July, 22, 2024

Idaho State University | Research Outreach and Compliance

PRINCIPAL INVESTIGATOR

IBC PROTOCOL HANDBOOK

OFFICE FOR RESEARCH
IDAHO STATE UNIVERSITY
1651 Alvin Ricken Dr., STOP 8286, Pocatello, ID 83209

https://www.isu.edu/research/research-outreach-and-compliance/biosafety/

I. PROTOCOL SUBMISSION AND APPROVAL CYCLE

A. Who is a Principal Investigator (PI)?

A Principal Investigator is defined as an ISU faculty member who is responsible for the conduct of a biosafety protocol in a research laboratory, field setting, or teaching laboratory and the supervision of its associated personnel. Students, including undergraduates, graduate students, and post-doctoral fellows, may not serve as PI on a Protocol.

- **Responsibilities of the PI**

Be familiar with this Handbook, the Institutional Biosafety Committee (IBC) Handbook, the IBC forms, and applicable regulations.

Prepare a protocol and the project-specific biosafety laboratory operations form for the individuals and activities under their purview for review and approval by the IBC before commencing work with biological or potentially biohazardous materials for a project (Register the potentially biohazardous agents they propose to use with the IBC via a modification form or protocol registration form).

Ensure the "ISU Biosafety Guide for BSL2 Laboratories" is in the lab and is reviewed by all personnel.

Perform risk assessments (and develop plans for all activities accordingly).

Ensure that all project personnel (including the PI) complete the applicable CITI training before the start of work.

Periodically evaluate all laboratory operations.

Cooperate with BSO biosafety laboratory inspections.

Establish the appropriate biological safety containment levels for their lab by consulting the BSO.

Ensure strict adherence by lab staff and students to biological safety practices and techniques.

Ensure that workers receive the appropriate training on the potential hazards and precautionary measures applicable to biohazardous materials. This includes instruction in specific practices and techniques required for safely handling the agents identified in protocols.

Coordinate with EH&S for the appropriate disposal of biohazardous and related biological materials.

II. IBC PROTOCOLS

The Principal Investigator for the project submits the Protocol Registration and relevant IBC forms

- **Timing for Protocol Submission**

Protocols, including renewals, must be submitted at least fourteen (14) business days in advance of a scheduled IBC meeting to be considered for a vote during that meeting. Protocols should be submitted well in advance of the planned research start date. Protocols received less than 14 days before a meeting may be held until the next monthly meeting.

Refer to the Biosafety webpage for the submission deadlines and meeting dates (under Research Outreach & Compliance). IBC does not regularly meet in the summer (June through August).

Submit protocols for summer work no later than the submission deadline before the April meeting.

- **Period of Protocol Approval/Expiration Cycle**

The ISU IBC approves most protocols for up to three years. An expiration date is set and conveyed within the approval letter.

- **Protocol Submissions Overview**

Submit protocol applications or IBC Review Inquiry Forms electronically to biosafe@isu.edu. The email subject line should refer to "protocol review".

No work may be started before an approved protocol is in place.

The completion of the documents listed below requires the use of the latest version of MS Word (2016 or later). PIs should avoid saving the entire protocol form file as a" locked pdf version" to use electronic signatures.

At present, please print and hand-sign signature pages, then scan them with the other pages. This will allow the IBC CC to make minor amendments during check-ins, such as assigning protocol IDs and receipt dates.

- **Required Documentation**

All new protocols and renewal submissions must include:

For BSL1:

1) The Biosafety Project Registration form
2) BSL1 Biosafety Laboratory Manual (Guide)
3) Protocol-specific forms

For BSL2:

1) The Biosafety Project Registration form
2) BSL2 Biosafety Project-specific Laboratory Operations Manual
3) BSL2 laboratory self-inspection form
4) Protocol-specific forms

The Protocol-specific forms are:

- Protocol Form A Use of Recombinant or Synthetic Nucleic Acid Molecules in Research
- Protocol Form B Use of Infectious Agents, Toxins and Select Agents in Research
- Protocol Form C Human and Non-Human Primate Blood, Cell Lines, or Other Potentially Infectious Materials (OPIM)
- Protocol Form D Use of Biological Materials in Teaching Laboratories

See also, Appendix B. Information for Completing Forms A – D.

