Oklahoma State University
Institutional Biosafety Committee
Required Safety Information & SOPs

University policy requires that all research and teaching activities involving biohazardous material be reviewed and approved by the OSU Institutional Biosafety Committee (IBC) prior to the initiation of work. This includes research that is "exempt" from the *NIH Guidelines*. Current OSU policy dictates that PIs CANNOT self-exempt if they are performing recombinant DNA experimentation/cloning. Researchers may ONLY self-exempt for work involving oligonucleotides. In other words, if DNA is being cloned and propagated in any system (viral, bacterial, eukaryotic), the PI MUST submit a protocol and the IBC MUST review and approve it prior to the initiation of research.

Protocols submitted for IBC review MUST contain safety information (e.g., PPE use, waste processing, disinfection, etc.). This may be a new requirement for researchers filing renewals of previously approved r(s)NA protocols; however, the requirement can be met easily using the information and examples provided below.

SOPs are Standard Operating Procedures, NOT laboratory protocols. For example, the IBC is not looking for documentation on the steps used to isolate DNA or the cycles used in a PCR reaction, but the SOPs for how the laboratorians in a particular lab conduct themselves as it pertains to safety and disposal of potentially hazardous material as defined by university, state, and federal regulations. Example statements might include "all personnel will wear gloves while handling biohazardous materials" or "biological wastes are transported to the autoclave in an autoclave bag within a leak resistant bin." These statements may address part of a labs PPE requirements as well as transport and disposal of waste, respectively. These examples are not all inclusive, but simple example statements to aid in an understanding of the type of statements within SOPs that will aid the IBC in reviewing a protocol submission.

Safety information/SOPs may be included in the "Project Information" section of the applicable IBC registration form or provided via separate SOP documents. Biosafety Office personnel may also request additional SOPs depending upon the specifics of a given project. The following lists and examples of required safety information and SOPs are meant to assist researchers in completion of their IBC protocols.

Biosafety Level	Protocol Type	Required Information/SOPs
BSL-1/BSL-1P/ABSL-1* *Includes work with: ○ Recombinant or synthetic nucleic acids that is exempt from the NIH Guidelines ○ Recombinant or synthetic nucleic acids that is **not** exempt from the NIH Guidelines, but can be safely conducted at BSL-1/BSL-1P/ABSL-1	r(s)NA	1. General safety info/SOPs* ○ PPE use ○ Safety equipment use ○ Waste processing ○ Disinfection ○ Transport procedures ○ Sharps handling *You must provide the above info/SOPs if only applicable to your research 2. Project-specific Info/SOPs (if applicable) ○ Containment of transgenic plants or plants inoculated with transgenic organisms of local origin ○ Containment of transgenic animals ○ As requested by Biosafety Office personnel 3. Spill clean-up & personnel exposure procedures – May use approved IBC SOP or similar document

Available Examples:

- Information included in the "Project Information" portion of the Registration Form
- IBC-approved Spill & Personnel Exposure SOP

Biosafety Level	Protocol Type	Required Information/SOPs
BSL-1/ABSL-1* *Includes work with: ○ Plant pathogens of local origin (i.e., isolated in Oklahoma or surrounding areas) in a lab setting ○ Plant pathogens of local origin in plants contained in a growth chamber or greenhouse ○ Non-zoonotic animal pathogens in a lab setting	Biological Agent	1. General safety info/SOPs* ○ PPE use ○ Safety equipment use ○ Waste processing ○ Disinfection ○ Transport procedures ○ Sharps handling *You must provide the above info/SOPs only if applicable to your research 2. Project-specific Info/SOPs ○ Containment of plants ○ As requested by Biosafety Office personnel 3. Spill clean-up & personnel exposure procedures – May use approved IBC SOP or similar document

Available Examples:

- Information included in the "Project Information" portion of the Registration Form
- IBC-approved Spill & Personnel Exposure SOP

Biosafety Level	Protocol Type	Required Information/SOPs
BSL-2/BSL-2P/ABSL-2* *Includes work with: ○ Recombinant or synthetic nucleic acids that is **not** exempt from the NIH Guidelines and can be safely conducted at BSL-2/ABSL-2	r(s)NA	1. General safety info/SOPs* ○ PPE use ○ Safety equipment use ○ Waste processing ○ Disinfection ○ Transport procedures ○ Sharps handling *You must provide the above info/SOPs only if applicable to your research 2. Project-specific Info/SOPs ○ Containment of animals ○ Containment of transgenic plants or plants inoculated with transgenic organisms of exotic origin ○ As requested by Biosafety Office personnel 3. Spill clean-up & personnel exposure procedures – May use approved IBC SOP or similar document

