.”[49]

Note the words: “US involvement” in the foregoing.

As to the reference to ‘Dunkin’ in the ATCC catalogue, he was Dr G W Dunkin, Superintendent of the Medical Research Council Field Laboratories and Farm, Mill Hill (same location as Prof Sneath, above) from 1923 to 1937.[50] In 1937, he became the first director of the Agricultural Research Council Field Station at Compton in Berkshire.[51] And this is when and where the anthrax, shortly to become known as Vollum strain, and thereafter ATCC strain 14578, originated. Again according to Martin Hugh-Jones:

“In, I believe, 1937 a cow died in south Oxfordshire and the owner’s vet sent samples to Compton for diagnosis. ... And Dunkin’s people diagnosed anthrax. Dunkin was a member of the Royal Society and presumably The Athenaeum. Vollum, Professor of Bacteriology at Oxford, needed a culture of *B. anthracis*, presumably for a class project as his name is otherwise missing from the anthrax bibliography and asked Dunkin if he had any. He did; he provided this culture...”[52]

Therefore, the threat we were told we faced from Iraq, and which formed the basis for the 2003 invasion of that country, actually originated – probably in 1937 – from a dead cow in South Oxfordshire.[53]

There is a great deal more of interest that could be said on this subject, but the point of all of the foregoing in relation to the case made concerning the US biological exports is that from 1942 onwards a tripartite agreement between the US, Britain and Canada in the matter of biological research was in place, and numerous formerly secret documents have been obtained from the Public Record Office which show that the United States was intimately involved in the weaponization of this anthrax strain. These include the documents detailing the Gruinard Island trials in the early 1940s and others describing further trials elsewhere, for example those conducted at sea – such as “Operation Harness”[54] – in the later 1940s and 1950s. The Vollum/14578 anthrax strain is referred to and is noted as having destroyed many thousands of sheep, monkeys and guinea pigs during these experimental weapons tests. The documents consistently show that US representatives were present and include

the United States on their limited 'top secret' distribution lists. Even today, there is a tripartite Memorandum of Understanding in effect and all such information is shared between the parties.[55]

It is also notable that Dr David Henderson, who took over at MRE Porton Down as Chief Superintendent after Dr Paul Fildes at the end of WW2, was the man who conducted most of the Gruinard Island experiments with the Vollum/14578 anthrax strain, as Fildes himself was rarely there. Henderson produced a study of anthrax aerosols, the test equipment even being named after him - 'The Henderson apparatus' - and following the first phase of the trials on Gruinard Island in 1942 he went to America, setting up liaisons to ensure US/UK collaboration.[56] According to Porton historian Gradon Carter, Henderson initiated a "major collaborative effort with the US Chemical Corps Biological Laboratories at Camp Detrick for which he was awarded the US Medal of Freedom, Bronze Palm".[57]

As Gradon Carter also notes:

"The United Kingdom made its data available to the US and Canada in pursuit of an Allied programme for a retaliatory biological capability in what was later to be called the "N bomb" project based on 500 lb. cluster bombs containing just over 100 small 4 lb. bomblet sub-munitions of the type which had been trialled latterly on Gruinard Island. Such clusters had been shown by the use of simulants in trials at Porton to produce an effective aerosol concentration of spores over nearly 100 acres from a small impact area." [58]

It was intended to produce the anthrax in the United States but: "In the event, fulfillment of the Allied plans was halted by the end of the war, before the Vigo plant erected at Terre Haute, Indiana, by America, had produced any anthrax spores".[59]

Quite apart from the aforementioned extent of US/UK collaboration, the virulence of the Vollum/14578 strain and its utility as a weapon is well known to the British and American authorities because, in addition to the development of the anthrax bomb, five million 'cattle cakes' were manufactured and impregnated with the same anthrax during WW2, for intended release over Germany by the Royal Air Force: "Each had a small hole bored into it which was filled with anthrax spores and then sealed; they were all stored at Porton".[60] This was clearly a major operation and according to Dr Paul Fildes, writing in 1942: "At the present time, the whole resources of the Biological Section are taken up with research, applications and manufacture of anthrax".[61]

There can be absolutely no doubt that the United States was fully involved in the weaponization of the Vollum/14578 anthrax strain, though it should be noted that these activities took place before the BTWC came into force. Fortunately, neither the anthrax bomb nor the cattle cakes were used against Germany.