- **Modifications**

All modifications to currently approved protocols/activities are required to have IBC review and approval before implementation of the changes. Modifications are requested by using Form E Modification of Approved Protocols. Modifications do not alter the expiration date of the original, approved protocol. There are two types of modifications.

- Significant Modifications

When researchers make significant changes to the scope, the materials, or the processes in a protocol, a full IBC review is required. Examples of significant modifications include the addition of a new class of bio-hazardous material not previously utilized, the addition of materials requiring a higher biosafety level, or the addition of materials or processes that may increase the project's associated risks. The change of the PI is also considered a significant change. Some changes may be so significant that a new protocol is required. For questions about this please contact the IBC Chair.

- Minor Modifications

The IBC Chair and the BSO (together) may approve Minor modifications.

Examples of minor modifications include the addition of very similar potentially bio-hazardous materials to those already listed on the approved protocol (where the same conditions would apply in the lab) or a change of laboratory room (to an equivalent and approved facility).

The IBC Chair may independently approve additions of personnel or changes of contact information on the protocol without another member review.

- **Receipt by IBC Compliance Coordinator (IBC CC)**

The IBC CC conducts the Preliminary Administrative Review of protocols and biosafety laboratory manuals. This is not a scientific review and is focused on accuracy and proper format. The IBC CC will check for required signatures, the completion of the forms, and confirms training in the CITI system when applicable. Ensuring correct paperwork and data capture for auditing and reporting to regulatory bodies is the purpose of the Preliminary Administrative Review.

The IBC CC will contact the PI by email requesting clarification, and to coordinate communication between the IBC and the PI, as required. Incomplete or inaccurate form sets will not be distributed to the IBC for review.

After the application clears Preliminary Administrative Review, the PI will receive an email from biosafe@isu.edu confirming receipt and assigning the protocol identification number (B-###).

Protocols that are received 14 days before the meeting will be added to the agenda for the next scheduled IBC meeting. The documents will be distributed to the IBC members at least 7 working days before that meeting date.

The BSO is notified by the IBC CC of the need to schedule and perform a biosafety laboratory inspection, if feasible, before the meeting when the protocol status will be voted.

B. The Review Process

The ISU IBC is responsible for the review and approval of all projects involving potentially biohazardous materials conducted under the auspices of Idaho State University regardless of funding source (external or internal).

The IBC will consider all information presented and may request additional information and/or clarification from the researcher. The IBC CC sends requests for additional information from the biosafe@isu.edu email account.

The IBC Chair or the Chair's designee presents the proposed protocols to the convened IBC and protocols are discussed in detail. The Committee will also review additional permits as needed, with their duration based on their regulating agency.

After full discussion, the IBC will make one of three determinations:

Approved: The IBC votes to approve the protocol as submitted. The PI will then receive an approval letter.

Pending Approval: Approval is pending when additional information is needed or other requirements, such as completion of the lab inspection, must be met. The IBC CC will contact the PI requesting said information and detailing the requirements. The PI has up to 6 months to supply this information. After 6 months, the project application will be closed. If the information or requirements constitute a major change to the protocol, the IBC may require re-review at a convened IBC meeting before approving. If the IBC determines the information or requirements needed are minor, and once the additional materials are reviewed and accepted by the Chair, the PI will receive the approval letter.

Rejected: In certain cases, research activities may be proposed that are deemed too hazardous or for which the proper expertise or facilities are not available. In such cases, the IBC may vote to reject the protocol.

