

We would like to take this opportunity to welcome you to the
Department of Soil Science.



For more information about Soil Science and to put a face to the people in the Department, check out our Website:

http://www.umanitoba.ca/afs/soil_science

This **Orientation Handbook** is full of general guidelines and background information. It is meant to orient you to Departmental Procedures and to provide you with an up-front guide as to where to direct any questions or concerns. Please feel free to contact support staff or faculty members.

Please read this entire document, in detail, as soon as possible. We hope you find your stay in the Soil Science Department a fun and rewarding, learning experience.

Edited By: Rob Ellis and Trevor Fraser, April , 2021

Next Revision: April 2022

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The Soil Science House Band is always open to new members

GENERAL

ELLIS BUILDING

The Ellis Building is occupied by the Department of Soil Science, Department of Food and Human Nutritional Science, Agriculture and Agri-Food Canada (AAFC) and the Province of Manitoba. Students require permission to use facilities and equipment of the Department of Food and Human Nutritional Science or AAFC. Your supervisor will coordinate permission with the appropriate director or head of these agencies.

COMPUTER SERVICES

A UMNNetID is an account name that uniquely identifies you as a member of the University of Manitoba community. It is visible in University of Manitoba business systems and reports and may be viewed by university staff. Your UMNNetID and password supply your online credentials and allow you to access various online services and systems such as JUMP, UM Learn, E-Mail, and WIFI.

Information and links to set up your UMNNetID is at this website:

http://umanitoba.ca/computing/ist/service_catalogue/access/accounts/2513.html

Information on digital security at the university can be found at this web site:

<http://umanitoba.ca/computing/ist/security/index.html>

The university has site-licensed software available to students and staff. More information can be found here: <http://umanitoba.ca/ist/software/index.html>

There are two desktop computers for general use in Room 368 (photocopier room). A university UMNNetID is required along with the password listed on the monitor. Please do not remove or install any software on this computer. Your work files can be kept in a folder created under the user folder on the D: drive. Do not save to the root C: drive and refrain from leaving files on the desktop. You may leave files on the computer's hard drive if space allows but do not expect this to be a permanent storage solution. You are responsible for maintaining a copy of your own files. Storage on your Home (H): volume is an excellent way to backup but usually limited to 15Mb.

Personal computers brought from home can be connected to the network and the LAN. Laptops can be connected securely using wireless. Contact Nonato Nitafan (Ph. 8587) for specific information on how to connect to the University Wi-Fi.

KEYS AND BUILDING SECURITY

Each graduate student will be assigned a key that opens most of the labs, as well as the general office, photocopy room, etc. Visiting students will only receive keys that are deemed necessary.

Lynda Whitlam, Soil Science General Office (Rm 362), is responsible for key distribution. A \$25 deposit is required before keys are provided. The deposit will be

refunded when the keys are returned. These keys are for your use only and are not to be used to allow entrance of any unauthorized persons. During the evenings, weekends and holidays all outside doors must be kept locked. Remember this is for your security as well as to secure the building. Be sure that the office, laboratory, and building doors are locked when unoccupied and that all lights and instruments in your area, are turned off.

LOUNGES / KITCHEN AREA

(Closed during Covid-19 Restrictions)

A kitchen area is operated by the Soil Science Graduate Students Association in Rm 385. This room contains a toaster, small oven and a microwave. There is also a fridge and freezer where personal lunches can be stored. **No human consumption food or beverages should be stored in any laboratory fridges or freezers.**

The Graduate students have a coffee fund, with the coffee pot in the Rm 386 Lounge. A second lounge is located in Rm 340, in the south wing. For more details about the coffee, contact the Graduate Student Rep.

OFFICE SPACE

Office space will be assigned by the Head of the Department and the Administrative Secretary on a priority basis and according to the needs of the individual and the program involved.

OFFICE SUPPLIES

Basic office supplies are available from the Soil Science General Office. Supplies required for research purposes are to be purchased using your supervisor's funds. Students are required to provide for their own resource materials for the classes they are attending.

PARKING

Parking for staff and students is available at various sites around the University of Manitoba, Fort Garry Campus. Applications can be made through the Parking Office in the Welcome Centre, 423 University Crescent. Please note that there is no free parking on campus from Monday through Friday, 7:30 a.m. to 4:30 p.m. During those times, a valid parking pass must be displayed for an assigned parking lot. Information on parking during Investors Group Field events will be posted at <http://umanitoba.ca/student/guide/parking-and-event-days.html>.

PHOTOCOPYING

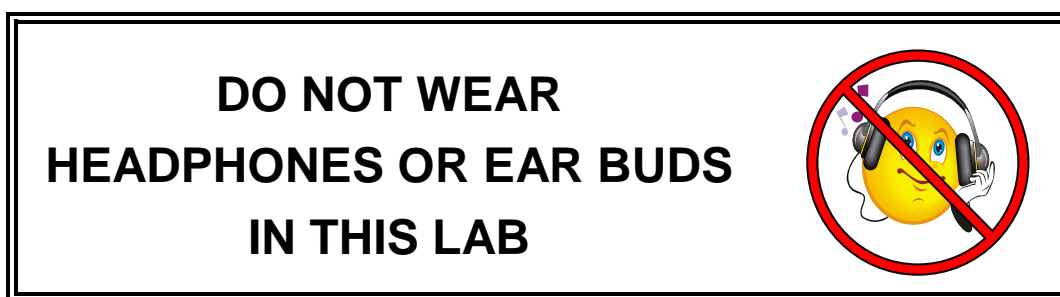
Lynda Whitlam, Soil Science General Office (Rm 362) will assign you a code to access the photocopier. This is not to be shared and is only for copying essential to your research. Personal photocopies can be purchased through the Soil Science General Office.

RADIOS IN OFFICES, LABORATORIES AND OTHER WORK AREAS

The use of radios in offices and laboratories is permitted, if the following guidelines are followed:

- (a) Radios are operated at volumes such that no noise results in hallways, adjacent laboratories or offices.
- (b) Radios should not be used in offices when other occupants are studying, writing reports, etc.

Use caution when working and wearing ear-buds from personal music devices. **These should not be used when working with any controlled Products** (i.e., chemicals in the Labs). In some labs and work areas, the use is not allowed at any time and the following sign is posted at the entrance.



TELEPHONES



- If you have long distance University business calls to make, see the General Office staff and they will assist you.
- Push 4 first to get an outside line. For campus calls, when the phone # starts with 474, all you need to dial are the last 4 digits.

- Campus Security Emergency Number: 555 or (204) 474-9341, (non-emergency: 9312).
- Cell Phone users with Bell MTS or Rogers can make an emergency call using “#555”.
- Phones have been installed in all the Teaching Labs and Lecture Rooms, which have a button for connecting directly to UM Security Services. As well, 4 red emergency call boxes have been installed in the building’s hallways. All these emergency phones have speakers so that Security Services can use them as a public address (PA) system.

OFFICE PROCEDURES

Accessing Your Pay Statement

The University does not issue paper pay statements. To access your pay statement, you need to use your UMNNetID to log into JUMP <http://jump.umanitoba.ca/cp/login/>. In order to do this, you will need to have a University of Manitoba employee number. If you have not received your number, please see Lynda Whitlam (Room 362). Instructions on how to access JUMP can be found on the login page under “how do I log in”. Once you have access to JUMP: log in, click on the My JUMP tab and your earning statement will show up on that page.

Casual hourly employees will receive their hourly salary, plus 6% vacation pay. Please note that the first line of your pay will be the hourly wage (e.g. 70 x \$13.21). The next line is where your vacation pay (6%) shows up. The two amounts together will be the salary plus 6% (e.g. Line 1 – 70 hrs x 13.21 = 924.70); (Line 2 – 55.30 (6%) – Total salary is \$980.00. You will also notice that if there has been a statutory holiday, your net pay will change. This is because you have already been paid vacation pay and they do an adjustment to your pay for a statutory holiday.

Change of Address or Marital Status

If you change your address or marital status, an Employee Record Change Form must be filled out and returned to the Soil Science Office as soon as possible. Students are also required to complete a Change of Address Form through the Student Records Office.

Payroll

Appointment forms should be processed 2 weeks prior to your start date. This includes a Personal Information Form as well as a Direct Deposit Authorization which requests your banking information. We know that this timeline is not always possible, but keep in mind your first payment may be delayed if this information is not received in time. Please see the Soil Science Office, to both receive the forms and to provide the required information to initiate the appointment.

Purchases

There are various ways to purchase needed supplies and materials through the University of Manitoba. There are purchase orders and VISA orders. Essentially, if any money is spent, there must be a paper trail processed through our general office. Please ensure that all purchases are approved by your supervisor prior to the purchase and that a budget number is obtained. If you are unsure at all regarding any of the procedures, please ask Lynda Whitlam (Room 362) or Flor Toribio (Room 366).

Time Off

Whenever time from work is missed (sickness, medical appointments, vacation time, funerals, etc.), your supervisor as well as Lynda Whitlam in the Soil Science Office must be notified as soon as possible. Notification should be prior to time taken off or for sick time, given as soon as possible.

Timesheets

Hourly employee and student timesheets must be completed, approved by your supervisor and submitted to Lynda **before noon on Thursdays**. Employees supervised by Dr. Tenuta should go directly to Lynda. **If you do not turn in a timesheet, you will not be paid.**

Biweekly staff must report any extra hours worked or time off (i.e., vacation, overtime, medical appointment, sick time, etc.) to Lynda **before noon on Thursdays**.

Travel Policies and Procedures

General travel policies and procedures are explained at the following address on the University of Manitoba website:

http://www.umanitoba.ca/admin/financial_services/travel/index.shtml and it is to your advantage to familiarize yourself with them. Travel expenses are reimbursed to you by direct deposit. Allow approximately 2 weeks for processing once all forms have been submitted to administration. Forms related to travel (except conference registration) are available on the bulletin board outside the general office. For Department policies, please follow these procedures:

- To register for a conference or workshop, fill out the registration form and submit it to Lynda Whitlam, along with a copy of the conference particulars.
- To purchase a plane ticket: (a) see Lynda Whitlam and obtain a budget number from your supervisor and his/her signature before proceeding. Make sure you retain all your flight documentation (ticket, itinerary, e-ticket and boarding passes) as these documents must be turned in after your trip, when you submit your travel claim information.

To claim reimbursement for travel expenses, check with your supervisor on whether you will be required to keep your meal receipts or claim a daily per diem.

Per Diem Rates: http://umanitoba.ca/admin/financial_services/travel/rates.html

Keep all expense receipts (meals, taxis, accommodation, etc.) related to your trip. On your return, complete a Travel Claim form as soon as possible, attach your receipts and have your supervisor sign their approval, then submit it to Lynda. Supply as much information about your trip as possible, including the agenda of the conference, whether you shared lodgings, paid for another person's expenses, etc. If you did not travel by plane, supply information on the transportation you used. If by private car, we require information to be filled in with regard to your vehicle and mileage. If you do not have accommodation then an explanation must be included.