A note on the responsibility of the British Government under law

In addition to its responsibility under international law - that is if there actually *is* a credible concept called international law - the British Government has a statutory responsibility to its sovereign People, to whom it is wholly accountable. Although rarely referred to, and consequently largely unnoticed by the People themselves, an Article in

Britain's partially-written Constitution is worthy of mention. Dating from 1701, the

Article resides in the *Act of Settlement* and concerns the laws of the land, which it terms

“the birthright of the people thereof”.[62] This states that:

“..all the Kings and Queens , who shall ascend the throne of this Realm, ought to administer the government of the same according to the said laws, and all their officers and ministers ought to serve them respectively according to the same..”[63]

It certainly seems reasonable to expect that when Green Papers are presented to Parliament by command of Her Majesty, and these claim that UK Policy is to regard a particular Convention as a “principal international and legally binding instrument”, saying that “those at every level responsible for any breach of international law will be held personally accountable”, that the stated policy is adhered to.

In conclusion

This paper rests its case on the following principal points:

1. That it is known that a range of pathogenic (disease producing) and toxigenic (poisonous) biological materials were exported to Iraq from the United States between 1985 and 1989, and that, among other warfare-related materials, these included a strain of anthrax utilized and tested over many years as a weapon, including during well documented WW2 and post-WW2 trials, to which the US was a party.
2. That the US Government was fully aware of the dangers vested in the biological materials exported to Iraq by the American Type Culture Collection between 1985 and 1989, and was, at the least, grossly negligent in failing to prohibit these exports to a state which was known by the US Administration at that time to be actively utilizing chemical weapons of mass destruction, and suspected - if not known - to also be developing a biological weapons programme.
3. That with knowledge of the US biological exports, the British Government, being bound to act according to the law, and having stated as much in the UK Parliament in the name of Her Majesty the Queen, has a responsibility to formally report this matter to the UN Security Council for investigation. Furthermore, that failure to do so effectively renders the BTWC meaningless, and, thereby, compromises the very concept of international law.

Beyond the case made in this paper, the following appears to be the disturbing international political reality: The invasion of Iraq by the United States and Britain in 2003 was predicated upon Iraq’s possession of ‘weapons of mass destruction’ - the primary threat presented both to Parliament and the People being anthrax. This anthrax was exported to Iraq from the US, having previously been exported from Britain, where it had been tested as a biological weapon “because its capability to produce infection and death after the inhalation of spores had been demonstrated in the laboratory”. This information is well known to the US, Britain, and Canada, due to a trilateral agreement concerning biological research between the three nations. Meanwhile, more than 20% of Britain’s MPs - representing approximately 12 million people - have twice called for a UN investigation into the US exports, a call which has been dismissed by the British Government by means of flimsy responses and a refusal to answer questions properly.



Former Senator Donald W Riegle Jr [64]

Endnotes

[1] D'Amato, A., "Is International Law Really 'Law'?" in: Koskenniemi, M., (ed.), *International Law*, Aldershot: Dartmouth, 1992, pp. 25-46.

[2] Ibid, p. 26.

[3] Bull, H., *The Anarchical Society*, Basingstoke: Macmillan, 1995, p. 127.

[4] Stern, B., "How to Regulate Globalization?" in: Byers, M. (ed.), *The Role of Law in International Politics*, Oxford: OUP, 2000, p. 251.

[5] <http://projects.sipri.se/cbw/docs/bw-btwc-rat.html> , Stockholm International Peace Research Institute Website. The number of State Party ratifications and accessions to date is 152 - including Iraq, which signed on 11 May 1972 and ratified on 19 Jun 1991 - with 16 signers yet to ratify.

[6] <http://www.fas.harvard.edu/~hsp/biologic.html> , Harvard Sussex Program on CBW Armament and Arms Limitation Website.

[7] Bull, H., p. 131.

[8] University of Sussex Students' Union interview, published in *the badger*, 4 Jun 2004.

[9] US Senate report: "US Chemical and Biological Warfare-Related Dual Use Exports to Iraq and Their Possible Impact on the Health Consequences of the Persian Gulf War", ('The Riegle Report'), 25 May 1994, Part II, Chapter 1. <http://snipurl.com/g1xl>

[10] Ibid.

[11] Ibid.

[12] "Comprehensive Report of the Special Advisor to the Director of Central Intelligence on Iraq's Weapons of Mass Destruction" (the Duelfer Report), 30 September 2004, Vol 3, "Biological Warfare", p.21, http://www.foia.cia.gov/duelfer/Iraqs_WMD_Vol3.pdf .

[13] House of Commons Library Research Service, 9 May 2003, ref 2003/5/31ia, report to Sir Teddy Taylor MP, p. 8.

