Fu Jen Catholic University
Biosafety Emergency Response Plan

102.7.16 環安衛中心
105.12.29 生物安全會議修訂
Passed by the Environmental Health and Safety Committee on July 16, 2013
Amended by the Biosafety Committee on December 29, 2016

1. Basis

This Biosafety Emergency Response Plan was created in accordance with the following pieces of legislation: Article 6 of the Occupational Health and Safety Act, which requires employers to take steps to prevent hazards caused by animals, plants, or microorganisms, as well as create appropriate plans and adopt necessary measures to allow for evacuation, first-aid treatment, proper rest, and other guarantees to protect the physical and mental health of workers; and Article 10 of the Regulations Governing Management of Infectious Biological Materials, which stipulates incidents involving infectious biological materials must be classified based on hazard level.

2. Goals

This Biosafety Emergency Response Plan has the following goals: to prevent infectious biological materials from infecting personnel after an accident, and to draw up preventive safety measures for experiments involving laboratory animals or infectious biological materials, as well as create a response flow chart for when an incident occurs.

3. Scope

This Biosafety Emergency Response Plan applies to all faculty, staff, and students at the University.

4. Common factors which results in biosafety accidents include:

(1) Lack of focus during an experiment or sudden movements by a startled laboratory animal.

(2) Non-compliance with safety rules or standard operating procedures.

(3) Natural disasters such as fire, flooding, earthquakes, or explosions.

5. Steps to handle an overflow, splash, or breach of infectious biological materials:

(1) BSL-1 Laboratory

1. Stop all operations immediately and adopt emergency response measures.
2. If the accident occurs in the biological safety cabinet (BSC), make sure the BSC continues operating.

3. Contact the laboratory supervisor, coordinator for health and safety at the academic program, or personnel at the Environmental Health and Safety Center for assistance. (Please refer to Appendix II.)
4. Check the Pathogen Safety Data Sheet (PSDS) to confirm the properties of the leaking substance.
5. Everyone involved in handling the situation must wear a lab coat, mask, gloves, goggles, and safety boots.

(2) BSL-2 Laboratory

1. Stop all operations immediately and adopt emergency response measures.
2. If the accident occurs in the biological safety cabinet (BSC), make sure the BSC continues operating.
3. Confirm that all personnel have evacuated the laboratory and take a head count before closing the laboratory door.
4. Contact the laboratory supervisor, the coordinator for health and safety at the academic program, or personnel at the Environmental Health and Safety Center for assistance. (Please refer to Appendix II.) If the leak cannot be controlled, the Environmental Health and Safety Center must immediately notify neighboring areas to evacuate.
5. Check the Pathogen Safety Data Sheet (PSDS) to confirm the properties of the leaking substance.
6. Wait 30 minutes until aerosols have settled before returning to the laboratory.
7. Everyone involved in clean-up must wear impermeable protective clothing, safety boots, rubber gloves, protective goggles, and a respirator.

(3) Place absorbent cotton over the leaked liquids. If the leak covers a large area, first use a chemical sorbent pad to contain the area.

(4) Prepare a solution of water containing 5 to 10 percent bleach or another suitable bactericide and pour it over the contaminated area (e.g., floor, work tables, troughs, and cabinets). Begin pouring the solution from the outer extremity of the leak toward the center. Avoid splashing while pouring the solution. Set up a warning sign. Do not try to clean HEPA filters or other parts of the safety cabinet.

(5) Let the bactericide sit on the contaminated area at least 20 minutes. Wear double layered gloves and use absorbent cotton to wipe away all of the bactericide. Pick up contaminated objects with tongs and place them in a red infectious waste bag, then tie the bag tightly. Dispose of the bag in accordance with University procedures for the disposal of contaminated waste.

(6) Do not pick up glass culture dishes, test tubes, or other sharp objects with your hands; use tongs, tweezers, or a broom. Place the sharp objects in an anti-puncture container (such as a cardboard box), and dispose of the box in accordance with University procedures for the disposal of contaminated waste, used needles, and sharp objects.

(7) Use a water mixture containing 5 to 10 percent bleach or a suitable bactericide to clean up and decontaminate all contaminated surfaces once again.

(8) Place all leaked substances and objects to be disposed into an impermeable container designed for handling waste. Decontaminate all objects, tools, and equipment in the area of the leakage in the following manner:

1. Wipe tools and equipment with a water solution that contains 5 to 10 percent bleach.
2. Sterilize reusable objects and tools with a method that kills bacteria (such as an autoclave).
3. Dispose of contaminated objects and cotton that was used to soak up contaminated substances in accordance with University procedures for the disposal of contaminated waste.

