

Oklahoma State University Policy and Procedures

Institutional Biosafety Policy	4-0301 RESEARCH April 2016
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PURPOSE

1.01 The purpose of this policy is to formalize Oklahoma State University's obligation to ensure that activities involving biohazardous material (as defined below) are conducted safely and in accordance with applicable governmental regulations, laws, and required guidelines. Oklahoma State University (hereinafter referred to as OSU or the University) accepts responsibility for ensuring that all research and instructional activities involving the use of biohazardous materials, and the facilities used to conduct such work, are in compliance with all external regulations, laws, and guidelines, as well as applicable University policies.

1.02 The University acknowledges its responsibility to ensure, as much as possible, the safety of employees, students, the local populace, and the environment from activities that are capable of producing deleterious effects upon humans, animals, plants, or the environment. Therefore, OSU will work to ensure that its Institutional Biosafety Committee (IBC) has meeting space and sufficient staff to support the IBC's work.

1.03 The biosafety program at the University is structured in accordance with the National Institutes of Health (NIH) and the Centers for Disease Control and Prevention (CDC) publication *Biosafety in Microbiological and Biomedical Laboratories (BMBL)* (latest edition) for work with infectious agents and the NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules (NIH Guidelines). The University assures its compliance with pertinent government regulations, laws, and required guidelines, including but not limited to, the NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules (NIH Guidelines), as implemented by the National Institutes of Health, a division of the United States Department of Health and Human Services (HHS); the Select Agent Final Rule, as implemented by the United States Department of Health and Human Services' Centers for Disease Control and Prevention (CDC) and the United States Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) via Title 42 Code of Federal Regulations Part 73 (42 CFR 73 "Possession, Use, and Transfer of Select Agents and Toxins; Final Rule), Title 7 Code of Federal Regulations Part 331, and Title 9 Code of Federal Regulations Part 121 (7 CFR 331 and 9 CFR 121 Agricultural Bioterrorism Protection Act of 2002; Possession, Use, and Transfer of Biological Agents and Toxins; Final Rule); the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Public Law 107-188); the Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act of 2001 (USA PATRIOT Act, Public Law 107-56); and the United States Government Policy for Institutional Oversight of Life Sciences Dual Use Research of Concern. Additionally, the University

adheres to the Department of Commerce's (DOC) Bureau of Industry and Standards (BIS) Title 15 Code of Federal Regulations Parts 730 – 777 (15 CFR 730 – 774 “Commerce Control List”) and the Department of Transportation's (DOT) Research and Special Programs Administration's Title 49 Code of Federal Regulations Parts 171 – 180 (49 CFR 171 – 180 “Hazardous Materials: Revision to Standards for Infectious Substances; Final Rule).

POLICY STATEMENT

2.01 This policy establishes responsibility for the proper use of biohazardous material in research and instructional activities at OSU. Moreover, this policy establishes procedures to ensure that activities of a potentially biohazardous nature are conducted safely so as to protect employees, students, the public, and the environment, as well as the public service interests of the University.

2.02 Individuals intending to conduct research or instructional activities involving biohazardous material on campus or in a University-sponsored, -funded, or -sanctioned activity must comply with all applicable government regulations, laws, and guidelines, as well as OSU policies.

DEFINITIONS

3.01 **Biological Material** refers to all prokaryotic and eukaryotic organisms (and their components), viruses, subviral agents, recombinant DNA, and biologically-derived toxins used in research and instructional laboratories. For biosafety purposes we categorize biological material as biohazardous or non-biohazardous (George Mason University, 2007).

3.02 **Biohazardous Material** includes all viable infectious, pathogenic, or toxin-producing agents, prions, biologically-derived toxins, or nucleic acid constructs that have the potential to affect the health of humans, animals, plants, or the environment (University of California, Davis, 2008). This includes vectors known to carry and transmit infectious agents, infected or potentially infected animals, infectious material, and recombinant or synthetic nucleic acid molecules capable of producing deleterious effects in humans, animals, plants, or ecosystems “either directly through infection or indirectly through damage to the environment” (George Mason University, 2007).

3.03 **Biologically-Derived Toxins** include all naturally occurring molecules produced by animals, plants, microorganisms or other biological agents that have a median lethal dose (LD50) value of less than 50 mg/kg (as determined for rats). This includes the synthetic or recombinant production of naturally occurring biologically-derived toxins. Examples are bacterial exotoxin, some plant lectins such as ricin, and certain mycotoxins (aflatoxins, sterigmatocystin, luteoxkyrin, rugulosin, patulin, etc.) (George Mason University, 2007).

