UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND

Confidence Building Measure Return for 2011 (covering data for 2010) for the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and their Destruction, 10 April 1972

Submitted to the United Nations
On 31March 2011

DECLARATION FORM ON NOTHING TO DECLARE OR NOTHING NEW TO DECLARE FOR USE IN THE INFORMATION EXCHANGE

Measure	Nothing to declare	Nothing new to declare
A, part I		
A, part 2 (i)		
A, part 2 (ii)		
A, part 2 (iii)		
B (i)		
B (ii)		
C		√
D		
E		
F		
G		

(Please mark the appropriate box (es) for each measure, with a tick.)

Date: 31 March 2011

State Party to the Convention: United Kingdom of Great Britain and Northern Ireland

Form A Part 1

Exchange of data on research centres and laboratories[1]

1.	**Names(s) of facility[2]**	Defence Science and Technology Laboratory (Dstl), Porton Down. *Declared in accordance with Form A Part 2(iii)*
2.	**Responsible public or private organisation or company**	Ministry of Defence
3.	**Location and postal address**	Dstl Porton Down Salisbury Wiltshire SP4 0JQ

4. **Source(s) of financing of the reported activity, including indication if the activity is wholly or partly financed by the Ministry of Defence**

   Largely financed by the MOD.

5. **Number of maximum containment units[3] within the research centre and/or laboratory, with an indication of their respective size (m^2)**

   2 BL4 labs, 335m^2 total

6. **If no maximum containment unit, indicate highest level of protection**

   Not applicable

7. **Scope and general description of activities, including type(s) of micro-organisms and/or toxins as appropriate**

   Research and development into protective measures as defence against the hostile use of micro-organisms and toxins.

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[1] The containment units which are fixed patient treatment modules, integrated with laboratories, should be identified separately.

[2] For facilities with maximum containment units participating in the national biological defence research and development program, please fill in name of facility and mark "Declared in accordance with Form A, Part 2(iii)".

[3] In accordance with the 1983 WHO Laboratory Biosafety Manual, or equivalent.

Form A Part 1

Exchange of data on research centres and laboratories[1]

1.	**Name(s) of facility[2]**	Health Protection Agency, Colindale
2.	**Responsible public or private organization or company**	Health Protection Agency (a non-departmental public body of the UK Department of Health)
3.	**Location and postal address**	61 Colindale Avenue London NW9 5HT

4. Source(s) of financing of the reported activity, including indication if the activity is wholly or partly financed by the Ministry of Defence

The Department of Health funds this activity as part of its finance of the Health Protection Agency's Centre for Infections at Colindale, London NW9

5. Number of maximum containment units[3] within the research centre and/or laboratory, with an indication of their respective size (m^2)

1 high containment unit: 30 m^2

6. If no maximum containment unit, indicate highest level of protection

Not applicable

7. Scope and general description of activities, including type(s) of micro-organisms and/or toxins as appropriate

Laboratory is used to provide diagnostic services for Herpes B; viral haemorrhagic fever infections: Lassa fever, Ebola, Marburg, Congo-Crimean haemorrhagic fever; avian influenza and SARS. To support diagnostic services a programme of applied diagnostic research and development is conducted**.**

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[1] The containment units which are fixed patient treatment modules, integrated with laboratories, should be identified separately.

[2] For facilities with maximum containment units participating in the national biological defence research and development program, please fill in name of facility and mark "Declared in accordance with Form A, Part 2(iii)".

[3] In accordance with the 1983 WHO Laboratory Biosafety Manual, or equivalent.

Form A Part 1

Exchange of data on research centres and laboratories[1]

1.	**Name(s) of facility[2]**	Health Protection Agency, Centre for Emergency Preparedness and Response, Porton Down
2.	**Responsible public or private organization or company**	Health Protection Agency (a non-Department public body of the UK Department of Health)
3.	**Location and postal address**	Porton Down Salisbury Wiltshire SP4 0JG

4. Source(s) of financing of the reported activity, including indication if the activity is wholly or partly financed by the Ministry of Defence

The Department of Health funds this activity as part of its finance of the Health Protection Agency's Centre for Emergency Preparedness and Response at Porton Down.

5. Number of maximum containment units[3] within the research centre and/or laboratory, with an indication of their respective size (m^2)

2 units: 59 m^2; 46 m^2

6. If no maximum containment unit, indicate highest level of protection

Not applicable

7. Scope and general description of activities, including type(s) of micro-organisms and/or toxins as appropriate

Diagnosis and research into various containment level 4 viruses including Lassa, Ebola, Marburg and other haemorrhagic fever viruses.

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[1] The containment units which are fixed patient treatment modules, integrated with laboratories, should be identified separately.
[2] For facilities with maximum containment units participating in the national biological defence research and development program, please fill in name of facility and mark "Declared in accordance with Form A, Part 2(iii)".
[3] In accordance with the 1983 WHO Laboratory Biosafety Manual, or equivalent.

Form A Part 1

Exchange of data on research centres and laboratories[1]

1.	**Name(s) of facility**[2]	National Institute for Biological Standards and Control
2.	**Responsible public or private organisation or company**	Non-departmental public body of the UK Department of Health
3.	**Location and postal address**	Blanche Lane South Mimms Potters Bar Herts EN6 3QG

4. Source(s) of financing of the reported activity, including indication if the activity is wholly or partly financed by the Ministry of Defence

UK Government (Department of Health and the Home Office)

5. Number of maximum containment units[3] **within the research centre and/or laboratory, with an indication of their respective size (m^2)**

Two containment level 4 units, each of 59 m^2

6. If no maximum containment unit, indicate highest level of protection

Not applicable

7. Scope and general description of activities, including type(s) of micro-organisms and/or toxins as appropriate

Highly pathogenic influenza virus – reagent development
Bacillus anthracis – vaccine testing, reagent development, development of in vitro assays to detect anthrax toxin neutralising antibodies
Yersinia pestis – molecular structural work
Botulinum toxins (serotypes A-G) - control, standardisation and assay development for vaccines and anti-toxins

In general, the activities are related to development of assays and testing of reagents.

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[1] The containment units which are fixed patient treatment modules, integrated with laboratories, should be identified separately.
[2] For facilities with maximum containment units participating in the national biological defence research and development program, please fill in name of facility and mark "Declared in accordance with Form A, Part 2(iii)".
[3] In accordance with the 1983 WHO Laboratory Biosafety Manual, or equivalent.

Form A Part

Exchange of data on research centres and laboratories[1]

1.	**Name(s) of facility[2]**	NIMR Containment 4 Building C
2.	**Responsible public or private organisation or company**	National Institute for Medical Research
3.	**Location and postal address**	The Ridgeway Mill Hill London NW7 1AA

4. Source(s) of financing of the reported activity, including indication if the activity is wholly or partly financed by the Ministry of Defence

Medical Research Council

5. Number of maximum containment units[3] within the research centre and/or laboratory, with an indication of their respective size (m^2)

1 BL4 containment unit of 298 m^2

6. If no maximum containment unit, indicate highest level of protection

Not applicable

7. Scope and general description of activities, including type(s) of micro-organisms and/or toxins as appropriate

Research and diagnostics on highly pathogenic avian influenza virus

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[1] The containment units which are fixed patient treatment modules, integrated with laboratories, should be identified separately.

[2] For facilities with maximum containment units participating in the national biological defence research and development program, please fill in name of facility and mark "Declared in accordance with Form A, Part 2(iii)".

[3] In accordance with the 1983 WHO Laboratory Biosafety Manual, or equivalent.

Form A Part 1

Exchange of data on research centres and laboratories[1]

1.	**Name(s) of facility[2]**	Institute for Animal Health, Pirbright Laboratory
2.	**Responsible public or private Organisation or company**	Biotechnology and Biological Sciences Research Council (BBSRC)
3.	**Location and postal address**	Institute for Animal Health Pirbright Woking Surrey GU24 0NF

4. Source(s) of financing of the reported activity, including indication if the activity is wholly or partly financed by the Ministry of Defence

BBSRC, EU, Department for Environment, Food and Rural Affairs (Defra).

5. Number of maximum containment units[3] within the research centre and/or laboratory, with an indication of their respective size (m^2)

No ACDP* Level 4* containment
12 m^2 ACDP Level 3 containment
5,173.87 m^2 of SAPO** Level 4 ACDP2 laboratory space and plant areas
4,327 m^2 of SAPO4 ACDP2 animal accommodation including plant

** Advisory Committee on Dangerous Pathogens*
*** Specified Animal Pathogens Order*

6. If no maximum containment unit, indicate highest level of protection

SAPO4 ACDP2 containment

7. Scope and general description of activities, including type(s) of micro-organisms and/or toxins as appropriate

Work on exotic animal virus disease: Foot and mouth disease, bluetongue, swine vesicular disease, African Horse Sickness, Capripox, African Swine Fever, PPR and rinderpest.

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[1] The containment units which are fixed patient treatment modules, integrated with laboratories, should be identified separately.
[2] For facilities with maximum containment units participating in the national biological defence research and development program, please fill in name of facility and mark "Declared in accordance with Form A, Part 2(iii)".
[3] In accordance with the 1983 WHO Laboratory Biosafety Manual, or equivalent.

Form A Part 1

Exchange of data on research centres and laboratories[1]

1.	**Name(s) of facility[2]**	Veterinary Laboratories Agency
2.	**Responsible public or private organisation or company**	Department for Environment, Food and Rural Affairs (Defra)
3.	**Location and postal address**	Woodham Lane Addlestone Surrey KT15 3NB

4. Source(s) of financing of the reported activity, including indication if the activity is wholly or partly financed by the Ministry of Defence

Most funding is through Defra.

5. Number of maximum containment units[3] within the research centre and/or laboratory, with an indication of their respective size (m^2)

SAPO* Level 4 (Defra)
3 x Avian Flu laboratories 1 = each 50 m^2
1 x Classical swine fever laboratory = 15 m^2
1 x Newcastle disease virus laboratory = 50 m^2
1 x Rabies virus laboratory = 45 m^2
1 suite of Serology laboratories capable of increasing to SAPO level 4, but which usually run at ACDP level 2 = approximately 100 m^2.