[14] <http://www.fco.gov.uk/Files/kfile/btwc290402,0.pdf> , "Strengthening the Biological and Toxin Weapons Convention: Countering the Threat from Biological weapons", Green Paper presented to Parliament by the Secretary of State for Foreign and Commonwealth Affairs (Rt Hon Jack Straw MP), Apr 2002, p. 5.

[15] <http://edmi.parliament.uk/EDMi/EDMDetails.aspx?EDMID=26824> , UK Parliament Website, Early Day Motion 303, 2004-05, tabled by Austin Mitchell MP & signed by 126 MPs, and: <http://edmi.parliament.uk/EDMi/EDMDetails.aspx?EDMID=26209> , Early Day Motion 300, 2003-04, tabled by Austin Mitchell MP & signed by 141 MPs.

[1 6]

<http://www.publications.parliament.uk/pa/ld199697/ldhansrd/pdvn/lds04/text/40315-01.htm>

[#40315-01_star0](#) , *Hansard*: Parliamentary Debates, House of Lords, “Biological Weapons: US Sales to Iraq”, 15 Mar 2004.

[17] *Ibid.*

[18] <http://161.203.16.4/t2pbat4/150766.pdf> , US General Accounting Office, Report to the Chairman, Committee on Foreign Affairs, House of Representatives: “US Military Items Exported or Transferred to Iraq in the 1980s”, Feb 1994.

[19] House of Commons Library Research Service, 9 May 2003, ref 2003/5/31ia, report to Sir Teddy Taylor MP, p. 4.

[20] The National Security Archive, “Shaking Hands with Saddam Hussein: The U.S. Tilts toward Iraq, 1980-1984”, ed. Joyce Battle, 25 Feb 2003, <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB82/> , nb: The House of Commons Library Research Service (see footnote 19) dates the removal of Iraq from the US list of “nations that support international terrorism” to November 1983.

[21] The Riegle Report, see footnote 9.

[22] Some of the information in this section has previously been published by this writer in “Biological and Toxin Weapons Convention and Iraq: A report for Parliament on the British Government’s response to the US supply of biological materials to Iraq”, Oct 2004, at <http://www.edm300.co.uk> .

[23] <http://www.cia.gov/cia/publications/gulfwar/061997/support.htm> , US Central Intelligence Agency report: “CIA Support to the US Military During the Persian Gulf War”, 16 Jun 1997.

[24] <http://www.globalsecurity.org/wmd/library/report/gao/gao-01-13.htm> , US General Accounting Office report: “Coalition Warfare: Gulf War Allies Differed in Chemical and Biological Threats Identified and in Use of Defensive Measures”, 24 Apr 2001.

[25] http://www.gulflink.osd.mil/medsearch/FocusAreas/riegle_report/report/INTRODUCTION , US Senate report: “US Chemical and Biological Warfare-Related Dual Use Exports to Iraq and Their Possible Impact on the Health Consequences of the Persian Gulf War”, (‘The Riegle Report’), 25 May 1994.

[26] *Jane’s Defense Weekly*, 9 Jan 1988, p. 3.

[27] Jentleson, B., *With Friends Like These: Reagan, Bush, and Saddam, 1982-1990*, New York: W.W. Norton, 1994, p. 90.

[28] State Department memorandum: “Meeting with Iraqi Under Secretary Hamdoon”, 24 Mar 1989, cited in Jentleson, pp. 18 and 107.

[29] National Security Archive, US Department of State Memorandum, “Iraq Use of Chemical Weapons”, 1 Nov 1983, <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB82/iraq24.pdf> .

[30] House of Commons Library Research Service, October 2002, ref 2002/10/16ia, supplied by Sir Teddy Taylor MP.

[31] <http://www.cooperativeresearch.org/archive/1980s/wpost121586.htm> , Washington Post: "CIA aiding Iraq in Gulf War: Target Data from U.S. Satellites Supplied for Nearly 2 Years", Bob Woodward, 15 Dec 1986.

[32] <http://www.webcom.com/~lpease/collections/hidden/teicher.htm> , US District Court, Southern District of Florida: "The Teicher Affidavit: Iraqgate", 31 Jan 1995.

[33] See emboldened entry in Figure 1.

[34] The Duelfer Report, see footnote 12.

[35] Personal e-mail from Milton Leitenberg, 13 Apr 2005.

[36] Leitenberg, M., *The Problem of Biological Weapons*, Stockholm: The Swedish National Defence College, 2004, p. 166. This limited edition book may only be obtained from the Swedish National Defence College, Department of Security and Strategic Studies, Box 27805, SE-115 93 Stockholm, Sweden.