3.04 **Biological Safety Officer (BSO)** is the individual appointed by an institution to oversee management of biosafety risks. The NIH Guidelines require that a BSO be appointed when the institution is engaged in large-scale research or production activities, or in research requiring containment at BL-3 or BL-4 (National Institutes of Health, 2013).

3.05 **Biosafety Level (BSL)** is a description of the degree of physical containment being employed to confine biohazardous material such as organisms containing recombinant or synthetic nucleic acid molecules and to reduce the potential for exposure of laboratory workers, persons outside of the laboratory, and the environment. In Appendix G of the NIH Guidelines, these are graded from BL-1 (the least stringent) to BL-4 (the most stringent) (National Institutes of Health, 2013).

3.06 **Dual Use Research of Concern (DURC)** is life sciences research that, based on current understanding, can be reasonably anticipated to provide knowledge, information, products, or technologies that could be directly misapplied to pose a significant threat with broad potential consequences to public health and safety, agricultural crops and other plants, animals, the environment, materiel, or national security (U.S. Department of Health & Human Services, 2014).

3.07 **Infectious Agents** include human, animal, and plant pathogens (bacteria, parasites, fungi, viruses, prions (George Mason University, 2007)).

3.08 **Infectious Material** includes all biological material that contains or has the potential to contain infectious agents. Examples of potentially infectious material include human blood and blood components, human tissues and body fluids, cultured cells (from humans and non-human primates), infected animals and animal tissues, non-human primates and any tissues from non-human primates and environmental samples likely to contain infectious agents (Wilson & Chosewood, 2007).

3.09 **Institution**, as defined in the context of the NIH Guidelines, is any public or private entity, including federal, state, and local government (National Institutes of Health, 2013).

3.10 **Institutional Biosafety Committee (IBC)** is an institutional committee created under the NIH Guidelines to review research involving recombinant or synthetic nucleic acid molecules. The role of IBCs has evolved and OSU's committee also reviews other forms of research, as well as instructional activity that entail biohazardous risks as part of their institutionally assigned responsibilities (National Institutes of Health, 2013).

3.11 **Institutional Review Entity (IRE)** is a committee established by the institution to execute the requirements of the USG Policy for Institutional Oversight of Life Sciences Dual Use Research of Concern (U.S. Department of Health & Human Services, 2014).

3.12 **Non-Biohazardous Materials** are biological materials that are not normally infectious and are therefore considered non-biohazardous. This includes non-pathogenic microorganisms, viruses, and subviral agents, biological material not likely to contain infectious agents, recombinant or synthetic nucleic acid molecules exempt from NIH Guidelines, environmental samples not likely to contain infectious agents, and biologically-derived non-toxic molecules (George Mason University, 2007).

3.13 **Recombinant Nucleic Acid Molecules** are molecules constructed outside of living cells by joining natural or synthetic nucleic acid segments to nucleic acid molecules that can replicate in a living cell, or molecules that result from their replication (National Institutes of Health,

2013). Recombinant nucleic acid molecules are considered biohazardous if they are not exempt from the NIH Guidelines. Examples include recombinant nucleic acid that is formed by the deliberate transfer of a drug resistance trait to microorganisms that are not known to acquire the trait naturally (if that transfer could compromise the use of the drug to control disease agents in humans, veterinary medicine, or agriculture); is designed for use in human gene transfer experiments; contains genes for the biosynthesis of toxic molecules lethal for vertebrates at a median lethal dose (LD₅₀) of less than 100 ng/kg body weight (e.g., microbial toxins such as the botulinum toxins, tetanus toxin, diphtheria toxin, and *Shigella dysenteriae* neurotoxin); is designed for the generation of transgenic plants or animals; or contains infectious DNA or RNA viruses or defective DNA or RNA viruses in the presence of helper virus (NIH Guidelines).

3.14 **Risk Group** Classification, as defined by the World Health Organization (WHO), describes four risk groups based upon hazardous agent characteristics. These agent characteristics include the ability to cause disease in a susceptible human or animal host, virulence, route of transmission, and availability to prevent or treat the disease the agent causes. The BMBL classifies agents based upon their potential hazard to laboratory personnel and the environment, which includes the risk to plants.

