

[dstl]

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Ministry
of Defence

Is There a Doctor in the House? The Role of a Medical Officer Integrated into Laboratory Safety Procedures

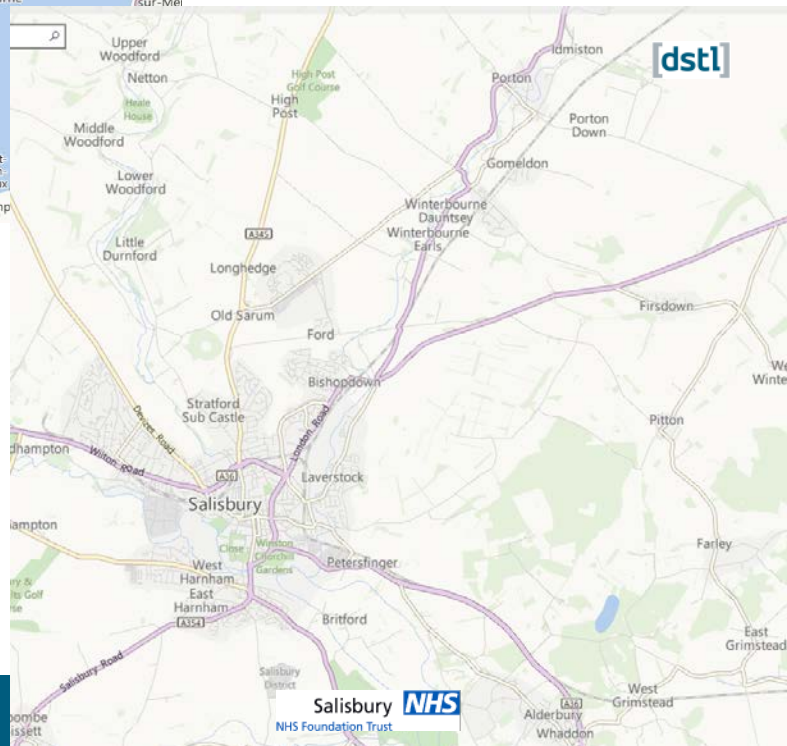
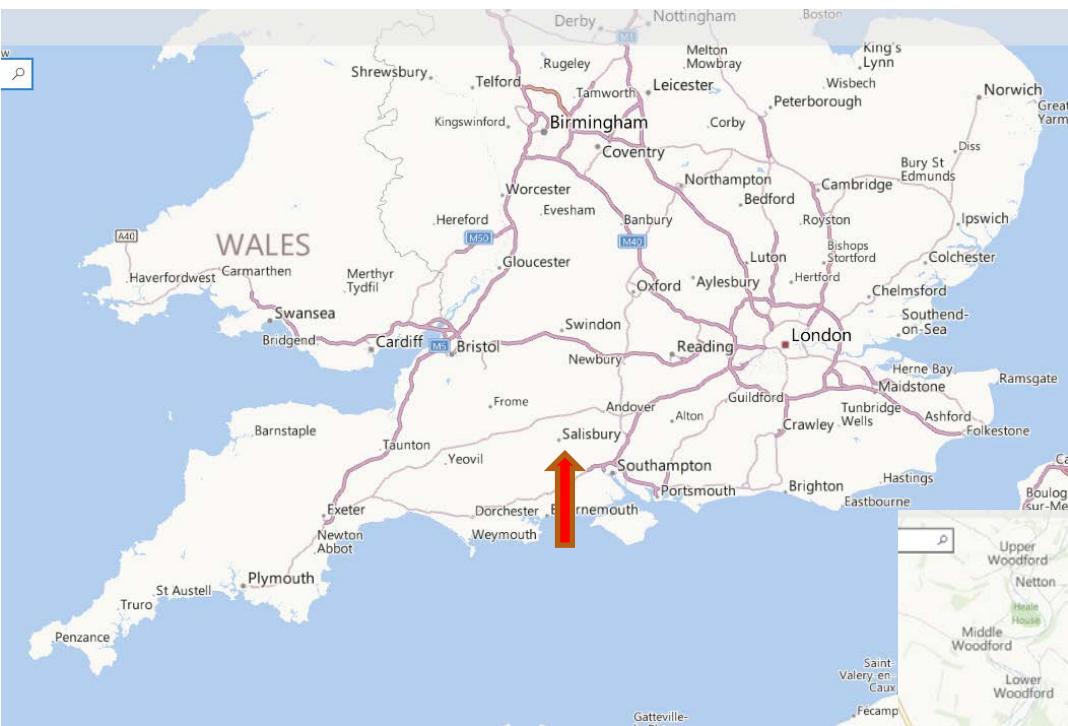
Dr Paul Russell