- **Post-Meeting**

Protocol documents are held until receipt of all requested changes or information is received. The PI responses are then either incorporated into the file, or the document is modified to bring it in sync with the IBC direction. The original submission, the final protocol with the lab manual, and the voting history are all maintained, with the associated email thread(s) as the file for the specific protocol.

Protocol files are maintained for a minimum of 3 years following the closing date of the approved protocol, or from the date, the protocol is disapproved. Protocol renewals are maintained with the original documentation set. Renewals are numbered as well, see section III subsection B. Nomenclature for Protocol Documents.

- **Protocol Renewals**

The IBC CC will notify the protocols PI when the protocol is 6 months out from its expiration date, again at 3 months, and a final notice at 2 months prior. The protocol renewal must be submitted by the deadline posted on the ROC website for protocol submissions of that month.

If no renewal has been filed by the time the protocol is 1 month out from its expiration date, the IBC CC will notify the PI that the protocol is expiring and to prepare to stop work.

Example: A protocol is set to expire in March. The IBC CC will email the PI in September and again December reminding them of the expiration date. A final notice in January will be sent to the PI via email. The PI must then submit the protocol by the cutoff date in February for the protocol to be reviewed for renewal.

If the PI wants to continue their work beyond the expiration date, a new set of protocol documents must be submitted for IBC consideration of renewal. Use the most current versions of the ISU Biosafety Project Registration and protocol forms to apply for renewal (within 60 days before the renewal application submission date). Protocols previously approved by the IBC may not be automatically approved. It is important to have renewals submitted 60 days before the protocol ends to ensure that any questions the IBC may have for the PI does not result in a lapse of coverage for the protocol.

Research projects previously approved by the ISU IBC may be subject to additional review by federal or state agencies.

Check the Biosafety website for the most current form versions. More detailed instructions on the submission process appear in Appendix C. IBC Protocol Review Process and Life Cycle diagrams A,B.

- **Expired Protocols**

If an approved protocol expires, the PI must stop work until a new protocol document set is submitted, reviewed, and approved. If the PI intends for the protocol to expire they are to respond to the notice emails from the IBC CC stating this intention.

- **Teaching Lab Protocol Review**

Teaching laboratories where potentially biohazardous materials are to be used must apply for protocol and laboratory manual review as with research laboratory projects. This is done by using Form D -Use of Biological Materials in Teaching Laboratories.

Either the full IBC or a subcommittee of the IBC will review Teaching Lab Protocols. Protocol review follows the same process and timeline as research protocols. Preliminary Administrative Review and requests for clarification follow the same process. Laboratory facilities must pass biosafety inspection before the start of teaching using the BSL level materials proposed. Faculty in teaching laboratories are required to complete modification forms whenever there is a change in key personnel and the materials in use. The IBC Coordinator will provide Department chairs with the status of protocols for teaching labs in their divisions while ensuring the Teaching Lab faculty receives the official letter or Approval, Pending Approval, or Disapproval status.

- **Transgenic* Plant Field Trails (rDNA)**

Planting of deregulated transgenic plants will be reviewed by the IBC Committee, while planting of transgenic plants to produce pharmaceuticals or industrial compounds may require a specialized subcommittee and/or in-depth review by the full committee.

*Transgenic plants are plants that have been genetically engineered, a breeding approach that uses recombinant DNA techniques to create plants with new characteristics. They are identified as a class of genetically modified organisms (GMO).

- **Progress Reports and IBC Oversight**

All approved biosafety teaching or research protocols are subject to continuing IBC review and may have random inspections. Periodic reports on research progress may be requested at the discretion of the IBC.

See Appendix C. IBC Protocol Review Process and Life Cycle diagrams A,B, and C.

- **PI Requests for Advanced Project Initiation**

If there is an instance where advanced or expedited project initiation may be needed contact the IBC Chair for a case by case discussion.

