WHO Polio Eradication Programme  
UK National Survey of Polioviruses


In September 2001, the University received a joint letter from the Health and Safety Executive and Department of Health, which outlined the programme within WHO European Region towards certification of polio eradication. The letter also contained a request from the Joint Committee on Vaccination and Immunisation, and the Advisory Committee on Dangerous Pathogens, through the (then) Public Health Laboratory Service (PHLS) at Colindale, for information on laboratories that may hold stocks of poliovirus, either for directly associated research, or adventitiously in samples taken for other purposes.

The original general questionnaire was returned to (then) PHLS, followed by a collated set of detailed follow-up questionnaires to all relevant individual areas of the University, which formed part two of our response to this request for information. The University of Edinburgh took this exercise very seriously, given the nature of the subject in question, and was commended for the quality of its return to PHLS.

Individual Principal Investigators and Heads of School signed off for their own laboratory accommodation – only a single PI recording that “this laboratory holds infectious or potentially infectious poliovirus materials according to the definitions set out by the UK Working Party.” Since the original survey, one PI indicated that his group intended to commence work involving live poliovirus, but this research was not pursued.

The Health and Safety Executive has made contact with the University Biological Safety Adviser in February 2008, to indicate that they intend to make a follow-up visit to laboratories which made positive declarations in the original survey, through HSE Biological Agents Unit (BAU) as the “inspecting agency”.

Enquiries to relevant areas of the University by the University Biological Safety Adviser (UBSA) have indicated that some of the samples which were the subject of the initial positive response have subsequently been destroyed and others are in the “brain banks” within Medicine and Vet. Medicine. Additional detailed information on the nature and source of the samples was obtained. Following further exchanges with the HSE BAU Inspector it was determined these would be unlikely to contain poliovirus and a visit was therefore not considered necessary. The HSE Inspector explained the purpose of the current exercise was to undertake a detailed risk analysis of the materials that had previously been reported as potentially containing poliovirus and to update the national records accordingly taking account of the additional information. We are therefore not expecting any further action in relation to these samples.

The recent follow up by HSE has prompted review of actions we should take in the University to address and take account of the process. Draft guidance from the UBSA on the significance of the WHO Global Polio Eradication Initiative to research within the University appears in the Annexe to this Paper. This will be circulated widely and also brought to the attention of relevant Heads of Schools. The University will continue to make as full and meaningful a contribution as possible to this important programme at UK and European levels.
THE SIGNIFICANCE OF THE GLOBAL POLIO ERADICATION INITIATIVE TO RESEARCH IN THE UNIVERSITY

Attention is drawn to the following abstract from the Health Protection Agency website at http://www.hpa.org.uk/infections/topics_az/polio/update1.htm

Certifying the world polio-free requires not only stopping the circulation of wild poliovirus in human populations, the only natural reservoir, but also minimizing the risk of an accidental or intentional reintroduction of wild poliovirus into the community from a laboratory or vaccine production site. The WHO global action plan for laboratory containment of wild polioviruses aims to identify laboratories worldwide that store wild poliovirus and potentially infectious materials, and ensure that those materials are handled under appropriate biosafety conditions after eradication. Completion of all pre- and post-eradication containment measures is a prerequisite of global certification of polio eradication. That the last case of smallpox actually occurred as a result of a laboratory containment failure in Birmingham, England in 1978, one year after global eradication of smallpox, serves as an important reminder of the need for effective containment.

It is important to emphasise the World Health Organisation’s Global Action Plan to minimise risk of poliovirus release from containment facilities, includes wild poliovirus (WPV), vaccine derived poliovirus (VDPV), attenuated strains of poliovirus vaccine (OPV) and any materials that may be contaminated with these virus strains.

Since researchers in the University obtain a diverse range of materials from wide and varied sources and often keep valuable samples in storage for many years they should be aware of the need to consider whether they may have any materials that could potentially be contaminated with poliovirus. If such materials are identified, the relevant researchers must confirm that they are appropriately contained to minimise any potential for release. Every effort should be made to ensure the University makes as full and meaningful a contribution as possible to this important programme at UK and European levels.

During 2001 all laboratories in the UK were asked, through the (then) Public Health Laboratory Service, to take part in a survey to establish the location of stocks of poliovirus and any potentially infectious material. The Health and Safety Department circulated the questionnaire and co-ordinated the response on behalf of the University of Edinburgh. Any laboratories with such stocks were subsequently registered on the National Inventory of Laboratories recorded as holding poliovirus or related materials.

In 2007 the Health and Safety Executive commenced a 3-year rolling programme of audits to the sites on the inventory that hold stocks of virus, or material that may contain virus. As part of the visits they are also promulgating information on the poliovirus eradication programme and reminding institutions of the importance of providing up to date information on stocks of virus and materials that may contain the virus. Wherever possible, HSE will be encouraging laboratories to dispose of samples, which contain or may contain poliovirus.
The University has recently been contacted as part of the above programme and this has served as a reminder of the need to be vigilant and take account of the process. It is fair to say that in the intervening period since 2001 there has been no follow up from the PHLS and its successor the Health Protection Agency and so awareness in the University has inevitably fallen, and many researchers may not be aware of the significance of the Initiative to their work. This mainly relates to materials that have been in long term storage but, since cases of polio have been occurring in some countries of the world since 2001, it is possible new materials that may be contaminated have been obtained in the interim.