Microbiological Health Officer

DSTL Porton Down

My background

- 1991-2001: Research microbiologist DSTL Porton Down
 - Research work and laboratory manager of BSL-3 facilities
- 2001-2005: Medical School
- 2005-2007: Foundation medical training
- 2007-2012: Specialty training: Medical Microbiology and Virology
- 2012: Consultant Medical Microbiology and Virology in NHS (Part-time)
- 2013: Microbiological Health Officer at DSTL Porton Down
- 2008: Locum work in local Emergency Department



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Ministry of Defence

Primary Containment



The response to incidents in containment

- Occupational Health take the lead for any emergency on site
 - 0800-1700 Monday-Friday
 - Doctor and 2-3 nurses
 - They will not enter containment
- Primary role of the Microbiological Health Officer (MHO) is to provide specialist advice and practical help to Occupational Health
 - Out of hours cover
- Events are extremely rare
- However:
 - Anxiety and concern to the individual(s) involved
 - May be handling a pathogen with no recognised treatment
 - Consequences for themselves and their family
 - Public Health Consequences
 - Human, animal and plant health
 - Rumour and misinformation
 - About the pathogen
 - About Porton Down!

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Eye lids ripped & bones broken - Britain's horror testing on 12,000 rabbits in ONE YEAR

NEARLY 12,000 rabbits are being subjected to horrific testing in Britain EACH YEAR, shocking figures reveal.

By **HELEN BARNETT**
 PUBLISHED: 16:11, 14 May 2015 | UPDATED: 09:06, 16 May 2015

CLASGOW

EXCLUSIVE: Major security breaches at testing ground for chemical and biological weapons

SIX major security breaches have taken place at the top-secret military base where the world's most deadly biological and chemical weapons are tested.

By **Joe Hinton** / Published 1st February 2015



UK
Chemical base 'too big', says MP

Porton Down must be closed to the public, says George Grieve, a Conservative MP. He says the base is "too big" and "too secret" and that it is "a major security risk".

George Grieve, chairman of the Commons Defence Committee, said it would be "hardening" to say the parliamentary committee has anything that was going on at the secret Porton Down in Wiltshire.

On Thursday night a large jet landed at the death of a man during gas warfare tests there in 1953.

Mr Grieve told the BBC: "It's not likely for us to know, and certainly, there are many things happening there that we do not know about, and we have to let our parliamentarians know."

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Tears on her wedding day | Schoolgirl 'victim of Asian abuse gang' | Shift workers are 'more likely to be fat' | 'Please hurry, it's not a great sniffer'

New UFO witness reopens 1970s mystery of the 'Welsh Roswell'

UPDATED: 15:53, 1 July 2008

One of Britain's greatest UFO riddles refuses to go away as a new witness emerged today - 34 years after the alleged 'close encounter'.

The Government is said to have covered up 1974's event in North Wales, where scores of residents reported a massive terror, strange lights in the sky and secret-service-style 'men in black' scouring the area.

It has been dubbed the 'Welsh Roswell' after the famous U.S. case in which aliens were allegedly found by authorities in New Mexico.

UFO believers claimed aliens crash-landed in the Berwyn mountain range and their bodies were transported by the MoD to top-secret Wiltshire research base Porton Down.



NEWS

UK
Porton Down - a sinister air?

