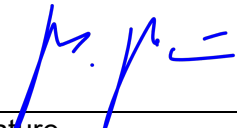
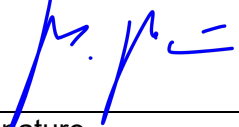


<b>College/Unit:</b>	<b>Omics Resource Center (ORC)/WCVM</b>
<b>Procedure Title:</b>	<b>ORC General Procedures</b>

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Print Title	Print Name	Signature

<b>Authorized By:</b>		
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Print Title	Print Name	Signature

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## Revision History

Revisions to this procedure are to be documented in Table 1, Revision History.

Table 1: Revision History

<b>Document Section</b>	<b>Details of Amendments</b>	<b>Date</b>	<b>Author (Initials)</b>
All	New 'ORC General Procedures' SOP	07/15/2024	MM
8.4, 8.5, 8.7, References	Change Micro-Chem Plus to Virox PREempt Disinfectant	05/21/2025	MM
8.7, References	Add Hazardous Waste - Biological Waste Label information and review hyperlinks	07/21/2025	MM

## 1 Purpose

This guideline provides safety requirements for safe handling of PPE, equipment, sharps, glassware, transported goods, chemical and biological waste, in addition to general housekeeping rules in the Omics Resource Centre (ORC) (WCVM rooms 2207, 2259 and C616).

This document demonstrates that there has been a considerable amount of due diligence done to prevent worker injuries and minimize damage to equipment/property, and it is your responsibility to know and participate in them. Please take care to ensure the safety of other workers who may be affected by your work/omissions.

## 2 Applicable To

This guideline applies to all workers that are granted access and will perform work in the Omics Resource Centre laboratories (ORC): WCVM rooms 2207, 2259 and C616.

## 3 Scope

The scope of this guideline is to provide information on various aspects of general lab etiquette, administrative safety controls (e.g. ERP, access control), safe handling measures (e.g. PPE, waste disposal rules), and device maintenance rules.

## 4 **Definitions**

**AED** - Automatic External Defibrillators

**BSC** – Biosafety Cabinet

**DNA** – Deoxyribonucleic acid

**ERP** – Emergency response plan

**FMD** – Facility Repairs and Maintenance

**GMP** - Glassware and Media Preparation Laboratory

**Hazardous Materials and Equipment** - Hazardous materials include, but are not limited to, chemicals that are pyrophoric, water reactive, potentially explosive, large volumes of highly flammable materials, acutely toxic, peroxide forming, strong corrosives, strong oxidizing agents, strong reducing agents and regulated carcinogens; biological material that is listed as a “select agent”; and radiological material. Hazardous equipment includes, any electrically, pneumatically, or hydraulically powered pieces of machine equipment (i.e. robotic devices with moving arms such as liquid handlers and material homogenization equipment) and high pressure/vacuum equipment.

**HEPA** - high efficiency particulate air [filter]

**HQP** – Highly Qualified Personnel are defined as individuals with university degrees at the bachelors' level and above (Analysis Series, 2001 Census)

**SDS** - Safety Data Sheet

**NSID** - Network Services Identifier

**ORC** - Omics Resource Centre

**PCR** - Polymerase Chain Reaction

**PDS** - Prairie Diagnostic Services

**PI** - Principal Investigator

**PPE** – personal protective equipment

**RNA** - Ribonucleic acid  
**RUH** - Royal University Hospital  
**TDG** - Transportation of Dangerous Goods  
**VMC** - Veterinary Medical Centre  
**WCB** - Worker's Compensation Board  
**WCVM** – Western College of Veterinary Medicine  
**WHMIS** - Workplace Hazardous Materials Information System

## 5 Training

The **ORC lab manager** grants access to WCVM rooms 2207, 2259 and C616. Approves laboratory staff or students to conduct specific work in WCVM rooms 2207 (Main lab, sequencing lab), 2259 (crude sample extraction lab) and C616 (crude sample storage facility).