**Action required**

Researchers in the University should consider whether any samples they have, or intend to acquire, may contain poliovirus. Guidance is provided in the appendix on the type and source of samples affected and factors to consider as part of the risk analysis. If anyone in the University identifies any materials that may contain poliovirus they should contact the University Biological Safety Adviser for advice as soon as possible. If any such materials are identified and are to be kept they will need to be added to both the University of Edinburgh Inventory (maintained by the University Health and Safety Department) and the Health Protection Agency National Inventory.

**Current containment requirements**

At present poliovirus is a hazard group 2 pathogen, and work involving this virus or materials contaminated with the virus should be undertaken at containment level 2 (CL2) in accordance with the COSHH Regulations. There are, however, in addition WHO recommended containment measures (follow link from HPA website above) for such materials which go beyond those required by CL2 of COSHH. These minor additional requirements are not legally enforceable in the UK but in the spirit of supporting the eradication programme researchers in the University should strive to meet these wherever possible.

**Future implications**

As the eradication programme progresses it is expected UK legislation will be altered to take account and materials will have to be moved to higher levels of containment. Initially this will be to Containment Level 3 but ultimately, when immunisation ceases, work will be allowed only in Containment Level 4 facilities. Therefore the eradication initiative could have considerable resource implications for some areas of research that should be taken into account now.

**Biosafety Unit**  
**Health and Safety Department**  
**University of Edinburgh**  
**April 2008**
Appendix 1

IDENTIFICATION OF SAMPLES THAT MAY CONTAIN POLIOVIRUS

The flow chart below summarises the steps to be followed to identify samples which may contain poliovirus. Please use this chart in conjunction with the fuller guidance in the rest of this Appendix.

Stage 1: Type and source of samples
Do you have any of the listed types of samples from any of the listed sources?

No

Samples regarded as unlikely to contain poliovirus

Yes

Stage 2: Storage / inactivation processes
Have the samples been subject to any of the listed procedures?

No

Samples regarded as unlikely to contain poliovirus

Yes

Stage 3: Additional detailed risk analysis
Are samples unlikely to contain poliovirus due to known medical history, symptoms or individual circumstances?

No

Stage 4: Testing for poliovirus
Have samples been tested and been shown to be negative for presence of enteroviruses?

Yes

Samples regarded as unlikely to contain poliovirus

No

CAUTION: Samples regarded as potentially “may contain poliovirus”
Contact University Biological Safety Adviser

Keep test records

Record risk analysis
Use the following guidelines when considering if samples may contain poliovirus:

**STAGE 1 – preliminary assessment based on TYPE AND SOURCE of samples**

Do you have any of the following types of samples:
- Human faecal specimens
- Human throat specimens
- Other unfixed human specimens, excluding serum and plasma
- Untreated sewage samples
- Untreated water samples

that have been collected from any of the following sources:
- Material from known or suspected polio cases.
- Materials collected for any reason from a country at a time when wild poliovirus was circulating

Information sources in worldwide circulation of poliovirus:
- last reported polio cases, figures for 2000-20008
  [http://www.polioeradication.org/content/general/casecount.pdf](http://www.polioeradication.org/content/general/casecount.pdf)
- read in conjunction with Annex 1 of WHO report from 2004
  [http://www.polioeradication.org/content/publications/WHO-VB-03-729.pdf](http://www.polioeradication.org/content/publications/WHO-VB-03-729.pdf)
- Materials collected in the UK for any reason before the end of 1985

If NO samples are unlikely to contain poliovirus so finish here, if YES go on to Stage 2

**STAGE 2 – take account of STORAGE/INACTIVATION processes**

Have your samples been subjected to any of the following storage or inactivation processes:
- Stored without refrigeration for three months or more
- Refrigerated for one year or more (note frozen materials are potentially infectious)
- Heat inactivated at 55°C for at least 30 minutes
- Treated with disinfectant known to inactivate polioviruses
  - 3% formaldehyde, 0.1N HCl or free residual chlorine at 0.3-0.5ppm are examples of effective disinfectants
  - 70% alcohol, 5% Lysol, 1% quaternary ammonium compounds are not effective disinfectants

If YES samples are unlikely to contain poliovirus so finish here, if NO go on to Stage 3

**STAGE 3 – where additional information is available undertake detailed risk analysis to determine likelihood samples contain poliovirus** (or go direct to stage 4 if additional information not available)

Are your samples unlikely to contain polioviruses based on known medical history, symptoms and individual circumstances of the source human or animal.

If YES samples are unlikely to contain poliovirus so finish here – however you must document and keep a record of your risk analysis, if NO go on to stage 4

**STAGE 4 – testing of materials to show that poliovirus is not present**

Have your samples been tested and found negative for the presence of enteroviruses by
- Culture
- Antigen detection (eg ELISA)
- Genome detection (probe hybridisation, PCR/gene amplification)

If YES samples are considered to be free of poliovirus so finish here - you must keep a record of the test results, if NO the samples are regarded as potentially may contain poliovirus and you must contact the University Biological Safety Adviser for further advice