3.15 **Select Agents and Toxins** are biological agents and toxins that 1) the United States Department of Agriculture (USDA) identifies as having the potential to “pose a severe threat to animal or plant health, or to animal or plant products;” and/or 2) the United States Department of Health and Human Services (HHS) identifies as having the potential “to pose a severe threat to public health and safety.” These biological agents and toxins are listed in Title 7 Code of Federal Regulations Part 331, and Title 9 Code of Federal Regulations Part 121 (7 CFR 331 and 9 CFR 121 Agricultural Bioterrorism Protection Act of 2002; Biennial Review and Republication of the Select Agents and Toxins List; Amendments to the Select Agent and Toxin Regulations; Final Rule), Title 42 Code of Federal Regulations Part 73 (42 CFR 73 “Possession, Use, and Transfer of Select Agents and Toxins; Biennial Review; Final Rule), or the HHS and USDA select agents and toxins list.

3.16 **Synthetic Nucleic Acid Molecules** are nucleic acid molecules that are chemically or by other means synthesized or amplified, including those that are chemically or otherwise modified but can base pair with naturally occurring nucleic acid molecules, or molecules that result from their replication (National Institutes of Health, 2013). This includes genes and mutant genes, or portions thereof, assembled from oligonucleotides, regardless of applied codon usage. Synthetic nucleic acid molecules are considered biohazardous if they are not exempt from the NIH Guidelines. Examples include synthetic nucleic acid molecules designed for use in human gene transfer experiments, those that contain genes for the biosynthesis of toxin molecules lethal for vertebrates at an LD₅₀ of less than 100 ng/kg body weight (e.g., microbial toxins such as the botulinum toxins, tetanus toxin, diphtheria toxin, and *Shigella dysenteriae* neurotoxin), and those that are designed for generation of transgenic plants or animals.

SCOPE AND APPLICABILITY

4.01 This policy governs the review and conduct of all research and instructional activities involving biohazardous material (as defined in this policy) performed on the OSU-Stillwater campus or the OSU-Tulsa campus.

4.02 This policy applies to all research and instructional activities involving biohazardous material conducted completely or partially at or sponsored by Oklahoma State University-Stillwater and/or Oklahoma State University-Tulsa, including a) activities conducted by faculty, researchers, staff, students, and employees; b) activities performed in or on OSU property and facilities; and/or c) research supported by government funding, industry sponsors, non-profit entities, or by OSU resources and/or facilities regardless of funding source (if any).

4.03 This policy does not apply to diagnostic work. Diagnostic work is performed to identify an unknown biological agent (including microbes, viruses, toxins, prions, etc.) within a sample (whole organism, tissue, etc.) that is not intentionally inoculated with a biological agent. Diagnostic activities include, but are not limited to:

- culturing unknown organisms from samples,
- amplifying an unknown organism to generate material for extraction of DNA, enzymes, etc., and
- DNA extraction and down-stream procedures (not to include recombinant work) from an unknown organism.

Diagnostic work, by this definition, does not fall within IBC purview. Known organisms may be used for the activities described above if they are to serve as a positive control for diagnostic work. If a sample that has been intentionally inoculated as part of a research project is submitted to a diagnostic laboratory, this is not considered diagnostic work. Therefore, it is mandatory that this type of work be registered with the IBC prior to project initiation if the agent is risk group 2 or higher and/or if the activity involves recombinant or synthetic nucleic acid molecules. In addition, if a select agent or toxin is identified in a diagnostic lab, proper notification must be made and appropriate paperwork filed with the CDC.

POLICY AND PROCEDURES

5.01 The University requires Institutional Biosafety Committee (IBC) review and approval of all research and instructional activities involving biohazardous material prior to initiating the activity. This includes activities involving recombinant or synthetic nucleic acid molecules that qualify for exemption from the NIH Guidelines. Agents (e.g., faculty, researchers, staff, students, and employees) of OSU may only self-exempt for activities involving synthetic nucleic acid molecules that cannot replicate or generate nucleic acids that can subsequently replicate in any living cell (e.g., oligonucleotides). Examples of synthetic nucleic acid molecules which researchers cannot self-exempt include those designed for use in human gene transfer experiments, those that contain genes for the biosynthesis of toxin molecules lethal for vertebrates at an LD50 of less than 100 ng/kg body weight (e.g., microbial toxins such as the botulinum toxins, tetanus toxin, diphtheria toxin, and *Shigella dysenteriae* neurotoxin), and those that are designed for generation of transgenic plants or animals. All other activities involving recombinant or synthetic nucleic acids, biological agents, and/or biologically-derived toxins require IBC approval prior to initiation. For these activities, principal investigators must conduct risk assessments and submit information to the IBC in the form prescribed by the committee. IBC approval will be in writing.