**Students, Researchers, or Workers** must obtain their PI's **and** the ORC lab manager's approval before working in the research laboratory or work area, complete proper safety trainings and follow the proper procedure outlined in this guideline. **The level of independence that is given to an ORC user for operation of certain processes and equipment is at the ORC lab managers discretion. Some processes will only be performed by ORC staff.**

**FORMS mandatory to be provided by ORC USER to the ORC laboratory manager Dr. Martin Mau (orc@usask.ca):**

- An authorized worker form must be completed.
- Certificates in PDF format for any required classes and readings (see requirements in the "ORC\_NewWorkerSafetyInstructions\_checklist" excel document provided on the ORC webpage and/or by the ORC lab manager).
- Individual on-site training updated as training progresses.

## 6 Safety & general lab etiquette

You must provide all your own consumables/glassware that are required to perform your experiment. If you have forgotten to bring any of these things, you must **ask permission from the Omics Resource Centre laboratory manager Dr. Martin Mau** to borrow from what is found in the laboratory.

Empty your tabletop waste containers once they are  $\frac{3}{4}$  full. There is at least one grey Biomed bin used for biohazard waste placed in each of the laboratories that you can use and there is a supply of red autoclave bags in the room WCVM2207 and WCVM2259.

All workstations in WCVM rooms 2207, 2259 and C616 are NSID and password protected. Please remember to log out every time you are finished using an instrument. Each computer is set up to print to the main printer in WCVM room 2207 and 3101 so that you can take away your results when you leave the laboratory.

All crude sample handling must be conducted in the Biosafety Cabinet in WCVM room 2259. All handling of samples with volatile compounds (e.g. from fixatives) must be conducted in the fume hood of WCVM room 2259. All other equipment such as freezers, pipets, benchtop devices etc.

belong to the ORC and are not assigned to specific personnel. It is mandatory that all visiting researchers and HQPs need to have completed all courses offered by Safety Resources (see [section #7](#)), in addition to having received training on the equipment prior to operate any ORC equipment. **All benchtop equipment such as pipettes, centrifuges, heaters, vortexers, the benchtop space itself or hoods and BSCs occupied during an experiment need to be cleaned before and after use (see [section #8.4](#)).**

**Room WCVM 2207 is a sequencing lab and is designed for handling nucleic acid samples only (i.e. RNA or DNA), no crude samples or any intermediate products are allowed here!**

PPEs (see specifics in [section #8.2](#)) must be worn at all times in WCVM room 2259 and 2207 and must be taken off when leaving the laboratories.

WCVM room **2259**: Containment Level 2 (**CL-2**) | crude sample handling, nucleic acid extraction & QC

WCVM room **2207**: Containment Level 1 (**CL-1**) | next generation sequencing library preparation & sequencing

WCVM room **C616**: Containment Level 1 (**CL-1**) | crude sample receipt & storage

**Do not use rooms WCVM 2207, 2259 and C616 unless you have been trained and given permission by Omics Resource Centre laboratory manager Dr. Martin Mau.**

## 7 [Administrative Safety Controls](#)

Within the ORC rooms 2207 and 2259, there will be a binder in the overhead cabinet at the computer workstation in each lab which includes:

- Standard Operating Procedures (SOPs)
- Biosafety permits/plan
- Safety Data Sheets (SDS)

The safety documents (SOPs, Biosafety permit and plan, SDS) will be maintained by the Omics Resource Centre Laboratory Manager Dr. Martin Mau.

All personnel authorized to work in the laboratory will be required to read and understand the Standard Operating Procedures and will indicate so by signing.

All personnel working in the ORC are required to take the following courses offered by Safety Resources (minimum):

- Laboratory Safety – online – expires every 3 years
- WHMIS 2015 – online – expires every 3 years
- Safety Orientation for Employees/Supervisors - in class – 3 hours
- Biosafety – online course – expires every 3 years

If you are not sure about your status on each of the classes, you can check your profile online by visiting the Safety Resources website: <https://paws2.usask.ca/safety>.

A [Training Needs Assessment](#) will be completed by the ORC Lab Manager for each authorized worker at ORC to identify any gaps in training on a yearly basis (see [section #11](#)).

The **Standard Operating Procedures** (SOP) Manual will be reviewed and updated annually by the laboratory manager.

The **Emergency Response Plan** (ERP) is posted on the inside of both doors (North and South) of the room 2259 and on the main door (inside/outside) of rooms 2207 and C616.

