

BIOSCIENCES FEDERATION



INSTITUTE
OF BIOLOGY

Biosecurity in UK Research Laboratories

A joint response from the Biosciences Federation and the Institute of Biology to the Innovation, Universities and Skills Committee

January 25th 2008

Summary

1. IOB and BSF welcome this inquiry by the IUS Committee. We recognise not only the serious potential threat posed by deliberate exploitation or accidental escape of many laboratory collections but also the essential and beneficial contribution to society of research involving such material. We hope that this consultation process will lead to improved practices and increased peace of mind for researchers and the public.
2. The current capacity for work on dangerous pathogens is limited and may not be sufficient to allow the desired level of Category 4 research both in terms of facilities and of fully trained personnel.
3. There is concern that, despite Full Economic Costing for universities, the pressure to generate measurable output and income causes infrastructure funding to be shifted towards short term projects to the detriment of routine maintenance. Licensing and monitoring should require full costing of, and budgeting for, maintenance as well as provision for decommissioning at the end of each licensing period to accommodate the possibility of non-renewal.
4. The role of Safety Officer should be responsible, visible, highly trained and senior. While moves to avoid negative effects of health and safety regulations may be appropriate in some areas, biosafety must always be paramount in the handling of pathogens. Moreover, biosecurity should be given priority over other matters such as trade agreements etc.
5. Routine and unannounced inspections are infrequent in the absence of reported incidents. Transport of dangerous agents between facilities needs to be examined, particularly with regard to planning for critical incidents and communication of these strategies. Training advice from the Advisory Committee on Dangerous Pathogens (ACDP) is well regarded, however, actual training is heavily dependent upon internal procedures at each facility.

Appendix 1

Q1. The current capacity for research on dangerous pathogenic material in the UK and the capability to conduct research on the causative agents of disease that may emerge at a future time

A1. The current capacity for such work is limited¹ and may be inadequate to allow the desired level of Category 4 Pathogen research both in terms of facilities and of sufficiently trained personnel. Research on Category 4 and 3 agents is necessary to allow recognition of new variants, to identify and trace contacts of potentially exposed travellers and animals, and to compare outbreaks from different areas.

It is important for researchers and regulators to recognise that release of notifiable animal, bird and plant pathogens can hamper trade and transport within a country and have a detrimental effect on the economy, and that security against theft should therefore be as high in these cases as for agents of dangerous human and zoonotic diseases.

Q2. The state of biological containment facilities in the UK

A2. Category 3 pathogens pose a very serious risk and how and where to do research on agents and infected animals needs to be considered very carefully. Any facility dealing with microorganisms dangerous to man or commercially important animals and plants should have modern well maintained systems that are *guaranteed* to inactivate the agents before disposal of the residue of experiments. All systems should be visible to inspection, and old-fashioned hidden pipes or inaccessible filtration units cannot be allowed.

There is considerable concern that economic pressure shifts focus towards short term budgeting at the expense of routine maintenance and replacement. It is essential that the need for excellent biosecurity is considered in reviewing budgetary requests to funding bodies. Applicants should be encouraged to apply for the full cost of maintaining top class systems in the knowledge that the need for the research will be the deciding factor and not the cost of the biosecurity.

Q3. Laboratory inspection regimes and the rationale and practicalities of the licensing system

A3. The rationale of the licensing system is well thought out and implemented. However, there are a number of potential areas of concern; old facilities are difficult to inspect and there are areas where identification of poor internal processes might be unlikely. There is an impression that once licences have been issued routine and spot inspections are rare, unless an incident is notified, and that even change of organism does not necessarily trigger a site inspection.

We note that Category 4 inspection in particular, and indeed Category 2 and 3 facilities are under the care of very few inspectors.

¹ The Callaghan Report (p10) notes that there are 10 Category 4 held licences in England.

The granting of licences to new facilities at new locations needs to be carefully considered to ensure that qualified and experienced personnel are available to establish mature, expert and responsible practices.

Q4. Biosafety training provision for staff working in containment facilities

A4. The need for exemplary practice is obvious and within the limited facilities in the UK standards appear to be good. The advice which we have received from experienced managers is that biosafety rules should be simple and adhered to totally. Moreover, in order to aid this, the safety officer should be highly trained and have an important and responsible position in the organisation allowing good communication with all levels. Requirement for routine, recorded and frequent (weekly) timetabled internal reporting from Safety Officers to Heads of Department or Directors of Research should be recommended. In addition facility for communication directly with the licensing authority to raise concerns and seek external advice should be considered.

The ACDP has a series of useful booklets and guidelines but does not specifically govern training. Training is left very much to local conditions. These are generally good but collaboration between sites and indeed international collaboration requires a high degree of trust between licensees. Training records are reviewed but review is reactive rather than proactive.