[37] The Riegler Report, see footnote 9. In their attempts to deflect attention from these US exports, despite citing the Riegler Report as their source, British Government statements have (one assumes purposely) misquoted the Report by stating that the materials were exported not to "agencies of the Government of Iraq" but to "established scientific research institutes". See <http://www.edm300.co.uk> .

[38] Leitenberg, M., p. 192.

[39] The Riegler Report, see footnote 9. This writer's italics.

[40] *Hansard*, House of Lords debates, 15 Mar 2004, <http://www.publications.parliament.uk/pa/ld199697/ldhansrd/pdvn/lds04/text/40315-01.htm> .

[41] Leitenberg, M., p. 174.

[42] *Hansard*, http://www.publications.parliament.uk/pa/cm200304/cmhansrd/vo040701/text/40701w18.htm#40701w18.html_wqn4 . This writer's italics.

[43] American Type Culture Collection, Rockville, Maryland, sales catalogue, 1968, p. xi.

[44] *Ibid*, p. 9.

[45] Personal e-mail from Prof P.H.A. Sneath, 18 May 2005.

[46] Sneath P.H.A., et al, "Type Cultures and Proposed Neotype Cultures of Some Species in the Genus *Bacillus*", *Journal of General Microbiology*, 1964, Vol 34, pp. 269-272.

[47] Public Record Office ref. WO195/12136 XC0162, Ministry of Supply, Microbiological Research Department, Annual Report 1951-1952, formerly 'top secret'.

[48] Carter, G.B., "Gruinard Island: The Historical Background 1942-1972 (U)", Tech. Note No. 458, copy No. 27 of 36, ref: 264526 - 1002, Chemical Defence Establishment, Porton Down, Salisbury, Wilts, Mar 1981 (formerly classified); nb: the decontamination of Gruinard

Island in the 1980s was supervised by Dr David Kelly – see Harvard Sussex Web site: www.sussex.ac.uk/spru/hsp/davidkelly.pdf .

[49] Personal e-mail from Prof Martin Hugh-Jones, 13 Apr 2005.

[50] National Archives extract FD 5/99, “Remuneration and pension details, policy and personnel matters”.

[51] Personal e-mail from Prof Martin Hugh Jones, 20 Apr 2005, quoting information received from a Miss B Hoadler, Librarian, Royal College of Veterinary Surgeons.

[52] Personal e-mail from Prof Martin Hugh-Jones, 13 Apr 2005.

[53] In Martin Hugh-Jones’ e-mail of 20 Apr 2005, he narrows the South Oxfordshire origin of the dead cow to “a few miles south of Oxford”, which suggests that it may well have been within the Parliamentary constituency of Henley, although this is, as yet, unconfirmed.

[54] Operation Harness took place only one mile offshore off Basseterre, St Kitts, Leeward Islands, in 1948/9. This was a substantial top secret operation conducted by Britain and the United States, involving hundreds of military personnel. Two variations of the Vollum strain of anthrax were used: “monkey passage” and “sheep passage”. See declassified document: DERA/CBD/CR990038, “The major sea trials 1948-1955”.

[55] See “Research at CBD Porton Down”, <http://www.mod.uk/policy/cbw/chapter6.htm> .

[56] Hammond, P. & Carter, G., *From Biological Warfare to Healthcare: Porton Down, 1940-2000*, Basingstoke: Palgrave Macmillan, 2002, pp. 198-9.

[57] Carter, G.B., *Chemical and Biological Defence at Porton Down, 1916-2000*, London: The Stationery Office, 2000, p. 78.

[58] Ibid, p. 64.

[59] Ibid.

[60] Harris, R. & Paxman, J., *A Higher Form of Killing*, New York: Hill and Wang, 1982, p. 88. The five million anthrax-filled cattle cakes were produced for ‘Operation Vegetarian’. Apparently, RAF bomber crews practiced the dropping of inert cakes across England.

[61] Public Record Office file WO 188/652, Porton Executive Committee Meeting, 5 Oct 1942. Statement on the items of the agenda by Dr Fildes, quoted by Brian Balmer (Senior Lecturer in Science and Technology at University College London) in his book *Britain and Biological Warfare – Expert Advice and Science Policy, 1930-1965*, Basingstoke: Palgrave Macmillan, 2001, p. 45.

[62] The Act of Settlement, 1701, Article IV. <http://www.worldfreeinternet.net/parliament/settlement.htm> .

[63] Ibid.

[64] Personal letter from former Senator Donald W. Riegle Jr., 28 May 2003.

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Geoffrey Holland , geoffreyholland2001@yahoo.co.uk

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