Available Examples:

- Information included in the "Project Information" portion of the Registration Form
- Other sample SOPs
- IBC-approved Spill & Personnel Exposure SOP

Biosafety Level	Protocol Type	Required Information/SOPs
BSL-2/ABSL-2* *Includes work with: ○ Non-zoonotic animal pathogens in animals ○ Human and zoonotic pathogens of moderate hazard in a lab setting or in animals ○ Plant pathogens of exotic origin (i.e., outside of the U.S.) in a lab setting ○ Plant pathogens of exotic origin in plants contained in a growth chamber or greenhouse	Biological Agent	1. General safety info/SOPs* ○ PPE use ○ Safety equipment use ○ Waste processing ○ Disinfection ○ Transport procedures ○ Sharps handling *You must provide the above info/SOPs only if they are applicable to your research 2. Project-specific Info/SOPs ○ Containment of animals ○ Containment of plants ○ As requested by Biosafety Office personnel 3. Spill clean-up & personnel exposure procedures – May use approved IBC SOP or similar document

Available Examples:

- Information included in the "Project Information" portion of the Registration Form
- Other sample SOPs
- IBC-approved Spill & Personnel Exposure SOP

BSL-1/BSL-1P/ABSL-1 r(s)NA EXAMPLES
(these are examples, each PI's procedures may be unique)

Safety information for research involving recombinant or synthetic nucleic acids conducted at BSL-1/BSL-1P/ABSL-1 can typically be included in the "Project Information" section of the registration form without the need for additional SOPs. Biosafety Office personnel will request additional information if it is needed.

Project Information: **A. Describe proposed research objectives and include specific research methods for each objective in the box below** **B. Include the following information (if applicable) in the box below or in an attached SOP: personal protective equipment (PPE), safety equipment, waste processing, disinfection, transport procedures, sharps handling, and any other general lab safety practices** **C. Attach relevant project-specific SOPs**
A. Project objective & methods B. Personnel wear PPE consisting of a lab coat & gloves when handling recombinant materials and wash their hands before leaving the lab. Liquid cultures are decontaminated by adding bleach to a final concentration of 10% and allowing to set for 30 min before pouring down the sink. Culture plates, used PPE, and other disposable materials that have come into contact with recombinant materials are decontaminated by autoclaving at 121C for 30 min at 15 psi before disposal. Surfaces are regularly decontaminated using 70% ethanol/10% bleach/etc. Personnel are trained in the safe use of sharps which are placed in approved puncture-resistant containers and autoclaved before disposal. Samples to be transported for use in other facilities are placed in a sealed primary container with absorbent material before being placed in a labeled secondary container for transport. C. Plant containment – Plants inoculated with transgenic organisms are maintained in a secure (i.e., locked) growth chamber/greenhouse. All materials (i.e., plants, pots, soil) are autoclaved as above before disposal. Animal containment – Transgenic mice are housed in filter-top static air cages in the Animal Resources facility. Animal wastes are disposed of as regular trash prior to washing of cages. Carcasses are disposed of via incineration or the OADDL tissue digester.

BSL-1/ABSL-1 Biological Agent EXAMPLES
(these are examples, each PI's procedures may be unique)

Safety information for research involving biological agents conducted at BSL-1/ABSL-1 can typically be included in the "Project Information" section of the registration form without the need for additional SOPs. Biosafety Office personnel will request additional information if it is needed.

Project Information: **A. Describe proposed research objectives and include specific research methods for each objective in the box below** **B. Include the following information (if applicable) in the box below or in an attached SOP: personal protective equipment (PPE), safety equipment, waste processing, disinfection, transport procedures, sharps handling, and any other general lab safety practices** **C. Attach relevant project-specific SOPs**
A. Project objective & methods B. Personnel wear PPE consisting of a lab coat & gloves when handling biohazardous materials and wash their hands before leaving the lab. Culture material, used PPE, and other wastes are decontaminated by autoclaving at 121C for 30 min at 15 psi before disposal. Surfaces are regularly decontaminated using 70% ethanol/10% bleach/etc. Personnel are trained in the safe use of sharps which are placed in approved puncture-resistant containers and autoclaved before disposal. Samples to be transported for use in other facilities are placed in a sealed primary container with absorbent material before being placed in a labeled secondary container for transport. C. Plant containment – Plants inoculated with plant pathogens are maintained in a secure growth chamber/greenhouse. All materials (i.e., plants, pots, soil) are autoclaved as above before disposal. Animal containment – Animals are confined in appropriate housing (e.g., static air cage, aquarium, etc.) in the secure laboratory. At the end of each experiment, animals are euthanized and necropsied on a benchtop lined with absorbent paper. Animal carcasses are autoclaved before disposal or disposed of via the OADDL tissue digester. Other potentially contaminated materials are autoclaved as above before disposal.