For any questions on office procedures, please contact:

Lynda Whitlam	Administrative Secretary	Rm 362	(204) 474-8153
Flor Toribio	Administrative Assistant	Rm 366	(204) 474-6035

LABORATORY USE

LABORATORY SPACE

Laboratory space and Teaching Lab access will be assigned by the Head of the Department, and/or your supervisor on a priority basis, according to needs of an individual and the program involved. Do not enter or work in areas / laboratories unless you have obtained permission from the person in charge. **Also, do not remove anything from the Laboratories (including glassware, chemicals, balances, etc.) without permission.**

Movement of any balances between labs and booking time in a Teaching Lab needs to be coordinated by Rob Ellis.



Junior Soils Laboratory, Rm 318

- (a) Please obtain permission from the faculty member or technician in charge of equipment before you use it. This will allow the technical staff to provide you with assistance and training.
- (b) CLEAN UP: Clean up all laboratory space and equipment after use. Make sure equipment is maintained and ready for another user. Report any equipment malfunction to the person in charge of the lab.
- (c) Growth Chambers and the Growth Room: Requests for plant growth space should be submitted to Bo Pan. Procedures to be followed for maintenance of growth chambers and growth rooms will be provided after space is allocated. Be sure to fill in the "Record of Operation" form for growth chamber use.

INTERNAL DEPARTMENTAL CHARGES

There are a number of procedures and analyses that are performed using general use Departmental Equipment. These do not have on-going funding, so users are charged a fee to provide funds for replacement, parts and servicing.

Use of equipment is recorded in log books, along with the chargeable account number.

Current Chargeable Procedures are:

1) Autoanalyzer Analysis, Rm 300

Initial training and troubleshooting are provided. Students perform the actual work and there is a charge of \$1.00 per colorimeter used.

2) Deionized Water, Rm 300

Water usage is recorded, and consumable charges of \$0.50/L are charged to the appropriate budgets.

3) Acid Digestions Rm 302

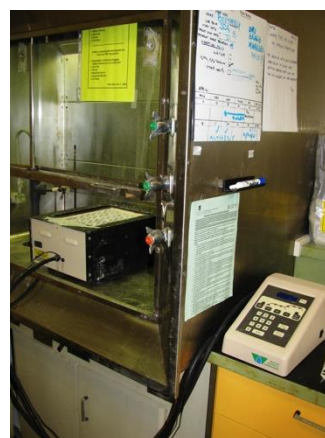
The charge is \$20 per digestion cycle for the Departmental Westco Block Digester.



Deionized Water



Autoanalyzer



Block Digester

4) Soil Grinder, Soils Shed

This charge is applicable to all University personnel using the rolling mill grinder and the pulverizing grinder.

The charge is \$0.50 / L of soil to be ground. The max sample size is 1L. After that, it is recorded as an additional sample for each extra L or part L.



Soil Grinders



Plant Tissue Grinders

5) Plant Grinder, Soils Shed

This charge is applicable to all University personnel using the plant grinder. The charge is \$0.50 / sample (less than 1 L of ground material). An additional \$0.50 will be charged for each L and partial L ground.

6) Tractor Use (including the Giddings Corer)

Tractors and implements may be used by trained and qualified Department of Soil Science staff and students. Contact Trevor Fraser for training and questions. Each item has an associated daily cost to operate, the Equipment Charge List can be provided by Trevor Fraser on request. Scheduling and prioritizing use of equipment and technical help happens at the Monday morning technician's meeting. Priority will be given to those in attendance at the meeting; attendance is advised before booking to avoid conflicts. Interdepartmental and external use of equipment will be discussed at the technicians meeting and will be approved on a case-by-case basis.

LAB COAT CLEANING

Soil Science lab coats will be picked up by Perth's Wednesday mornings and returned the following Wednesday.

- Take the lab coat to Rm 383, make sure your name is clearly written with permanent marker and place it in the supplied laundry bag or box.
- On the sheet provided, record your name, your Supervisor's name and the number of lab coats. (Your Supervisor will subsequently be charged for the cleaning).
- Pick up your coat the following week.
- Do not take your lab coat home for cleaning.

WHO DO I ASK?

The following is a list of the different laboratories, professors and support staff who can assist you with any questions you might have about their particular area of expertise:

Agrometeorology Labs	Paul Bullock
Colorimetric Auto Analyzer	Rob Ellis
Department Safety Officer	Rob Ellis
Gamma Spectrometer	David Lobb
Grinding Rooms	Trevor Fraser
Growth Chambers	Bo Pan, Trevor Fraser
Hazardous Waste Disposal	Rob Ellis
Pesticide Storage and Use	Trevor Fraser
Pesticide Research Laboratories	Annemieke Farenhorst
Radioisotope Permitted Laboratories	Rob Ellis
Sample Drying Room	Trevor Fraser
Soil Fertility/Agronomy Laboratories	Xiaopeng Gao
Soil Chemistry Laboratories	Inoka Amarakoon
Soil Ecology Laboratories	Mario Tenuta
Soil Physics Laboratories	TBD
Soil Science Department Head	Francis Zvomuya
Soil Science Shed/ Vehicle Use	Trevor Fraser

LABORATORY OPERATIONS

UNIVERSITY OF MANITOBA SAFETY PROGRAMS

Staff and Students are to follow Departmental and University safety policies governing the use of chemicals and general good laboratory procedures (GLPs).

WORKING ALONE POLICY

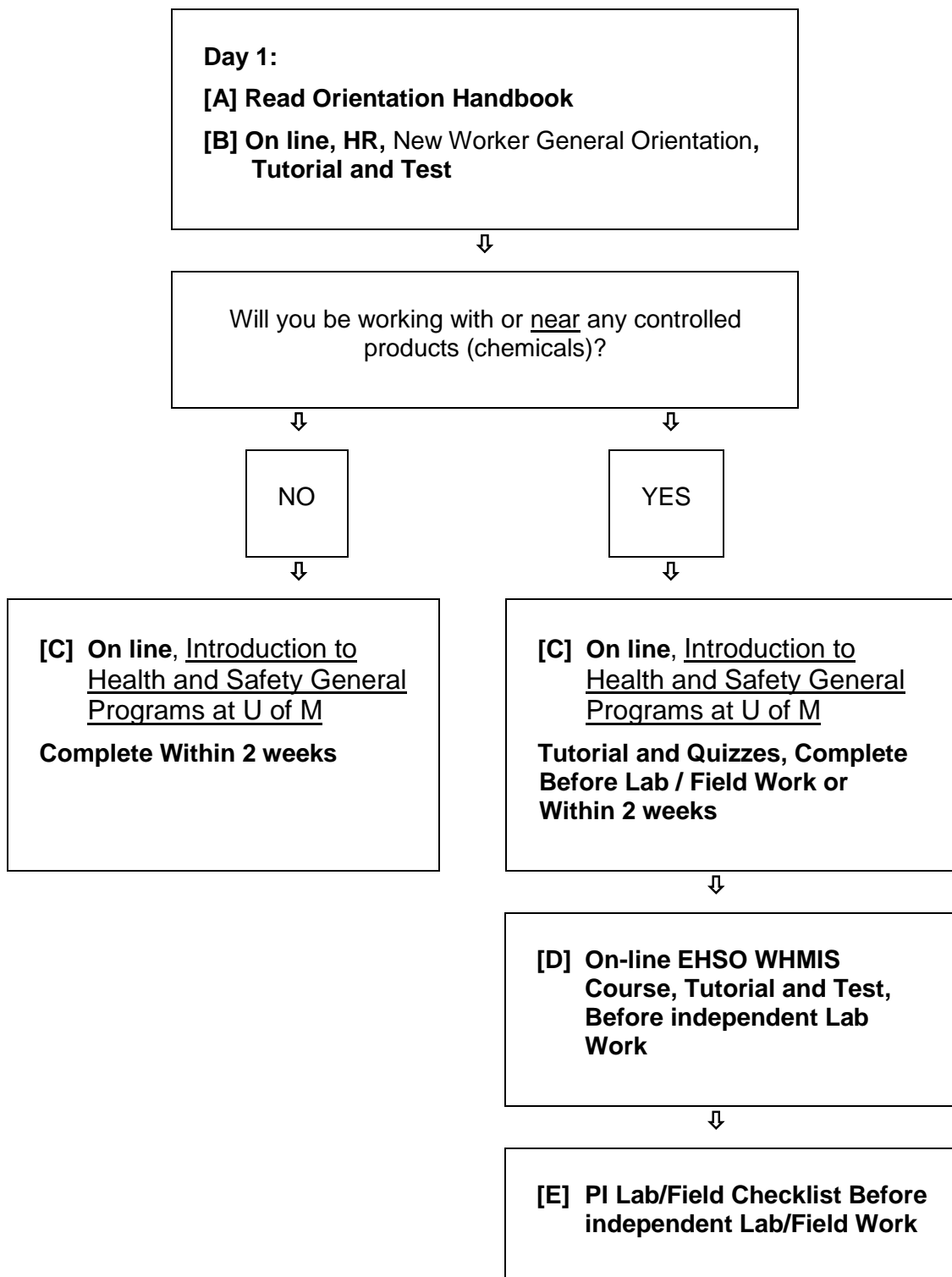
The following activities are discouraged from being conducted outside of normal working hours. If it is necessary to conduct these activities in evenings or weekends, a buddy system must be established with clear lines of communication. The risk will be assessed for each of these and a formal procedure will be established by the Supervisor. Documentation on the procedure must follow the University forms found at: http://umanitoba.ca/admin/goverance/governing_documents/staff/839.htm.

Activities with risk:

- Motorized equipment in shed and laboratories, including grinders, saws and threshing machines.
- Field activities of any type.
- Chemistry activities with a possibility of burns or other trauma.

TRAINING SEQUENCE

This is the training sequence we follow in the Soil Science Department:



[A] Orientation Handbook

- You will be provided with a hardcopy of the booklet. Read and pay special attention to all safety related topics. The handbook is also available on the Soil Science Website http://umanitoba.ca/afs/soil_science/

[B] Completion of New Worker General Orientation (NWGO)

- Follow this link to the Environmental Health and Safety Office website:
http://umanitoba.ca/admin/vp_admin/risk_management/ehso/training/index.html
- Go to the Training section and follow the instructions to read the NWGO (PDF) and then complete the test through UM Learn.
- When you have passed the test, print the certificate and return to Rob Ellis.

[C] Introduction to Health and Safety General Programs at U of M

- [PowerPoint Presentation \(umanitoba.ca\)](http://umanitoba.ca) View the “Introduction to Health and Safety General Programs at the U of M” presentation. When you have completed the 3 presentation self-test quizzes, print the acknowledgement page. When you and your supervisor have signed this page, forward to Rob Ellis.



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[D] Combined GHS/WHMIS 2015 On-line Course

- Follow this link to the Environmental Health and Safety Office website:
[Workplace Hazardous Materials Information System \(WHMIS\) | Environmental health and safety | University of Manitoba \(umanitoba.ca\)](#)
- Go to the WHMIS section and follow the instructions to complete the tutorial and test through UM Learn.
- When you have passed the test, print the certificate and forward to Rob Ellis.