**Access is limited to authorized personnel through key fobs** that are administered by the ORC Laboratory Manager Dr. Martin Mau and can be requested by Principal Investigators only. Access doors are self-locking and should not be propped open. Laboratory room 2259 is a Level 2 Facility with a negative air pressure within the space.

None of the ORC laboratories (rooms 2207, 2259 and C616) are main thoroughfare and anyone that you do not recognize should be questioned. If you see someone you think is suspicious, call campus security immediately (306-966-5555).

### **DO NOT SHARE YOUR FOB WITH OTHER PEOPLE!**

It is expected that researchers (especially HQPs) from other laboratories will use the ORC laboratories.

- Temporarily visiting workers will be under the supervision of authorized personnel (listed on a Biosafety Permit, *i.e.* laboratory manager).
- Recurrent visiting workers who are expected to use the lab for an extended period will be required to undergo the appropriate training provided by the ORC laboratory manager Dr. Martin Mau and to familiarize themselves with the appropriate documents provided to them.
- Visits by people with no science background (high school students, volunteers, tours etc.) must be approved by the ORC lab manager Dr. Martin Mau. They will be under constant supervision during their visit in the lab.

## **8 [Procedures](#)**

### **8.1 [Incidents](#)**

All incidents that have harmed someone or could potentially have harmed someone will be reported to the ORC Lab Manager Dr. Martin Mau. An incident report form must be filled out online: <https://paws2.usask.ca/safety> and should be done so **within 24 hours of the incident**.

If there are injuries sustained that will result in time taken off work, there is a Worker's Compensation Board form E1 that needs to be filled out and sent to Safety Resources and Worker's Compensation **within 5 days** (<http://www.wcbsask.com/>).

**NOTE: It is important to know that you should not be ashamed of an incident. Disclosing an incident is not only mandatory but also for the benefit of everyone including yourself and will help to improve our safety measures.**

In the case of a **Major Medical Emergency** call Campus Security 306-966-5555 or Emergency 911. In the case of a **Minor Medical Emergency** there are First Aid Kits located above the sink in WCVM room 2207, as well as one hanging from the south wall in WCVM room 2259. There are emergency showers/eyewash stations located at each entrance of the laboratory 2259 and an eyewash station at each sink in all ORC laboratories.

There are 3 **Automatic External Defibrillators (AED)** within our building. The nearest one is located in the Buffeteria on main floor, one is located in PDS receiving area and one is located in the VMC reception area.

The **nearest medical emergency centre** is the Royal University Hospital (RUH) on campus. Do not attempt to transport anyone who is injured in your own vehicle – call Campus Security 306-966-5555 or Emergency 911 instead.

**Fire Emergencies** - If you hear the fire alarm for more than 10 seconds (less than that is just a monthly test), evacuate the building and wait in the marshaling area across the street in the courtyard between WCVM and the Agriculture Building.

**Laboratory Fire** – Fire alarm pull station is in the hallway outside WCVM room 2215 opposite site of the washrooms halfway between WCVM room 2207 and 2259. The fire extinguisher is in the hallway halfway between WCVM room 2207 and 2259.

**Chemical/Biological spills** – If you are unable to deal with the spill yourself, evacuate the area and seek help. Call Campus Security at 5555. There are spill kits located under the sink in WCVM room 2207, as well as one hanging from the wall in WCVM room 2259.

**Power Outages** – If you are working in the Biosafety Cabinet or Fume Hood, cover all of your work with lids or wipers and cease working there. Report the power outage to Campus Security at 306-966-5555.

## 8.2 [Personal Protective Equipment \(PPE\)](#)

Every worker must wear the appropriate clothing to work in the ORC laboratories (rooms 2207, 2259 and C616) and wash their hands regularly. **If you are seen dressed inappropriately, you will be asked to leave the laboratory.**

**With the exception of ORC staff all authorized workers must bring their own lab coats. If the authorized worker does not have their own lab coat ORC will temporarily provide the worker with a guest lab coat. Other PPE (i.e. gloves, goggles) will be provided by the ORC.**

**Footwear** with closed toes and heels must be always worn in all laboratories. There should be no skin showing between shoes and pants.

