Vanderbilt University Institutional Biosafety Committee (IBC) Policy: Safeguarding Research Labs Against Accidental Exposure to High-Risk Biological Agents

This policy is intended to identify and address the possible scenarios by which a high-risk biological agent may be accidentally introduced in a basic research lab setting. **For the purposes of this policy, high-risk biological agents are defined as those that are:**

1. currently listed as CDC/USDA select agents, or
2. Risk Group 3 agents for which the recommended containment level is typically BSL-3 or higher based on the latest recommendations from the Centers for Disease Control and Prevention (CDC) or National Institutes of Health (NIH), or
3. Risk Group 4 agents.

In addition to purified agent, the policy includes body fluids, tissues, cultures, or any other materials that could harbor the agent. **Principal Investigators or lab directors must not initiate acceptance/receipt of viable or nonviable high-risk biological agents from an internal or external party before consulting with VU Biosafety.** This policy is not intended to replace existing protocols pertaining to:

1. biological toxins which are addressed under the *IBC Policy: Biosafety Best Practices for Research Use of Biological Toxins & Venoms*, or
2. macaque-derived materials which are covered under the *IBC Policy: Best Practices for the Use of Macaque Tissues, Body Fluids and Cells in Basic Research Applications*.

As a reminder, it is the Principal Investigator's responsibility to ensure that materials falling under these two policies are handled, secured and fully accounted for in accordance with administrative practices outlined in those documents.

Discovery of High-Risk Biological Agents in Storage

While extensive biological inventory actions were completed by research labs following the "anthrax letters" events of the early 2000's, it is possible that storage units may have been missed in surveys, or materials have been unintentionally acquired since that time as legacy material transfers. In the event a lab discovers a high-risk agent or samples containing such during surveys or storage unit cleanouts/transfers, then the following actions should be taken immediately:

1. Suspend the activity underway
2. Secure or restrict access to the unit
3. Contact the VU Biosafety Officer (BSO) at (615) 343-8918; the BSO will arrange to retrieve the materials for destruction and initiate notification to federal agencies as applicable.

Materials Containing Nonviable High-Risk Biological Agents

Events involving shipments of viable high-risk infectious agents (presumed to be biologically-inactivated) in 2015 from a government lab to numerous labs brought public attention to the widespread use of nonviable materials, both for research and lab proficiency purposes. Biological agents that typically require biosafety level 3 or 4 containment may be safely handled in lower containment settings (i.e., BSL-2), but they must be effectively rendered nonviable using a validated process first. While the possession and use of most nonviable agents is not an activity that the Institutional Biosafety Committee (IBC) typically monitors, the events mentioned previously have prompted the need to develop a policy as it relates to nonviable high-risk biological agents. By following the actions outlined in Attachment A, Principal Investigators can partner with the IBC to strengthen:

1. institutional communication and knowledge regarding what nonviable high-risk agents are on campus, who has them, and for what purpose; and
2. VU's ability to respond quickly to circumstances when a notification is received that a biological inactivation process for a high-risk agent may have failed on the part of the lab of origin.

In doing so, the IBC in conjunction with the Vanderbilt University Environmental Health & Safety Biosafety Team can support the necessary actions to manage research compliance, personnel safety and press issues that could arise.

Biological Materials Containing Genetic Elements from High-Risk Agents

Agents modified to contain foreign DNA from pathogens are subject to the *NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules,* and containment provisions are described under Section III-D . Therefore, any use of these agents in research requires IBC review and approval before work with these agents can be carried out.

If a PI has an existing IBC registration, then an amendment should be initiated by sending an email to VUBiosafety@vanderbilt.edu with "IBC amendment request" in the subject line, and a brief message indicating the need to add a modified agent containing inserts derived from a high-risk agent. The Biosafety Team will contact the requestor within 3 business days to collect details and initiate any additional actions needed. If the genetic inserts are derived from a Risk Group 3 or 4 pathogen or a select agent, then additional information will be requested to ensure that the agent was generated in a way that ensures no viable high-risk agent may be present or recovered.

Policy Endorsement & Revision

This policy was originally reviewed and approved by the Vanderbilt University (VU) IBC and Vanderbilt University Medical Center (MC) Institutional Biosafety Committees (IBCs) on July 26, 2016 for adoption and endorsement. Minor edits were made to the policy subsequently in 2018 and 2020.

This policy was rewritten as a Vanderbilt University IBC Policy in November 2023 to reflect current responsible parties, institutional guidance documents and biosafety standards. The policy was endorsed by the VU Institutional Biosafety Committee on December 12, 2023.

The policy will be reviewed periodically when determined appropriate by the Biosafety Officer for purposes of compliance with regulatory requirements.

Attachment A: Process for Acquiring Nonviable High-Risk Agents
(in culture or specimen form)

If a Principal Investigator (PI) plans to acquire a nonviable high-risk biological agent*, they must contact the VU Biosafety Officer (BSO) and provide the following information before initiating a material transfer:

1. a succinct but thorough written explanation of:
    a. the materials to be received
    b. intended research purpose for use including desired start date and duration of use
    c. list of all lab personnel who will be actively engaged in using the materials
2. contact information for the party who will be providing the materials
3. contact information for the Biosafety Officer of the originating entity
4. validated method that the originating lab will use to determine that the material in question will be rendered nonviable; references to substantiate the efficacy of the method should be provided whenever possible. This information must include:
    a. a detailed standard operating procedure (SOP) describing the inactivation process,
    b. a detailed SOP describing the validation process to confirm the agent has been inactivated
    c. the results of the validation process for the sample being sent to VU.

Once this information is received, the VU BSO (or designated Biosafety Team Member) will:

1. take action to contact the Biosafety Officer of the originating entity and verify the processes and methodologies in place for rendering materials nonviable;
2. add information provided to the PI's electronic folder and update the master spreadsheet for nonviable agents;
3. prepare a summary for the IBC regarding the proposed use for consideration at the next IBC meeting. Note: If the BSO is provided with inactivation documentation that fully supports that the materials have already been rendered nonviable, the BSO will confer with the IBC Chair to determine whether materials can be approved for shipment while awaiting approval by the IBC.

Once IBC approval is granted, the following actions and responsibilities apply:

1. Materials may be shipped to the receiving PI only after documentation verifying that the agents are nonviable has been provided by the originating entity to the PI and the VU Biosafety Officer.
2. It is the receiving PI's responsibility to assure that no materials are shipped before the previously mentioned documentation is received.
3. Upon receipt, packages containing inactivated materials should be opened by a designated senior lab member in a biosafety cabinet or fume hood if at all possible. This will provide a higher level of personnel protection in the event a damaged inner container is discovered.
4. In the event the PI is informed by the originating entity after receipt of materials that the materials may be viable, they must take action to:
    a. secure the materials in a manner that no lab personnel can gain access to them;
    b. notify the BSO immediately and be prepared to provide a summary of recent activities involving the use of the materials.
5. The PI must notify the BSO if activities with nonviable high-risk biological agents are to be terminated so that appropriate action can be taken for disposal of the materials.
6. Nonviable high-risk biological agents may not be transferred to another PI without notification of the VU BSO and approval by the IBC.

*If the material to be received is a select agent, documentation confirming inactivation must meet all requirements related to inactivation certificates in accordance with 42 CFR Part 73.