Department of Animal Science
Safety Manual

Introduction
The Department of Animal Science strives to maintain a safe environment and relies upon each individual to use due diligence when working or studying in the various lab spaces. People who are aware of their responsibilities and who undertake tasks with due caution are critical to a safe working environment. All users must complete, at minimum, new worker general orientation, lab safety and Workplace Hazardous Materials Information System (WHMIS) training as described in the training flow chart.

General department safety

- Know and follow safety rules, procedures and protocols.
- Be aware of hazards, and the procedures for dealing with those hazards, before you start your work.
- Research labs must keep lab doors closed to maintain proper ventilation in the space.
- Fire doors must be kept closed at all times; automatic (self-closing) fire doors must not be blocked or propped open.
- Familiarize yourself with all safety equipment and procedures in your work area (telephone, exits, fire extinguishers, fire alarms, safety shower, eyewash fountain, first aid kit, evacuation routes).
- Never block emergency exits, emergency equipment or electrical panels.
- Post suitable warning signs if a specific hazardous situation exists; include the name and phone number of individual(s) responsible.
- Maintain a tidy workplace.
- Keep work areas locked when unoccupied to avoid unauthorized entry.
- WHMIS training is mandatory for anyone working in a research lab. Contact Prakash Sharma in room 123.
- Anyone who will be working in Microbiology lab must complete biosafety training.
- Anyone who will be working with radioisotopes must complete a radiation safety training, organized by EHSO. Contact Karen Lim in room 117 for more information.
- Laboratory safety links are available through the Environmental Health and Safety Office (EHSO) website.
- All employees are responsible for understanding the Workplace Safety and Health Act and taking precautions to prevent work-related injuries or illness. For more information visit the Workplace Safety and Health website and the Health and Safety General Orientation.
- **Anyone working in a laboratory who becomes pregnant should inform his/her supervisor so that an assessment of potential risks may be carried out.**
Working alone

Students must not work alone in a laboratory at any time. A second person must be present and must assume responsibility for supervision of the student. The work carried out must be authorized by your supervisor.

For other members of the Department, working alone is usually defined as working in a laboratory outside of normal working hours (8:30 a.m. to 4:30 p.m., Monday through Friday) in the absence of any other co-workers. Individuals may work alone if their laboratory work is of a non-hazardous nature and if there is someone else working on the same floor of the building.

If, for some reason hazardous work must be performed outside normal working hours, then the following procedure must be followed:

1. The work must have your supervisor’s approval,
2. A second co-worker must be available in case of emergency, or
3. Your working location (room number) should be communicated to a second person, and he or she can keep checking on you by phone.

If you are working late at night, both the Campus Security Service (474–9312) and the Safe Walk Program (474–9341) are available. Further information on working alone is available here.

Working off the main campus

If you work at a facility off of the campus, e.g. Glenlea, consult the unit manager or other designated personnel to ensure you obtain all required site-specific safety information and training, e.g. operation of machinery, working with animals, etc.

Glenlea Research Station requires that anyone working at the site complete an annual safety and biosecurity orientation, after which designated workers will receive an authorization number. Contact Jason Bourcier to arrange this.

If working at the Ian N. Morrison Field Research Farm in Carman, MB additional site-specific safety training will be required, usually offered in early May. Consult with your supervisor for more information.

Refer also to the Faculty of Agricultural and Food Sciences Biosecurity Protocol for any work where there is potential to transfer soil or pathogens between sites.

Travelling in Department vehicles

Anyone wishing to drive a Department vehicle (Caravan or Suburban) must hold a valid driver's license and be comfortable driving a larger vehicle, in the current conditions (may be rural/highway or city travel through wind, snow, rain, etc.). All rules of the road must be followed, as the driver of the vehicle is responsible for his/her own safety, as well as the safety of any passengers. The driver is also responsible for paying any fines incurred if speeding or driving distracted.
If you perceive any possible safety risks as it pertains to vehicle maintenance or repair (i.e. flat tire), contact Brittany Byron and do not proceed until safe to do so.