* Specified Animal Pathogens Order

6. If no maximum containment unit, indicate highest level of protection

29 CL3 laboratories totalling 2,129 m^2
Advisory Committee on Dangerous Pathogens (ACDP) level 3. These laboratories cannot be operated at the higher level of containment.

7. Scope and general description of activities, including type(s) of micro-organisms and/or toxins as appropriate

Diagnosis and applied research on the epidemiology and pathology of the disease of farmed, domesticated livestock (cattle, sheep, pigs and poultry) and wild animal reservoirs. Bacteria and viruses in ACDP hazard groups 1-4, GM class 1-4 and SAPO groups 1-4.

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[1] The containment units which are fixed patient treatment modules, integrated with laboratories, should be identified separately.
[2] For facilities with maximum containment units participating in the national biological defence research and development program, please fill in name of facility and mark "Declared in accordance with Form A, Part 2(iii)".
[3] In accordance with the 1983 WHO Laboratory Biosafety Manual, or equivalent.

Form A Part 1

Exchange of data on research centres and laboratories[1]

1.	**Name(s) of facility[2]**	Merial Animal Health, Pirbright Laboratory
2.	**Responsible public or private organization or company**	Merial Animal Health Ltd.
3.	**Location and postal address**	Ash Road Pirbright Surrey, GU24 ONQ

4. Source(s) of financing of the reported activity, including indication if the activity is wholly or partly financed by the Ministry of Defence

Private finance.

5. Number of maximum containment units[3] within the research centre and/or laboratory, with an indication of their respective size (m^2)

1 x SAPO 4

6. If no maximum containment unit, indicate highest level of protection

Defra/HSE SAPO 4

7. Scope and general description of activities, including type(s) of micro-organisms and/or toxins as appropriate

Production of inactivated FMD and Bluetongue vaccines for protection of animals

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[1] The containment units which are fixed patient treatment modules, integrated with laboratories, should be identified separately.

[2] For facilities with maximum containment units participating in the national biological defence research and development program, please fill in name of facility and mark "Declared in accordance with Form A, Part 2(iii)".

[3] In accordance with the 1983 WHO Laboratory Biosafety Manual, or equivalent.

Form A, Part 2 (i)

National Biological Defence Research and Development Programme Declaration

1. **Is there a national programme to conduct biological defence research and development within the territory of the State Party, under its jurisdiction or control anywhere? Activities of such a program would include prophylaxis, studies on pathogenicity and virulence, diagnostic techniques, aerobiology, detection, treatment, toxinology, physical protection, decontamination and other related research.**

Yes

If the answer to (1) is Yes, complete Form A, Part 2 (ii) which will provide a description of the program.

Two Forms A, Part 2 (ii) are provided detailing programmes funded by the Ministry of Defence at (a) and the Home Office at (b).

(a) National Biological Defence Research and Development Programme

Description

1. State the objectives and funding of the programme and summarize the principal research and development activities conducted in the programme. Areas to be addressed shall include: prophylaxis, studies on pathogenicity and virulence, diagnostic techniques, aerobiology, detection, treatment, toxicology, physical protection, decontamination and other related research.

The objectives of the UK MOD biological defence research and development programme reflect the Defence Strategic Guidance 2008 (DSG) and the Government's CBRN Defence Policy Framework document which underlines the UK's Policy aspiration to maintain our political and military freedom of action despite the presence, threat or use of biological, chemical or radiological agents.

The Vision of Defence Capability in this area has been defined as the delivery of cross Defence Lines of Development (DLoD) military capability to minimise the impact to operations of the CBRN threat, by managing risk and utilising a coherent basket of CBRN capabilities tailored to suit the context. The keys to success are the economies of resource and synergies that can be exploiting true cross DLoD capability development and Through Life Capability Management (TLCM). This will enable creative and innovative solutions to be delivered to mitigate clearly defined problems.

Hazard Assessment

CBRN Hazard Assessment maintains the ability to provide an effective assessment of the current and developing CBRN hazard and is thus the bedrock on which sound CBRN defence is built. It requires the evaluation of the range of potential biological and toxin agents that might be utilised by a potential aggressor. The information generated helps define defence strategy, concepts and doctrine, as well as identifying the required performance of protective equipment. Therefore Hazard Assessment is an essential enabler to the CBRN capability.

The studies undertaken necessarily involve activities such as consideration of the agents' potency and dissemination characteristics, their aerobiology and the way in which they might be utilised by an aggressor in military and terrorist scenarios. This includes the potential impacts of genomics and proteomics. This work is essential to determine the challenge levels against which detectors, protective equipment and countermeasures must be effective. Current work includes studying the inhalation toxicity of a range of materials and the aerosol survival of pathogenic bacteria and viruses.

Detection and diagnostics

The ability to detect the presence or release of BTW agents across the battle space is crucial in providing timely warning to military personnel to allow them to adopt the appropriate protective posture and avoid casualties. In 2010 work has focussed on technologies for improved sample collection, non-specific detection (to detect particulate material), generic detection (to distinguish between biological and non-biological materials) and specific identification (to identify the material). The objective is to develop point detection systems that are man portable and impose less logistic burden than current systems.
The Portable Integrated Battle space Biological Detection Technology demonstrator has been developed by industry and is currently being tested. Technology options to provide area surveillance for BTW using stand-off detection based on LIDAR technology or networks of point sensors have continued.

Technologies for the specific identification of BTW currently rely on the use of Biological Recognition Elements, such as antibodies and gene probes. The research programme has continued to develop specific antibodies - recombinant, monoclonal and polyclonal – to extend the range of potential BTW agents that can be identified. Testing is conducted in the laboratory by assessing the binding of the BTW agent to the generally immobilised antibody, monitored either through a linked colour change (e.g. Dipsticks) or electronically (biosensors).

Gene probe-based technology offers highly sensitive and specific assays for the identification of BTW agents like bacteria and viruses. Work is continuing in order to accelerate and simplify the methodology thus rendering it suitable for military use. Rapid PCR systems have been developed so that this technology can be used in field situations. In addition, similar technologies are also being investigated for use in medical diagnostic systems.

The research programme has continued to assess whether biological mass spectrometry technology could offer unambiguous detection and identification of BTW agents with a significant reduction in whole life costs.

Protection

The dissemination of BTW agents by an aggressor is likely to result in the production of particulate aerosols. Effective individual and collective protection (COLPRO) requires the prevention of the inhalation of this particulate challenge or its contact with the skin of personnel. Individual Protective Equipment (IPE) consists of a respirator and suit while collective protection systems provide isolation from a BW agent challenge in the form of whole buildings, rooms, ships or vehicles.

Current research focuses on providing IPE with effective levels of protection but with significantly reduced physiological loading compared with in-service equipment. This involves the development of new materials, integrating the materials into protective suit ensembles, and assessing the performance of the ensembles using non-pathogenic micro-organisms.

COLPRO research aims to design systems that provide the required levels of protection but pose a lower logistical burden on the user. This includes assessing the potential of Commercial off the Shelf (COTS) systems to meet the requirements of UK Armed Forces, including Rapid strike, Light weight and low power requirement as well as incorporating protection into general purpose tentage.

Medical Countermeasures

The Medical Countermeasures (MedCM) programme seeks to determine the efficacy of vaccines, antibiotics, antivirals and antitoxins for the prevention of disease caused by BW agents.

The current suite of in-service MedCM offers a capability which does not protect against all BW agents. In some cases, no licensed MedCM are available and in others the in-service provision provides protection against lethality but not incapacitation. Opportunities for using COTS MedCM are extremely limited. Where no COTS solutions exist, and there is a realistic prospect of identifying feasible candidate MedCM, additional research has been performed to establish 'proof-of-principle' for potential interventions. Before COTS products or other medical interventions can be recommended, evidence base for their use in the treatment of personnel exposed to CBR agents has been assessed.

Programmes have continued to devise vaccines against tularemia (caused by *Francisella tularensis*) and melioidosis/glanders (caused by *Burkholderia pseudomallei/ mallei*). In the case of *Francisella tularensis* a programme is continuing to assess Lipopolysaccharide subunit vaccines in collaboration with academia

and industry. For *Burkholderia pseudomallei/mallei* the focus is to devise a sub-unit vaccine. Polysaccharides and proteins are currently being evaluated to test the optimal combination. Attenuated mutants of *Burkholderia pseudomallei* are not considered to be good vaccine candidates but are valuable for investigating the nature of the protective immune response. These vaccines will be tested using inhalation challenge models of disease.

Assessment of candidate anti-toxins against ricin, botulinum and SEB has continued, assessing efficacy, safety and acceptability.

The programme to explore the development of broad-spectrum BW countermeasures has continued, including therapies against *Brucella,* VEEV and Filoviruses. It has three broad elements: to investigate the up-regulation of the innate immune system, for example through immunomodulator stimulation; to determine whether there are cross-protective antigens or common mechanisms of virulence shared by different BW agents; and, to identify broad spectrum antimicrobials. Antibiotics and anti-virals which are newly emerging from industry are being tested to investigate whether they are effective against a wide range of candidate BW agents.

Projects to identify how animal models of disease can be replaced with in vitro assays, cell or organ culture systems are continuing.

Hazard Management

The ability to decontaminate personnel, materiel and infrastructure once an aggressor has dispersed BTW agents is a key element to hazard management and restoring operational tempo. Research aims to develop low logistic burden approaches for decontamination of BTW agents based on liquid formulations, strippable coatings, and reactive gases. Validated test methodologies for determining the efficacy of these decontamination processes are also being developed in parallel.