4. Dispose of protective clothing that was worn during clean-up operations in accordance with University procedures for the disposal of contaminated waste or else soak them in an antibacterial agent before washing them.

(9) Once decontamination is complete, make a report to the laboratory supervisor, complete the Fu Jen Catholic University Laboratory Incident Report and Investigation Form and send it to the Environmental Health and Safety Center.

(10) Everyone involved should closely monitor their physical condition.

6. Handling needle pricks, cuts, bites, or direct contact with biological reagents:

(1) Notify both the laboratory supervisor and the Environmental Health and Safety Center if you come in contact with a biological reagent as a result of a needle prick, a cut, or pierced skin.

(2) Immediately squeeze blood from the wound and then wash the wound under running water or flush it with water containing 0.9% normal saline for 5 minutes.

(3) Soak the wound or contaminated body part in iodine, a 70 percent alcohol solution, or another disinfectant to kill any bacteria.

(4) Check the Pathogen Safety Data Sheet (PSDS) to confirm the properties of the contaminant.

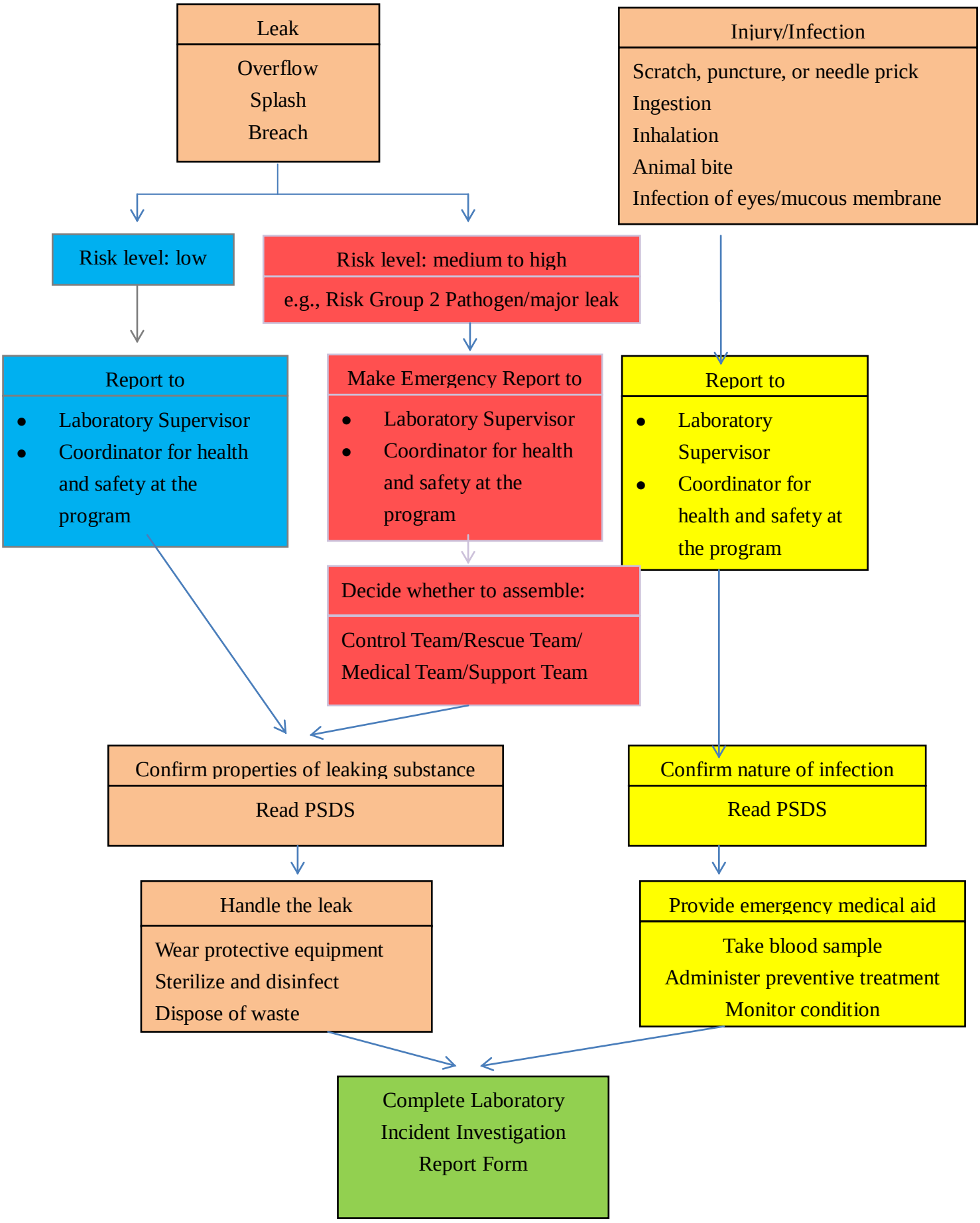
(5) Proceed immediately to the Fu Jen Clinic and register for a tetanus shot and blood test (personnel in a P2 laboratory or above must also provide an extra blood sample). If further evaluation or treatment is needed, Fu Jen Clinic will transfer you to Taipei Hospital or another treatment facility. Please closely monitor your physical condition and go for regular blood tests.