**Lab coats** are one of the most universal PPE articles designed to protect workers from accidental exposure to harmful pathogens/chemicals and it is obligatory to wear them only when inside the laboratory. **It is completely unacceptable to wear your lab coat at any other place such as bathrooms and offices.**

Every department has specific laboratory coat laundering policies. Speak to your supervisor or the ORC laboratory manager Dr. Martin Mau about your department's procedure and please remember to launder your lab coat regularly. In general, lab coats are taken to GMP (Glassware and Media Prep) in Vet Micro for laundering. Please ensure **ORC** is written inside the collar if using a lab coat provided by the Omics Resource Centre.

Hooks will be provided at the entrance of the lab for storing lab coats.

Lab coats must be

- Identified.
- be buttoned all the way down.
- with knitted cuffs.

**Disposable gloves** must be worn while working with biological material or harmful chemicals. Disposable gloves **MUST** be removed and discarded in appropriate receptacles **BEFORE** leaving the workbench.

All work areas, apart from the workbench itself, are considered CLEAN and gloves that might have been in contact with hazardous materials **MUST NOT** touch them.

These CLEAN areas include (but are not limited to):

- refrigerator and freezer handles
- incubators
- computer keyboards
- control surfaces on common equipment
- doorknobs
- telephones

Sometimes it is necessary to wear gloves while working with material that you do not wish to have contaminated with what is on your hands (for example, RNase or when doing PCR or tissue culture). If you are wearing gloves for these reasons, they should also be treated as contaminated and removed before leaving the work area.

**Eye and Face protection** must be used when there is a known or potential risk of exposure to splashes, UV light and/or flying objects.

**Standard Precautions** should be followed at all times when manipulating biological material and are work practices required to achieve a basic level of infection prevention and control. Standard Precautions is the practice of avoiding contact with human/animal bodily fluids or any extracts such as protein, RNA and DNA. It is recommended to wear gloves whenever handling biological material, wear face shields when there is a danger of such fluids splashing on mucous membranes and disposing of sharps in a puncture resistant container.

### 8.3 Transport

**Transport between rooms in the laboratory:** Storage fridges & freezers are located in each laboratory room 2207 (+4C, -20C), 2259 (+4C, -20C), and C616 (-80C). Hazardous material (infectious agents and chemical material) should be transported between these rooms on the cart provided and in a transport box (clear or red), then surface decontaminated when finished using.

**Transport outside the laboratory (but remaining on campus):** Materials such as cell-cultures, DNA, viruses and bacteria that must be transported to other laboratories within WCVL or on campus must be transported in secure, labeled, leak proof, sealed secondary containers containing absorbent material such as paper towel, then surfaced decontaminated when finished using.

**Transport off-campus:** Hazardous material mailed or couriered off-campus will be handled **only** by personnel with Transportation of Dangerous Goods (TDG) by air/road – (shipper) certification. The certification expires every 2 years and is an online class which will certify you in both biological shipping and chemical shipping. **\*\*Check with your Department or Safety Resources for a list of people who are TDG certified in your area.**

**Packaging Biomed waste bins:** You are required to take a short course if you generate waste or are responsible for packaging and/or transporting Biomed bins. The course is online, valid for 3 years and is called Biohazardous Waste Training. It is available here: <https://paws2.usask.ca/safety>

**Equipment:** Servicing, selling or relocating equipment are actions only to be conducted by the ORC laboratory manager Dr. Martin Mau. **If you as a visiting user notice broken or service-due equipment you must disclose your observation to the ORC laboratory manager.** The equipment will then be assessed, decontaminated and/or decommissioned before removal or repair by the ORC laboratory manager or ORC personnel. A 'Declaration and Disposal of Surplus Asset' form as well as 'Equipment Release' form will be filled out, then attached to an FMD online service request form by the ORC laboratory manager or ORC personnel.

- <https://wiki.usask.ca/display/public/CPKB/Equipment+Release+Form>
- <https://wiki.usask.ca/display/public/CPKB/Declaration+and+Disposal+of+Surplus+Assets+Form>

### 8.4 Disinfection

**For general countertop and ORC equipment cleanup** use 70% ethanol in spray bottles with 5 min contact time or 1:40 dilution of Virox PREempt Concentrate with tap or distilled water for at least 5 minutes.

- Shelf life of 70% ethanol is 6 months.
- Shelf life of diluted Virox PREempt Concentrate is 1 month. The shelf life of Virox PREempt Concentrate is 2 years minimum in the original container.