Arms Control

Dstl staff at Porton Down provide technical advice on CBW non-proliferation to the Ministry of Defence and the Foreign and Commonwealth Office as well as to other Government Departments involved in formulating and implementing UK policy on non-proliferation matters. This has included working towards and participating in: the Review Conferences of the BTWC; the Ad Hoc Group of Governmental experts tasked with identifying and examining potential verification measures; the Special Conference of States Parties held in September 1994; the BTWC Ad Hoc Group; and, the annual Meetings of Technical Experts and of States Parties during the intersessional programmes of work following the 5th and 6th Review Conferences.

Dstl staff assist in collating data for the UK Confidence Building Measures returns and provide technical advice towards the formulation and execution of policy on export control legislation, covering items related to biological weapons proliferation in foreign countries.

Dstl staff also assist the Department of Energy and Climate Change (DECC) in its role as the UK National Authority for the Chemical Weapons Convention, providing technical support over declarations, licensing, and inspections. Dstl operates the UK's Single Small Scale Facility at Porton Down, which has been declared under the CWC.

Dstl staff are also involved in the Ministry of Defence Arms Control and Counter-Proliferation Policy Division's non-proliferation programme which seeks to promote safe, secure and responsible application of dual use biological science internationally.

2. **State the total funding for the program and its source.**

The UK national biological defence research and development programme is concerned with the provision of effective measures for the UK and its Armed Forces against the threat that chemical and biological weapons may be used against them. The total UK expenditure on research and development on biological defence for the protection of the UK and its armed forces against micro-organisms and toxins in the fiscal year, April 1st 2010 - March 31st 2011 is forecast to be £51M. This includes £10.25M for work as project support to the procurement of armed forces biological defence equipment.

3. **Are aspects of this program conducted under contract with industry, academic institutions, or in other non-defence facilities?**

Yes.

4. **If yes, what proportion of the total funds for the program is expended in these contracted or other facilities?**

During the fiscal year April 1st 2010 to March 31st 2011, a total of 71 extramural contracts were placed. Of these 22 extramural contracts on research and development aspects relating to biological defence were in place with universities and other academic institutions, and 49 extramural contracts with other bodies, which are either government funded or industrial companies. Funding for these extramural contracts during the fiscal year totalled approximately £7.9M. This represents 15.5% of the total UK expenditure in the fiscal year on research and development on biological defence. The duration of individual contracts varies from a few months to three or four years, and in a few cases they include periods of work at Dstl. The precise institutions and companies are constantly varying as they are selected according to the needs of the defence programme and the availability of the necessary specialist skills.

5. **Summarise the objectives and research areas of the program performed by contractors and in other facilities with the funds identified under para 4.**

Contracts are let on specific research topics in support of the main research programme carried out at Dstl.

6. **Provide a diagram of the organisational structure of the program and the reporting relationships (include individual facilities participating in the program).**

Policy for biological and chemical defence is determined by the Ministry of Defence with the Director of Chemical, Biological, Radiological and Nuclear Policy (CBRN Pol) as the focus. The Arms Control and Counter-Proliferation Policy (ACP) Division determines MOD policy on CB arms control. The goals and individual objectives of the research programme are determined by the Ministry of Defence (MOD), with the DSTL Programmes Office CBR Science and Technology Centre being responsible for managing the planning, contracting and delivery of the research programme. The Director Equipment Capability CBRN (DEC CBRN) is responsible for the development of CBRN Defence capability and is the customer focus for the output from the research programme. Acquisition of tri-service CBRN protective equipment is carried out by the CBRN Integrated Project Team (CBRN IPT) and the Medical and General Supplies IPT is responsible for the acquisition of CBRN medical countermeasures. Research at Dstl, Porton Down, is undertaken in response to the requirements of these customers within MOD, and Dstl provides technical and policy advice as appropriate.

7. **Provide a declaration in accordance with Form A Part 2 (iii) for each facility, both governmental and non-governmental, which has a substantial proportion of its resources devoted to the national biological defence research and development programme, within the territory of the reporting State, or under its jurisdiction or control anywhere.**

The only UK facility which has a substantial proportion of its resources devoted to the national biological defence research and development programme is Dstl, for which a declaration is made on Form A Part 2 (iii).

Form A, part 2(ii)

(b) National biological defence research and development programme

Description

1. State the objectives and funding of the programme and summarize the principal research and development activities conducted in the programme. Areas to be addressed shall include: prophylaxis, studies on pathogenicity and virulence, diagnostic techniques, aerobiology, detection, treatment, toxinology, physical protection, decontamination and other related research.

The Home Office programme is aimed at enhancing the UK's capability to minimise the risk of a CBRN terrorist incident.

2. State the total funding for the programme and its source.

£3.017 M - Home Office funding

3. Are aspects of this programme conducted under contract with industry, academic institutions, or in other non-defence facilities?

Yes

4. If yes, what proportion of the total funds for the programme is expended in these contracted or other facilities?

0.05% (The majority of funding is with the Dstl)

5. Summarize the objectives and research areas of the programme performed by contractors and in other facilities with the funds identified under paragraph 4.

The work is aimed at:

- Detection and analysis of biological materials
- Medical countermeasures to biological agents
- Development and assessment of protective equipment against biological materials
- Hazard assessment and decontamination of biological agents
- Developing an understanding of the impact and spread of biological materials

6. Provide a diagram of the organizational structure of the programme and the reporting relationships (include individual facilities participating in the programme).

Contractors report through controlling Government departments to the HO-led CBRN Delivery Board

7. Provide a declaration in accordance with Form A, part 2 (iii) for each facility, both governmental and non-governmental, which has a substantial proportion of its resources devoted to the national biological defence research and development programme, within the territory of the reporting State, or under its jurisdiction or control anywhere.

The only facility that falls into this category is Dstl, for which a declaration is made on Form A Part 2 (iii).

Form A Part 2 (iii)

National Biological Defence Research and Development Programme

Facilities

Complete on form for each facility declared in accordance with paragraph 7 in Form A Part 2 (ii).

In shared facilities, provide the following information for the biological defence research and development portion only.

1. **What is the name of the facility?**

Defence Science and Technology Laboratory, Porton Down.

2. **Where is it located (include both address and geographical location).**

Dstl
Porton Down
Salisbury
Wiltshire
SP4 0JQ

The geographical location is shown in the attached map (Figure 2). G13 Access Road, centre of south boundary, Latitude 50° 07-N, Longitude 01° 40-W.

3. **Floor area of laboratory areas by containment level:**

BL2 1600m^2)
) Biological defence research and development
BL3 1050 m^2) element
)
BL4 335 m^2)

4. **The organisational structure of each facility:**

The organisational structure of Dstl Porton Down is shown in Figure 1. The facility provides research for all aspects of defence, including CBRN. The total number of Dstl staff at Porton Down on 4th March 2011 was 2042 civilians (1695 permanent and 347 temporary) and 17 military. The permanent staff fall into the following categories:

Scientists and Engineers	1041
Science support staff	334
Administration staff	203
Administration support staff	117
TOTAL	1695
Military personnel	17

For the biological defence research and development element, the numbers are as follows:

I.	Total number of personnel	222
II.	Division of personnel	
	Civilian	216
	Military	6
III.	Division of civilian personnel by category:	
	Scientists and Engineers	175
	Science support staff	15
	Administration staff	19
	Administration support staff	7

IV. **List the scientific disciplines represented in the scientific/engineering staff.**

Aerobiology, aerosol physics, mathematics, chemistry, chemical engineering, physics, bacteriology, biology, biophysics, bioinformatics, virology, genetics, immunology, medicine, veterinary science, microbiology, biochemistry, molecular biology, physiology, pharmacology, neuropharmacology, psychology, toxicology, engineering, electronics, ergonomics, hydrodynamics, information science, materials science, operational analysis, operational research, information technology, CB defence science.

V. **Are contractor staff working in the facility? If so, provide an approximate number.**

A small number of contractors work on the programme from time to time. Other contractor staff carry out building and maintenance work and some administrative functions.

VI. **What is (are) the source(s) of funding for the work conducted in the facility, including indication if activity is wholly or partly financed by the Ministry of Defence?**

Porton Down is one of the sites of the Defence Science and Technology Laboratory (Dstl), which is part of the Ministry of Defence. Some work, approximately 19%, is carried out for other governmental and commercial customers.

VII. **What are the funding levels for the following programme areas:**

Research	£38.7M
Development	£12.3M
Test and Evaluation	This is carried out as required to support research and development. Not separately funded in UK.

VIII. **Briefly describe the publication policy of the facility:**

Staff at Dstl are encouraged to publish their work in the scientific literature.

IX. **Provide a list of publicly available papers and reports resulting from the work during the previous 12 months. (To include authors, titles and full references).**

Attached as Annex.

5. **Briefly describe the biological defence work carried out at the facility, including type(s) of micro-organisms including viruses and prions and/or toxins studied, as well as outdoor studies of biological aerosols.**

The work of Dstl, Porton Down has been reported under Question 1 of Form A Part 2 (ii). Projects currently underway include:

a. The assessment of the hazard posed by micro-organisms and toxins when used by an aggressor as a BW.

b. Research into systems to facilitate collection, detection, warning, and identification of BW agents. This work includes the evaluation of collection and detection systems in outdoor studies using microbiological simulants and research into the composition of naturally occurring biological aerosols.

c. Research to establish the protection afforded by materials and CBRN defence equipment against BW agents. This work includes the evaluation of military equipment both in the laboratory and in outdoor studies using microbiological simulants.

d. Research into formulations and techniques for decontaminating microbiologically contaminated equipment using suitable simulants.

e. Rapid identification of micro-organisms and toxins by the use of monoclonal antibodies and gene probes.

f. Studies on the mechanism of action and treatment of toxins.

g. Therapies for bacterial and viral infections.

h. Studies on the mechanisms of pathogenicity of viruses and bacteria and the development of improved vaccines.