(6) Report to the laboratory supervisor, complete the Fu Jen Catholic University Laboratory Incident Report and Investigation Form (Appendix III), and send it to the Environmental Health and Safety Center.

(7) Attend re-training for the proper disposal of needles and sharps waste (Appendix IV).

Appendix I

Biosafety Emergency Response Flow Chart



Appendix II – Biosafety Accidents: Hazard Levels, Descriptions, Reports, and What to Do

Hazard Level	Description	Report	Examples	What to do
High	An infectious biological substance leaks from a laboratory or storage area, and poses a risk of infecting or harming personnel, the university population, and the surrounding community	1. Whoever discovers the leak must report it immediately to the supervisor of the laboratory or storage area, and produce a written record of the leak. 2. The supervisor must immediately make a report to the Biosafety Committee or the Biosafety Coordinator at the program/division. 3. The program must make a report to local and central government authorities within 24 hours.	1. An earthquake or flood results in an infectious biological substance escaping from the laboratory or storage area. 2. Improper operations or safety precautions results in a worker unknowingly becoming infected and then carrying a pathogen out of the laboratory.	1. Handle the situation by following the Biosafety Emergency Response Plan created by your program/division. 2. Take necessary measures for anyone who may be infected. If a test or observation confirms infection, provide medical treatment. 3. The central government may direct and coordinate efforts to handle the situation. 4. The program/division must make a report to the government detailing how the situation is being handled and how future risks will be mitigated.

Hazard Level	Description	Report	Examples	What to do
Medium	An infectious biological substance leaks but remains inside a laboratory or storage area, and poses a risk of infecting or harming personnel.	1. Whoever discovers the leak must immediately report it to the supervisor of the laboratory or storage area, and produce a written record of the leak. 2. The supervisor must immediately make a report to the Biosafety Committee or Biosafety Coordinator for the program/division. 3. The program must make a report to local and central government authorities within 24 hours.	1. The exhaust fan in a Biological Safety Cabinet malfunctions, creating positive pressure which causes the infectious biological substance to leak out. 2. Someone gets splashed by an infectious biological substance. 3. A vessel containing an infectious biological substance is dropped and contents spill out.	1. Handle the situation by following the Biosafety Emergency Response Plan created by your program/division. 2. Take necessary measures for anyone who may be infected. If a test or observation confirms infection, provide medical treatment. 3. The government may request the program/division to make a report detailing how the situation is being handled and how future risks will be mitigated.
Low	An infectious biological substance leaks but remains inside safety equipment, and poses a risk of infecting or harming personnel.	Whoever discovers the leak must immediately report it to the supervisor of the laboratory or storage area, and produce a written record of the leak.	1. An infectious biological substance is spilled or knocked over inside the Biological Safety Cabinet. 2. A breach occurs in the centrifuge pipe.	Handle the situation by following the Biosafety Emergency Response Plan created by your program/division.

Appendix III

Fu Jen Catholic University

Campus/Laboratory Incident Report and Investigation Form

Amended by the Environmental Health and Safety Committee on October 3, 2013
Amended by the Environmental Health and Safety Committee on October 9, 2014
Amended by the Environmental Health and Safety Committee on April 14, 2016

Program/Division:	
Form completed by:	Name: Position: Telephone: Date:

Details of the incident (to be reported in accordance with the Occupational Safety and Health Act and laboratory regulations)

- Location: ☐inside laboratory ☐outside laboratory

A. Report Required Within 8 Hours

☐1. Accident resulting in death
☐2. Accident injuring at least three people
☐3. Accident resulting in the hospitalization of at least one person

(Please call the Environmental Health and Safety Center: 2905-3021, 2905-3963. Outside of regular office hours please notify FJCU Security Center: 29052885. Also notify the New Taipei City Labor Standards Inspection Office: 0963700877.)