Working with animals
Anyone working with animals must follow an approved Animal Use Protocol and have completed Animal User Training, available via self-registration in UM Learn. Wet labs specific to the species you are working with should also be arranged through your supervisor and Denise Borowski, Lab Animal Training Coordinator with the Research Ethics and Compliance Office. Consult your supervisor for information on species-specific Safe Working Procedures (SWPs) and Standard Operating Procedures (SOPs).

Minors and non-employees in restricted areas or laboratories
The University of Manitoba Minors In Laboratories and Other Hazardous Work Areas policy must be followed. If any minors are required to be present in these areas, the Department Head must approve their presence and a parental consent form must be completed and signed.

Safety equipment, emergency exits, etc.
Animal Science research labs are equipped with safety equipment. Familiarise yourself and know the locations of the following:

- Emergency exit routes
- Fire alarms and fire extinguishers
- Personal protective equipment
- Spill kits and supplies
- First aid kit and supplies
- Emergency eyewash/showers
- Safety Data Sheets (SDS)
- Telephone

Chemical inventories
The chemical inventories are maintained in all research laboratories of the Animal Science Department and a hardcopy is kept in each lab for that area. Combined copies of chemical inventories from all labs are also kept in department’s main office room 201 for easy access in case of emergency.

Safety in the laboratory
- Always wear proper personal protection equipment (PPE) for the task you are carrying out (e.g. lab coat or coveralls, safety glasses or prescription glasses with side shields, gloves, face shield, respirator, aspirator, ear buds, etc.); see below for further details.
- Always know the hazardous properties of materials being use
- Always wash hands thoroughly before leaving the laboratory
- Never smoke in the building
- Never eat, drink, store food or apply cosmetics in laboratories
- Never perform unauthorized experiments
• Never engage in pranks, practical jokes or other acts of mischief
• Do not block access to emergency exits and emergency equipment
• **Any woman who works in a laboratory where hazardous substances are in use and who is, or believes that she may be, pregnant must inform her supervisor so that he/she can help assess the risks.**

**Personal protective equipment (PPE)**

**PROTECTIVE APPAREL AND FOOTWEAR**

Always wear a lab coat, gloves, eye protection and/or hearing protection (e.g. when using grinder or working with poultry or sows) as required. Lab coats must be removed before you leave the lab area and cannot be worn in common areas e.g. Coffee room, office etc.

Legs and feet must be covered (no shorts, skirts, short dresses or capris). Never wear open-toed shoes, high-heeled shoes or sandals in laboratories or other hazardous work environments. Steel-toed footwear may be required when working with livestock - consult your supervisor.

**EYE PROTECTION**

Use appropriate eye protection e.g. safety glasses, goggles and face shield etc. in situations where eye injury is possible, including when others are working on an experiment nearby.

**HAND PROTECTION**

Gloves must be worn whenever handling hazardous substances that can cause harm to the skin or can be absorbed through the skin. Remove disposable gloves and wash your hands before leaving a laboratory or other work area. Disposable gloves, if contaminated must be placed in a proper container and disposed of separately as waste.

**HEARING PROTECTION**

Always wear appropriate hearing protection e.g. ear plugs, ear muffs etc. to protect yourself from noise hazards, especially when working with equipment that generates loud noise (e.g. grinder, mixture and blender etc.) or with swine or poultry.

**RESPIRATORY PROTECTION**

Respirators provide personal protection by removing contaminants from the air before they are breathed in. A variety of respirators are available and are designed to deal with different substances in various situations. Select a proper respirator as per requirement and ensure filters are not overused.
Food or drink
Food and drink must not be contained or consumed in laboratories. Store foods and drinks in the food fridge located in lunch room area. Always wash your hands before you start enjoying your lunch or snacks.

Pipetting
Never do mouth pipetting. Always attach and use a rubber suction bulb for transferring the solution if using a pipette.

Laboratory safety equipment
EQUIPMENT USE
Use equipment only for its intended purpose. Whenever equipment is to be operated, seek assistance (training) and consult the manual before using it.

FUME HOODS
In most laboratories, the fume hood is the primary device for control of exposure to hazardous materials as it provides containment of operations which may release harmful gases, vapours or aerosols. All fume hoods in Animal Science Building are operated by a centralized exhaust fan system. All fume hoods in the building are on 24 hrs. a day.
Do not use fume hoods to store chemicals and equipment, as they restrict air flow. The sash should be kept at a safe operating height as determined by biannual inspection.