Q5&6. The maintenance and recording practices surrounding the storage and transportation of dangerous pathogens and measures implemented when pathogenic material cannot be accounted for

A5&6. Maintenance and storage are generally covered by internal training but transport (and international transport) of dangerous agents needs careful consideration. The OECD has recently considered this in relation to Biological Resource Centres.² Moreover, there are cultured organisms not listed as Category 3 or 4 which pose a threat to agriculture and thus to productivity (yield) and quality (producing toxins and damaging stored product) and we would urge improved practice and rigour in the handling and distribution of these organisms also.

Considerable attention is given to receipt of specimens and dangerous material within facilities and to labelling of items for transport but there does not appear to be good knowledge of contingency plans for loss of, or damage to, items in transit.

Q7. The role of universities in overseeing security clearance for research students working with dangerous pathogens

A7. There is little enthusiasm for an increased role for Universities in monitoring and vetting potential staff. The Security Services are experienced and resourced for this

² OECD Best Practice Guidelines for Biological Resource Centres. Available at <http://www.oecd.org/dataoecd/7/13/38777417.pdf>

and the establishment and expansion of good communications between the two sectors should suffice. **There should never be unauthorised personnel in secure laboratories** and employment procedures should afford an opportunity for security checks.

Openness

The Biosciences Federation and the Institute of Biology are pleased for this response to be publicly available and will be placing a version on www.bsf.org and on www.iob.org once the committee's permission to do so has been granted. For any queries regarding this response, please contact Dr Laura Bellingan, Institute of Biology, 9 Red Lion Court, London, EC4A 3EF, email: l.bellingan@iob.org or Dr Caroline Wallace, Biosciences Federation, email: cwallace.bsf@physoc.org

The Biosciences Federation (BSF) is a single authority representing the UK's biological expertise, providing independent opinion to inform public policy and promoting the advancement of the biosciences. The Federation brings together the strengths of Member Organisations and Associate Members (Appendix 2), including the Institute of Biology. **The Institute of Biology (IOB)** is an independent and charitable body charged by Royal Charter to further the study and application of the UK's biology and allied biosciences. IOB has 14,000 individual members and many specialist learned Affiliated Societies (Appendix 2). Together, BSF and IOB represent a cumulative membership of over 65,000 individuals, covering the full spectrum of biosciences from physiology and neuroscience, biochemistry and microbiology, to ecology, taxonomy and environmental science.

Appendix 2

Member Societies of the Biosciences Federation

Association for the Study of Animal Behaviour	Experimental Psychology Society
Association of the British Pharmaceutical Industry	Genetics Society
AstraZeneca	Heads of University Biological Sciences
Biochemical Society	Heads of University Centres for Biomedical Science
Bioscience Network	Institute of Animal Technology
British Andrology Society	Institute of Biology
British Association for Psychopharmacology	Institute of Horticulture
British Biophysical Society	Laboratory Animal Science Association
British Ecological Society	Linnean Society
British Lichen Society	Nutrition Society
British Mycological Society	Physiological Society
British Neuroscience Association	Royal Microscopical Society
British Pharmacological Society	Royal Society of Chemistry
British Phycological Society	Society for Applied Microbiology
British Society of Animal Science	Society for Endocrinology
British Society for Developmental Biology	Society for Experimental Biology
British Society for Immunology	Society for General Microbiology
British Society for Matrix Biology	Society for Reproduction and Fertility
British Society for Medical Mycology	Universities Bioscience Managers Association
British Society for Neuroendocrinology	UK Environmental Mutagen Society
British Society for Plant Pathology	UK Federation for Culture Collections
British Society for Proteome Research	Zoological Society of London
British Toxicology Society	

Associate Member Societies

BioIndustry Association	Medical Research Council
Royal Society	Merck, Sharpe and Dohme
Wellcome Trust	Biotechnology & Biological Sciences Research Council

Additional Societies represented by the Institute of Biology

Anatomical Society of Great Britain & Ireland	International Association for Plant Tissue Culture & Biotechnology
Association for Radiation Research	International Biodeterioration and Biodegradation Society
Association of Applied Biologists	International Biometric Society
Association of Clinical Embryologists	International Society for Applied Ethology
Association of Clinical Microbiologists	Marine Biological Association of the UK
Association of Veterinary Teaching and Research Work	Primate Society of Great Britain
British Association for Cancer Research	PSI - Statisticians in the Pharmaceutical Industry
British Association for Lung Research	Royal Entomological Society
British Association for Tissue Banking	Royal Zoological Society of Scotland
British Crop Production Council	Scottish Association for Marine Science
British Inflammation Research Association	Society for Anaerobic Microbiology
British Marine Life Study Society	Society for Low Temperature Biology
British Microcirculation Society	Society for the Study of Human Biology
British Society for Ecological Medicine	Society of Academic & Research Surgery
British Society for Research on Ageing	Society of Cosmetic Scientists
British Society of Soil Science	Society of Pharmaceutical Medicine
Fisheries Society of the British Isles	Universities Federation for Animal Welfare
Freshwater Biological Association	
Galton Institute	
Institute of Trichologists	

Additional Societies represented by the Linnean Society

Botanical Society of the British Isles	Systematics Association
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