

## NIH POLICY MANUAL

### 3035 - WORKING SAFELY WITH HAZARDOUS BIOLOGICAL MATERIALS

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1. **Explanation of Material Transmitted:** This chapter establishes the NIH policy on working with hazardous biological materials in the NIH research environment and instructions for transferring Select Agents as defined in 42 CFR 72.6, Additional Requirements for Facilities Transferring or Receiving Select Agents.
2. **Filing Instructions:**
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#### **A. Purpose:**

Established under this chapter is the National Institutes of Health (NIH) policy governing the conduct of work with hazardous biological materials in the research environment, including recombinant DNA materials, toxins and human pathogens classified at Biosafety Level 2 (BL-2) and higher and Select Agents as defined in 42 CFR 72.6, Additional Requirements for Facilities Transferring or Receiving Select Agents.

#### **B. Background:**

The safe handling of hazardous biological materials in the biomedical research setting

has been and will continue to be a concern. The emergence of the human immunodeficiency virus (HIV) prompted public awareness and enhanced the need for guidelines relative to the handling of potentially infectious materials. The CDC/NIH publication, Biosafety in Microbiological and Biomedical Laboratories, serves as the primary resource guide on biological safety issues. The guide provides both laboratory and animal biosafety level criteria, recommended biosafety levels for infectious agents and infected animals, risk assessment criteria and biological agent summary statements.

The Occupational Safety and Health Administration (OSHA) has promulgated a standard on working safely with human blood and body fluids (29 CFR 1910.1030, Occupational Exposure to Bloodborne Pathogens). This standard applies to research laboratories and outlines the requirements for working with human body fluids, tissues and potential bloodborne pathogens. The standard provides information concerning facility requirements, safe work practices, medical surveillance, personal protection, first aid procedures and worker training.

Concerns about the potential use of certain biological agents for terrorist purposes caused the U.S. Congress to enact Public Law 104-132, The Antiterrorism and Effective Death Penalty Act of 1996. Section 511 of the Act required the Secretary of Health and Human Services to regulate the transfer of Select Agents. The Centers for Disease Control and Prevention implemented regulations that govern the transfer of certain biological agents and toxins, defined as Select Agents (42 CFR 72.6). Facilities that apply to transfer or receive these agents must be equipped and capable of handling the agents at the appropriate biosafety level and meet all record keeping requirements. The NIH Biosafety Officer is the Responsible Facility Official for the implementation of Part 72.6. A list of the regulated agents can be found in Appendix 1, Appendix A to Part 72, CFR 42 Select Agents. The Centers for Disease Control and Prevention (CDC) provides an updated list of Select Agents on the CDC webpage (<http://www.cdc.gov/od/sap/appinfo.htm>).

### **C. Policy:**

The policy of the NIH is to ensure that all biomedical research involving hazardous biological materials, including recombinant DNA molecules and human pathogens classified at BL-2 and higher, is conducted in a manner which protects research personnel, support staff and the environment. All work with hazardous biological materials will be conducted in compliance with the publication, Biosafety in Microbiological and Biomedical Laboratories. The policy for working with bloodborne pathogens is set forth in the NIH Bloodborne Pathogen Exposure Control Plan for Non-Hospital Personnel. Copies of these documents may be obtained from the Occupational Safety and Health Branch, Division of Safety (OSHB, DS) 496-2960 or on the DS webpage (<http://www.nih.gov/od/ors/ds>).

Employee training is an important component in the safe conduct of work with biological materials. Providing the initial training and annual retraining of personnel, as required under 29 CFR 1910.1030 and subsequent health standards, is the

responsibility of the immediate supervisor. Supervisors are also accountable for ensuring that their employees are advised of the potential hazards associated with infectious agents and the proper use of laboratory equipment, including containment devices. The Occupational Safety and Health Branch provides training support to help supervisors fulfill the training requirements stated in the OSHA Standard. Training classes which address the recognition and control of common biological, chemical and physical hazards found in NIH laboratories, as well as safe work practices with human and nonhuman primate retroviruses and other bloodborne pathogens are routinely presented.

The OSHB is responsible for managing biological safety at the NIH and provides a broad range of support services, consultation and assistance. The NIH Institutional Biosafety Committee (IBC), whose functions are defined under the NIH Guidelines for Research Involving Recombinant DNA Molecules (Guidelines), reviews and approves research protocols involving the use of potentially infectious materials.