BIOLOGICAL SAFETY CABINETS
Biosafety cabinets are designed to protect the user and the environment from biohazards. They also protect materials being handled from environmental contamination. Always keep biosafety cabinets clean and disinfect them after every use with a suitable disinfectant.
Biosafety cabinets do not provide protection from radioactive or other chemical substances.
If you are working with materials in a biosafety cabinet, you must self-register through UM Learn for the Biosafety Training and complete the module and quiz.

EYEWASH AND SAFETY SHOWER
Most of the laboratories in Animal Sci. department are equipped with emergency safety shower and eyewash station; know the location of these units in your lab area. Access to this equipment must not be obstructed in any way.

FIRE EXTINGUISHERS
Portable fire extinguishers are designed to extinguish or control a small fire. They are not intended to fight a large or spreading fire. Remember the location of fire extinguisher in your lab area before fire emergency arises.
Laboratory safe practices and handling of lab equipment

Storage of chemicals
Incompatible chemicals must not be stored in close proximity or within the same confined space.

Routine reagent chemicals should be stored on shelves in all labs.

Do not place chemicals and solutions directly on the floor.

Flammable and combustible liquids must be stored in approved cabinets. Ordinary refrigerators and cold rooms must not be used for storage of flammable liquids.

FLAMMABLE MATERIALS STORAGE CABINETS

Two flammable materials storage cabinets are available in the Nutrition Lab room 122A. All flammable and combustible chemicals are to be stored in these cabinets.

Room 140B (accessible from outside near the loading dock) stores additional bulk flammable materials. Contact Prakash Sharma for details on access and rules of use.

Biohazardous materials
Biohazardous infectious materials must be clearly marked including clearly visible biohazard labels. Biohazardous materials must only be in designated biohazard areas.

Microbiology labs in Animal Science Dept. are monitored by EHSO to ensure required procedures are followed. Microbiology labs room 124, 126 and 106 are marked with appropriate signage as they are licensed as Level 2 biocontainment facilities. Do not enter these labs without permission from the person in charge.

Radioisotopes
Radioisotopes may be handled only by authorized users in the approved lab area. Radioisotope labs (Rooms 121 and 124) are marked with appropriate signage. Do not enter these labs without the permission of permit holder. Before working with radioactive material, you must take a radiation safety course and training organized by EHSO.

New chemicals or reactions
Before using a new chemical or making a new solution for the first time, always check toxicity, flammability, incompatibilities and disposal information etc. by consulting the SDS.

Labelling chemicals, solutions, samples
All chemicals, solutions, reagents and contained microorganisms must be clearly labeled. If you prepare a solution in the lab always put a Workplace Label on the container. Do not try to write on the container surface, always use a proper label. Research samples must also be labeled properly (name of owner, trial name, month and year etc.)
Compressed gas cylinders
Compressed gas cylinders are potentially dangerous due to high pressure. Rupture or sudden discharge can turn them into lethal projectiles. Never move a gas cylinder with the regulator attached to it.

Cylinders are heavy and unstable, so they must be moved carefully and be secured with the chain to the cart that has been designed for this, before they are moved. When cylinders are in use or in storage ensure they are secured with straps using a wall-mounting bracket.

Liquid nitrogen
Liquid Nitrogen can freeze the flesh in a second. Take appropriate precautions when dispensing liquid nitrogen; place the container on the floor. Always wear a full face shield, gloves and protective clothing (lab coat) when using this material.

Autoclave
Autoclaves are used for sterilization using steam. High pressure (20 psi), temperature (120°C) and time are controlled to optimize sterilization.

Do not put any material inside an autoclave which is contaminated with hazardous chemicals.

Open the autoclave door slowly after a cycle and let all steam escape. Always use thermal-lined mitts when handling autoclaved material, and be especially careful with liquids.

Furnaces and ovens
Muffle furnaces are used in the nutrition lab for ashing the samples and operate at very high temperature (600°C). Always be careful when opening the door of a furnace when it is hot. Use thermal gloves or metal tongs to remove items from a furnace.