**For BSCs and fume hoods** in WCVL room 2259 1:40 dilution of Virox PREempt Concentrate with 5 min contact time.

**For liquid waste** use 10% v/v household bleach for 30 minutes.

**For Spore-forming bacteria** use 10% v/v household bleach (prepared fresh) for 20 minutes for liquid waste or 1:40 dilution of Virox PREempt Concentrate with 5 min contact time is used following manufacturer's label instructions for surface disinfection.

## 8.5 Maintenance

**You must inform the ORC Laboratory Manager if you notice that something isn't working the way it is supposed to!**

Some major instruments will only be operated by ORC personnel due to their complexity and are also not able to be booked (e.g. liquid handlers, sequencers). For other major pieces of equipment (centrifuges, tissue homogenization or nucleic acid quantification equipment) a quick guide with operating instructions is placed on the side of the instrument. For those major pieces of equipment online booking is available. In general, all instruction manuals and service records can be found in the filing cabinets located in each of the labs, the computer workstation and on the LIMS under [\\Desktop\Manuals\](#) (TBD).

**Biosafety cabinets** are used to contain infectious agents and ensure product sterility.

Every employee working in a BSC must be trained in their correct use, and have a good understanding of the different types of cabinets and how they work.

### **Before using,**

- 1) verify that the air grilles are free from obstructions,
- 2) verify the inward airflow (by gauge readings or by holding a tissue to make sure that it is drawn in), and
- 3) For disinfection of all interior surfaces of the BSC 1:40 dilution of Virox PREempt Concentrate in distilled water with 5 min contact time must be applied with a cloth/sponge or hand pump sprayed with a coarse spray device (6-8 inches distance; **Attention: Do not breath the mist!**) to inactivate viruses, fungi, bacteria and other pathogens. Incubate the surface area for at least 5 minutes (i.e. wet surface) then dry the surface area with a clean paper tissue. The shelf life of Virox PREempt Concentrate is 2 years minimum in the original container. Diluted disinfectant should be disposed (see [section 8.6](#) for handling instructions) and renewed monthly.

### **While working in the cabinet,**

- 1) avoid excessive movement of hands and arms through the front access opening,
- 2) keep contaminated materials to the rear of the cabinet and
- 3) ensure to always discard materials in containers inside the cabinet.
- 4) **open flames are not allowed** in the BSC in the ORC laboratory.

**After using**, biosafety cabinets must be cleaned with 1:40 dilution of Virox PREempt Concentrate in distilled water using a cloth/sponge or hand pump sprayed with a coarse spray device (6-8 inches distance; **Attention: Do not breath the mist!**) to inactivate viruses, fungi, bacteria and other pathogens. Incubate the surface area for at least 5 minutes (i.e. wet surface) then dry the surface area with a clean paper tissue. The shelf life of Virox PREempt Concentrate is 2 years minimum in the original container. Diluted disinfectant should be disposed (see [section 8.6](#) for handling instructions) and renewed monthly.

Biosafety cabinets are tested and certified by an external contractor (CON-TEST) once a year and whenever they are moved. The trays on the bottom of the cabinets are removed and washed underneath regularly – once a month.

### Fume Hoods:

**NOTE: Read the SDS for your chemical before you start your experiment – they can be found online if you search by chemical name or in a binder in the overhead cabinet at the computer workstation in each lab)**

- Fume hoods will not keep your product sterile nor will they contain infectious agents.
- If you are working with chemicals that have dangerous or unpleasant fumes you must move your work to a fume hood. This will ensure a more pleasant working environment for everyone else in the lab.
- Fume hood sash must be closed to within the acceptable range indicated by arrows on the side of the hood – otherwise it will not be as effective as it should be.
- Nothing is to be stored in the fume hood. It is meant to work in only.
- Use bench paper to contain splashes and remove when you are finished.
- Fume hoods are certified by Safety Resources (FMD) once a year.

### Pressurized Gas Cylinders:

- Any pressurized gas cylinder, either full or in use, is required to be secured to the bench top with a cylinder clamp fitted with a strap. If a tank is not being used, the regulator should be removed and the cap should be placed onto the cylinder.
- All pressurized gas cylinders must be moved by using the gas cylinder trolley, secured with the black strap. Caps must be secured onto the tanks whenever they are being moved.