Failure to report to the Labor Standards Inspection Office by the deadline may result in a fine of NT$30,000 to NT$300,000. Except where necessary for rescue purposes, the scene of an accident may not be altered or destroyed. Anyone who alters or destroys the scene may be punished with a prison sentence of up to one year, detention, or detention and fine of up to NT$180,000.

B. Report Required Within 24 Hours

☐1. Damage to property in excess of NT$100,000 (includes damage to buildings, facilities, teaching resources, and products of research).
☐2. Incident has gained media coverage.

C. Within 7 days (minor injuries)

☐1. Someone has sustained a physical injury (which does not require a hospital stay and recovery takes less than 1 day).
☐2. Equipment was damaged due to improper use (NT$100,000 or less in damages)
☐3. Fire (including fires that were extinguished immediately)
☐4. Reaction of an experiment exceeded predictions
☐5. Electrocution
☐6. A close call (i.e. the incident could have caused injury, death, or greater damage if the situation had been slightly different)

Date of incident: (YYYY/MM/DD) Time:

☐Incident occurred during operations

☐Incident occurred while no one was present

Location of Incident

Financial Losses	NT$

Casualties

Death:

Number of Faculty/Staff Members:_____ Number of Students:_____

Serious Injury:

Number of Faculty/Staff Members:_____ Number of Students:_____

Minor Injury:

Number of Faculty/Staff Members:_____ Number of Students:_____

Total Number of Casualties:

Was hospitalization required: ☐Yes ☐No

If yes, please write the number of people hospitalized:

Faculty/Staff:_____

Students:_____

Response	Person who handled the situation	Name:	Position:	Telephone:
	Please detail how the situation was handled and what outcomes were produced			

Details of Incident	Name of Injured: Position: Gender: Birth Date: Age:	
	Work Experience Years: Months:	Dates of Injury Leave: From _____ until _____
	Location of Incident: Body Part Injured:	
	What external factor caused the incident? ☐none ☐power system ☐power transmission device (e.g. transmission shaft, gears) ☐welding equipment ☐furnace ☐woodworking machine (e.g. circular saw, band saw) ☐semi-automatic tool ☐radiation ☐chemical equipment ☐transported object ☐power generating machine (e.g. lathe, lapping machine, press, shear, centrifuge) ☐vehicle ☐pressure vessel (e.g. boiler, pressurized object) ☐hoisting machinery (e.g. crane, elevator, windlass) ☐electrical equipment (e.g. transmission and distribution line, electrical devices) ☐transport equipment (e.g. truck, forklift, conveyor belt)	

	☐materials (e.g. metal, wood, bamboo)	☐tool/apparatus (e.g. ladder)
	☐causative organism	☐environment (e.g. high or low-temperatures)
	☐hazardous/harmful material (e.g. explosive substance, flammable gas, harmful toxin)	
	☐other	
	Describe the incident: (If more than one person was injured, each additional person must complete Appendix I)	
Nature of Injury	☐fall/tumble	☐trip
	☐collision	☐falling object
	☐collapsed object	☐struck by object
	☐pinch/roll	☐abrasion/scratch/scrape
	☐foot injury (e.g. pierced by sharp object)	☐drowning (resulting in death)
	☐contact with high or low temperature	☐contact with hazardous substance
	☐electrocution	☐explosion
	☐breach	☐fire
	☐incorrect movement	☐oxygen deficiency
	☐dust hazard	☐biohazard
	☐chemical hazard	☐poisoning
	☐local vibration	☐radioactive exposure/contamination
	☐traffic accident (including on public roads/train tracks/boats/airplanes, etc.)	
	☐burn	☐needle puncture
	☐incised wound	☐bite
	☐leak or spill of biological agent	☐other_____
How did the accident happen?	☐improper use of equipment	☐improper tool used
	☐radiation exposure	☐incorrect posture while lifting
	☐protective equipment not worn/used	☐ equipment/materials transported incorrectly
	☐ failure of safety equipment	☐defective machinery/equipment
	☐fire or explosion	☐loud noise
	☐hazardous atmospheric environment	☐improper protection/supports
	☐ineffective warning system	☐unauthorized use of equipment
	☐insufficient lighting	☐untidiness
	☐insertion or retrieval of material from machine in operation	
	☐incorrect posture while working	☐consumption of alcohol/narcotics
	☐crowded work space	☐machine operated at improper speed
	☐improper management of contractor	☐potential danger unknown in advance
	☐standard operating procedures were not followed	
	☐insufficient skill	☐no pre-work plan exists
	☐playing or joking during work	☐fatigue/lack of concentration
	☐insufficient air flow	☐poor physical or mental condition
	☐failure to follow Workplace Safety Rules	☐other