Do not put flammable or combustible materials in an oven. This includes filtrates that are not solvent-free.

Centrifuges
Centrifuges are dependent on rotors. Use instrument-compatible rotors only. Make sure that centrifuge rotors are balanced properly and placed correctly on the spindle. Do not overfill the centrifuge tubes. Ask for assistance if you are using a centrifuge for the first time.

Incorrect operation of centrifuges can be very dangerous. Keep the operating manual near the unit for easy reference.

Safety data sheets (SDS)
A safety data sheet is a document which contains various information (e.g. physical, chemical, fire hazard, incompatibilities, toxicity and preventive measures etc.) for a hazardous chemical. In Animal Science Dept. the SDSs are available in binders in each lab. WHMIS training provides an overview on how to read and interpret SDSs.
Housekeeping
Housekeeping refers to the general condition and appearance of a laboratory. Proper housekeeping has obvious health and safety benefits. People working in the lab must practice good housekeeping.

- Always keep your lab area free of clutter, trash, unnecessary chemical containers and equipment.
- Always keep lab benches, fume hoods, refrigerators, glass and chemical cabinets, and sinks and clean.
- Do not store chemical containers on the floor.
- Keep containers and equipment away from the edge of benches.
- Exits and emergency equipment areas must be clear and free of clutter.
- Clean glassware the same day it is used.

Waste disposal in Animal Science Laboratories

1. Chemicals

A) Solids

Unwanted dry chemicals should be placed in a box and put in the fume hood in room 118 by the balance room door. Give the lab safety officer (Karen Lim) a complete list of the discarded chemicals.

B) Empty Chemical Bottles

Rinse the empty reagent bottle three times with water and deface the labels. Throw plastic containers in the garbage. Glass bottles that can be recycled should be placed in the green recycling box in the nutrition lab. Never put glass of any kind in the regular garbage.

C) Liquids

C1: No sink disposal of chemicals with limited exceptions. Inorganic compounds such as acids, bases, etc. are collected in bottles or drums and placed in the fume hood in room 118. Make sure the containers are labeled with waste disposal labels and give a list to the lab safety officer. Non-hazardous buffer solutions, detergent or mild acid/base solutions (< 1 %) may be disposed of by pouring down the drain with large amounts of tap water. Methanol and ethanol solutions no greater than 10% v/v and bleach solutions containing 1% sodium hypochlorite or 1:5 dilution may also be disposed of in the sink.
C2: Organics such as heptane, hexane and ether should be stored in bottles or drums, placed in the fume hood in room 118 and a list given to the lab safety officer.

C3: Chemicals and organics cannot be diluted with water for the purpose of disposal.

C4: Some chemicals become explosive with extended storage and must be disposed before the expiry date (e.g. ether, picric acid and tetrahydrofuran). Place in the fume hood in Room 118.

D) Pharmaceuticals

Do not throw any drugs in the garbage unless given permission by the department veterinarian responsible for the purchase. Contact Richard Hodges.

2. Biological waste

EHSO provides further information on hazardous waste management.

A) Sharps

Sharps are things that can pierce the skin. Examples are Pasteur pipettes, plastic pipette tips, needles, syringes, razor blades and scalpel blades. They are considered to be biological hazards if they have had contact with potentially infectious human/animal fluids or secretions such as blood, saliva, mucous, rumen fluid, feces or semen.

Place in biohazard containers, autoclave (room 126A) for 1 hour and store in the cupboard in room 140A in the annex. The container must not be filled above the line indicated on the container. The autoclave record book must be filled in with the date, minutes used to autoclave and type of load. The Animal Science safety officer, Karen Lim, is responsible for arranging for pick-up of the containers. Each lab is responsible for purchasing and sterilizing the containers they need. First time autoclave users must make arrangements to be trained on the proper handling of the autoclave by Karen Lim or Prakash Sharma.

DO NOT autoclave chemically contaminated sharps. These are placed in separate containers, labeled appropriately and placed in the fume hood in Room 118.