[E] Lab/Field Safety Checklist for New Lab Personnel.

- You and your Supervisor (or Supervisor's Designate) will review and discuss the associated risks for your assigned duties and work areas, plus the personal protection equipment that is available.
- When the checklist has been completed and signed, return to Rob Ellis

Due Diligence means:

- Everyone has the responsibility to take all precaution reasonable to prevent a work-related injury or illness.
- The concept of "reasonable care" 'holds individuals accountable for their acts (what they do) and omissions (what they fail to do).
- It applies to everyone at the workplace, both supervisors and workers.

Additional specific Lab / Field Safety Training will be provided or directed to you, by your Supervisor



VOLUNTEERS AND MINORS IN LABORATORIES

There is a University of Manitoba policy and procedure regarding the use of volunteers and the access of minors to Laboratories or other hazardous areas.

The policy addresses the requirement that volunteers need to have safe and rewarding experiences on campus. It also includes a parental consent/waiver form for minors.

For more information see:

www.umanitoba.ca/admin/goverance/governing_documents/staff/810.htm

www.umanitoba.ca/admin/goverance/governing_documents/staff/812.htm

For additional information on Safety Items check the UM Environmental Health and Safety Office (EHSO) website.

http://umanitoba.ca/admin/vp_admin/risk_management/ehso/index.html

University of Manitoba - Health and Safety Policy

www.umanitoba.ca/admin/goverance/governing_documents/staff/551.htm

University of Manitoba - Laboratory Safety Training Standards

www.umanitoba.ca/admin/goverance/governing_documents/operations/800.htm

University of Manitoba - Laboratory Safety Training Standards

www.umanitoba.ca/admin/goverance/governing_documents/operations/800.htm

Louis Pasteur...

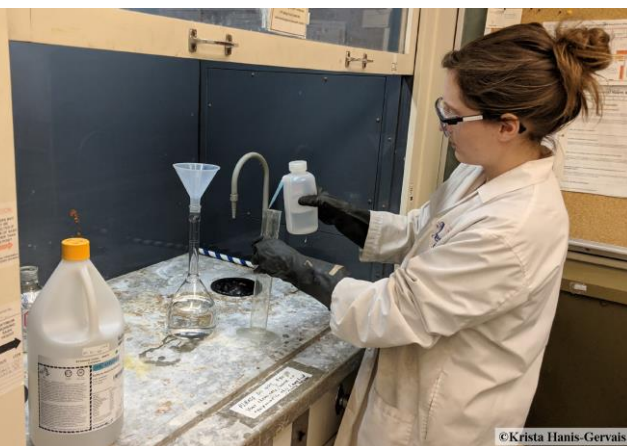
“Chance favours the trained mind.”

Rob Ellis...

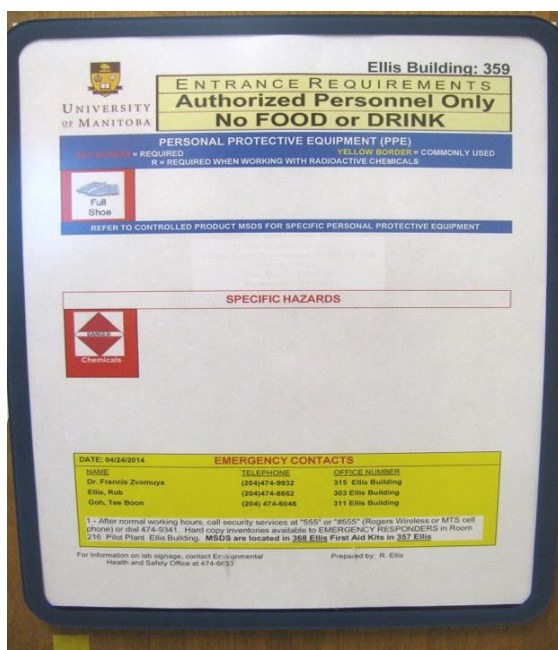
“Safety favours the prepared mind.”

GENERAL LAB SAFETY

Your Supervisor will provide you with safety glasses and any other safety equipment you require; keep them clean and readily available.



- (a) Before entering any Lab, check the Workplace Hazard Information Placard (WHIP sign) on the entrance door. This sign will identify the entrance requirements and Personnel Protective Equipment required. The PPE icons identified by a red border are mandatory before you enter. Other PPE may be required, dependent on the procedures being performed in the Lab.



UM Workplace Hazardous Information Placard (WHIP), In-Lab Signage

- (b) **No food or drink (including water bottles) is allowed in any of the labs.** So, enjoy your breaks in your office or a lunch room and return refreshed to the lab, when you are finished.

- (c) **Lab footwear must have a stable sole with a closed heel and toe.**
Sandals, flip-flops or slip-ons may not be worn in the lab or while doing laboratory work anywhere else in the building or shed.
- (d) There are lockers available in the south wing, 2nd floor, for personnel that have not been assigned an office. This is where personal belongings such as jackets and backpacks should be stored, **rather than on Lab counters.**
- (e) Lab coats and other protective wear are worn to prevent debris and contamination from reaching your personal clothing. Therefore, it **should not be worn** in common areas such as the Lunch lounge or conference rooms.
- (f) Gloves are used in many of the labs to protect you from contamination. Therefore, gloved hands should not be used for handling items that other people will be using without gloves. This would include **door handles**, phones and keyboards.



- (g) For your own protection, laboratory coats and eye protection should always be used when handling hazardous chemicals such as when dispensing strong acids and bases, and when digesting soil or plant material. Always use fume hoods to dispense chemicals with poisonous or corrosive fumes.
- (h) In accordance with Workplace Hazardous Materials Information System (WHMIS) guidelines, there is a hard copy of the Safety Data Sheet (SDS) in Rm 368 for all controlled products in the laboratories. Everyone should read the appropriate sheets and be aware of the precautions before they begin working with a chemical.



- (i) Always obtain proper instruction on use of all chemicals and equipment from your supervisor or technician in charge of the laboratory.
- (j) Chemical solutions or extracts should not be transported through the building in unprotected glass containers. Use a secondary plastic container such as a safety bucket or tub that will contain the volume of the solution, if the glass container should break. A stable cart would be appropriate as long as the sides are fluid tight.
- (k) **Chemicals and/or chemical solutions should not be brought into any office space, at any time! This was the source of a serious 2018 incident at the University of Manitoba.**
- (l) Use the cylinder carts provided for handling tanks of compressed gases. Always secure container to the wall or a laboratory bench with appropriate straps or chains.
- (m) There is a common storage area that has been designated for bulk flammable chemicals, in the Food Science Pilot Plant, Rm 216L. Temporary storage fire cabinets are also provided in the various laboratories.
- (n) If you have any concerns or doubts about the safety of any procedures or experiments that you are performing, stop work immediately and seek advice from your supervisor or appropriate support staff.

EXTENSION CORD SAFETY INFORMATION

- Heavy load electrical equipment (space heaters, kettles, coffee pots, fridges, ovens, etc.) need to be plugged directly into a wall socket.
- Where possible, use an electrical power bar, with an internal breaker and not an extension cord (best with surge protection included). Power bars need to be certified and stamped with UL, ETL or CSA.
- Extension cords should only be used on a temporary basis.

- Only use with one piece of equipment.
- Check that the power rating on the cord is appropriate for the intended use and use the shortest length available (the longer the cord is, the greater the resistance which causes a voltage drop and the production of heat).
- An extension cord in use should always be fanned out and never coiled or covered (the retractable cord caddies need to be completely unwound before use).
- Before use, inspect the extension cord and the cord of the equipment you are about to plug in. If either is damaged, mark it **“Out of Service”**.
- Do not connect an extension cord or a 2nd power bar together (Daisy-Chaining).

CHEMICAL ORDERING PROCEDURE

All order forms that contain a chemical must be delivered to Rob Ellis before going to the General Office for purchasing. This ordering procedure has 3 purposes:

- a) Chemicals will be scrutinized to ensure that grades, specifications and quantities of chemicals are correct.
- b) Requested chemicals will be compared against our list of surplus chemicals.
- c) Chemicals will start the process of being entered into the HECHMET Chemical Inventory List, as well as the list of Safety Data Sheets.

The order forms need to be complete, including authorizing signature, budget acct #, quantity, size, product # and actual name of the chemical.

When the order is delivered to our building, it will be held in our Chemical Storage, Handling and Waste Room (Rm 383) until the processing of the new chemical has been completed.

An inventory sticker will be attached to the container and the product information will be logged into the UM HECHMET Chemical Inventory Data Base. Every chemical container received and those currently on hand will get their own unique inventory number.

Do not take the chemical away until it has been logged in.

When the chemical has all been used up, the container must be washed and returned to Rm 383. The container will subsequently be disposed after it has been removed from the inventory list. If you wish to get the container back, stick a note on it when it is dropped off.

CHEMICAL USE

Chemicals come in a wide range of analytical grades and specifications. Determine that you are using the appropriate grade for your procedure.

Follow all appropriate safety precautions.

Record data in a preparation log book, include preparation date, manufacturer name, product #, lot #, chemical name, amount and final volume.

Chemicals that are removed from a bottle should never be returned.

Clean any residue from the balance or work area.

The SOP for preparing a proper workplace label is posted in all the labs.



A WHMIS workplace label must be attached to all containers of control products:

- prepared and used in the University workplaces.
- decanted or transferred from the original supplier container.
- on which the original supplier label has been removed or is unreadable.

HAZARDOUS WASTE DISPOSAL

Waste stream charts are posted in all the laboratories. There are special boxes labeled for broken glass, orange 3-L tubs for non-biological sharps and rigid plastic containers for used pipette tips. They are located in various labs throughout the building. All these sharps containers are dropped off at Rm 383, for disposal.

Notify the technician in charge of the laboratory of any breakage. As well, pass on any other information concerning equipment contamination or shortage of chemicals and/or glassware.

Laboratory waste must be disposed of based on the information listed in the University of Manitoba flowchart for Disposal of Laboratory Waste. This is posted in all Laboratories. For more information on waste disposal procedures refer to the University of Manitoba Safety Office website.



Glass



Non-Biological Sharps



Pipette Tips

All hazardous waste has to be stored in labelled containers that are appropriate for that particular waste (must sit in a secondary containment tray). When the container is full, it should be taken to Rm 383 for subsequent disposal through the Safety Office.

All waste needs to be clearly identified and labeled. Discarding unknown waste through the Safety Office is very expensive because extra testing is involved. These costs are charged back directly to the Soil Science Department.

Rm 383 is also the area where orphaned or abandoned chemicals have been stored. Be aware of what chemicals are available before ordering new chemicals.