- **External University Protocols**

When an ISU PI seeks to join a biosafety project at an institution other than ISU, the ISU IBC must be notified. Submit the other institution's IBC protocol and approval. If it is not included in the protocol, the PI should describe the specific activities planned for the ISU PI on the project, at the other institution. An ISU IBC number and approval will not be issued for this sort of work, but the approval and PI activities will be kept on file.

If part of the project will be done at ISU, a full IBC protocol is needed for approval of that section of work.

- **External Participants on ISU Projects**

Biosafety projects involving non-ISU personnel (including students enrolled at other universities not employed by ISU) must include these people as personnel listed on the ISU IBC protocol documents.

Additional assurances, material transfer agreements (MTAs), Authorized Volunteer Services Agreement forms may also be required. Contact the ISU IBC as soon as possible when working with non-ISU personnel to ensure a complete review before the start of work.

III. COMMUNICATION BY OR WITH THE IBC

The primary communication for the IBC is through the Committee email box, biosafe@isu.edu. The IBC Compliance Coordinator monitors this email; answering or forwarding messages to the IBC Chair or members as needed. This is the account from which the IBC CC distributes IBC questions to PIs, relays approval letters and notices.

Members and other ISU personnel are to "copy" this account when sending IBC or protocol-related questions to other members.

PIs and Teaching Lab Faculty are to use this account to turn in their protocol documents or to answer questions issued from the IBC or the Coordinator during protocol review.

biosafe@isu.edu is also an appropriate mailbox for the IBC Chair, and matters for the attention of the IBC Compliance Coordinator.

A. Subject Line of Emails

All persons – IBC members, ISU EH&S or Facilities staff, or PIs/Teaching Lab Faculty are encouraged to use the subject line of their emails to direct their messages. Once a protocol has an ID assigned, please include this ID number in your subject line.

B. Nomenclature for Protocol Documents

Protocols receive the following format for the IBC numbering system, this number is called the "Protocol ID".

- B###
- Example: B100

Documents receive the following format for the IBC records system.

- B###_PI LAST NAME_BIOSAFETY LEVEL_DOCUMENT NAME_YEAR
- Example: B100_SMITH_BSL1_Registration_2022

Modifications receive the following format for the IBC numbering system, this number is called the "Modification ID".

- B###_PI LAST NAME_BIOSAFETY LEVEL_Mod#_YEAR
- Example: B100_SMITH_BSL1_Mod1_2022

Renewals are numbered in relation to the protocol itself. Meaning the first renewal will appear as the example below.

- Renewal#_B###_Year

Example: Renewal1_B100_2022

C. Abbreviations

IO – Institutional Official

IBC – Institutional Biosafety Committee

IBC CC – IBC Compliance Coordinator

PI – Principal Investigator

IV. BIOSECURITY

The security of biological materials is of significant concern and importance. The PI and all laboratory personnel must be conscientious of the control of biological materials. Access to laboratories and materials must be limited to the greatest extent possible. PIs should identify the risk that material may pose (i.e., low, medium, high) and perform a vulnerability assessment of the use and storage of the material. The protection and security of the material should be based upon the risk. Security measures to be considered for biological materials include (but are not limited to):

- Additional locks (padlocks and electronic access cards) on laboratories, freezers, etc. where biological agents are used or stored.
- Chain-of-custody forms within laboratories to track materials.
- Inventories of biological materials.
- Logs of access to areas where biological materials are in use.
- Conduct a threat and/or vulnerability assessment.

When materials will be transported to another country, export controls requirements should be addressed before shipping. Address questions to the Assistant Vice President for Research Outreach and Compliance who is ISU's Export Control Officer.

V. APPENDICES

A. SOP-001 REPORTING CONCERNS

Institutional Biosafety Committee (IBC) Standard Operating Procedure
SOP 001 IBC Procedures for the Investigation and Reporting of Concerns Regarding Biological Materials Use.