B) Microbiological waste

1. Solids such as used gloves, petri dishes with media with harmful microorganisms are placed in clear autoclave bags, provided by each researcher. Label with autoclave indicator tape (do not seal: the bag must be open to allow steam to access contents) and autoclave in room 126A. The autoclave should be set to the waste program setting, and will run for 1 hour. Following autoclaving, seal and place in a garbage bag and dispose via the regular garbage. Gloves used for microbiological work are to be removed and disposed of in an autoclave waste bag before leaving the lab. Do not touch door knobs, phones or light switches while wearing contaminated gloves. All gloves used in the Level 2 labs should be placed in the autoclave bags.

2. Liquids can be autoclaved as above or decontaminated with a proven chemical method e.g. bleach. Dispose down the drain with copious amounts of water.
C) Teaching specimens

If fresh/frozen specimens are used for dissection the professor must obtain a biosafety permit. Fixed specimens (i.e. in formaldehyde) do not require a biosafety permit. More information on the Biological Safety Program is provided through the EHSO. To dispose of specimens, place in double bags, label, and place in the annex chest freezer (Room 140A). Notify Robert Stuski if the freezer is filling up.

3. Glass and broken glass

Place broken glass in designated boxes provided by the Nutrition Lab or researcher. When the box is full, seal completely and place outside the loading doors for disposal. Be sure to obtain a new box. Everyone is responsible for cleaning up their own broken glass. Glass bottles that can be recycled should be triple rinsed and placed in the green recycling box in the nutrition lab. Never put glass of any kind in the regular garbage.

4. Sharps

Any items considered to be sharps such as pipette tips, scalpels and Pasteur pipettes not used with potentially infectious materials should be treated as glass and placed in a box labeled broken glass. Never put pipette tips in the regular garbage.

If the sharps are biologically contaminated, be sure to follow the steps outlined above for autoclaving.

5. Freeze dried material

Place in double garbage bags and dispose via the regular garbage. Never throw any samples away unless you have your supervisor’s permission.

6. Radioactive materials

Only persons on the permit’s designated workers list are allowed to work with radioisotopes. It is the responsibility of the radiation permit holder and the lab radiation supervisors, Karen Lim or Deanne Fulawka, to arrange for pickup of waste and for training.

7. Mixed radioactive and biological

**DO NOT AUTOCLAVE.** See procedures/radiation permit holder/lab radiation supervisor, Karen Lim. Never put anything radioactive down the drain or in the garbage.

ALWAYS ASK A TECHNICIAN IF YOU DON'T KNOW WHAT TO DO
Emergency procedures

Fire emergency
WHEN THE FIRE ALARM SOUNDS:

a. Stop what you are doing and leave.
b. Do not assume it is a drill.
c. Close all doors and windows in your area if safe to do so.
d. Fire Wardens check that everyone evacuates.
e. Exit the building.

WHAT TO DO IF YOU DISCOVER SMOKE OR ANY FIRE:

a. Activate the nearest fire alarm by pulling the alarm pull box as you leave. If safe to do so, shut down critical experiments and turn off heating devices before you leave.
b. Close doors and windows to prevent fire from spreading.
c. Evacuate via the nearest safe exit. Animal Science and Entomology Building has two front entrances, use the nearest of these doors to evacuate the building. The meeting point of our building is in the front of the building on Dafoe Road (North side of the Building).
d. Always use stairs to exit. Do not use elevator and follow all other directions of Building Fire Wardens.
e. Advise a Fire Warden of the location and nature of the fire. Help the Fire Warden so that everyone in the building is notified and gets out immediately.
e. Stay outside the building until Fire Alarm sound has stopped and re-entry is permitted by the Fire Department Officer in charge, or Physical Plant Staff.

SHOULD YOU TRY TO PUT OUT A FIRE?

Only if you have activated the fire alarm, and if there is no significant personal risk, and it is relatively easily extinguishable, but if you could not put fire out within 30 seconds, evacuate through a safe exit.
EMERGENCY PHONE NUMBERS

To call 911 from a campus phone, dial 4-911.

The emergency phone number on campus is 555.

If using your MTS or Rogers cell phone Dial #555.

From all other phones, Security Services can be reached by dialing 204-474-9341.