RADIOISOTOPE LABORATORIES

- a) All laboratories that contain radioisotopes or any labeled material have a radiation sticker on the door. **These labs' doors must be shut and locked whenever the labs are not occupied.**
- b) Laboratories in the Ellis Building that have been licensed for the handling and storage of radioisotopes include Rooms 310, 316, 373 and 379.
- c) Licenses are issued by the Canadian Nuclear Safety Commission (CNSC) and CNSC officers regularly inspect our laboratories to ensure compliance with licensing conditions. All regulations regarding the handling and storage of radioisotopes must be adhered to. Furthermore, the Universities guidelines for documentation of radioisotope use must be met.
- d) Do not use radioisotopes unless you have been instructed in their safe use and storage. These procedures are outlined in the University of Manitoba's Radiation Safety Manual and are available from your supervisor. The University of Manitoba offers a short course on radioisotope safety and it is mandatory that you attend this course prior to beginning your radioisotope work.
- e) All Radioisotope labeled material must be disposed through the University Safety Office. There is a schedule for potential pick-ups at the Fort Garry campus posted in the main Radioisotope Lab, Rm 316.

- f) For further information regarding the safe handling and storage of radioisotopes please contact your supervisor, Rob Ellis or Alison Yarmill (Radiation Safety Coordinator, University of Manitoba) at 789-3654.

BUILDING EMERGENCIES

ELLIS BUILDING EVACUATION PROCEDURES

There are 2 evacuation procedures for the Ellis Bldg. One is initiated by a hallway ceiling-mounted siren/green strobe alarm and the other by the fire bell.

The Low Flow Fume Hood siren is automatically activated when building's monitoring system determines that the chemical fume hoods are not working properly.

The Fire Bell is activated by either, the building's smoke/heat detectors or by a manual pull station.



Low Flow Siren / Strobe



Fire Alarm Bell

LOW FLOW FUME HOOD ALARMS, ELLIS BUILDING

This is a new procedure (effective April 2020) for personnel response to the low flow fume hood alarms or for sustained power failure in Ellis Building.

If the siren activates, it means there has been an exhaust system failure and the fume hoods have stopped drawing the appropriate amount of air. Air quality may deteriorate over time from stored chemicals and experiments in progress.

Because the Ellis Building has 2 separate ventilation systems (the North Wing and the South Wing), we can initially evacuate to the other wing. If the siren has activated in both wings, then both ventilation systems have shut down and we need to exit the building.

5+ Minutes of Alarm:

- Teaching Labs should be made safe and then evacuated.
- Research labs should be placed in Safe Mode (see below).
- If immediate evacuation is required, the fire alarm will also be pulled.

10+ Minutes of Alarm:

- All personnel should move to an unaffected wing or outside.

Do not return until 5 min after the siren has stopped so air quality can improve.

Power Outage: A loss of electrical power to the Ellis Building will also prevent fume hoods from operating properly. On loss of power, perform the above actions.

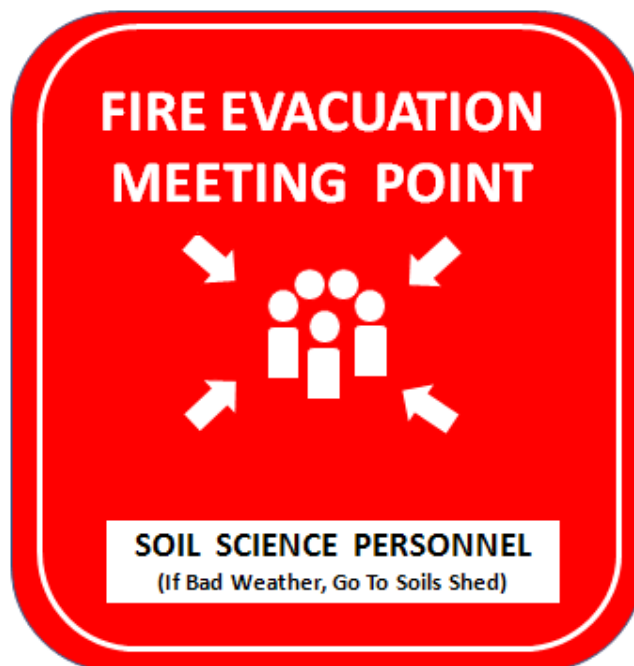
Safe Mode: Labs should be made safe to evacuate. If possible, electronic equipment should be unplugged to prevent surges when power is restored.

FIRE ALARMS, ELLIS BLDG

We have 2 initial check-in points, during a building fire alarm evacuation, for all personnel in the Building.

Initial Check-in Points:

- ***Soil Science Department, AAFC and Manitoba Agriculture and Resource Development*** – East side of North Wing, between the Building and the Soils Shed, near W Parking Lot.
- ***Department of Food and Nutritional Sciences*** – north side of South Wing, between exit doors and picnic tables



WHAT TO DO IF YOU DISCOVER OR SUSPECT A FIRE

- a) The fire alarm should be activated by pulling the alarm pull station, before any attempt to fight the fire begins.
- b) Alarm pull stations are located by all the stairwells and exits to the building. When activated, the alarm sounds locally and is monitored by Physical Plant and Security Services, who automatically call the Winnipeg Fire Department.
- c) The Emergency Exit Plans for the individual zones of the building are posted in the hallways. These plans detail the location of pull stations, fire extinguishers, fire hoses and multiple exit routes. Additional information is posted at all the fire alarm pull stations.
- d) Additionally, if there is an actual fire or building evacuation emergency contact UM Security Services (from a safe location) directly at 555. They will coordinate subsequent calls for emergency assistance, will respond to the scene in person and direct outside Emergency Services to your specific location on campus.

If there is any delay when trying to make contact with 555, then dial 911.

WHAT TO DO, WHEN THE ALARM SOUNDS

- a) Cease all activities. Turn off heat producing devices. Leave overhead lights on.
- b) If safe to do so, close all doors and windows in the immediate area.
- c) Evacuate the building, using the nearest safe exit. The target is to have everyone out of the building within 3 minutes.
- d) Follow all additional directions provided to you by the Building Fire Wardens.
- e) Once outside, proceed around the building to your assigned meeting spot.
- f) Clip boards are located inside the building, near these meeting spots, which have a list of personnel. These clip boards can be picked up by anyone as they exit. Once outside, make sure your name has been checked off, before leaving the area.
- g) If there is a foul weather problem or some other reason for us to take shelter, the secondary meeting spot for all Ellis Building personnel will be the Soil Science Shed. There are back up copies of the check-in sheets, located in the Shed. If there is an evacuation in our building, then all work should be stopped in the Soils Shed and the areas cleared to make room for emergency shelter.
- h) Remain outside the building until the most senior member of the Fire Department, the University Fire Marshall or Physical Plant Staff give the "All Clear" **and the alarm bells have stopped ringing.**



Soil Science Shed (Foul Weather Meeting Spot)

SOIL SCIENCE SHED ALARM

A monitored fire alarm system and emergency lighting has been installed in the Soil Science Equipment Shed. The system does not use smoke detectors, it uses fixed temperature heat detectors and exit pull stations.

The alarm is a 2 second pulsating horn as versus the continuous fire bell alarm in the Ellis Bldg. If the alarm was to activate, leave through the closest exit, closing as many doors as is safe to do. Meet at the primary Soil Science Check-in Point, W parking Lot.

Even though the Fire Department is automatically notified, the alarm is not indicated in the Ellis Building. Let the Soil Science Office know about the Shed fire alarm and the Office will request that our Building Fire Wardens respond.



FIRE WARDEN RESPONSIBILITIES

Fire wardens are responsible for sweeping their assigned areas, if safe to do so, and reporting to the Chief Fire Warden at the annunciator panel. Fire wardens then monitor the entrances to prevent anyone from re-entering the building before the alarm has been silenced and the “All Clear” given. The Chief Fire Warden then will communicate with the Fire Department and the UM Power Engineer as to any specific fire information or where personnel may be located that have not left the building.

Some or all Fire Wardens may be away from the building during a Fire Alarm. Senior personnel are expected to assist the Fire Wardens and act according to the Building Fire Plan.

For more information on your responsibilities during a fire/evacuation alarm, please refer to the EHSO web page at

http://umanitoba.ca/admin/vp_admin/risk_management/ehso/firelife_safety/index.html

FIRST AID TREATMENT

- (a) First aid kits are located in a number of labs, in the Soils Shed and in all the field vehicles. There is signage on the doors of the labs that contain first aid kits. The field vehicles also contain a blanket, a flashlight, spare batteries and a tow rope.
- (b) The kits are checked regularly, but if there is a problem with a kit or the contents need to be repacked after use, contact Rob Ellis.



Field Vehicle Emergency Kit Supplies

- (c) The list of the Departmental Certified First Aiders is posted at each first aid station.

<u>Department of Soil Science</u>		
Certified First Aiders (Nov 19/18 – Nov 19/21)		
Paul Bullock	Rm. 320	Ph# 8666
Rob Ellis	Rm. 303	Ph# 8662
Bo Pan	Rm. 372	Ph# 7884
Brad Sparling	Rm. 310	Ph# 223-6930
Trevor Fraser	Rm. 270	Ph# 470-5855, 8014
<u>AED Location closest to Ellis Building:</u>		
Active Living Centre, 100 Level, across from gym entrance turnstiles		
<u>Other Campus AED Locations:</u>		
http://umanitoba.ca/admin/vp_admin/risk_management/ehso/media/University_AED_Locations_20170203.pdf		

- (d) In the event of any work-related injury or accident, after treatment, report as soon as practical to your supervisor.
- (e) **All injuries should be documented on the green Workers Compensation Board (WCB) Notice of Injury, Green Cards** by the employee. The original form is stored with the Safety Officer, a copy is provided to the employee, the supervisor and faxed to EHSO (204-474-7629).
- (f) These green notification forms are available on the bulletin board, outside of the main office Rm 362. If there is a loss of work time or if medical attention was required, then the employee needs to phone in a claim to the WCB at (204) 954-4100.

http://umanitoba.ca/admin/vp_admin/risk_management/ehso/occ_health_com/p/occhealthwcb.html

FIELD WORK



USER RESPONSIBILITIES OF FIELD EQUIPMENT

- (a) Do not use equipment without authorization and proper instruction about its use. See Trevor Fraser regarding operating equipment.
- (b) Any reconfiguration or modification of the equipment should be discussed at the technicians meeting and recorded in the log book.
- (c) Operate equipment at moderate speeds and loads.
- (d) Record any breakages or problems in the log book and report them to Trevor Fraser.
- (e) Do not attempt to repair equipment unless qualified to do so, such as repairs of a minor nature. All repairs should be recorded in the log book and reported to Trevor Fraser.
- (f) Clean equipment after use.
 - a. All trucks, tractors, trailers and tools should be cleaned and sanitized according to biosecurity and COVID-19 protocols before being taken to another research site and/or returning to storage.
 - b. Field sprayers used for pesticides must be thoroughly cleaned after use as per the product label. Hand sprayers should not be used for applying sanitizers like Spray Nine after they have been used for pesticides.
- (g) Check brakes, brake lights, running lights, and tires on trailers and other equipment, every time it is hooked to a vehicle or parked overnight.
- (h) Lubricate and maintain all equipment as outlined by field technicians or the service manual.
- (i) Field supplies such as seed, pesticides, fertilizers, tools and laboratory chemicals are made available through your supervisor. Students should report the need for provision of supplies to their supervisor.