The purpose of this procedure is to establish guidelines for the investigation of concerns regarding the misuse of rDNA and potentially biohazardous materials or deficiencies related to their handling.

Definition: Allegations of misuse of rDNA and potentially biohazardous materials (and substances described in the ISU IBC Handbook) including the following:

- The wrongful or negligent handling of these materials, and
- Non-compliance with established procedures or policies.

- **Procedure**

Notice of the misuse of potentially biohazardous materials may be reported to any of the following responsible parties: The Institutional Official (IO), Institutional Biosafety Committee (IBC) chair, the Biosafety Officer, the IBC Compliance Coordinator (IBC CC), or any IBC member, in person, on the phone, by email or written note. In addition, concerns can be submitted online through Maxient at the URL: https://cm.maxient.com/reportingform.php?IdahoStateUniv&layout_id=75

Reports submitted online are relayed to the Assistant Vice President for Research Outreach and Compliance who sends them to biosafe@isu.edu. Reports may be made anonymously and by anyone, ISU-affiliated or not.

1) Any of the IBC parties listed above, upon receiving a reported concern, will send them to biosafe@isu.edu no later than 3 calendar days after receipt. The IBC CC will send such messages to IBC Chair upon receipt. If the report concerns the Chair, the IO is notified instead.
2) The meeting is convened.

During the academic year, the Chair convenes a meeting of the IBC within 5 working days of receiving a concerns report. Between May 15th and September 1st, the meeting will be convened within 10 working days. Summer meetings will not be required to be in person, with call-ins allowable.

During this meeting the IBC membership reviews and decides:

1) To perform further investigation, or
2) To take no action.

This decision is based on a review of the report, referencing the IBC Handbook and relevant guidance. All decisions and actions by the IBC are then summarized in the minutes of the meeting. If further investigation is determined to be required, either the

IBC Chair and at least one other committee member will conduct the investigation, or

If the Chair is involved in the report, the IO will select a subcommittee to conduct the investigation. In either instance, upon completion of the investigation, the investigating parties will report back to the full IBC.

It is important to avoid actual or perceived conflicts of interest in this process. IBC members who have a conflict of interest (related to the investigation) should declare that fact and recuse themselves from the investigation.

The IBC or IO should charge the appointed person(s) or subcommittee with its requirements for information gathering and impose a completion date. The assigned investigation completion date will be no later than 20 working days after the IBC decision to investigate. Within 5 working days of the IBC deciding to investigate, the PI named in the allegation will be notified of the IBC investigation.

The nature of the information required for the investigation will vary depending on the circumstances, but often involves:

- interviewing complainants (if known); any persons against whom allegations were directed; pertinent program officials or unit directors;
- observing the biological laboratory conditions; and
- reviewing any pertinent records.

The designated investigator(s) written report to the IBC should summarize:

- the concern(s),
- the results of interviews,
- the biological laboratory conditions, and
- the results of records and other document reviews.

The report should also contain:

- Any supporting documentation such as correspondence, reports, and process records.
- Conclusions regarding the substance of the concerns *vis-à-vis* requirements of the applicable regulation or guide, institutional policies and procedures, and recommended actions, if appropriate.

B. Information for Completing forms A-D

- **Determine the Project Risk Group (RG)**

"The Risk Group (RG) of an agent is an important factor to be considered during the biosafety risk assessment process. Biological agents and toxins are assigned to their relevant Risk Groups based on their ability to cause disease in healthy human adults and spread within the community." Source: BMBL 6th Edition, Section III, Principles of Biosafety

Table 1: Classification of Infectious Microorganisms by Risk Group

Risk Group Classification	Basis for the Classification of Biohazardous Agents by Risk Group (RG)
Risk Group 1	Agents not associated with disease in healthy adult humans.
Risk Group 2	Agents associated with human disease that is rarely serious and for which preventative or therapeutic interventions are *often* available.
Risk Group 3	Agents associated with serious or lethal human disease for which preventive or therapeutic interventions may be available (high individual risk but low community risk).
Risk Group 4	Agents likely to cause serious or lethal human disease for which preventive or therapeutic interventions are not usually available (high individual risk and high community risk).