FIRST AIDERS AND FIRE WARDENS

FIRST AIDERS:
Sandra Anderson (Room 201)
Dave Holder (Room 215C/Basement)
Robert Stuski (T.K. Cheung Centre)

WHMIS COORDINATORS:
Prakash Sharma (Room 123)
Lisa Babey (Room 214B)

CHIEF FIRE WARDEN: Prakash Sharma
Alternate Fire Warden: Karen Lim

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<tr>
<th>Area</th>
<th>Primary Fire Wardens</th>
<th>Alternate Fire Wardens</th>
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</thead>
<tbody>
<tr>
<td>Basement</td>
<td>Dave Holder</td>
<td>Deanne Fulawka</td>
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<tr>
<td>1st floor</td>
<td>Karen Lim</td>
<td>Deanne Fulawka</td>
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<td></td>
<td>Atanas Karamanov</td>
<td>Brittany Byron</td>
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<td>2nd floor</td>
<td>Sandra Anderson</td>
<td>Charlene Hawryluk</td>
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<td></td>
<td>Jordan Bannerman</td>
<td>Lisa Babey</td>
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<tr>
<td>Annex</td>
<td>Atanas Karamanov</td>
<td>Brittany Byron</td>
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Hazardous spills
A spill is defined as an uncontrolled release of a chemical and can be categorized into two types:

1- Major spills
2- Minor spills
Major Spill Criteria
- There is fire or potential for fire or explosion.
- The spill poses an immediate danger to life or health.
- There are injuries requiring medical attention.
- You do not know the properties or hazards of the spilled substance.

WHAT TO DO FOR MAJOR SPILLS:
1. Pull the fire alarm
2. If possible to do so safely:
   a. Attend to injured persons
   b. Shut off all ignition sources
3. Exit the building
4. Inform your supervisor and technician in charge immediately, and brief them on the nature of the emergency and other possible hazards in the area.
5. Contact EHSO 474-6633 as soon as possible for further actions.
6. For spills resulting in injuries requiring medical attention contact campus security services, Dial 555 or #555 from your Rogers or MTS cell phone.

Major spills require an incident investigation and report to be conducted by the PI and submitted to EHSO.

Minor Spill Criteria
Minor spills are spills that do not meet the criteria of a major spill and can be safely dealt with by laboratory personnel. The Safety Office can be contacted for technical advice and help.

WHAT TO DO FOR MINOR SPILLS:
1. If there is a need, evacuate the area, close doors and open windows.
2. Attend to any contaminated persons and alert the other people about the spill.
3. Control spread of the spill.
4. Notify your supervisor or technician in charge of that area as soon as possible.
5. Clean up spill with spill kit, consult SDS for hazard and clean up information.
6. Always use personal protective equipment e.g. Gloves, goggles and face shield.
Ask for help if someone is nearby and immediately inform Primary or Alternative member in the event of any spill, fire and medical emergency. Also notify your supervisor and technician in charge.

**DO NOT PANIC, REMAIN CALM. ALWAYS REMEMBER: YOUR SAFETY COMES FIRST.**

Incident reporting

Minor spills must be reported in writing to EHSO by PI within one working day of the incident. The Incident Investigation reporting form is available on the EHSO website.

All work related injuries must be reported promptly to your supervisor and documented by filling out a Notice of Injury form (green card). All work-related injuries forms are also available in the main office of the department, Room 201 and details on WCB reporting and accident investigation are available on EHSO’s website.
Animal Science Lab Safety Orientation and Training Flow Chart

Step 1:
Ensure you have a UM net ID. Contact IST if you cannot claim your UM net ID.

Step 2:
In UM Learn, self-register for “New Worker General Orientation” and “WHMIS Training” and complete the online modules and quizzes. Print the certificates upon successful completion.

Check with your supervisor to see if you will be working with any biological hazards and radioactive materials. If so, also self-register for the “Biosafety Training” in UM Learn, or have your supervisor arrange for Radiation Training through the Environmental Health and Safety Office (EHSO), respectively.

With your supervisor, arrange for any species-specific facility orientation and wet lab training you may require.

Step 3:
Contact Karen Lim in Room 117 for a building safety tour.

Step 4:
Contact Prakash Sharma in Room 123 with all training documents. Prakash will provide you with a Laboratory Safety Checklist for New Lab Personnel to be completed with your supervisor.