ANNEX TO
Form A Part 2 (iii)

BIOLOGICAL DEFENCE RESEARCH PUBLICATIONS FOR Dstl PORTON DOWN 2010

DC Jenner, E Dassa, AM Whatmore and HS Atkins. ATP-binding cassette systems of *Brucella. Comparative and Functional Genomics.* 2009 : 354649 (Published online in Feb)

RJ Ingram, G Metan, B Maillere, M Doganay, Y Ozkul, L Kim, L Ballie, EH Dyson, ED Williamson, KK Chu, S Ascough, J Robinson, S Sriskandan and DM Altmann. Natural exposure to cutaneous anthrax gives long-lasting T cell immunity encompassing infection-specific epitopes. *Journal of Immunology*. 184 : 3814-3821, 2010.

IJ Thompson, PC Oyston and ED Williamson. Potential of β-glucans to enhance innate resistance to biological agents. *Expert Review of Anti-Infective Therapy*. 8 : 339-352, 2010.

SD Perkins, SJ Smither, HS Atkins. Towards a Brucella Vaccine for humans. *FEMS Microbiological Reviews. 19 January 2010* [Epub ahead of print].

PC Oyston, G Mellado-Sanchez, MF Pasetti, JP Nataro, RW Titball, HS Atkins. A *Yersinia pestis* guaBA Mutant is Attenuated in Virulence and Provides Protection Against Plague in a Mouse Model of Infection. *Microbiological Pathogenesis*. 48(5): 191-195, 2010.

JW Conlan, H Shen, I Golovliov, C Zingmark, PC Oyston, W Chen, RV House, A Sjöstedt. Differential Ability of Novel Attenuated Targeted Deletion Mutants of *Francisella tularensis* Subspecies tularensis Strain SCHU S4 to Protect Mice Against Aerosol Challenge with Virulent Bacteria: Effects of Host Background and Route of Immunization. *Vaccine.* 28(7): 1824-1831, 2010.

AR Timms, J Cambray-Young, AE Scott, NK Petty, PL Connerton, L Clarke, K Seeger, M Quail, N Cummings, DJ Maskell, NR Thomson and IF Connerton. Evidence for a Lineage of Virulent Bacteriophage That Target Campylobacter. *BMC Genomics.* 11: 214, 2010.

ED Williamson, MG Duchars and R Kohberg. Recent Advances in Predictive Models and Correlates of Protection in Testing Biodefence Vaccines. *Expert Review of Vaccines.* 9(5): 527-537, 2010.

WG Hu, AL Phelps, S Jager, D Chau, CC Hu, LM O'Brien, SD Perkins, AJ Gates, RJ Phillpotts and LP Nagata. A recombinant humanized monoclonal antibody completely protects mice against lethal challenge with Venezuelan equine encephalitis virus. *Vaccine.* 28: 5558–5564, 2010.

DJ Kenny, AM Sefton, TJ Brooks, TR Laws, AJ Simpson and HS Atkins. Evaluation of Azithromycin, Trovafloxacin and Grepafloxacin as Prophylaxis for Experimental Murine Melioidosis. *International Journal of Antimicrobial Agents*. 36(1): 87-99, 2010.

M Nelson, MS Lever, RE Dean, VL Savage, FJ Salguero, PC Pearce, DJ Stevens and AJ Simpson. Characterization of Lethal Inhalational Infection with *Francisella tularensis* in the Common Marmoset (*Callithrix jacchus*). *Journal of Medical Microbiology*. 59: 1107-1113, 2010.

M Nelson, MS Lever, RE Dean, PC Pearce, DJ Stevens and AJ Simpson. Bioavailability and Efficacy of Levofloxacin Against *Francisella tularensis* in the Common Marmoset (*Callithrix jacchus*). *Antimicrobial Agents and Chemotherapy*. 54: 3922-3926, 2010.

SG Vachieri, GC Clark, A Alape-Girón, M Flores-Díaz, N Justin, CE Naylor, RW Titball and AK Basak. Molecular structure of a non-toxic variant form of *Clostridium perfringens* α-toxin. *Acta Crystallographica.* D66: 1067–1074, 2010.

CA Rowland, MS Lever, KF Griffin, GJ Bancroft and RA Lukaszewski. Protective cellular responses to *Burkholderia mallei* infection. *Microbes and Infection.* 12: 846-853, 2010.

TJ Piercy, SJ Smither, JA Steward, L Eastaugh and MS Lever. The survival of fioviruses in liquids, on solid substrates and in a dynamic aerosol. *Journal of Applied Microbiology*. Article Published On-Line 10 June 2010.

NJ Commander, JM Brewer, BW Wren, SA Spencer, AP MacMillan and JA Stack. Liposomal delivery of p-ialB and p-omp25 DNA vaccines improves immunogencnity but fails to provide full protection against *Brucella melitensis* challenge. *Genetic Vaccines and Therapy.* 8: 5-17, 2010.

WG Hu, AL Phelps, S Jager, D Chau, CC Hu, LM O'Brien, SD Perkins, AJ Gates, RJ Phillpotts and LP Nagata. A recombinant humanised monoclonal antibody completely protects mice against lethal challenge with Venezuelan equine encephalitis virus. *Vaccine.* 28: 5558-5564, 2010.

SA Ngugi, VV Ventura, O Qazi, S Harding, BG Kitto, DM Estes, A Dell, RW Titball, TP Atkins, KA Brown, PG Hitchen and JL Prior. Lipopolysaccharide from *Burkholderia thailandensis* E264 provides protection in a murine model of melioidosis. *Vaccine.* 28: 7551-7555, 2010.

LW Baillie, TB Huwar, S Moore, G Mellado-Sanchez, L Rodriguez, BN Neeson, HC Flick-Smith, DC Jenner, HS Atkins, RJ Ingram, DM Altmann, JP Nataro and MF Pasetti. An anthrax sub-unit vaccine candidate based on protective regions of *Bacillus anthracis* protective antigen and lethal factor. *Vaccine.* 28: 6740-6748, 2010.

RE Dean, LM O'Brien, JE Thwaite, MA Fox, HS Atkins and DO Ulaeto. A Carpet-Based Mechanism for Direct Antimicrobial Peptide Activity Against Vaccinia Virus Membranes. *Peptides.* 31: 1966-1972, 2010.

ML Duffield, I Cooper, E McAlister, M Bayliss, D Ford and PC Oyston. Predicting Conserved Essential Genes in Bacteria: *in silico* Identification of Putative Drug Targets. *Molecular BioSystems.* 6: 2482-2489, 2010.

R Thomas, C Davies, A Nunez, S Hibbs, H Flick-Smith, L Eastaugh, S Smither, A Gates, PC Oyston, T Atkins and S Eley. Influence of Particle Size on the Pathology and Efficacy of Vaccination in a Murine Model of Inhalational Anthrax. *Journal of Medical Microbiology.* 59: 1415-1427, 2010.

S Lin, S Park, JJ Adamovicz, J Hill, JB Bliska, CK Cote, DS Perlin, K Amemiya and ST Smiley. TNFα and IFNγ contribute to F1/LcrV-targeted immune defense in mouse models of fully virulent pneumonic plague. *Vaccine.* 29: 357-362, 2010.

KK Chu, P Tippayawat, NJ Walker, SV Harding, HS Atkins, B Maillere, GJ Bancroft, G Lertmemongkolchai and DM Altmann. CD41 T-cell immunity to the Burkholderia pseudomallei ABC transporter Lol C in melioidosis. *European Journal of Immunology.* 4 : 1–9, 2011.

Figure 1: Organisational Structure of Dstl (Departments contributing to the Biological Defence Programme are shown in grey)