VEHICLE USE

Vehicle Fleet Assignments

Truck	Year and Type	Trans.	Booking	Person/Group
1	2019 Ford 1 ton	4WD	All Year	Fraser (Contact Trevor)
2	2001 GMC ¾ ton	4WD	TBD	Reserve (Contact Trevor)
4	2009 Chev ½ ton	4WD	TBD	Tenuta
5	2016 Equinox	AWD	TBD	CASUAL
6	2011 Dodge ½ ton	4WD	TBD	CASUAL
7	2013 Chev ½ ton	4WD	TBD	Tenuta
8	2009 GMC ½ ton	2WD	TBD	Tenuta
10	2012 GMC ½ ton	4WD	TBD	Tenuta
11	2014 Chev ½ ton	4WD	TBD	Tenuta
12	2015 Chev ½ ton	4WD	TBD	Tenuta

As part of our COVID-19 planning, vehicle assignments for the 2021 field season have been based on individual users or isolation groups rather than research groups. Contrary to our standard policy (below), sharing or transferring of vehicles between users must be authorized by Trevor Fraser and accompanied with proper sanitation of the interior between users. Details of the 2021 vehicle policy will likely change as the situation evolves; refer to the 2021 Department of Soil Science COVID-19 Work Protocol for the current rules regarding transferring vehicles, allowable capacities and cleaning instructions.

Vehicle Charges

	#2 2001 GMC ¾ ton truck 4WD	All other vehicles	Additional charge for pulling large trailers (small trailers exempt)
Mileage Charges (\$/km)	\$0.57	\$0.47	\$0.10

Basis for the Mileage Fee

- The vehicle pool must be sustainable over the long term; therefore, the department must fully recover all costs for owning, operating, maintaining and replacing the vehicles.
- Vehicle replacement (approximately \$30k cost) at 200,000 km, requires \$0.15 per fleet km.
- A cost of \$7,000 per year in technician time is required for vehicle maintenance and fleet oversight.
- The total cost of the fleet including all fuel, maintenance and repairs plus the costs above was \$0.52 per km in 2016-17 and \$0.43 per km in 2015-16. Starting 1 April 2017, the standard mileage charge is \$0.47 per km.
- An additional charge of \$0.10 per km for the ¾ ton and for any vehicle pulling a large trailer will remain in place as per previous years. Any trailers equipped with a braking system (7 pin wiring) are considered large. For example, the Sokal and the gooseneck trailers are in this category.

Assigned Vehicle Monthly Charges

- i) Vehicles are normally assigned to an individual professor's research team or a team of professors (e.g., a truck and van shared between two professors). However, because of the COVID-19 pandemic, vehicles are currently being assigned to individual users.
- ii) The minimum monthly charge of \$500 per assigned vehicle has been waived during the COVID-19 pandemic. Please do not reserve dedicated vehicles unless they will be needed several times per week.
- iii) Trevor should be consulted before sharing or transferring dedicated vehicles.

Vehicle Assignment and Sharing

- i) Vehicle assignment and bookings are meant to encourage efficient use of vehicles while enabling field research operations by research teams.
- ii) Research teams with assigned vehicles will be responsible for the vehicle and no other staff or students will be allowed to use such vehicles, except in the case of an emergency at the shed.
- iii) Individual members of research teams sharing vehicles and casual vehicle users should indicate their daily vehicle needs on the online calendar. The purpose is to coordinate vehicle sharing. **NEW in 2021:** Surfaces must be sanitized between users (see the vehicle sanitization protocol for COVID-19).
- iv) It may be necessary to limit research teams to one vehicle for exclusive use, depending upon the supply of vehicles and demand for their use.
- v) If demand exceeds the department vehicle supply, research teams or the vehicle pool can consider renting vehicles from Enterprise.
- vi) Operation of private vehicles is acceptable but the department will try to use its own vehicles where practical and cost-effective; please check with your supervisor before using personal vehicles for field work. There are additional daily log requirements for mileage reimbursement - check with Lynda or Trevor.

Department Responsibilities

- i) Each vehicle is insured to a \$200 deductible, which includes glass and wildlife damage; research teams are responsible for the deductible, which can be paid by the research grant or the driver, depending on circumstances of the accident.
- ii) The department will organize vehicle tune-ups and repairs with each vehicle receiving a minimum of one service appointment by a qualified mechanic each year.
- iii) A booking calendar for each vehicle will be posted online; assignments will be marked clearly on the calendars. See 'Accessing online booking calendars' section for instructions.
- iv) The department will maintain a file of all driver's licenses and declaration forms submitted by vehicle operators.

Driver Responsibilities

- i) Vehicle drivers are responsible for the vehicle they are operating, whether it is a vehicle assigned to their team or a casual booking.
- ii) Personal use of vehicle is prohibited.
- iii) Contravention of any traffic law is the sole responsibility of the driver.
- iv) All drivers must have a valid driver's license. Prior to using any vehicle, a driver must submit a photocopy of his/her valid Driver's license along with the declaration form at the Soil Science general office.
- v) Inform Trevor Fraser of any damage or suspected issues immediately. If the issue will affect the safe operation of the vehicle (may cause further damage to the vehicle or endanger occupants, pedestrians or other vehicles), it must not be driven until the issue is resolved.
- vi) Drivers must complete a vehicle safety check before operation of a department vehicle. Daily Pre-Use Inspection is a condition of use for all Soil Science Vehicles.
 - The inspection is recommended every time you use the vehicle but is required if the vehicle is going outside of the Perimeter Hwy.
 - Any new damage noticed during the pre-trip inspection should be noted, photographed and reported to prove it was pre-existing.
- vii) A minimum of one entry must be placed in the provided log book for each day of vehicle use.
 - Log entries must include the date, name of driver(s), destination, **purpose (NEW in 2021)**, budget number (FOP), odometer reading before departing and after returning.
 - If a trip must be divided, for example between two budget numbers, a second log entry can be added with appropriate odometer readings.
 - If pulling a "large trailer", the fraction of the trip that included the trailer should be recorded in the last column. Suggested: use $\frac{1}{2}$ or 0.5 for half, 1 or ✓ for the whole trip and leave blank, 0 or – for no trailer used.
 - Logs must be recorded in ink.
- viii) Drivers are responsible for ensuring that biosecurity protocols are followed for the vehicles they are operating.
 - **NEW in 2021:** for sanitizing to prevent the spread of soil borne plant pathogens and pests (biosecurity), refer to the Vehicle, Trailer and Equipment Sanitation sections of the Soil Science Shed Biosecurity and Field Biosecurity Protocols below.
- ix) Returned vehicles must be ready for use by another driver.
 - The driver will ensure the vehicle is clean (inside and out), has at least half a tank of fuel and an intact safety kit when returned each day.
 - **NEW in 2021:** for cleaning interior surfaces to prevent COVID-19, refer to the Soil Science 2020-2021 Vehicle Interior Sanitation Protocol below.

Sanitizing for biosecurity purposes and sanitizing for COVID-19 have different protocols that use different sanitizers, clean different parts of the vehicle and have different record keeping requirements.

Please familiarize yourself with both.

- x) Drivers will return the keys to the safe in the **Soil Shed (NEW in 2021)** promptly after returning a vehicle.
- xi) Fuel cards are to be used for purchasing fuel for departmental equipment only.
 - Receipts are placed in the sleeve with the cards and are collected periodically. Do not transfer credit cards among vehicles.
 - Washes can be occasionally purchased with the fuel cards.
 - Fuel for equipment such as tractors, mowers, generators, etc., can be purchased with the vehicle fuel cards.
 - Check the fuel storage for full containers before filling more.
 - You must use an approved container to hold fuel, indicate the date on the container and make a note of how many liters were for equipment in the vehicle log book.
 - Do not fill containers with more fuel than you will use in the field season.

In Case of Vehicle Breakdown

- (a) If a vehicle breaks down within the city limits, you can make arrangements to have it towed to Dynamic Auto at 967 St. Mary's Rd. (204-257-0244). You can contact Crane Towing at (204) 489-3727 or Dr. Hook Towing at (204) 956-4665.
- (b) Your Supervisor is responsible for arranging rural roadside emergency service contacts, for research sites. This info can be included on the Off-Campus Research Location Form.

In Case of Vehicle Accident

In case of an accident, the driver will follow normal Autopac guidelines (license plates of vehicles involved, names and addresses of all drivers and witnesses, record time and place of the accident) and report the accident to the research team principal investigator and the Department Head.



Vehicle Pre-Use Inspection

Daily Pre-Use Inspection is a condition of use for all Soil Science Vehicles.

The inspection is recommended for every time you use the vehicle but is **required** if the vehicle is going outside of the Perimeter Hwy.

The Driver is responsible for ensuring that the Pre-Use Inspection has been completed before departure.

If you have any question on how to complete the inspection or if you find a problem contact Trevor Fraser (trevor.fraser@umanitoba.ca)

SOIL SCIENCE DEPARTMENT

Vehicle Pre-Use Inspection

- ☐ Tire Pressure?
- ☐ Fluid Levels?
- ☐ Emergency Supplies?
(First Aid Kit, Flashlight, Extra Batteries, Blanket, Tow Rope)
- ☐ Windows Clear?
- ☐ Ready for heat/cold?
- ☐ Load Secured?
- ☐ Any Vehicle Damage?
- ☐ All Lights Working?

Soil Science 2020-2021 Vehicle Interior Sanitation Protocol

When to Clean

While the COVID-19 pandemic continues, the driver compartment of Soil Science vehicles must be sanitized before and after each casual user. Vehicles that have been dedicated to a specific user do not require sanitation of the driver compartment unless surfaces may have become contaminated by hand contact with dirty surfaces (gas pumps, currency, credit card readers, elevator buttons, etc.) or the vehicle is to be transferred to a new user.

How to Clean

Surfaces may be cleaned using the provided alcohol sanitizer solution and paper towels or the provided alcohol wipes. These are flammable solutions: avoid sources of ignition. A container of wipes will be provided in each vehicle and can be refilled on request; contact Trevor Fraser for refilling. Spray alcohol sanitizer and paper towels can be found in the Soil Science shed; contact Rob Ellis for refilling.

The wipes contain a hand and surface sanitizer that can be used without gloves to clean hands and equipment. Wipes may also be used to clean other potentially contaminated surfaces (shopping carts, tools, etc.). They are there to be used we can make more.

Open vehicle doors and/or windows to increase ventilation. Do not sanitize while driving. Surfaces should be coated with a thin layer of alcohol sanitizer by spraying and/or wiping so that they appear wet. Surfaces should then be allowed to dry before driving.

Where to Clean

Surfaces that should be cleaned include:

- Steering wheel and nearby surfaces,
- Plastic surfaces within reach of the driver,
 - Dash board
 - Upper door panels
 - Front of dash around radio and vents
- Controls within reach of the driver,
 - Turn signal, cruise control, break controller
 - Gear shifter(s)
 - Stereo and climate controls
 - Windows controls
 - Mirror controls
 - Seat adjustment levers (tilt, front-back)

- Seatbelt buckle and buckle receiver
- Door handles,
- Console and armrests,
- If made from non-porous material, also sanitize the driver seat and headrest.