5.02 The University is responsible for ensuring that any activity involving recombinant or synthetic nucleic acid molecules conducted at or sponsored by the institution is performed in

compliance with the NIH Guidelines. Any research involving select agents or toxins conducted at or sponsored by the institution must adhere to the Select Agent Final Rule regulations. More specifically, the University is responsible for:

- establishing and implementing policies and procedures that provide for the safe conduct of activities involving biohazardous material that ensure compliance with the NIH Guidelines;
- ensuring compliance with the NIH Guidelines by principal investigators performing activities as specified in Section IV-B-7 of the NIH Guidelines;
- establishing an IBC that meets the requirements of the NIH Guidelines set forth in Section IV-B-2-a and carries out the functions detailed in Section IV-B-2-b;
- ensuring that the IBC has adequate expertise and training (using ad hoc consultants as necessary);
- appointing a Biological Safety Officer who serves as a member of the IBC if the institution: 1) conducts recombinant DNA research at Biosafety Level 3 or 4, or 2) engages in large-scale (greater than 10 liters) research and, at a minimum, carries out the duties specified in Section IV-B-3 of the NIH Guidelines.
- providing training for the IBC chair and members, Biological Safety Officer, principal investigators, and laboratory staff based on specific needs (i.e., BSL-2 practices);
- determining the necessity for health surveillance of individuals involved in activities involving biohazardous material, most particularly the activities delineated in Section IV-B-1-i of the NIH Guidelines;
- filing an annual report with the NIH Office of Biotechnology Activities that includes 1) a roster of IBC members clearly indicating the chair, contact person and, as applicable, the Biological Safety Officer, plant expert, animal expert, and human gene transfer expert or ad hoc consultant; and 2) biographical sketches (e.g., curricula vitae or résumé) of all IBC members;
- establishing procedures that the IBC shall follow in its initial and continuing review and approval of applications, proposals, and activities; and making available to the public, upon request, all IBC meeting minutes and any documents submitted to or received from funding agencies that those agencies must make available to the public, in accordance with the NIH Guidelines and Oklahoma law.

5.03 The University is ultimately responsible for the effectiveness of its IBC. Therefore, the University may establish procedures that the IBC shall follow in its initial and continuing review and approval of applications, proposals, and activities.

5.04 The Institutional Biosafety Committee is appointed by, reports to, and is advisory to the Vice President for Research. The IBC shall consist of a minimum of five members, in accordance with the NIH Guidelines. Collectively, the membership shall have expertise in research with microbial pathogens to include select agents where appropriate, animal pathogens, plant pathogens, and recombinant DNA. In addition, members shall have an understanding of potential risk to public health and the environment. At least two members shall not be affiliated with the University and shall represent the interests of the surrounding community. The chairperson and the vice chairperson must be members of the OSU faculty. The University's Biological Safety Officer shall be a member of the committee and the Assistant Vice President for Research Compliance shall be an ex-officio member of the committee, with all rights, privileges, and

responsibilities. All appointments to the committee shall be for a three- year term, unless they are appointed to complete the term of a member who will no longer serve. A member who cannot serve a complete term (e.g., sabbatical or separation) may be replaced by a new member who will be expected to serve the remainder of the initial member's term, unless the initial member plans to return and complete his/her term. Members may be re-appointed at the end of each three year term.

Individuals may be appointed to the committee as alternates for specific IBC members. Alternate members may vote in the absence of the member he/she is assigned to as an alternate. If both the member and his/her designated alternate member are present at a convened meeting of the IBC, the alternate member may not vote.

The IBC may use non-voting, ad hoc consultants when necessary to provide special expertise during review of proposed research and instructional activities. The IBC shall not allow any member to participate in the review and approval of any project in which the member has a conflicting interest, except to provide information requested by the IBC.

5.05 The Institutional Biosafety Committee (IBC) will serve as the Institutional Review Entity (IRE) for review of all research with dual use research of concern (DURC) potential.