Countermeasures to prevent a similar occurrence	☐re-train personnel ☐create pre-work plan ☐increase routine inspections ☐temporary injury leave ☐de-clutter the work space ☐investigate similar situations ☐eliminate potential dangers	☐install protective equipment ☐educate and remind about safety ☐create workplace safety rules ☐conduct repairs ☐provide protective equipment ☐implement work guidance and safety training ☐other

Supervisor	Environmental Health and Safety Center Program Representative	Program Director	Dean/Primary Administrator

1. After an incident occurs, a report by telephone must be made within the designated timelines. The Incident Report and Investigation Form must also be submitted. A minor injury must be reported within seven days. This form must be submitted to the dean or primary administrator of the college as well as the Environmental Health and Safety Center.
2. The form must be completed accurately and in detail. The following details must be included if the incident involved an infectious biological substance: the name of the pathogen, source, amount, and number of people infected.

Confirmed causes behind the incident:

Direct cause:

Indirect cause:

Fundamental cause:

Labor Representative*	Environmental Health and Safety Member	Environmental Health and Safety Director

*A labor representative is only required if an occupational accident is involved with faculty, staff, or students.

Appendix I: Additional Injury Report Form (Please modify the layout of the form if space is insufficient)

Details of Incident	Name: Position: Gender: Birth Date: Age:	
	Work Experience Years: Months:	Dates of Injury Leave: From _____ until _____
	Body Part Injured:	
	What external factor caused the incident? ☐none ☐power system ☐power transmission device (e.g. transmission shaft, gears) ☐welding equipment ☐furnace ☐woodworking machine (e.g. circular saw, band saw) ☐semi-automatic tool ☐radiation ☐chemical equipment ☐transported object ☐power generating machine (e.g. lathe, lapping machine, press, shear, centrifuge) ☐vehicle ☐pressure vessel (e.g. boiler, pressurized object) ☐hoisting machinery (e.g. crane, elevator, windlass) ☐electrical equipment (e.g. transmission and distribution line, electrical devices) ☐transport equipment (e.g. truck, forklift, conveyor belt) ☐materials (e.g. metal, wood, bamboo) ☐tool/apparatus (e.g. ladder) ☐causative organism ☐environment (e.g. high or low-temperatures) ☐hazardous/harmful material (e.g. explosive substance, flammable gas, harmful toxin) ☐other	
	Please describe the incident:	

Details of Incident	Name: Position: Gender: Birth Date: Age:	
	Work Experience Years: Months:	Dates of Injury Leave: From _____ until _____
	Body Part Injured:	
	What external factor caused the incident? ☐none ☐power system ☐power transmission device (e.g. transmission shaft, gears) ☐welding equipment ☐furnace	

	☐woodworking machine (e.g. circular saw, band saw) ☐semi-automatic tool ☐radiation ☐chemical equipment ☐transported object ☐power generating machine (e.g. lathe, lapping machine, press, shear, centrifuge) ☐vehicle ☐pressure vessel (e.g. boiler, pressurized object) ☐hoisting machinery (e.g. crane, elevator, windlass) ☐electrical equipment (e.g. transmission and distribution line, electrical devices) ☐transport equipment (e.g. truck, forklift, conveyor belt) ☐materials (e.g. metal, wood, bamboo) ☐tool/apparatus (e.g. ladder) ☐causative organism ☐environment (e.g. high or low-temperatures) ☐hazardous/harmful material (e.g. explosive substance, flammable gas, harmful toxin) ☐other
	Please describe the incident:

Appendix IV

Steps to Dispose of Needles and Sharps Waste

1. Dispose of a used needle immediately.
2. Do not recap a needle. If a needle must be recapped, make sure to use the one-hand recapping technique to minimize risk.
3. Have a designated container for sharps waste in the work area. The sharps container must be made of a material which is hard, durable, and not prone to leaks or punctures. A biohazard warning label must be attached to the outside of the sharps container.
4. When the sharps container is 80% full, it must be sealed and handled as infectious waste.
5. Everyone who works with needles must develop safe habits. Dispose of needles and syringes in the sharps container immediately after use. Avoid bending or breaking a needle.
6. Place the sharps container in a convenient location not too far from the workspace. Keep it close to minimize potential accidents which could occur while busy conducting an experiment.
7. NEVER place a needle in the pocket of a lab coat or work clothes.