If a passenger has been approved, areas within reach of the passenger must also be cleaned before and after use.

Accessing Online Booking Calendars

Booking of shared rooms, workspaces, equipment and vehicles can be done using the soil science online booking calendars. A booking calendar has been provided for each shared room and piece of shared equipment. Contact Trevor Fraser to add, remove, change or inquire about the booking calendars. Each calendar has a daily “read me first” booking with notes that contain instructions for each specific calendar. To ensure these resources are shared efficiently, promptly remove unneeded bookings. Only make changes to your own bookings. In the event of over-booking or conflicts the first correctly placed booking will take precedence.

For more information regarding the online booking system see the Department of Soil Science Covid-19 Work Protocol.

To access the calendars:

- Go to the University of Manitoba website. Click on faculty and staff. Click Email. You must use the staff email link the student link will not work.
- Enter the username “soilscal” and the password “Welcome2020”.
 - A link may appear to another login at onmicrosoft.com. Click it. You will need to re-enter the above user information but username should now be “soilscal@umanitoba.ca”.
- Click on the calendar icon on the left to view the calendars.
 - Colour coded bookings for only the selected calendars are shown.

To place a booking you must:

- Read the “read me first” notes with instructions for each specific calendar.
 - Check whom to contact for permission to use the space or equipment.
 - Check the current bookings, and room capacity if making simultaneous bookings.
 - Check for special cleaning instructions or requirements.
- Place your booking on the correct calendar.
 - Click the “New event” button or double click where you would like your booking.

- When the dialog box opens, select the correct calendar from the drop down list.
- Ensure the booking contains:
 - Your name;
 - The start and end times, do not click the “all day” button;
 - The room or vehicle number (in case the booking is misplaced);
 - List any specific workspaces, equipment or attachments you will need. Examples: Left countertop, fume hood, the Giddings, Sokal trailer.
- Click “Save” then review your booking to ensure it is correct.

PESTICIDE HANDLING AND STORAGE

Contact Trevor Fraser for details

Before working with any pesticides that require the use of a respirator, all staff and students must complete the 2-step respirator fit testing process. First, you must submit a confidential medical surveillance form to be assessed by the Occupational Health Nurse at EHSO.

Once medically cleared, you will be fit tested using a quantitative method by a Technician at EHSO, using North half mask respirators.

For details on fit testing contact Rob Ellis or view the information at EHSO

(http://umanitoba.ca/admin/vp_admin/risk_management/ehso/hazardous_waste/rpd.htm)

- (a) Use appropriate clean apparel when handling pesticides. This may include:
 - rubber gloves
 - disposable Tyvek Suit
 - rubber boots
 - respirator (properly fitted and in working condition)
 - goggles

Do not store any Personal Protective Equipment inside the Pesticide Storage Room. This equipment will be provided to each field research team by their supervisor. After using pesticides, thoroughly wash all clothing and parts of the body that may have been exposed.

- (b) Do not remove pesticides from storage area without permission of your supervisor.
- (c) Read all labels on pesticide containers prior to use and obtain instructions for use from field technicians and/or your supervisor.
- (d) For your own safety, please ensure that you do not transport pesticides inside the passenger compartment of any vehicle. Ensure jugs will not tip or leak during transport, it is much easier to secure the load than to clean up spills.

- (e) In case of pesticide spills, or other accidents with pesticides, contact Dr. Zvomuya or Trevor Fraser. If health of person(s) is endangered, contact nearest hospital or medical office immediately.
- (f) Pesticides and Laundry. To ensure your safety and the removal of all or nearly all the pesticide from clothing that has been contaminated by a spill, the following steps should be followed:
 - Keep the clothes, used during pesticide application, separate from the family wash. Use plastic bags to ensure this separation.
 - Use a “pre-spray” laundry aid (Spray and Wash, Stain Away, etc.) before starting the wash with detergent.
 - Set the washing machine temperature to hot.
 - Use the full amount of detergent recommended on the box or jug.
 - Wash the clothing two or three times before reusing them.
 - Dry clothing outside, not in the dryer.
 - When selecting clothing to wear while applying pesticides, it is best to avoid “perma-press” type fabrics, because these are harder to launder to a pesticide-free condition.
- (g) The Soil Science Department has a supply of election-style pesticide application signs. These signs are to be placed at the entrance of an off-site research location immediately after pesticides have been applied to inform anyone who would enter of the hazard.
 - Signs should be labeled with contact information and relevant product safety information, including application date and re-entry date.
 - In order to reuse the signs, place a piece of packing tape with a folded end on the sign and write your information on the tape using a permanent marker. A second piece of tape can be placed over the text if there is a chance of it washing off.
 - After the re-entry period has elapsed, the tape can be removed and the sign cleaned and returned to supplies.

HANDLING OF SOIL AND PLANT SAMPLES

- (a) Soil samples may be stored unprocessed and just refrigerated or frozen, dried only or dried and ground. Confirm your sampling protocol with your supervisor.
- (b) Small soil samples: Use plastic bags for field soil samples. After drying and grinding they can be stored in small paper or plastic bags or containers that are provided by your supervisor. Grinding facilities are located in the Soil Science shed and require training before use. Please do not use the drying room or grinding rooms for storage.

- (c) Large bulk soil samples for growth room studies: Use 20-L pails with lids or large plastic bags appropriate for soil. Please do not use cloth bags. Dry soil samples in the drying room and sieve to desired size using soil sieving table located in the Soil Science Shed. Return soil to the 20-L pails and store temporarily in the Soil Science Shed equipment storage area on a well-labeled pallet. **DO NOT** store or prepare soil in the growth chamber room or the workshop.
- (d) Plant samples: Please use cloth or mesh bags for plant samples. Plant samples can be air-dried in the drying room or oven-dried in the large shed oven. No plastic containers or bags are allowed in ovens; metal trays, paper bags and cloth bags are acceptable. Ensure there is space for airflow between samples in the oven, **DO NOT** over fill them. After grinding, place plant samples in plastic bags. **DO NOT** store or prepare plant samples in the growth chamber room or the workshop.
- (e) Arrange for use of shed facilities such as the drying room, drying oven, grinding rooms, etc., with Trevor Fraser.
- (f) Label all soil and plant samples with date, name and location.

NEW: The computer in the shed has an inventory program that can help keep track of the shed contents. Keeping this up-to-date will save time looking for samples and discarding during shed cleanup.

The program can quickly print labels that are ready to put on boxes, buckets or tubs when you return from the field. No need to hand write each one anymore!

It can also print a catalog of samples and storage locations for each group and project.
- (g) Clean up after yourself! Not only are there are many people that also require these facilities but we must avoid the transfer of soil and plant-borne agricultural pests and pathogens. Refer to the Soil Science Shed biosecurity protocol to find appropriate workspaces and clean-up instructions.
- (h) All cloth bags, Rubbermaid tubs and pails should be cleaned and returned to their proper storage area.

FIELD SITE REGISTRATION FORM

This form is completed / updated at the beginning of each field season. A copy of the form is stored in the Main Office, Rm 362 Ellis Building.

The record of the legal locations and road directions on this form provides a means of directing emergency help to a remote site.

The blank forms are located at the Vehicle Booking Calendar bulletin board.

Biosecurity

This section contains excerpts from the Faculty of Agricultural and Food Sciences biosecurity protocols document that are relevant to the majority of staff and students in the Department of Soil Science. For additional protocols and appendices, refer to the original Faculty of Agricultural and Food Sciences (FAFS) Biosecurity Protocol document. If you will be working with plants or animals; working in growth rooms, incubators or greenhouses; or working at facilities not covered by the included protocols, ask your supervisor for the appropriate biosecurity protocols if they have not already been provided to you.

https://www.umanitoba.ca/faculties/afs/pdf/FAFS_Web_Biosecurity_Protocol_14-Mar-19.pdf

Information that was not available at the last review of the FAFS biosecurity document is marked as “**UPDATE YYYY:**”.

Background (FAFS Biosecurity Protocol 14-Mar-19)

"Biosecurity" is a general description for a set of measures designed to protect Canada's agricultural resources from biological pests at the national, regional, and individual farm/organizational levels. A biological pest is considered anything that is injurious or potentially injurious, whether directly or indirectly, to plants, animals, products or by-products of plants/animals, or food. This includes pests not established in Canada, pests established in limited areas of Canada, and pests widely distributed that can spread from farm to farm.

A wide variety of organisms can be injurious to plants, animals and agricultural production. Depending on their biological nature, introduction of these pests into an agricultural or research setting can occur through a wide range of pathways. Knowing the pests of concern for your research location and identifying the pathways by which they are introduced and spread are key elements of any biosecurity plan.

Possible pathways of introducing plant pests to fields include the following:

- seeds and plant materials;
- vehicles and transportation;
- equipment;
- staff and visitors;
- agricultural inputs;
- irrigation water;
- soil, compost, manure;
- research materials (e.g. industrial/bio-industrial waste);
- insects and other pests;
- birds, wildlife, pets and other animals;
- wind and blown dust;
- food and feed products.

Possible pathways for introducing and transmitting pests in controlled growth environments include the following:

- field research plant material and soil via humans (e.g., field research staff) and equipment;
- transfer among greenhouses, separate rooms within each greenhouse, growth chambers and work areas within each growth area complex via people and tools;

- outside pests via human and equipment vectors, including general public traffic, students, service personnel and caretakers;
- delivery of infected seed or growth mediums (e.g., soil, sand, compost, etc.);
- introduction of plant pathogens used for research;
- improper disposal of infected organic material.

Possible sources or vectors for introducing animal diseases include the following:

- live animals (especially sick or recently recovered);
- dead or sick animals;
- animal products;
- staff and visitors;
- equipment;
- vehicles and transportation;
- feed, soil and water;
- feces and urine;
- birds, wildlife, and other animals;
- insects and other disease vectors;
- air (aerosols or particulates);
- food products.

Field Biosecurity refers to a series of practices designed to prevent, minimize, and control the introduction, spread, and release of plant pests, which include insects, nematodes, weeds, molluscs, phytoplasma, bacteria, fungi, and viruses into fields. Biosecurity risks in field crops can be categorized as soil-borne pests (e.g., clubroot, verticillium, soybean cyst nematode), diseases associated with plant material, weed seeds, and insects introduced to a farm and moved within a farm enterprise.

Animal Biosecurity refers to a series of practices designed to prevent, minimize, and control the introduction and spread of animal diseases. Disease may result from a number of factors, including, but not limited to, infectious organisms; toxins; trauma or damage to a tissue or organ; and metabolic, nutritional, and degenerative conditions. However, a primary cause is infection from pathogens, namely viruses, bacteria, fungi, and parasites.

Why is Agricultural Biosecurity Important?