Principal Investigators working with recombinant DNA shall complete and submit to the IBC, NIH form 2690 Registration Document for Recombinant DNA Experiments, prior to the initiation of any experiment which requires approval under the Guidelines. The PI is responsible for compliance with the Guidelines in the conduct of recombinant DNA research and ensuring that appropriate reviews and approvals are obtained prior to initiation of experiments.

Principal Investigators (PIs) are responsible for submitting the form, Registration of Materials (Potentially) Infectious for Humans (OSHB 1/97), for all work involving human pathogens or human blood, tissues and body fluids including primary human cell cultures.

Principal Investigators who wish to transfer or receive a Select Agent (virus, bacterium, fungus, rickettsia or toxin) or associated genetic elements (shown to produce or encode for a factor associated with disease) as listed in Appendix A, 42 CFR Part 72.6 must contact the NIH Biosafety Officer (OSHB, DS) for assistance and approval.

Laboratories where work at BL-2 and higher is conducted, shall be posted with signage indicating the assigned biosafety level, biological material(s) in use, special procedures or precautions for entry, name of the Principal Investigator with work and emergency phone numbers. These laboratories will be inspected by OSHB staff to ensure that the facility is operating properly for the biosafety level and that appropriate practices and procedures are observed. Follow-up inspections shall be conducted.

Principal Investigators operating or working in a BL-3 laboratory must secure all potentially infectious materials prior to allowing entry of support personnel such as maintenance employees. All laboratory components (sinks, countertops, etc.) and equipment scheduled for repair or servicing will be thoroughly decontaminated by

research personnel prior to initiation of the work. A staff member familiar with the operation of the laboratory shall be present during normal working hours whenever maintenance/repair work is being conducted.

In the event of an after hours emergency in a BL-3 laboratory, the PI will be contacted at home prior to maintenance personnel entering the area. The information posted on the laboratory door sign must be kept current to facilitate this response.

#### **D. References:**

1. References and copies of registration forms are available from the Occupational Safety and Health Branch, Building 13 Room 3K04, 496-2960. OSHA references are also available on the OSHA webpage (<http://www.osha.gov>).
2. Additional Requirements for Facilities Transferring or Receiving Select Agents. Centers for Disease Control and Prevention 42 CFR 72.6, Federal Register, June 10, 1996, (61 FR 29327).
3. Biosafety in Microbiological and Biomedical Laboratories. Centers for Disease Control and Prevention/National Institutes of Health, (current edition).
4. NIH Bloodborne Pathogen Exposure Control Plan for Non-Hospital Personnel. Prepared in compliance with 29 CFR 1910.1030, December 4, 1992.
5. NIH Guidelines for Research Involving Recombinant DNA Molecules (Guidelines). Federal Register, July 5, 1994 (59 FR 34496). Amendment - Federal Register, March 12, 1996, (61FR10004).
6. Occupational Exposure to Bloodborne Pathogens. Occupational Safety and Health Administration Standard 29 CFR 1910.1030, Federal Register, December 6, 1991.

#### **E. Records Retention and Disposal:**

All records (e-mail and non-e-mail) pertaining to this chapter must be retained and disposed of under the authority of NIH Manual 1743, "Keeping and Destroying Records, Appendix 1, NIH Records Control Schedule, " Item 7000.

NIH e-mail messages. NIH e-mail messages (messages, including attachments, that are created on NIH computer systems or transmitted over NIH networks) that are evidence of the activities of the agency or have informational value are considered Federal records. These records must be maintained in accordance with current NIH Records Management guidelines. If necessary, back-up file capability should be created for this purpose. Contact your IC Records Officer for additional information.

All e-mail messages are considered Government property, and, if requested for a legitimate Government purpose, must be provided to the requestor. Employees' supervisors, NIH staff conducting official reviews or investigations, and the Office of Inspector General may request access to or copies of the e-mail messages. E-mail

messages must also be provided to Congressional oversight committees if requested and are subject to Freedom of Information Act requests. Since most e-mail systems have back-up files that are retained for significant periods of time, e-mail messages and attachments are likely to be retrievable from a back-up file after they have been deleted from an individual's computer. The back-up files are subject to the same requests as the original messages.

## **F. Management Controls:**

The purpose of this manual issuance is to establish the NIH policy on working with hazardous biological materials in the research environment including recombinant DNA materials, toxins and human pathogens classified at Biosafety Level 2 and higher and Select Agents as defined in 42 CFR 72.6, Additional Requirements for Facilities Transferring or Receiving Select Agents.

### *1. Office Responsible for Reviewing Management Controls Relative to this Chapter (Issuing Office):*

Through this manual issuance, the Division of Safety (DS), Occupational Safety and Health Branch (OSHB) is accountable for the method used to ensure that management controls are implemented and working.