5.06 The Institutional Biosafety Committee (IBC) is specifically responsible for:

- establishing campus specific policies and procedures governing all research and instructional activities involving biohazardous material conducted by OSU faculty, researchers, staff, and students;
- reviewing all instructional and research activities that involve recombinant or synthetic nucleic acid molecules conducted at or sponsored by the University for adherence with the NIH Guidelines, regardless of source of funding, unless the activity involves synthetic nucleic acid molecules that cannot replicate or generate nucleic acids that can subsequently replicate in a living cell (e.g., oligonucleotides);
- approving those instructional and research activities that conform to NIH Guidelines, including work involving recombinant or synthetic nucleic acid molecules unless the activity involves synthetic nucleic acid molecules that cannot replicate or generate nucleic acids that can subsequently replicate in a living cell (e.g., oligonucleotides);
- reviewing all instructional and research activities that involve other biohazardous material conducted at or sponsored by the University, regardless of source of funding, for adherence with the guidelines in the latest edition of the Centers for Disease Control and Prevention's (CDC) Biosafety in Microbiological and Biomedical Laboratories (BMBL); approving those activities that conform to the BMBL guidelines;
- reviewing all instructional and research activities that involve select agents and toxins conducted at or sponsored by the University, regardless of source of funding, for compliance with the Select Agent Final Rule; approving those activities that conform to the pertinent regulations;
- reviewing research activities involving specific agents for dual use research of concern potential in accordance with IBC policy;
- performing risk assessments to determine the containment levels required by all applicable regulations and/or guidelines;

- assessing facilities, procedures, practices, and the training and expertise of personnel involved in the proposed activities;
- performing periodic reviews of all research and instructional activities that fall within the purview of an IBC to ensure compliance with all applicable guidelines, laws, regulations, and policies at the federal, state, and university level;
- notifying principal investigators in writing of the outcomes of IBC review of initial and renewal applications/protocols;
- receiving and reviewing incident reports regarding: 1) exposures of individuals to biological agents or recombinant or synthetic nucleic acid molecules, 2) loss or theft of biohazardous material, and 3) any incident that warrants an emergency response;
- reporting any problems with or violations of the NIH Guidelines and any instructional or research related incidents or illnesses involving recombinant or synthetic nucleic acid molecules to the campus' Vice President for Research and the NIH Office of Biotechnology Activities within 30 days, unless it is confirmed that a report was already filed by the principal investigator or personnel of the campus research compliance office;
- reporting any noncompliance with IBC requirements and determinations and noncompliance with pertinent regulations, laws, guidelines, and University policies to the Vice President for Research;
- performing periodic reviews of this policy and recommending changes, as needed, to the Vice President for Research. Approximately every four years, this policy will be reviewed and updated as appropriate.

Note: Research involving select agents, a subset of pathogenic organisms or toxins, requires submission of an application to the CDC or the USDA (<http://www.selectagents.gov/index.html>) and submitting materials to the Federal Bureau of Investigation (FBI) (<http://www.fbi.gov/about-us/cjis/bioterrorism-security-risk-assessment-form/bioterrorfd961>) for a background check, all of which must be approved **before any activity involving a select agent or toxin can begin.**

5.06 The OSU IBC will open its meetings to the public, in accordance with the NIH Guidelines, when possible and consistent with protection of privacy and proprietary interests.

5.07 The IBC will approve research and instructional activities according to biosafety containment levels as follows:

Biosafety Containment Level	Approval Term
BSL-1, ABSL-1, BSL-1P, ACL-1	5 years
BSL-2, ABSL-2, BSL-2P, ACL-2	3 years
BSL-3, ABSL-3, BSL-3P, ACL-3	3 years

Continued approval for terms noted above will be contingent on completion of the annual protocol review questionnaire.

5.08 One component of the IBC approval process is satisfactory completion of an inspection of laboratories, facilities, and farms that are classified as biosafety containment level 1, 2 or 3. Inspections are tailored to the type of laboratory or facility (e.g., research laboratory, teaching laboratory, greenhouse, animal containment facility, or isolation area). OSU does not currently have laboratories or facilities that are classified as biosafety containment level 4.

5.09 The IBC may:

- seek appropriate resources in order to conduct thorough reviews of activities involving biohazardous material that fall within IBC purview;
- seek appropriate resources in order to inspect laboratories and facilities where proposed biohazardous activities may be conducted;
- suspend or terminate IBC approval;
- conduct inquiries pertaining to incidents of non-compliance prior to taking action;
- place restrictions on any activity that falls within IBC purview.