Maintenance of the highest possible plant, soil and animal health, as well as food safety is vitally important to the sustainability and profitability of the Canadian agricultural sector. The success of Canada's agricultural exports is linked to the excellent sanitary status of our plant and animal products. Access to existing markets and to new and emerging markets will increasingly depend on our ability to demonstrate the minimal biosecurity risk that Canadian products pose to our trading partners. Continual improvement of biosecurity standards may be needed to meet processor requirements, achieve/retain quality assurance certification and market access, to ensure market competitiveness for Canada's agricultural products and to maintain public trust.

Pests can reduce productivity, affect farm income and animal welfare, increase labour and other operational costs, reduce the value of farmland, close export markets, affect domestic consumption and reduce prices that producers receive for their animals, plants and other agricultural products. In addition to adverse effects on the agricultural economy, there can be negative effects on the environment and human health.

Considerations as to why someone may want to implement biosecurity measures within an operation include:

- achieving research standards and production objectives;
- external demand for biosecurity practices and protocols;

- decreased production losses;
- avoiding the introduction of pests that are currently not present;
- the desire to contain and minimize pests that are already present; and
- responsibilities to neighbours and industry to ensure that biosecurity risks are not introduced to someone else.

The capacity of the agricultural sector to withstand an outbreak rests not only on the collective efforts of the sector, but also on individual biosecurity plans and their effective implementation. Quick and simple measures built into your everyday management practices will go a long way toward protecting your research, production and resources from the costly consequences of pests.

Definitions (FAFS Biosecurity Protocol 14-Mar-19)

Biosecurity zone: an area with defined boundaries where biosecurity measures are to be implemented to control entry, exit, and movement to prevent the introduction and spread of pests (e.g., a field, greenhouse, animal handling area, or storage area). Also referred to as controlled and restricted access zones:

- a. **Controlled access zone (CAZ):** The area of land, buildings and/or spaces constituting the production or work area of the premises that is accessible through a defined access point.
- b. **Restricted access zone (RAZ):** An area inside the CAZ where personnel and equipment access is more restricted than in the CAZ.
- c. **Controlled access point (CAP):** A visually defined entry point(s) through which staff, students, visitors, and if applicable, residents, will enter the CAZ and/or the RAZ.

Controlled growth environment: a research area within the Faculty of Agricultural and Food Sciences that includes greenhouses, growth rooms, growth chambers and growth cabinets

Crop: throughout this document, "crop" is used in a widely inclusive sense to include plants, plant products, and other products that may be generated by a grower, producer, or operator for profit, including annual and perennial crops, fruit, vegetables, horticultural plants, trees and mushrooms

Farm: a tract of land held for the purposes of cultivation, crop production, and/or the rearing of certain animals. Throughout this document, "farm" is used to denote a physical location that generates crops, animals, plant products, and other products, and it includes barns, nurseries, greenhouses, and plant propagators. A field research facility is also considered a farm by this definition.

Field: an individual block or piece of land contained within a research location (e.g., field 8E at the Ian N. Morrison Research Farm or block 6 at the Point Research Station).

Livestock and poultry: food production animals used for research, education or outreach that are housed individually or in groups in cages, pens or stalls surrounded by a building structure or fence.

Location: a research location composed of multiple fields (e.g., Ian N. Morrison Research Farm, Point Research Station or a farmer's commercial field).

Pest: according to the Plant Protection Act, any thing that is injurious or potentially injurious, whether directly or indirectly, to plants, animals, or to products or by-products of plants and animals, and including any plant prescribed as a pest.

Producer: one who owns, leases, or rents land for cultivation, crop production, and/or the rearing of certain animals.

Research facility: a research site composed of multiple fields (e.g., Ian N. Morrison Research Farm, the Point Research Station, Glenlea Research Station), livestock facilities or livestock supporting buildings.

Residents/tenants: a person or group that is renting a field or research area within or outside of a FAFS research facility. This can include members of the FAFS or non-FAFS personnel.

Standard Operating Procedure (SOP): a set of written instructions that documents a routine or repetitive activity followed in a research area.

Safe Work Procedure (SWP): a set of procedures that describes how to perform a task safely, the potential hazards, the necessary protective equipment and required training.

Visitors: any personnel who normally do not work in the area/building who arrive at a research area (e.g., sales representatives, inspectors, delivery people, contractors, tour guests, attendees at workshops, etc.).

SOIL SCIENCE SHED BIOSECURITY (FAFS Biosecurity Protocol 14-Mar-19)

Background	The Soil Science Shed contains facilities for processing and storage of soil, plant and manure samples as well as growth rooms and incubators that are appropriately sized for individual finite duration projects. As there is very little material within the soil science shed that can become infected, the soil science shed biosecurity protocols are primarily aimed at preventing the distribution of potentially contaminated materials. The Soil Science Facilities section of the Controlled Growth Environment Biosecurity Protocol deals with preventing contamination in growth rooms and incubators and/or containing known pathogens or pests. This protocol must be used along with standard operating procedures (SOPs) and safe work procedures (SWPs).
Scope	The Soil Science Shed Biosecurity Protocol applies to the soil science shed and the parking pads directly to the south and east sides of the shed. This protocol applies to all staff, students, visitors and service personnel within the shed. See site maps and images for the soil science shed - Appendix E
Contact	Soil Science Field and Equipment Technician Trevor Fraser. Office: 204.474.8014; Mobile: 204.470.5855; Email: Trevor.Fraser@umanitoba.ca

Communication and Documentation

- This protocol will be communicated to Faculty of Agricultural and Food Sciences (FAFS) staff via email and to FAFS staff and students during the spring safety training and orientation each year. This protocol will also be sent to all additional users of the soil science shed facilities.
- All users are required to attend the soil science orientation, the shed orientation and review the soil science orientation handbook.
- Principal Investigators (PIs) must discuss this protocol with their staff and students and work with them to develop the SOPs and SWPs that meet the needs of their specific research programs. PIs will be responsible for the conduct of personnel in their research programs.

Visitors

- All doors are to remain locked when the shed is not in use. Visitors are required to contact the soil science office to request entry and may be required to be accompanied by personnel that have completed the shed orientation when within the building.

Handling of Materials and Disposal

- Whenever possible, research materials (seed, plant tissue, soil, compost, manure, water, etc.) are to be processed and/or reduced at the site where sampling occurred. Research materials are to be disposed of in an approved manner such as: land fill, autoclaving, or incineration.
- With the exception of commercial seed and fertilizer, returning research materials from the soil

shed to the field (including the site of collection) is discouraged as materials may have become contaminated in the soil shed.

- Samples are to be labeled appropriately, including a Date, PI, Researcher, Project, Location, etc.
- Stored research materials must be in sealed plastic mouse-resistant containers.
- Use proper containment on work surfaces and scales for ease of cleanup and disposal.
- Work surfaces and floors should be cleaned before leaving.
- Unless otherwise approved, soil and plant tissue processing are to occur in area 101. These areas including the grinder rooms (101A and 101B) are to remain clean and free of soil and plant tissue when not in use.
- Manure samples are to be processed within the manure canopy in area 102. Work surfaces, equipment and any additional surfaces that may have come into contact with manure are to be cleaned and sanitized when finished.
- Unless otherwise approved, growth media preparation is to occur in area 102. This area must be cleaned and sanitized after use.

Vehicle, Trailer and Equipment Sanitation

- The pads immediately south and east of the soil science shed are used for sample delivery, trip staging and vehicle/trailer parking. This area is accessible to anyone and, when unattended, is to be kept clean and free of research materials.
- The areas in front of overhead doors are to be kept free of vehicles and clean. This will help minimize the amount of soil that is transferred during short-term parking at the shed.
- Each vehicle has an assigned parking space. It is the user's responsibility to ensure that each vehicle and its parking space remain clean to avoid transporting soil. When visiting field sites users are required to follow the Field Biosecurity Protocol as well as all other site specific biosecurity protocols.
- Whenever possible, vehicles and equipment should be cleaned in the marked wash area near the south-west door. A pressure washer is available for this purpose. After washing, the wash area itself should also be cleaned. Bulk soil can be scraped and discarded in the garbage before pressure washing the pad.



FIELD BIOSECURITY (FAFS Biosecurity Protocol 14-Mar-19)

Information from Manitoba Agriculture and Resource Development and the Canadian Food Inspection Agency has been incorporated in order that this protocol meets both provincial and national standards for field biosecurity.

Background	The FAFS Field Biosecurity Protocol provides specific guidance on the practices required to reduce the risk of spreading pests when conducting field research, including communication strategies, crop input considerations and sanitation of humans, vehicles, trailers, equipment and small tools involved in field research. Precautions must be taken to minimize the transfer of soil and to disinfect footwear, vehicles and equipment by which soil can be transferred in order to reduce the risk of transferring pests from one location to another. This protocol must be used along with standard operating procedures (SOPs) and safe work procedures (SWPs).
Scope	The Field Biosecurity Protocol pertains to field research locations on land owned and operated by the University of Manitoba (i.e., Ian N. Morrison Research Farm, Glenlea Research Station Point Field Research Laboratory, the Bison research location and the Arboretum research location), as well as non-University of Manitoba locations used by Faculty of Agricultural and Food Sciences staff for field research. The protocol applies to all faculty, staff, research collaborators, visitors and vendors/service providers accessing the field research locations. Individuals/entities leasing cropland at the Glenlea Research Station are required to follow the “Biosecurity and Reduction of Pest Movement Strategies for Producers” Schedule that accompanies their legal agreement (Appendix B).
Contact	The manager at each field research location represents the contact for that location.

Communication and Documentation

- This protocol will be communicated to Faculty of Agricultural and Food Sciences staff via email and to FAFS staff and students during the spring safety training and orientation each year. This protocol will also be sent to Principal Investigators (PIs) and technicians in the departments, Faculty, and all other units or organizations at the time of initiating a land request for the Carman, Glenlea and Point research farms.
- PIs must discuss this protocol with their staff and students and work with them to develop the SOPs and SWPs that meet the needs of their specific research programs. PIs will be responsible for the conduct of the personnel in their research programs.
- This protocol should be discussed with any land owner, or non-University of Manitoba research farm prior to conducting research on their land. In addition to the FAFS Field Biosecurity Protocol, site-specific biosecurity protocols for these non-UofM research facilities or farms must be followed as required.
- **UPDATE 2020: Each department has a supply of election-style biosecurity signs that can be placed at off-site research locations. These signs are to notify workers and the public of the biosecurity measures in place, and to provide contact information so additional information can be provided as required.**
- It is mandatory to use the Manitoba Agriculture Field Biosecurity Checklist (Appendix C) to document the biosecurity measures that have taken place, and that these records be kept on file for five years. These documents will be stored in each vehicle and filled out following each field visit. If needed, the documentation for cleaned vehicles, equipment and small tools will be used as evidence that protocols were followed at each location. Each PI will be responsible for managing these documents for their research projects. **UPDATE 2020: The biosecurity web-form may be**

used in place of paper records and is preferred.

- This protocol will be provided to any producer, research collaborator or research funding agency that requests this information.
- This protocol can be utilized along with agreements for use of producer fields for research purposes. PIs may want to include a waiver in regards to biosecurity from producers as part of an agreement for access to their land. The landowner should be made aware of this protocol prior to signing the land lease.