Table Source: NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid, Appendix B – Table 1.

- **Determine Biosafety Levels**

Both the NIH Guidelines (April 2019) and the CDC's BMBL, 6th Edition, describe four Biosafety Levels (BSLs). These biosafety levels consist of combinations of laboratory practices and techniques, safety equipment, and laboratory facilities appropriate for the operations performed and based on the potential hazards imposed by the agents used and for the laboratory function and activity. Biosafety Level 4 provides the most stringent containment conditions, Biosafety Level 1 is the least stringent. Biosafety Level 3 or 4 work is not allowed at ISU.

Biological safety or biosafety is defined as the development and implementation of administrative policies, work practices, facility design, and safety equipment to prevent transmission of biological agents to workers, other persons, and the environment. Biosafety

defines the containment conditions under which infectious agents can be safely manipulated. The objective of containment is to confine biohazards and to reduce the potential exposure of the laboratory worker, persons outside of the laboratory, and the environment to potentially infectious agents.

Containment can be accomplished through the following means:

Primary Barriers:

- Protection of personnel and the immediate laboratory environment using a good microbiological technique (laboratory practice) and using appropriate safety equipment.

Secondary Barriers:

- Protection of the environment external to the laboratory from exposure to infectious materials through a combination of facility design and operational practices.
- A generalized summary of the different biosafety level requirements is shown in Table 2, Biosafety Levels with Requirements. Refer to the BMBL or NIH Guidelines for more detail.

Table 2: Biosafety Levels with Requirements

Biosafety Level	Description
Biosafety Level 1 (BSL-1)	
Agents:	Not known to cause disease in healthy adult humans.
Practices:	Standard microbiological practices.
Safety Equipment: (Primary barriers)	None required.
Facilities: (Secondary barriers)	Open bench top with sink available. Eye wash station available.
Biosafety Level 2 (BSL-2)	
Agents:	Moderate risk agents that are present in the community and associated with human disease of mild to moderate severity.