5.10 A decision by the IBC to disapprove an application/protocol may not be overruled, or reversed by the University, its officials, or other institutional compliance committees. Research covered by this policy that has been approved by the IBC is subject to additional review and approval or disapproval by officials of the University (e.g., President/CEO, Vice President for Research, College Deans, Department Heads) who should consult with the IBC and other involved parties including the principal investigator.

5.11 The responsibilities of the Biological Safety Officer (BSO) shall include:

- advising the IBC, administration, faculty, and staff on any concern regarding biohazards and their control;
- performing routine inspections of all facilities and laboratories in which potentially biohazardous activities are to be conducted;
- reporting any significant problems, violations, accidents or illnesses related to biohazardous activities to the appropriate University Administration, the IBC, and appropriate federal agencies;
- serving as a permanent voting member on the IBC and assisting with risk assessments, which will be reviewed by the committee;
- serving as a first responder to biosafety incidents;
- providing OSU personnel with information about current regulations, laws, guidelines, and safety pertinent to work with biohazardous materials;
- coordinating and delivering biosafety and biosecurity training programs to individuals who work with biohazardous material;
- developing and maintaining the incidence response plan related to biosafety and biosecurity; and
- serving as a liaison between the University and regulatory agencies.

The Biological Safety Officer (BSO) has independent authority to terminate any OSU campus activities or operations related to the use of biohazardous material where health and safety appear to be compromised. Consequently, the BSO has the vested authority to act immediately by terminating any OSU campus activities related to the use of biohazardous material for the purpose of assuring individual well-being and the integrity of the University without consulting with executive management or the Institutional Biosafety Committee (IBC). A report of such action will be made to the IBC by the BSO for further evaluation.

5.12 All incidents involving biohazardous material must be reported to the Biological Safety Officer. All incident reports shall be referred to the campus' IBC for review, and if appropriate inquiry.

5.13 Administrative heads of colleges, departments, and other units are responsible for employee safety within their units. No activity of a potentially biohazardous nature is to be permitted unless there is a commitment of effort and resources appropriate to insure that the work can be conducted safely.

5.14 Principal investigators (PI), instructors, and other personnel in charge of potentially biologically hazardous work are responsible for the activities conducted within their respective laboratories. They are responsible for carrying out activities in accordance with the IBC approved application (i.e., protocol), and in a lab approved for the proposed work. They must promptly report biohazard incidents to the Biological Safety Officer, or his/her designee, and, if possible, assist in any resulting decontamination, inquiry, and reporting of the incident, as may be required. They are ultimately responsible for the instruction and training provided to all staff and students engaged in the potentially biohazardous activity. Specific responsibilities are outlined in OSU's Biological Research Safety Plan.

5.15 When the University plans to possess, use, and/or transfer select agents and toxins, a Responsible Official (RO) shall be appointed to have oversight responsibility for the institution's select agent program, per the Select Agent Final Rule. Alternate Responsible Officials (ARO) may be appointed to act for the RO when he/she is unavailable. AROs have the authority and responsibility to ensure compliance with the select agent regulations.

5.16 If an activity that involves biohazardous material will be submitted to a prospective sponsoring agency, an application/protocol must be submitted to the IBC for review and approval prior to initiating the work.

REFERENCES

George Mason University Biological Safety Manual (February 2007). Fairfax, VA: Office of Laboratory Safety (Producer).

NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules. (March 2013). Office of Biotechnology Activities. Washington, DC: U.S. Government Printing Office.

Wilson, D.E., & Chosewood, L.C. (Eds.). (2007). Biosafety in Microbiological and Biomedical Laboratories (BMBL). U.S. Department of Health & Human Services.

Title 42 Code of Federal Regulations Part 73 (42 CFR 73) Possession, Use, and Transfer of Select Agents and Toxins; Biennial Review; Final Rule (October 2012). U.S. Department of Health and Human Services.

Title 7 Code of Federal Regulations Part 331 (7 CFR 331) and Title 9 Code of Federal Regulations Part 121 (9 CFR 121) *Agricultural Bioterrorism Protection Act of 2002; Biennial Review and Republication of the Select Agent and Toxin List; Amendments to the Select Agent and Toxin Regulations; Final Rule* (October 2012). U.S. Department of Agriculture.

United State Government Policy for Institutional Oversight of Life Sciences Dual Use Research of Concern (September 2014). U.S. Department of Health and Human Services.

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