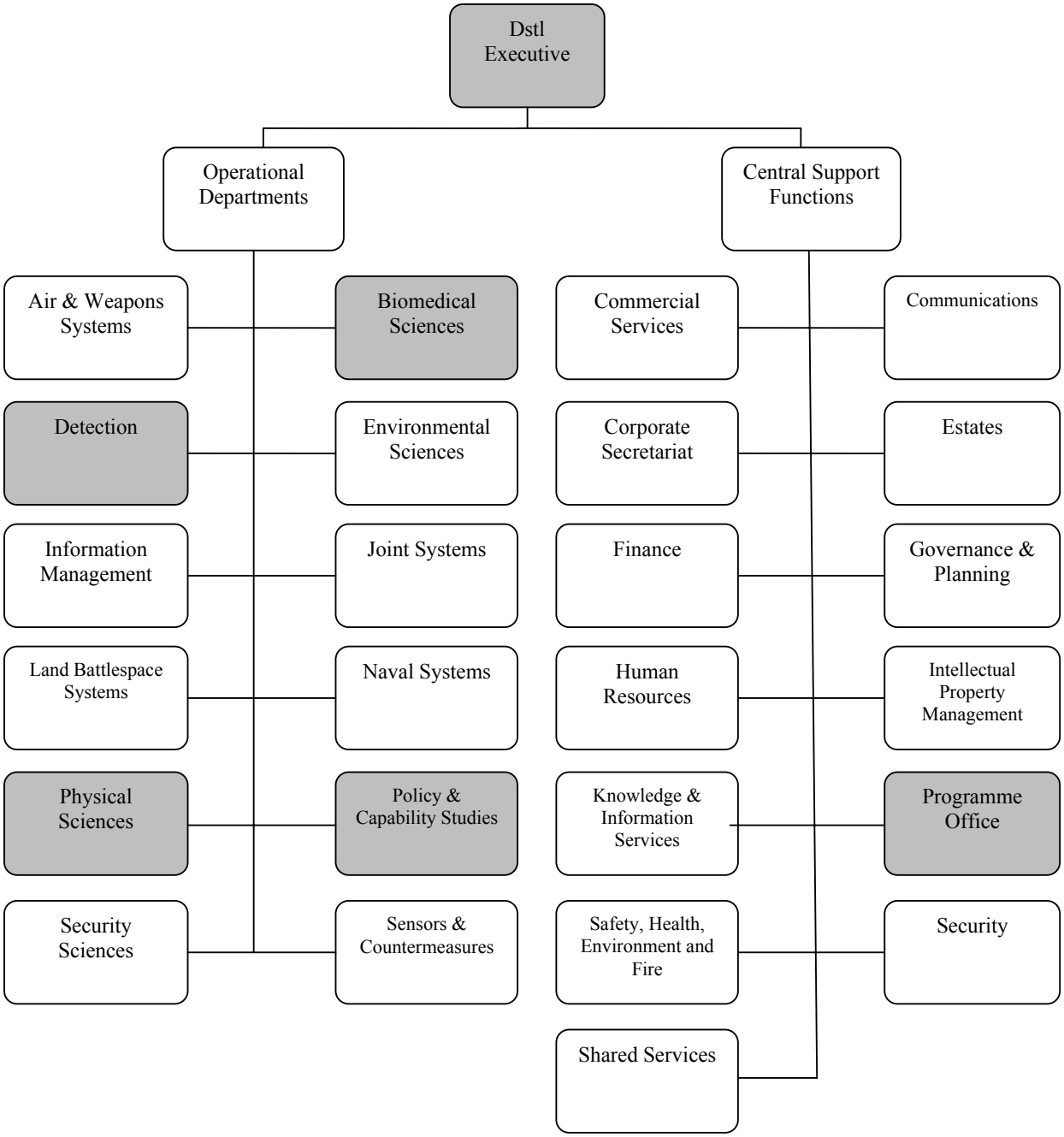
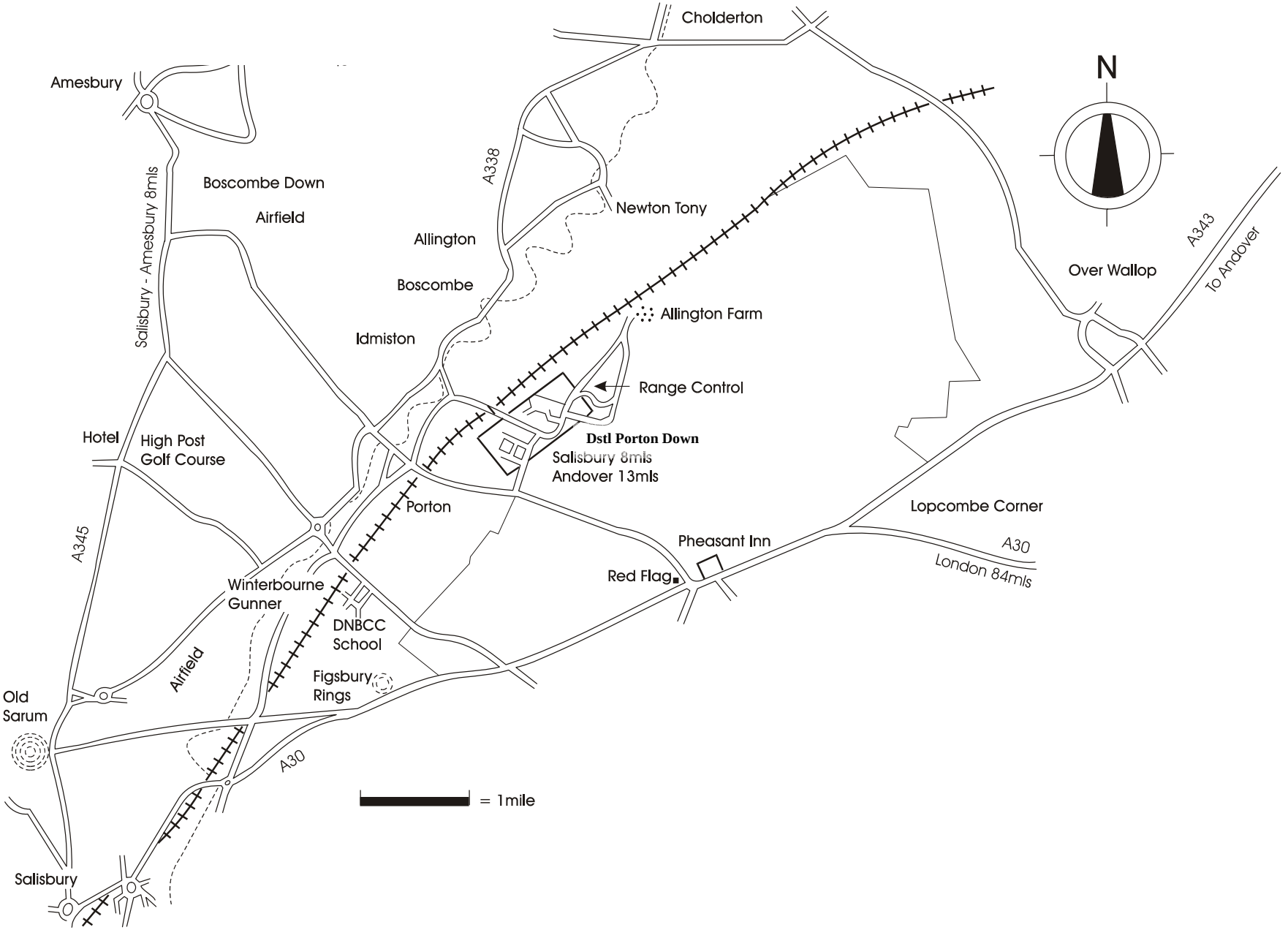


Figure 2: Routes to Dstl Porton Down



Form B (i)

Background information on outbreaks of reportable infectious diseases in humans – England and Wales

Data from Statutory Notifications of Infectious Diseases (England and Wales)*

Disease	Number of cases per year				
	2006	**2007**	**2008**	**2009‡**	**2010†**
Acute encephalitis	19	18	24	16	16
Acute poliomyelitis	0	0	0	1	0
Acute infectious hepatitis	-	-	-	-	470
Anthrax	1	0	1	0	5
Botulism	-	-	-	-	2
Brucellosis	-	-	-	-	0
Cholera	37	41	40	35	35
Diphtheria**	10	9	6	11	9
Enteric fever (typhoid or paratyphoid fever)	386	334	410	340	365
Food poisoning	70,603	72,382	68,962	74,974	56,933
Haemolytic Uraemic Syndrome (HUS)	-	-	-	-	1
Infectious bloody diarrhoea	-	-	-	-	385
Invasive group A Streptococcal disease	-	-	-	-	216
Legionnaire's Disease	-	-	-	-	102
Leprosy	-	-	-	-	1
Malaria	613	426	386	381	325
Measles**	3,705	3,670	5,088	5,191	2,231
Meningitis	1,494	1,251	1,181	1,219	918
Meningococcal septicaemia	657	673	528	495	363
Mumps**	12,841	7,196	7,827	18,629	10,403
Plague	0	0	0	0	0
Rabies	0	0	0	0	0
Rubella**	1,221	1,082	1,096	1,130	630
SARS	-	-	-	-	0
Scarlet fever	2,166	1,948	2,920	4,176	2,971
Smallpox	0	0	0	0	0
Tetanus	0	4	7	6	6
Tuberculosis	7,621	6,989	7,319	7,240	8,140
Typhus fever	6	0	4	0	2
Viral haemorrhagic fever (VHF)	5	1	3	5	3
Whooping cough	550	1,089	1,512	1,155	404
Yellow fever	0	0	0	0	0

* The list of notifiable diseases was amended from 6 April 2010. The above table reports data on diseases in the revised list. For diseases added to the list in April 2010 no data can be provided for the period before that date.

‡ Adjusted (confirmed) annual totals

† Provisional annual totals

** Note: In recent years a substantial proportion of notified cases of these diseases are shown subsequently not to be the implicated infection but do not get de-notified

Further information on Statutory Notifications of Infectious Diseases in England and Wales can be obtained via:

http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1191942172956?p=1191942172956

http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListNameDesc/Page/1233906822114?p=1233906822114

http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/NotificationsOfInfectiousDiseases/NOIDSReportsAndTables/NoidsPreviousNOIDsReports/Noids2010NOIDsReports/

http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1287148466462

Form B (i)

Background information on outbreaks of reportable infectious diseases in humans - Northern Ireland

Data from Statutory Notifications of Infectious Diseases (Northern Ireland).*

Disease	Number of cases per year				
	2006	2007	2008	2009‡	2010†
Acute Encephalitis/Meningitis:Bacterial	46	33	39	43	40
Acute Encephalitis/Meningitis:Viral	12	3	2	2	13
Anthrax	0	0	0	0	0
Chickenpox	3,034	2,823	1,941	2,655	2,107
Cholera	1	0	0	0	0
Diphtheria	0	0	1	0	0
Dysentery	7	10	16	13	8
Food Poisoning	1,469	1,321	1,267	1,452	1,550
Gastro-enteritis (persons under 2)	718	762	758	612	1,045
Hepatitis A	4	1	15	32	4
Hepatitis B	42	50	60	54	78
Hepatitis Unspecified:Viral	2	1	0	0	0
Legionnaires' Disease	5	10	5	8	1
Leptospirosis	1	1	0	0	0
Malaria	6	4	2	5	6
Measles	52	31	24	51	58
Meningococcal Septicaemia	75	42	33	46	44
Mumps	205	164	135	632	209
Paratyphoid Fever	0	0	1	0	0
Plague	0	0	0	0	0
Polio (paralytic)	0	0	0	0	0
Polio (acute)	0	0	0	0	0
Rabies	0	0	1	0	0
Relapsing Fever	0	0	0	0	0
Rubella	33	26	28	14	18
Scarlet Fever	213	214	173	207	152
Smallpox	0	0	0	0	0
Tetanus	0	0	0	0	0
Tuberculosis (Pulmonary)	34	44	28	41	36
Tuberculosis (Non Pulmonary)	14	19	29	12	24
Typhoid	1	3	0	0	1
Typhus	0	0	0	0	0
Viral Haemorrhagic Fever	0	0	0	0	0
Whooping Cough	28	16	30	25	17
Yellow Fever	0	0	0	0	0

*Please note these figures are not classified as outbreaks and are only suspected cases reported by General Practitioners/hospital clinicians.