- When empty, cylinders are brought to the loading dock and placed in the secure area with the white tagged ripped off to say “empty”. Tanks are secured to the wall with chains until they are picked up by Linde.
- Brass regulators should be attached to cylinders that are in use in the lab. The fitting for the regulators should be facing away from the worker and the gauges should be turned to face the worker. Primary gauge setting is 5500 kPa and secondary gauge setting is 70 kPa for our CO2 tanks connected to incubators.
- There are several hazards associated with the handling, use and storage of compressed gases. They include pressure, fire, explosion, health, chemical burns and asphyxiation hazards.

**DO NOT TOUCH THE GAUGES WITHOUT MANAGER’S APPROVAL.**

#### **Centrifuges and rotors:**

- Make sure that your tubes are balanced before attempting to operate a centrifuge. Different centrifuges have different requirements for balancing tubes that range from a visual balance to weighing within 0.05 g of each other. **Check the lab manager to find out about the centrifuge you wish to operate.**
- Ensure that the centrifuge is up to maximum speed before leaving it unattended.
- Sealed safety cups should be loaded and unloaded in biosafety cabinets whenever using infectious agents.
- Most rotor lids require regular use of vacuum grease to maintain a proper seal.
- Most high-speed centrifuge spindles require a coating of BeckmanCoulter SpinKote lubricant to stay lubricated.

#### **Water baths:**

Water must contain a growth inhibitor such as AquaClean and must be changed regularly (once a month).

#### **Fridges and Freezers:**

- Fridges and freezers must be cleaned or defrosted whenever necessary (at least once a year).
- Each fridge and freezer is identified with a number and emergency after hours contact information that is posted on the outside.

- The fridges and freezers and their content are managed by the ORC laboratory manager. **ORC users are not allowed to store samples or consumables without the lab managers approval.**

#### Liquid handling equipment (robotics in general):

- WCVM room 2259 and 2207 will each host a liquid handler.
- **In general, liquid handlers will only be operated by ORC staff and users will only be allowed to operate these devices under direct supervision of the ORC lab manager or ORC staff.**
- The operating manuals are available on the LIMS under [\\Desktop\Manuals\](#) (TBD) in each laboratory workstation.
- For ORC users **changes to the programming environment are prohibited**. **Access to the software and the programming environment** to conduct any alterations or additions to the must be approved by the ORC lab manager (contact: [orc@usask.ca](mailto:orc@usask.ca)) and conducted either under direct supervision by ORC staff or executed by the ORC lab manager.

#### 8.6 Housekeeping procedures

→ **Long hair must be tied back or restrained** so that it cannot come into contact with hands, specimens, containers or equipment.

→ **Hands must be washed with soap and water:**

- 1) after gloves have been removed,
- 2) before leaving the laboratory, and
- 3) after handling materials known or suspected to be contaminated.

**Workbenches and work areas** must be tidied up when finished for the day and whenever you are finished using a common area. Clean up the bench tops at the end of the day with 70% ethanol.

**Chemical waste** must be collected in jugs or containers with screw capped lids (liquids; e.g. Uline Liquid Screw Top Pail - 5 Gallon, cat # [S-20606](#) with lid cat # S-20606LID) or plastic lined boxes (solids).

Each container must be clearly marked with the type of chemical on special labels from Safety Resources and stored in a designated area in each lab.

Online forms are submitted to Hazardous Waste, Safety Resources for disposal when containers are nearly full and they will pick up from individual laboratories ([https://wwwapps.usask.ca/sys-forms-apps/hazardous\\_waste\\_form/](https://wwwapps.usask.ca/sys-forms-apps/hazardous_waste_form/)).

#### **Glassware and Media Preparation Laboratory (GMP):**

Department of Veterinary Microbiology houses GMP, which serves the entire college (WCVM). You must be authorized to enter the facility by using a fob that is issued in your name – otherwise the door will be locked to anyone unauthorized. Because fob activity is

recorded under your name, it is wise to keep it in a secure place and don't lend it out to others.