A sinister air surrounds the subject of chemical weapons, quite different from the power politics of the nuclear arms race.

When terrorists targeted the Japanese subway, it was their use of Sarin gas that caught the public fear. When Saddam Hussein's crimes are mentioned, it is invariably using chemical weapons against the Kurds that is cited.

And some of the mystery is attached to the name of Porton Down, the secret chemical weapons centre in Wiltshire.

The centre, made up of building buildings in 7,000 acres near Salisbury, was set up in 1936 at the height of WWI.

Patrick Marcar, a retired air officer, spent several weeks there on courses designed to test soldiers about chemical warfare.

"It was hideous," he said, "a hotted camp, where it seemed to do nothing but rain. There were a series of bunkers to which you were thrust from time to time to be gassed with CS gas and to go through pharyngeal exercises underground wearing a gas mask."

During WWII Porton Down started researching a new weapon - biological weapons, but during the Cold War chemical weapons became the top priority.

For many years, the mere fact that there was a chemical weapons research centre there was secret, but after it was admitted in the late 1950s, it became the most controversial military

BBC NEWS

Porton Down scientists 'could be charged'

Police say they have enough evidence to charge five scientists over nerve gas testing on servicemen up to 50 years ago.

Sailors were exposed to the deadly nerve gas sarin during experiments at Porton Down, a chemical and biological defence establishment on Salisbury Plain in Wiltshire, between the 1930s and 1950s.

The Ministry of Defence (MoD) tests carried out on several British servicemen could now lead to prosecutions.

Veterans say the chemical tests left them with long-term ill health.

Their claims have been investigated by Wiltshire police who say they now have enough evidence to charge up to five retired scientists with criminal offences.

In an unprecedented move, the force will ask the Director of Public Prosecutions to take the scientists to court for allegedly helping the volunteers into taking part in the tests.

The Ministry of Defence's chemical and biological weapons research centre has tested 3,000 servicemen in human volunteer experiments since 1945.

More than 100 ex-servicemen claim to have suffered disabilities ranging from breathing difficulties to kidney complaints as a result of the tests.

The response to incidents in containment

- The individual
 - Assess
 - Reassure
 - Treat
 - Injury/medical problem
 - Prophylaxis
 - Refer
 - Isolate
 - Usually livestock animal contact!

The key issues

- Face-to-face consultation with a familiar face
 - MHO on-site or within 30 minutes
- Discuss with Emergency Department/Acute Medicine if necessary
 - Dispel the myths and legends
- Know who to call for help
 - Specialist services for Viral Haemorrhagic Fever (VHF)
- Keep records!

The response to incidents in containment

- It may also be necessary to liaise with other agencies/individuals
 - Public Health
 - Family doctor
 - Liaise between individual, line management and hospital
 - Maintain medical confidentiality!
 - Keep records!
 - (Health and Safety Executive)
 - (Department of Environment, Food and Rural Affairs)
 - Incident involves organism covered by Specified Animal Pathogens Order (SAPO)

Case 1 – Typical case

- 27 year old working in isolator with *Burkholderia pseudomallei*
- Stretches to get universal container
- Glove rips

Case 1 – Typical case

- 27 year old working in isolator with *Burkholderia pseudomallei*
- Stretches to get universal container
- Glove rips
- Individual risk assessment
 - Negative pressure maintained
 - No actual culture or infected material spilled on to hand
 - Glove change
 - Wash hands and continue work. Incident reported
 - No MHO involvement

Case 2

- 27 year old removing *Yersinia pestis* from -70°C freezer.
- Vial falls out and lid comes off
- Ice and “drops” on floor
- Individual makes safe – reports incident by telephone.

- Advised to leave the laboratory
- Seen by MHO
 - Risk assessed – Very low risk of inhaled exposure
 - Reassured
 - “Safety net”
 - No further action from MHO. Return to work

Case 3

- 27 year old worker administering ciprofloxacin to mouse infected with *Y. pestis*
- Bitten. Both gloves compromised and small flap of skin raised at bite site. No blood. No obvious puncture wound.
- Reported incident. Self aid – cleaned wound. Colleague made lab safe.
- MHO
 - Advised signs and symptoms of plague
 - Started ciprofloxacin 2 weeks
 - Daily reporting to line manager
 - No lab work for 2 weeks. Other duties.
 - Family doctor informed.