BSL-2/BSL-2P/ABSL-2 r(s)NA & Biological Agent EXAMPLES
(these are examples, each PIs procedures may be unique)

Safety information for research involving recombinant/synthetic nucleic acids or biological agents conducted at BSL-2/BSL-2P/ABSL-2 can sometimes be included in the "Project Information" section of the registration form. Studies involving animals, plants, or especially hazardous procedures may require additional SOPs. Biosafety Office personal will request additional information if required.

Project Information:

A. Describe proposed research objectives and include specific research methods for each objective in the box below

B. Include the following information (if applicable) in the box below or in an attached SOP: personal protective equipment (PPE), safety equipment, waste processing, disinfection, transport procedures, sharps handling, and any other general lab safety practices

C. Attach relevant project-specific SOPs

A.

Project objective & methods – Must include inoculation methods used with animals & plants. Examples:

1. Mice will be infected with Influenza A by pipetting 10µL of virus preparation into the nostril of each anesthetized animal inside the BSC.
2. Plants will be inoculated by pipetting 10µL of bacterial suspension onto 2-3 leaves and then gently rubbing with gloved fingers. Gloves will be changed between inoculations.

B.

Personnel wear PPE consisting of a lab coat & gloves when recombinant or pathogenic materials and protective eyewear will be donned for anticipated splashes/sprays of biohazardous material. Personnel wash their hands before leaving the lab. Culture material, used PPE, and other wastes are decontaminated by autoclaving at 121C for 30 min at 15 psi before disposal. Surfaces are regularly decontaminated using 70% ethanol/10% bleach/etc. Personnel are trained in the safe use of sharps which are placed in approved puncture-resistant containers and autoclaved before disposal. Samples to be transported for use in other facilities are placed in a sealed primary container with absorbent material before being placed in a labeled secondary container.

C.

Plant containment – Transgenic plants inoculated with plant pathogens/Plants inoculated with transgenic organisms are maintained in a secure growth chamber/greenhouse that is only accessed by project personnel. For transgenic plants, inflorescences will be bagged to prevent accidental outcrossing and/or release. All materials (i.e., plants, pots, soil, & run-off water) are autoclaved as above or otherwise rendered biologically inactive before disposal.

Undesirable species (e.g., weeds, rodents, arthropods) are controlled by the screening of all openings and the use of sticky traps. Traps are checked on a weekly basis to ensure that pests are adequately controlled.

Animal containment – Animals will be housed in actively-ventilated microisolator cages within the Animal Resources facility. Cages will only be opened within the biosafety cabinet and all animal procedures will be confined to the BSC. BSC surfaces will be decontaminated using 70% ethanol after use. Animal carcasses will autoclaved before disposal via incineration or the OADDL tissue digester. Other potentially contaminated materials, including animal caging, feces, & bedding as well as remaining food and water will be autoclaved before disposal or washing.

BSL-2/ABSL-2 SAMPLE SOPs
(these are samples, each PIs procedures may be unique)

Cage Change Procedures

1. Don appropriate PPE and enter the animal holding room.
2. Place a clean cage in the BSC.
3. Remove the dirty cage from the rack and place in the BSC.
4. Transfer animal to clean cage and close.
5. Spray outside of clean cage with 70% ethanol, remove from the BSC, and place in cage rack.
6. Close dirty cage and spray with 70% ethanol before removing from BSC.
7. Place cage in biohazard bag and close using tape/twist tie.
8. Once all cage changes are complete, spray bagged cages with 70% ethanol and remove from the animal room.
9. Transfer cages to the autoclave and decontaminate at 121C for 30 min at 15 psi.
10. Following decontamination, remove cages from biohazard bags, empty contents into regular trash, and run through the cage washer.

Animal Bite/Scratch Procedures

1. If you are bitten/scratched by an infected animal, decontaminate and remove PPE and exit the animal room.
2. If possible, wash affected area with warm water and soap for 15 minutes.
3. Contact the PI or laboratory director.
4. Seek medical attention at University Health Services (normal business hours) or Stillwater Medical Center (afterhours). Take a Safety Data Sheet (SDS) for the pathogen with you if possible.
5. Contact the Biosafety Office at (405) 744-3203.