‡ Confirmed figures for 2009

† Provisional figures for 2010

Further information on Notifications of Infectious Diseases in Northern Ireland can be obtained via:

http://www.cdscni.org.uk/

http://www.cdscni.org.uk/surveillance/NOIDS/Default.asp

Form B (i)

Background information on outbreaks of reportable infectious diseases in humans – Scotland

Data from Statutory Notification of Infectious Diseases, Scotland†

Disease	Number of cases per year				
	2006	2007	2008	2009*	2010**
Anthrax	1	0	0	1	38
Botulism	-	-	-	-	0
Brucellosis	-	-	-	-	0
Cholera	3	8	3	6	3
Clinical Syndrome *E.coli* O157	-	-	-	-	25
Diphtheria	0	1	0	0	0
Haemolytic Uraemic Syndrome (HUS)	-	-	-	-	5
Haemophilus Influenzae Type B (Hib)	-	-	-	-	4
Measles	259	168	219	157	86
Meningococcal infection	140	150	120	120	87
Mumps	2,917	2,741	720	1,042	700
Necrotizing Fasciitis	-	-	-	-	2
Paratyphoid fever	0	1	4	2	2
Pertussis	67	98	134	84	47
Plague	0	0	0	0	0
Poliomyelitis	-	-	-	-	0
Rabies	0	0	0	0	0
Rubella	153	146	106	84	37
Severe Acute Respiratory Syndrome (SARS)	-	-	-	-	0
Smallpox	0	0	0	0	0
Tetanus	0	0	0	0	0
Tuberculosis	414	409	502	385	468
Tularemia	-	-	-	-	0
Typhoid fever	3	3	3	0	8
Viral haemorrhagic fevers	0	0	0	0	0
West Nile Fever	-	-	-	-	0
Yellow Fever	-	-	-	-	0

† The list of notifiable diseases was amended from 1 January 2010. The above table reports data on diseases in the revised list. For diseases added to the list in January 2010 no data can be provided for previous years.

* Confirmed figures

** 2010 Provisional figures

Further information on Notifiable Infectious Diseases in Scotland can be obtained via:

http://www.hps.scot.nhs.uk/surveillance/NotifiableInfectiousDiseaseData.aspx

http://www.hps.scot.nhs.uk/publichealthact/annualdata.aspx

http://www.documents.hps.scot.nhs.uk/ewr/pdf2011/1102.pdf

http://www.legislation.gov.uk/asp/2008/5/pdfs/asp_20080005_en.pdf

Form B (i)

Background information on outbreaks of reportable infectious diseases in animals - United Kingdom*

Disease	Number of confirmed cases per year				
	2006	2007	2008	2009	2010
African Horse Sickness					
African Swine Fever					
Anthrax	1				
Aujeszky's Disease	4		2		
Notifiable Avian Disease	3	5	2		
Bat Rabies	1	1	2	1	
Bluetongue		66	71		
Classical Swine Fever					
Contagious agalactia					
Contagious Bovine Pleuro-pneumonia					
Contagious Epididymitis (Brucella ovis)					
Contagious Equine Metritis Organism (CEMO)	1	1	2	2	2
Dourine					
Enzootic Bovine Leukosis					
Epizootic Haemorrhagic Virus Disease					
Epizootic Lymphangitis					
Equine Viral Arteritis					2
Equine Viral Encephalomyelitis					
Equine Infectious Anaemia	1				3
Foot and Mouth Disease		8			
Glanders and Farcy					
Goat Pox					
Lumpy Skin Disease					
Newcastle Disease	1				
Paramyxovirus of pigeons					
Peste des Petits Ruminants					
Rabies			1**		
Rift Valley Fever					
Rinderpest (Cattle plague)					
Scrapie					
Sheep pox					
Swine Vesicular Disease					
Teschen Disease (Porcine enterovirus encephalomyelitis)					
Vesicular Stomatitis					
Warble Fly					
West Nile Virus					

* This table shows confirmed exotic notifiable disease investigations. Further information can be found at: http://www.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/ndi/index.htm

Full information on all UK notifiable animal diseases can be obtained via:

http://www.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/notifiable.htm

UK reports to the World Organisation for Animal Health (OIE) can be found on the OIE website via:

http://web.oie.int/wahis/public.php?page=country_reports

** Rabies case involved one imported dog held in quarantine.

Form B (i)

Background information on outbreaks of reportable infectious diseases - Plants

Disease	Number of cases per year				
	2006	2007	2008	2009	2010
Ring rot in seed potatoes *Clavibacter michiganesis* subsp. *sepedonicus*					
Columnea latent viriod		4			
Florida passionflower virus		1	3		
Pepino mosaic virus in tomato crops	8	3	4	6	4
Downy mildew of basil and Agastache *Peronospora belbahrii*					3
Phytophthora kernoviae	7	10	24	49	25
Phytophthora lateralis					1
Sudden Oak Death *Phytophthora ramorum*	74	103	121	167	203
Sunflower downy mildew *Plasmopara halstedii*					1
Potato spindle tuber viroid on tomato crops					
Potato virus M (non European isolate) in seed potato crops			1		
Potato brown rot *Ralstonia solanacearum*					8
Potato brown rot in river surveys *Ralstonia solanacearum*	1	6	5	2	
Potato wart disease in private gardens *Synchytricum endobioticum*			2		
Tobacco mild green mosaic virus			2		
Tomato chlorotic dwarf viroid					12
Angular leaf spot on strawberry *Xanthomonas fragariae*					

The serious diseases above were all investigated but occurrence could be explained by normal introduction means and there was no evidence of deliberate malicious introduction. There were also a number of findings of less important routine notifiable diseases but these can also be explained by natural means of spread or by trade pathways.

Further information on plant pest and disease outbreaks in the UK can be found at:

http://www.fera.defra.gov.uk/plants/plantHealth/pestsDiseases/interceptionCharts.cfm

Form B (ii)

Information on outbreaks of infectious diseases and similar occurrences, that seem to deviate from the normal pattern

1.	Time of cognizance of the outbreak	December 2009
2.	Location and approximate area affected	Initially Scotland, subsequently also England
3.	Type of disease/intoxication	Anthrax
4.	Suspected source of disease/ intoxication	Contaminated heroin suspected
5.	Possible causative agent(s)	*Bacillus anthracis*
6.	Main characteristics of systems *(?symptoms*)	protean signs and symptoms ranging from mild localised skin infections to fatal sepsis/toxaemia
7.	Detailed symptoms, when applicable	
	- respiratory	Not significant component
	- circulatory	Coagulopathy, haemorrhaging, circulatory collapse and fluid volume loss to tissues.
	- neurological/behavioural	headache, confusion, coma
	- intestinal	GI tract bleeding
	- dermatological	massive disproportionate limb and truncal swelling and fluid accumulations, soft tissue infections up to severe necrotising fasciitis
	- nephrological	renal impairment / failure
	- other	circulatory collapse, hypovolaemic shock, multi-

	organ failure due to anthrax toxin damage leading to death
8. Deviation(s) from the normal pattern as regards	
type	new form of anthrax infection related to exposure via direct injection into subcutaneous tissues previously reported only once in Norway (drug user died in 2000).
- development	"Injectional" Anthrax – new clinical picture
- place of occurrence	No normal pattern – 1st significant outbreak of anthrax in Scotland for many years.
- time of occurrence	not known to be endemic therefore no "normal" time of occurrence.
- symptoms	unusually wide ranging and varying presentations of illness not normally seen with classical anthrax presentations
- virulence pattern	Average age 35-37. All injecting drug users with a heroin habit
- drug resistance pattern	sensitive to current recommended antibiotics
- agent(s) difficult to diagnose	identified using standard culture & PCR methods and serology (toxin and anti-toxin antibody tests)

	- presence of unusual vectors	1st outbreak suspected to be caused by contaminated heroin sourced from Afghanistan / Pakistan
	- other	n/a
9.	Approximate number of primary cases	Scotland: 47 confirmed cases 35 Probable cases and 37 possible cases. England: 5 possible cases
10.	Approximate number of total cases	52 confirmed cases in UK (55 confirmed cases in European Union)
11.	Number of deaths	13 in Scotland, 4 in England
12.	Development of the outbreak	Outbreak declared ended in Scotland in December 2010.
13.	Measures taken	National Outbreak Control Team convened. Advice on avoiding heroin use given to drug users and service workers. Drug users recommended to seek treatment for addiction and prescribing of heroin substitutes. NHS services alerted to enhance surveillance and assist early diagnosis & appropriate management. Extensive risk assessments and advice developed and provided to professionals involved in case identification, investigation and management from NHS services (clinical, microbiological, pathology, infection control, public health) to Police, Prison Staff, hostel wardens and carers. Clinical network established to share knowledge and expertise on case management. US Government sent supplies of new (experimental) anthrax anti-toxin to treat cases.

Information on the outbreak is available at: http://www.hps.scot.nhs.uk/anthrax/index.aspx

Form C

Encouragement of publication of results and promotion of use of knowledge

At the Third Review Conference it was agreed that States parties continue to implement the following:

> **"Encouragement of publication of results of biological research directly related to the Convention, in scientific journals generally available to States parties, as well as promotion of use for permitted purposes of knowledge gained in this research."**

Nothing new to declare since last submission

UK policy is that basic research in biosciences, and particularly that related to the Convention, should generally be unclassified and applied research is also unclassified to the extent possible without infringing on national and commercial interests.

It is UK policy to encourage research scientists funded by the Government to publish the results of their work in scientific journals readily available to the scientific community. This applies to the publication of the results of research carried out in the research centres and laboratories subject to exchange of information under Confidence Building Measure A.

Insofar as publication of research on outbreaks of diseases covered by Confidence Building Measure B is concerned again it is UK policy to encourage research scientists funded by the Government to publish the results of their studies.