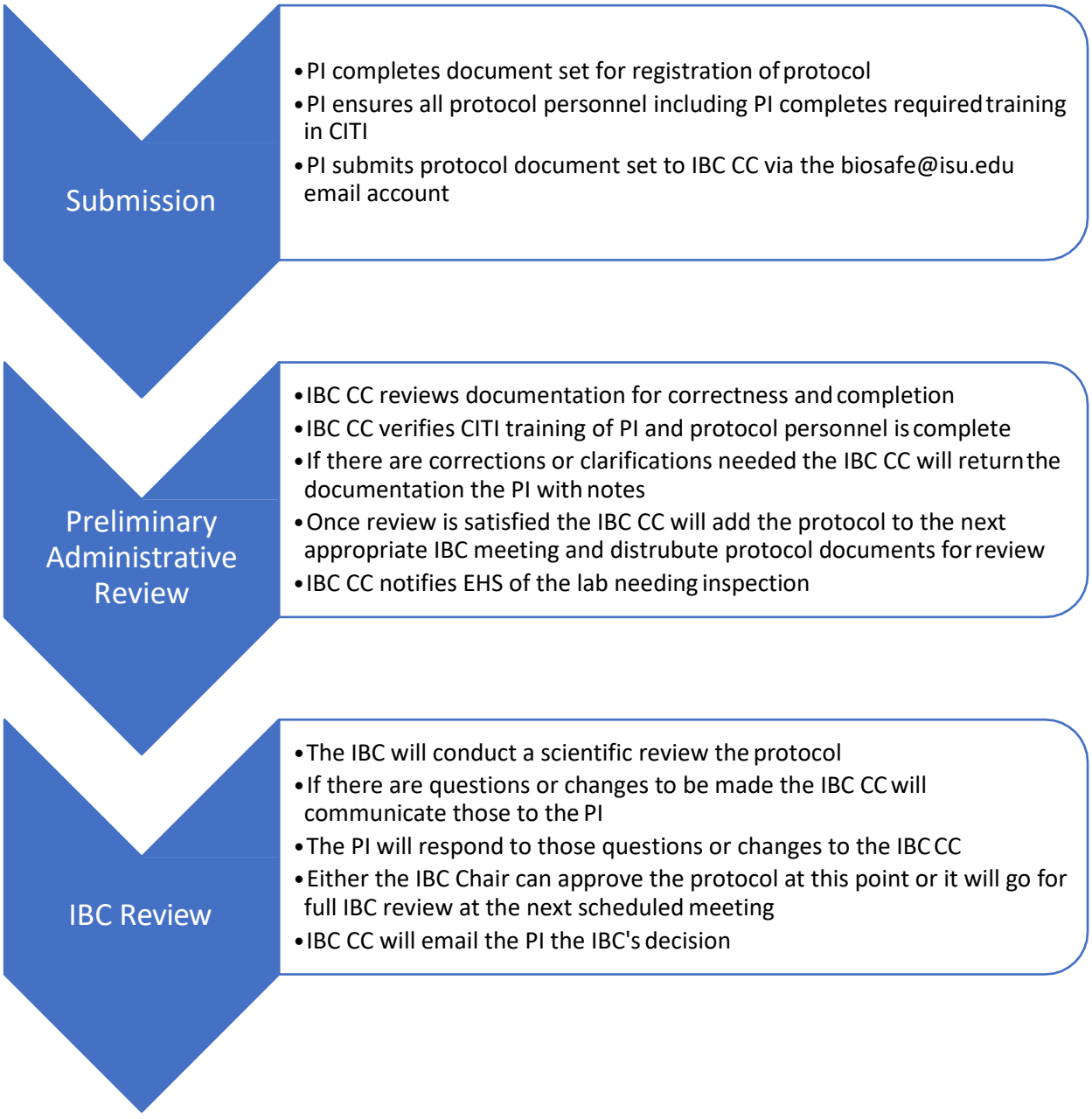
Practices:	BSL-1 practice plus limited access, biohazard warning signs, "sharps" precautions, and a SOP defining any needed waste decontamination or medical surveillance policies.
Safety Equipment: (Primary barriers)	Primary barriers include a Class I or II Biological Safety Cabinet (BSC) or other physical containment devices used for the manipulation of agents that cause splashes or aerosols of infectious materials; Personal Protective Equipment (PPEs) including laboratory coats, gloves, face and eye protection as needed
Facilities: (Secondary barriers)	BSL-1 plus the availability of an autoclave for decontamination.
Biosafety Level 3 (BSL-3)	
Agents:	Indigenous or exotic agents with a potential for aerosol transmission; and which may cause serious or potentially lethal infection.
Practices:	BSL-2 practice plus controlled access, decontamination of all waste, and decontamination of lab clothing before laundering.
Safety Equipment: (Primary barriers)	Primary barriers include a Class II BSC or other physical containment device used for the manipulation of agents, PPE to include protective lab clothing, gloves, face and eye protection, and respiratory protection as needed.
Facilities: (Secondary barriers)	BSL-2 plus physical separation from access corridors, self-closing and double door access, exhausted air not recirculated with negative airflow into laboratory

Table Source: BMBL 6th Edition, Section II, Biological Risk Assessment (summarized)

C. IBC PROTOCOL REVIEW PROCESS AND LIFE CYCLE

- **IBC Protocol Review Process Diagram A**

Diagram A illustrates the IBC Protocol review process, from submission to full committee review. This shows the base process, the next diagram (Diagram B) shows more details.



- **Life Cycle of a Protocol Diagram B**