### *2. Frequency of Review (in years):*

Annual.

### *3. Method of Review:*

Other Review (describe): The OSHB will maintain oversight and ensure effective implementation and compliance with this policy through review of Science Citation Index Expanded, a multidisciplinary library database covering the journal literature of the sciences. Literature reviews of a sampling of NIH PIs, working with hazardous biological materials, will be conducted and the PIs' names cross-referenced with OSHB records. The OSHB maintains information from NIH form 2690 Registration Document for Recombinant DNA Experiments, Registration of Materials (Potentially) Infectious for Humans (OSHB 1/97) and Select Agent transfer documentation. Any discrepancies will be noted and the PI will be provided with the correct documentation. Information on missing or inadequate documentation for laboratories using hazardous biological materials will be reviewed by the NIH Biosafety Committee and an Executive Summary will be forwarded to the Deputy Director for Intramural Research (DDIR).

### *4. Review Reports are sent to:*

DDIR (Executive Summary)

## **Appendix 1:**

Appendix A to Part 72, CFR 42 Select Agents, Department of Health and Human

## Services

### *Viruses*

1. Crimean-Congo haemorrhagic fever virus
  2. Eastern Equine Encephalitis virus
  3. Ebola viruses
  4. Equine Morbillivirus
  5. Lassa fever virus
  6. Marburg virus
  7. Rift Valley fever virus
  8. South American Haemorrhagic fever viruses (Junin, Machupo, Sabia, Flexal, Guanarito)
  9. Tick-borne encephalitis complex viruses
  10. Variola major virus (Smallpox virus)
  11. Venezuelan Equine Encephalitis virus
  12. Viruses causing hantavirus pulmonary syndrome
  13. Yellow fever virus
- Exemptions: Vaccine strains of viral agents (Junin Virus strain candid # 1, Rift Valley fever virus strain MP-12, Venezuelan Equine encephalitis virus strain TC-83, Yellow fever virus strain 17-D) are exempt.

### *Bacteria*

1. Bacillus anthracis
  2. Brucella abortus, B. melitensis, B. suis
  3. Burkholderia (Pseudomonas) mallei
  4. Burkholderia (Pseudomonas) pseudomallei
  5. Clostridium botulinum
  6. Francisella tularensis
  7. Yersinia pestis
- Exemptions: vaccine strains as described in Title 9 CFR, Part 78.1 are exempt.

### *Rickettsiae*

1. Coxiella burnetii
2. Rickettsia prowazekii
3. Rickettsia rickettsii

### *Fungi*

1. Coccidioides immitis

### *Toxins*

1. Abrin

2. Aflatoxins
3. Botulinum toxins
4. Clostridium perfringens epsilon toxin
5. Conotoxins
6. Diacetoxyscirpenol
7. Ricin
8. Saxitoxin
9. Shigatoxin
10. Staphylococcal enterotoxins
11. Tetrodotoxin
12. T-2 toxin

Exemptions: Toxins for medical use, inactivated for use as vaccines, or toxin preparations for biomedical research use at an LD50 for vertebrates of more than 100 nanograms per kilogram body weight are exempt. National standard toxins required for biologic potency testing as described in 9 CFR Part 113 are exempt.

#### *Recombinant organisms/molecules*

1. Genetically modified microorganisms or genetic elements from organisms on Appendix A, shown to produce or encode for a factor associated with a disease.
2. Genetically modified microorganisms or genetic elements that contain nucleic acid sequences coding for any of the toxins listed in this Appendix, or their toxic subunits.

#### *Other restrictions*

The deliberate transfer of a drug resistance trait to microorganisms listed in this Appendix that are not known to acquire the trait naturally is prohibited by NIH "Guidelines for Research Involving Recombinant DNA Molecules," if such acquisition could compromise the use of the drug to control these disease agents in humans or veterinary medicine.

#### *Additional Exemptions*

1. Products subject to regulation under the Federal Insecticide Fungicide and Rodenticide Act (7 U.S.C. Section 136 et seq.) and the Toxic Substances Control Act (15 U.S.C. Section 2601 et seq.) are exempt.
2. Additional exemptions for otherwise covered strains will be considered when CDC reviews and updates the list of select agents in this Appendix. Individuals seeking an exemption should submit a request to CDC that specifies the agent or strain to be exempted and explains why such an exemption should be granted. Future exemptions will be published in the Federal Register for review and comment prior to inclusion in this Appendix.