Case 3

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 - Family doctor informed.

That was me!

Case 4 – “The man from Porton Down”

- Contacted by Emergency Department Consultant
 - 27 year old collapse ?cause
- Advised not a lab worker
 - No lab-based pathogen hazard. No chemical/toxin hazard
- Nothing further for MHO

Case 4 – “The man from Porton Down”

- Contacted by Emergency Department Consultant
 - 27 year old collapse ?cause from Porton Down
- DSTL but not a lab worker
 - No lab-based pathogen hazard. No chemical/toxin hazard
- Nothing further for MHO
- Porton Down has 3 sites – PHE, DSTL and Science Park
- DSTL ~2500 on site with large transit population.
- ~70 people work at BSL-3
- ~12-15 at BSL-4

So what is routine.....

- Safety
 - Sit on 3 safety committees
 - Microbiology Safety Committee
 - Biological Research Safety Committee
 - Genetic Modification Safety Committee
 - Scrutinise safety procedures, lab protocols etc

Case 5

- Project proposal to modify *Francisella tularensis* for vaccine studies
 - Using a kanamycin resistance marker
 - MHO raised concerns – kanamycin is aminoglycoside – would it induce class resistance to other aminoglycosides especially gentamicin (mainstay of therapy)?
 - Answer unknown
 - Mechanism of resistance not known
 - “We’ve always done it” “Everyone else does it”
- MHO not happy
- Literature review
 - Kanamycin resistant mechanism differed from mechanism that would confer resistance to gentamicin
- Antibiotic MIC measured
 - No evidence of cross resistance
- Project could proceed

So what is routine.....

- Safety
 - Sit on 3 safety committees
 - Microbiology Safety Committee
 - Biological Research Safety Committee
 - Genetic Modification Safety Committee
 - Scrutinise safety procedures, lab protocols etc
 - Clinical input where necessary
 - Teach
 - Containment and accident preparedness courses
 - Toxins and accident preparedness course
 - Curriculum for Immediate Responders course

So what is routine.....

- Staff screening
 - For staff working at BSL-3 and BSL-4
 - Not a physical examination
 - Occupational Health cover employment medicals and further surveillance
 - Opportunity for the MHO to introduce themselves
 - Determine any underlying health problems
 - Any impact on working with dangerous pathogens
 - Determine any concerns
 - Outline risks of working in containment
 - Changes any health
 - Pregnancy
 - Immunosuppressive problems
 - Diabetes
 - Drugs e.g. DMARDs
 - Mental health

Case 6

- 27 year old 8 weeks pregnant
- Not announced to other colleagues
- Works in containment
 - Advised same risks as everyone else
 - Consequences of an incident could be more serious
 - Avoid chemical solvents
 - Avoid lifting
- Worker decided to stop containment work few weeks later
 - She informed line manager
- Maintaining confidentiality is difficult
- Pregnancy uneventful

Case 7

- 27 year old 8 weeks pregnant
- Not announced to other colleagues
- Advice as case 6
- Continued to work until 36 weeks
- Pregnancy uneventful

Case 8

- Advice requested from a line manager
- Member of staff started on antidepressants
 - Worked in technical capacity within containment
 - A number of simultaneous significant life events
- Line manager had no concerns with performance or behaviour
- MHO advised no issues with continuing work

So what is routine.....

- Research
 - Clinical advice to projects
 - Antibiotics
 - Vaccines
 - Diagnostics
 - Other non-microbiological projects
- Advice and assistance to Occupational Health

In summary

- MHO
 - Microbiology/Infectious Disease Specialist
 - Recommend maintaining clinical currency
 - Understands the workings of containment
 - Has good working relationship with local medical facilities

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