Examples of relevant scientific journals and other scientific publications include the following:

American Journal of Tropical Medicine and Hygiene
Analyst
Antimicrobial Agents and Chemotherapy
Antiviral Research
Applied and Environmental Microbiology
Applied Biosafety
Archives of Virology
Avian Pathology
Bioinformatics
Biosensors and Bioelectronics
BMC Genomics
BMC Infectious Diseases
BMC Microbiology
BMC Proceedings
Clinical and Vaccine Immunology
Developmental and Comparative Immunology
Emerging Infectious Diseases
Epidemiology and Infection
Eurosurveillance
Expert Review of Vaccines
FEMS Microbiology Letters
Foodborne Pathogens and Disease
Government Veterinary Journal
Indian Journal of Experimental Biology
Infection and Immunity

Influenza and Other Respiratory Viruses
Institute for Animal Health Biology of Animal Infections Series
International Journal of Antimicrobial Agents
International Journal of Experimental Pathology
International Journal for Parasitology
Journal of Aerosol Science
Journal of Bacteriology
Journal of Comparative Pathology
Journal of Food Protection
Journal of General Virology
Journal of Immunological Methods
Journal of Medical Microbiology
Journal of Molecular and Genetic Medicine
Journal of the Royal Society Interface
Journal of Veterinary Diagnostic Investigation
Journal of Virological Methods
Journal of Virology
Lancet
Letters in Applied Microbiology
Methods in Molecular Biology
Microbial Pathogenesis
Microbiology
Molecular Immunology
Nature
Nature Biotechnology
Outlooks on Pest Management
Parasite Immunology
Parasitology Research
Philosophical Transactions of The Royal Society B-Biological Sciences
PLoS Neglected Tropical Diseases
PLoS One
Proceedings of the National Academy of Sciences
Proteomics
The EMBO Journal
The Veterinary Journal
Transactions of the Royal Society of Tropical Medicine and Hygiene
Transboundary and Emerging Diseases
Trends in Immunology
Trends in Microbiology
Trends in Parasitology
Vaccine
Veterinary Immunology and Immunopathology
Veterinary Microbiology
Veterinary Research
Viral Immunology
Virology
Virology Journal
Virus Research

Form D

Active promotion of contacts

1. Planned international conferences, symposia, seminars, and other similar forums for exchange.

For each event the following details are provided:

a.	**Name of the conference, etc**.	EBSA 14th Annual Conference.
	Arranging organization(s), etc.	European Biosafety Association
	Time	14 - 15 April 2011
	Place	Estoril, Portugal
	Main subject(s) for the conference, etc.	Applied Biosafety & Biosecurity
	Conditions for participation	Fee payment (reduction for EBSA members)
	Point of contact for further information, registration, etc.	http://www.ebsaweb.eu/ebsa_14.html
b.	**Name of the Conference, etc.**	AHVLA International Conference 2011
	Arranging organisation(s)	AHVLA
	Time	13 – 15 September 2011
	Place	Royal Holloway, University of London, Surrey
	Main subject(s) for the conference, etc.	International Conference: Animal Diseases and their Consequences *'Shaping for the Future'*
	Conditions for participation	Fee
	Point of contact for further Information, registration, etc.	events@vla.defra.gsi.gov.uk
c.	**Name of the conference, etc.**	Health Protection 2011
	Arranging organization(s)	Health Protection Agency
	Time	13 – 14 September

Place	University of Warwick
Main subject(s) for the conference, etc.	- Preventing and reducing infectious diseases - Minimising the impact of radiation, chemical and environmental hazards - Preparing for potential or emerging threats to health
Conditions for participation	by application
Point of contact for further information, registration, etc.	http://www.healthprotectionconference.org.uk

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2. Information regarding other opportunities

(i) UK Biological Non-Proliferation Programme

The goals of the G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction (GP), agreed at Kananaskis in 2002, included the redirection of former weapons scientists and preventing terrorists and states of proliferation concern from acquiring or developing biological weapons and related materials, equipment and technology. The GP Principles therefore included a commitment to promote the adoption, universalisation, full implementation and strengthening of the Biological and Toxin Weapons Convention (BTWC). At the 2010 Muskoka Summit, the G8 Leaders again recognised the continued importance of addressing the global WMD threats, highlighting biological security and scientist engagement, as well as nuclear and radiological security and facilitation of the implementation of UN Security Council Resolution 1540.

The UK's Biological Non-Proliferation Programme supports the GP goals and principles and is aimed primarily at addressing potential proliferation risks in the biological sciences. Between 2001 and March 2011 the UK spent over £8.5 million on biological projects in support of the Global Partnership, which have helped to strengthen biosafety and biosecurity, promoted the use of biological agents for peaceful purposes, and contributed to implementation of the BTWC. The Programme covers projects and activities such as:

- training in biosafety, modern diagnostics and disease surveillance, covering both human and animal infectious diseases;
- technical advice and training for laboratories holding dangerous pathogens;
- building sustainable capacity in crop disease surveillance, diagnosis and control;
- collaborative research projects on infectious disease surveillance and diagnostics;
- contribution to regional workshops in support of BTWC implementation and export controls;
- supporting attendance of experts at BTWC meetings.

The UK has conducted or funded activities in the following regions: the Caucasus, Central Asia, and the Middle East and North Africa (MENA). The programme is expected to continue to develop in scale and geographical range over the coming years. The main regions for which engagement is planned are the Former Soviet Union, South Asia, and MENA. Activities will

continue to focus on engagement with biological scientists and provide support for the safe and secure development of dual use biological science, in compliance with the BTWC. The emphasis will be on developing sustainable projects in collaboration with recipient governments, other national programmes and international organisations such as the World Health Organization (WHO), the World Organisation for Animal Health (OIE), and the Food and Agriculture Organisation (FAO), making use of the beneficial aspects of dual use science to enhance and protect public health and agriculture.

In addition, the UK is making funding contributions to programmes led by partners:

- £2M contribution for laboratory equipment for the BSL-3 human and animal health facility to be built in the Kyrgyz Republic by the Canadian Global Partnership Program.
- £1M contribution to US Department of State Bio Engagement Program: Field Epidemiology Training Program to assist countries (Afghanistan/Tajikistan) with the development and implementation of dynamic public health strategies to strengthen their public health system and infrastructure; Iraq Scientist Engagement Program to engage with Iraqi scientists with weapons-applicable skills through a research fellowship program based in the United States; and training at Jordan University of Science and Technology in the use of modern diagnostic techniques for scientists from Pakistan, Afghanistan, the Middle East and North Africa.

(ii) Institute for Animal Health, Pirbright Laboratory

The Institute for Animal Health runs a number of training courses open to external participants:

- Foot and mouth disease diagnostics and epidemiology (11 Days)
- Bluetongue/PPR/Capripox viruses diagnostics and epidemiology (10 Days)

These courses can be viewed at the following link: http://www.iah.ac.uk/events/transbo.shtml.

Further details can be obtained from Dr Chris Oura (IAH training manager) or Elisabeth Wilson (training administrator) at the following email address: pirbright.etraining@bbsrc.ac.uk

The Institute for Animal Health also offers opportunities for postgraduate research. Details on studentships can be obtained via the following link: http://www.iah.ac.uk/students/index.shtml

Form E

Declaration of legislation, regulations and other measures

Relating to		Legislation	Regulations	Other measures	Amended since last year
(a)	Development, production stockpiling, acquisition or retention of microbial or other biological agents, or toxins, weapons, equipment and means of delivery specified in Article I	YES	YES	YES	NO

Links to the UK's Anti-Terrorism, Crime and Security Act 2001 (ATCSA):

http://www.legislation.gov.uk/ukpga/2001/24/contents

http://www.legislation.gov.uk/uksi/2007/926/contents/made

Link to text of the UK's Biological Weapons Act 1974:

http://www.legislation.gov.uk/ukpga/1974/6/contents

The Academic Technology Approval Scheme (ATAS) was introduced on 1 November 2007
For information, see link:

http://www.fco.gov.uk/en/about-us/what-we-do/services-we-deliver/atas/

(b)	Exports of micro-organisms* and toxins	YES	YES	YES	YES

Link to current UK Export control lists:

http://www.bis.gov.uk/assets/biscore/eco/docs/control-lists/uk-consolidated-list.pdf

Further information on UK export control legislation can be found at:

http://www.businesslink.gov.uk/bdotg/action/layer?topicId=1084474434&r.s=e&r.l1=1079717544&r.lc=en&r.l3=1084471558&r.l2=1084228483&r.i=1084471678&r.t=RESOURCES

http://www.businesslink.gov.uk/bdotg/action/detail?r.s=m&r.l1=1079717544&r.lc=en&r.l3=1084474434&r.l2=1084228483&type=RESOURCES&itemId=1084478417

(c)	Imports of micro-organisms and toxins	YES	YES	YES	YES

* Micro-organisms pathogenic to man, animals and plants in accordance with the Convention.

Amendments since last year:

The following legislation was amended in 2010:

- The Specified Animal Pathogens Order (Northern Ireland)
  http://www.legislation.gov.uk/nisr/2010/24/introduction/made

- The Plant Health (England) Order
  http://www.legislation.gov.uk/uksi/2010/2962/made

  http://www.legislation.gov.uk/uksi/2010/1510/introduction/made

- The Plant Health (Scotland) Order
  http://www.legislation.gov.uk/ssi/2010/206/introduction/made

- The Plant Health (Wales) Order
  http://www.legislation.gov.uk/wsi/2010/1795/introduction/made

- The Plant Health (Northern Ireland) Order
  http://www.legislation.gov.uk/nisr/2010/197/introduction/made

Further information on UK domestic controls to prevent the proliferation of nuclear, chemical and biological weapons, and their means of delivery has been submitted under UN Security Council Resolution 1540 requirements and can be found via:

http://www.un.org/sc/1540/nationalreports.shtml

http://www.un.org/sc/1540/legisdocuments.shtml

Form F

Declaration of past activities in offensive and/or defensive biological research and development programmes

1. Date of entry into force of the Convention for the State Party.

26 March 1975

2. Past offensive biological research and development programmes:

Updated Information:

The UK provided information on its past offensive programme in 1992. Since that point the CBM F has not been updated. In the past year information has become available, as part of regular reviews of retained files held at The National Archives, which reveals some experimental work on anti-livestock biological warfare, which has not been previously acknowledged in the UK's CBM submissions. The UK is therefore taking this opportunity to update the information provided in its CBM Form F. Our original Form F is being reproduced in this year's return.