Crop Inputs

At all field research locations, all members of the research team will use only clean, pest-free inputs prior to entering the field.

- Use certified seed whenever possible.
- Use seed treatments and coatings where appropriate and cropping/research project conditions warrant.
- When possible, source materials from suppliers and transporters known to implement a biosecurity risk management protocol.
- Inoculation of plant pathogens for research purposes should be restricted to the intended field treatment area. Surplus inoculum should be inactivated before disposal and infected plant material should be removed and properly disposed of at the end of the trial.
- Test manure for potential pests (e.g., invasive weeds, pathogens, etc.) and comply with existing local, municipal, provincial, and/or federal regulations pertaining to the application of manure to farmland.
- Evaluate components of industrial/bio-industrial waste to identify any potential biosecurity risk and refrain from using the waste if it contains contaminants deemed a biosecurity risk or if the biosecurity risk is undetermined.

Human Sanitation

- Complete the Field Biosecurity Checklist (Appendix C) following each field visit.
- Try to reduce field visits when field conditions are muddy.
- Use disposable footwear coverings prior to entering the field. These can be removed at the field edge immediately after leaving the field and placed in a garbage bag for disposal.
- All non-disposable footwear should be scraped clean of visible soil and washed before the next location. Use an approved disinfectant (Appendix D) between locations.
- Hands (and any other body parts) or clothing that may be covered with soil should be washed or cleaned off before leaving the location. The use of disposable gloves and/or coveralls is also recommended when working directly with the soil.

Vehicle, Trailer and Equipment Sanitation

- Maintain copies of the Field Biosecurity Checklist (Appendix C) in vehicles and equipment used in the field. Complete the Field Bio-Security Checklist following each field visit.
- Whenever possible, field visits should be done on foot.
- Vehicles (trucks and trailers) should be parked on roads, grassed areas, or in the approach and not in fields.
- Try to reduce field visits when the field is muddy.
- All vehicles and wheeled equipment (tractors, quads, trailers, implements and sprayers, etc.) entering any field must be cleaned after use. Upon leaving the field you should:
 1. Rough clean, which includes knocking or scraping off soil clumps in the field. Within Faculty research locations at Ian N. Morrison Research Farm, Glenlea Research Stations and the Point Research Station, a rough cleaning is required when moving equipment from field to field.

2. Fine clean, (i) using compressed air to blow off remaining soil (for light texture soil and dry soil), or (ii) pressure-washing off remaining soil (for loams, clays and wet soil). It is preferred that this be done at the research station washing pad, or a nearby carwash (tires, wheels and undercarriage, especially wheel wells and anywhere else soil may have stuck). A fine cleaning is required when leaving a location after leaving a field or a muddy location.

Small Tool Sanitation

- All small tools (augers, shovels, trowels, etc.) entering any field must be cleaned after use. Upon leaving the field you should:
 1. Rough clean, which includes knocking or scraping off soil clumps in the field. Within Faculty research locations at Ian N. Morrison Research Farm, Glenlea Research Stations and the Point Research Station, a rough cleaning is required when moving equipment/tools from field to field.
 2. Fine clean, (i) using compressed air to blow off remaining soil (for light texture soil and dry soil) or (ii) washing as described above (for loams and clays and wet soil). Spray down the equipment with an approved disinfectant. A fine cleaning is required when leaving a location.

Field Biosecurity Checklist (FAFS Biosecurity Protocol 14-Mar-19)

Name(s): _____		Date of field visit: (DD/MM/YY): ____ / ____ / ____			
Reason for visit: _____					
FIELD INFORMATION:					
Legal location or GPS: _____		Producer / landowner: _____			
Crop: _____		Phone number: _____			
Producer/landowner was consulted and agreed to biosecurity protocol? <input type="checkbox"/> Yes <input type="checkbox"/> No					
SANITATION PROCEDURES					
Indicate the steps taken to prevent transfer of soil/organisms to or from the field via your person, vehicle or equipment. Check off all boxes that apply and/or indicate other methods in the comments. Refer to protocol for definitions and procedures.					
					BEFORE ENTRY ON EXIT BETWEEN SITES
					COMMENTS
FOOTWEAR		No action			
<input type="checkbox"/> Used disposable booties		Rough cleaned			
<input type="checkbox"/> Properly disposed of items		Fine cleaned			
<input type="checkbox"/> Work/rubber boots - fill out →		Disinfected			
HANDS / EXPOSED SKIN					
<input type="checkbox"/> Used disposable gloves		No action			
<input type="checkbox"/> Used disposable coveralls		Rough cleaned			
<input type="checkbox"/> Properly disposed of items		Fine cleaned			
<input type="checkbox"/> Did not use disposable items →		Disinfected			
VEHICLE		No action			
<input type="checkbox"/> Remained on main road		Rough cleaned			
<input type="checkbox"/> Remained on field road/approach		Fine cleaned			
<input type="checkbox"/> Entered field →		Disinfected			
FIELD EQUIPMENT including hand tools, tractors, machinery, etc. Specify items in left-hand column.					
1.		No action			
		Rough cleaned			
		Fine cleaned			
		Disinfected			
2.		No action			
		Rough cleaned			
		Fine cleaned			
		Disinfected			
3.		No action			
		Rough cleaned			
		Fine cleaned			
		Disinfected			
4.		No action			
		Rough cleaned			
		Fine cleaned			
		Disinfected			
Were field conditions wet/muddy? <input type="checkbox"/> Yes <input type="checkbox"/> No					
Specify which disinfectant was used: _____					

UPDATE 2021: Biosecurity Checklist Web-Form

We have developed a web based form to track biosecurity activities at field locations. While the paper version of the biosecurity tracking form above may still be used, it is preferred to use the online biosecurity form.

<https://forms.cc.umanitoba.ca/721952-biosecurity-form/>

Instructions

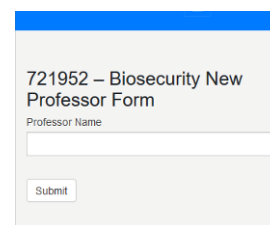
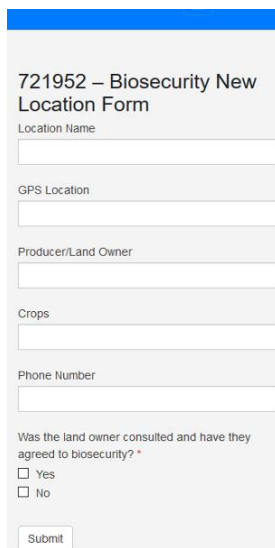
Once you have navigated to the form, check that your Professor and Field (research location) appear in the drop-down menus. If they do not click the “Add a new Professor” or the “Add a new Location” buttons at the top, see notes below. Please only add your professor and research location once and ensure that they are unique, this will make it much easier to track activities by group or research site. Reload the main form so your new value appears in the drop down menu.

Ensure that you enter the Soil Science truck ID number (1 to 12) in the “Vehicle” box. This will allow us to check that all trips logged with soil science vehicles requiring a biosecurity checklist have one completed. You will be contacted to complete a log entry for each trip using a soil science vehicle where a form was not completed. It is the driver’s responsibility to ensure biosecurity records are completed for each trip when personal vehicles or rentals are used.

Fill in the appropriate text and check boxes and finally click the “Submit” button at the bottom. Once submitted you cannot alter the values.

See Trevor Fraser if you have any questions, comments or concerns regarding the use of the biosecurity web-form.

Adding Professors: This value is used to sort the forms by research group, it does not strictly need to be a name but should indicate who to contact regarding the forms. Enter the first and last name, group name, company name avoiding duplicate values. Ensure you select this same entry from the drop-down menu each time you use the form.

Adding Locations: A research station or town may have many research sites associated with it, be specific when choosing a Field name. Rather than just the name of the nearest town or the research station, also include a field identifier or project name. (Glenlea-NCLE LT is better than Glenlea or NCLE LT alone) Then ensure you select this same Field entry from the drop-down menu each time you complete a new checklist for that location.

GPS Location pinpoints the worksite. This can be GPS coordinates, a legal land description, a research station field ID number, a street address or other identifier. Any information you provide regarding locations or producers is only viewable by the form administrator. Only the Location name will be visible to all users.

UPDATE 2021: Disinfectants

Virkon is ineffective against Clubroot. Wherever limiting the spread of soil-borne plant pathogens is the goal, do not use Virkon as a disinfectant.

Solutions of 2% bleach or 100% Spray-Nine are effective for the control of soil-borne plant pathogens, including Clubroot.

Due to the corrosive nature of bleach solutions, the soil science department has switched to Spray-Nine as the primary sanitizer solution for 2021.

Spray-Nine

- Spray-Nine is used at full strength without dilution. Do not mix with other sanitizers, cleaners or chemicals.
- A supply of refillable jugs can be found at the exchange station near the east door of the soil science shed. Please return your empty jugs and inform Trevor Fraser if there are no full jugs available.
- The shelf life of undiluted properly stored Spray-Nine is estimated to be two years. Please date sprayers so contents will be replenished a minimum of every two months. To avoid wasting sanitizer, only fill sprayers with a volume of product that can be consumed within this timeframe.
- Do not inhale. Move to fresh air and consult physician if irritation develops.
- Do not allow contact with eyes or prolonged contact with skin. If contact with skin or eyes occurs flush well with water.
- Do not freeze.

Example Label:

Spray-Nine	
Discard as domestic waste	
Prepared by:	_____
Preparation Date:	_____
Expiry Date:	_____

Bleach (corrosive to steel and rubber, may discolour surfaces)

- 2% bleach solution, dilution based on stock concentration of sodium hypochlorite. Dilution instructions will be written on each stock bottle.
- Bleach solutions will last longer if kept out of direct sunlight and at lower temperatures. Solutions may be used for up to 5 days if they will be transported or stored in the back of a truck.
- Bleach solutions must be labelled appropriately.

- Warning: Bleach can stain clothing and footwear, Do not mix bleach with other sanitizers, cleaners or chemicals.

Example Label:

2% Bleach Solution
Discard as domestic waste
Prepared by: _____
Preparation Date: _____
Expiry Date: _____

Testing for soil Pathogens

Potential testing locations include:

- 20 20 Seed Labs Inc. - <http://www.2020seedlabs.ca/contact>
- Pest Surveillance Initiative - <http://www.mbpestlab.ca/field-testing/>

FAFS Biosecurity Protocol List (2019)

Below is a list of available biosecurity protocols provided by the Faculty of Agriculture and Food Sciences. This is not a comprehensive list of biosecurity protocols; your research location may have its own protocols that must be followed in addition to the ones listed. For example, Richardson's Kelburn farm is such a location.

- Field Biosecurity
- Ian N. Morrison Research Farm Biosecurity
- Controlled Growth Environments Biosecurity
 - Department of Plant Science Facilities
 - Department of Soil Science Facilities
- Soil Science Shed Biosecurity
- Animal Science Research Facility Biosecurity
- Glenlea Research Station Livestock and Poultry Biosecurity
- Field Trips/Tours Biosecurity
- Disinfectants

SOIL SCIENCE....



.....AN ALOHA DEPARTMENT