The Porton Experiments Sub-Committee was established in September 1940 as a sub-committee of the War Cabinet to investigate the feasibility of the means of biological warfare. Until then there had been no systematic scientific investigation in the UK into offensive and defensive biological warfare. Those engaged in UK efforts worked from the assumption that only by a full examination of the methods of attack would it be possible to develop effective means of defence. Work started at Porton Down within the Chemical Defence Experimental Station (CDES) in November 1940 to assess the feasibility of BW, to define the necessary defensive measures and to acquire the means to retaliate in kind in the event of use of BW against the UK or its allies.

As part of this work in January 1941, the UK noted the possibilities for attacks on livestock using saboteurs and aircraft as the means of delivery of the causative agents. At the then current state of knowledge of human and animal diseases, it was believed that the spreading of the latter appeared to be the more formidable weapon. It was subsequently proposed that preparatory measures for retaliation with animal diseases should be initiated or continued by the Ministry of Agriculture and Fisheries at its Weybridge and Pirbright stations or elsewhere.[1] The diseases under investigation were Foot and Mouth Disease (FMD), Rinderpest, Glanders and Swine Fever.

Experiments were conducted in 1941 and 1942 to test the survival of Swine Fever virus on certain foodstuffs, particularly cakelets, and when sprayed on grass. Similar programmes were undertaken for FMDV and Rinderpest virus. Research was also done to investigate defensive measures against these agents. Work on glanders involved some initial studies on virulence, growth and survival of the causative agent, as well as defensive measures.

It seems that no further progress was made on developing these agents into practical weapons in the 1940 to 1942 period. Although experimental work with FMDV and Rinderpest virus in cattle cakes was undertaken, no evidence has been found to indicate that there were any stockpiles produced to match the anthrax charged cattle cakes, which were the sole means of providing a BW retaliatory capability during the Second World War.

[1] Pirbright in Surrey was the Ministry of Agricultures and Fisheries' Foot and Mouth Disease Research Station. Weybridge, also in Surrey, was the Ministry's Veterinary Laboratory.

Original Form F:

BIOLOGICAL AND TOXIN WEAPONS CONVENTION: UK CBM FOR F 1992

Declaration of past activities in offensive and/or defensive biological research and development program

1. Date of entry into force of the Convention for the State Party

The UK signed the Convention in April 1972, ratified it in March 1975, and the Convention became operative for the UK in December 1975, by which time national implementation had already been achieved by the Biological Weapons Act of 1974.

2. Past offensive biological R&D programs

- Yes

- Period(s) of Activities:

The UK had a modest programme to provide a capability to retaliate in kind should UK force be attacked by BW which started in 1940 and ceased in the late 1950s.

- Summary of the R&D activities indicating whether work was performed concerning production, test, and evaluation, weaponisation, stockpiling of biological agents, the destruction programme of such agents and weapons, and other related research.

United Kingdom concern about the possible future menace of the use of biological weapons (BW) began in the 1920s and continued through the 1930s with the establishment in 1936 of a sub-committee of the Committee for Imperial Defence, with a mandate "to report on the practicality of the introduction of bacteriological warfare and to make recommendations on the countermeasures which should be taken to deal with such an eventuality." This led to the establishment in 1940 of the Biology Department, Porton (BDP).

From 1940 to 1946 the UK focus for BW studies was the Biology Department, Porton (BDP) which though located within the then Chemical Defence Experimental Station was a small autonomous organisation (up to about 45 people at its largest) set up to assess the feasibility of BW, to define the necessary defensive measures and to acquire the means to retaliate in kind in the event of use of BW against the UK or its allies. The latter part of this mandate involved carrying out trials using anthrax spores disseminated from bombs on Gruinard Island in 1942 and 1943. The success in demonstrating this method of release of spores was followed by the start of a conjoint United Kingdom, United States and Canadian development of a retaliatory capability based on cluster bombs with anthrax charged munitions, the so called N bomb project. This project had not come to fruition by the end of the war, and the War Cabinet's requirement for a retaliatory capability in World War II was fulfilled by the development of a modest anti-livestock aircraft-delivered BW capability based on anthrax spores in cattle cakes. A stockpile of 5,000,000 cattle cakes was produced by BDP in 1942-3 and was stored at Porton. This weapon was never employed.

In the immediate post-war period the cattle cake stockpile was destroyed by autoclaving and burning; a few cardboard boxes each holding 400 cakes were retained as curiosities in the culture collection of the then Microbiological Research Establishment (MRE) at Porton until they were destroyed in 1972 at the time of the signature of the Biological Weapons Convention.

Whilst some research on offensive aspects continued for a few years after World War II, by 1957 the UK had abandoned work on an offensive capability. Subsequent work was on biological defence and included assessment of hazards should BW be used against the UK.

3. Past defensive biological R&D programmes

- Yes

- Period(s) of Activities:

1940-Present

- Summary of the R&D activities indicating whether or not work was conducted in the following areas: prophylaxis, studies on pathogenicity and virulence, diagnostic techniques, aerobiology, detection, treatment, toxinology, physical protection, decontamination, and other related research, with location if possible.

BW defence was pursued from 1940 by BDP, notably in evaluation of respiratory protection, immunisation, anti-biotic therapy, and decontamination. By 1946 the BDP had become the Microbiological Research Department (MRD). In 1951 the MRD moved to a separate building in from within what had now become the Chemical Defence Experimental Establishment (CDEE). It was still known as MRD until 1957 when it became the Microbiological Research Establishment (MRE), under which title it continued until 1979.

Defensive studies were carried on from 1946 at MRD and then at MRE. The programme involved work on pathogenicity and virulence, aerobiology and experimental inhalation infection, detection and warning of BW aerosols, rapid identification of BW agents and rapid diagnosis of infectious diseases, prophylaxis, toxins, physical protection for individual and collective use, and decontamination. Most of this work was done at Porton but in the period 1948-1955 field trials with pathogens were performed on the high seas off the Bahamas and off the Scottish coast, initially to determine the feasibility of conducting trials at sea and latterly to acquire data on the behaviour of microbial aerosols under realistic conditions. Although such work was begun during the period when offensively motivated R&D was also being pursued, the data acquired was relevant to defence.

In the late 1960s and 1970s the proportion of MRE effort devoted to BW defence was gradually reduced as a result of reductions in defence funding offset by increase in civil research and microbiology. In the late 1970s it was decided that BW defence should be carried out at the then Chemical Defence Establishment (CDE) on a much reduced scale, resulting in defence sector economies and benefits from the wholesale commitment of MRE to public health microbiology. MRE was transferred to the Public Health Laboratory Service of the Department of Health in 1979. It is now the Centre for Applied Microbiology and Research in the Public Health Service. Accordingly, on 1 April 1979, a new Defence Microbiology Division (DMD) was set up within CDE as the focus of UK research on BW defence. The impact of genetic engineering, molecular biology, and biotechnology began to be felt in the early 1980s and has been highlighted in the UK papers submitted to all three Review Conferences of the Convention. These scientific and technological developments brought about a reassessment of the potential hazard posed by living biological and toxin weapons to the UK Armed Forces, and of continuing progress towards better detection and protection. In the latter areas it was recognised that the emerging biological technologies would make a significant contribution within the integrated research programme of CDE to counter the CBW threat. In April 1991, CDE was renamed the Chemical and Biological Defence Establishment (CBDE) to reflect more accurately the scope of the Establishment's work.

Form G

Declaration of vaccine production facilities

1. **Name of facility:** MedImmune UK Ltd

2. **Location (mailing address):** Plot 6 Renaissance Way
Boulevard Industry Park
Speke
Liverpool
L24 9JW

3. **General description of the types of diseases covered:**

Influenza vaccine

Form G

Declaration of vaccine production facilities

1.	**Name of facility:**	Novartis Vaccines and Diagnostics Limited
2.	**Location (mailing address):**	Gaskill Road Speke Liverpool, L24 9GR

3. General description of the types of diseases covered:

Influenza vaccines only were manufactured at this facility. Two distinct types:-

a) Northern Hemisphere Influenza vaccine - Cultivation of egg adapted influenza virus. Three strains incorporated within the vaccine (Trivalent).

b) H1N1sw pandemic influenza vaccine (monovalent i.e. single strain) - Cultivation in eggs of attenuated H1N1 strains produced by 'Reverse Genetics' and classical reassortment techniques.

Designated at containment category allocated Cat 2 (Enhanced) initially and then lowered in line with World Health Organisation guidance to Cat 2. The enhancements refer to a requirement for additional personal protection (use of RPE) and vaccination of operators with current Northern Hemisphere Influenza vaccine. This agent in its reverse genetic form is designated as a GMO & an appropriate manufacturing licence (GM consent) has been granted from the UK Competent Authority. IAPO (the 'Importation of Animal Pathogens Order', 1980) does not apply to these strains due to attenuation at the genetic level.

In response to the H1N1 pandemic a new purpose built influenza vaccine manufacturing facility started manufacturing during mid 2009, support structures were also brought on line including product/raw material testing laboratories and a waste treatment plant. This manufacture was in parallel to manufacture at the existing facilities.

Form G

Declaration of vaccine production facilities

1. Name of facility: Health Protection Agency
Centre for Emergency Preparedness and Response

2. Location (mailing address): Porton Down
Salisbury
Wiltshire
SP4 0JG

3. General description of the types of diseases covered:

Manufacturer of anthrax vaccine