GMP provides clean glassware such as bottles, cylinders, flasks, beakers, Pasteur and serological pipettes to PI's and their team members. There is a cost- recovery fee that is charged for every item that you use therefore these items must be signed out and returned when you are finished using.

GMP provides a custom reagent/media preparation service for any WCVI PI's or members of their teams. There are request forms located in GMP that you need to fill out and place in a brown tray. GMP will charge your account for the consumables used and you can pick up your media or solutions when they are ready. GMP does not ship anything for you.

For those faculty, staff or students wishing to make up their own media, GMP staff or your supervisor will provide proper protocol and training. Keep in mind that everything that is removed from GMP must be signed out and will be billed to the appropriate account. All glassware must be returned when you are finished using them.

GMP will autoclave and wash reusable glass and plastic ware that contains biohazardous material. It is every worker's responsibility to ensure that GMP staff are not exposed to volatile, poisonous or corrosive solvents during this process. Such mixtures of biohazardous and dangerous chemicals are to be chemically decontaminated with bleach (check the SDS sheet for your specific microorganism for contact time) and collected in separate disposal containers (available through GMP) and disposed of through Waste Management Section of Safety Resources.

There are 2 racks located just inside the door to GMP. One is dedicated to items that need to be washed but are not contaminated with infectious agents of any kind (bacteria, viruses, other microorganisms, tissue culture or rDNA). The other rack is dedicated to items – either glassware or reusable plasticware that is contaminated with biohazardous material. If items are placed on the contaminated rack, they will be autoclaved first and then washed. If you place items on the biohazardous rack, they must be inside an autoclavable tub with a signed tag that certifies its contents do not contain volatile, poisonous or corrosive solvents.

If you would like to have items autoclaved for purposes of sterilizing, simply put some autoclave tape with your name and date on your item and inform GMP staff of your requirements (timelines, place in water bath after autoclaving, etc) and place in the appropriate location for autoclaving. Do not attempt to use the autoclaves without permission or without training.

## 8.7 Waste handling

**For Solid Biohazardous waste:** Dispose of solid biowaste in the grey Biomed bin, lined with a yellow bag. Once  $\frac{3}{4}$  full, tie off the bag with a zip-tie, close the lid, and zip-tie the lid closed. Place a barcode sticker and the '[Hazardous Waste - Biological Waste Label](#)' on the lid, surface disinfect with 1:40 dilution of Virox PREempt Concentrate in distilled water or 70% Ethanol for 5 minutes, follow the instructions provided through the [Waste Management Facility](#) website and transport to the waste pick up location (WCVN Sea-Can Container in front of the WCVN loading dock). Refer to the [USask Biohazardous Waste Disposal Guideline](#) for more information.





**For liquid Biohazardous waste:** Inactivate with 10% v/v household bleach for 20 minutes to your contaminated solution before flushing down the sink with plenty of water. Place a barcode sticker and the '[Hazardous Waste - Biological Waste Label](#)' on the side of the pail, surface disinfect with 1:40 dilution of Virox PREempt Concentrate in distilled water or 70% Ethanol for 5 minutes, follow the instructions provided through the [Waste Management Facility](#) website and transport to the waste pick up location (WCVN Sea-Can Container in front of the WCVN loading dock). Refer to the [USask Biohazardous Waste Disposal Guideline](#) for more information.

**For SHARPs:** Dispose of all sharps in a SHARPs container. Once  $\frac{3}{4}$  full, seal the container and place inside the grey Biomed bin. [Follow the instructions for Solid Biohazardous Waste above.](#)

**For Chemical waste:** All chemical waste is collected in appropriate waste containers, labelled with a '[Hazardous Waste - Chemical Waste Label](#)' follow the instructions provided through the [Waste Management Facility](#) website and transport to the waste pick up location (WCVN Sea-Can Container in front of the WCVN loading dock). Refer to the [Hazardous Waste Disposal Standard](#).

## 8.8 Inventory control and storage

- Chemical storage should be divided into compatible groups such as:

Flammables	Corrosives	Reactives	Toxic
			

(Safety Resources personnel can help you decide how to do this)

- Workplace labels are required on all hazardous substance containers including decanted or prepared substances that are controlled under the Workplace Hazardous Material Information System (WHMIS)
- Material Safety Data Sheets (SDS) are available online for all chemicals and microorganisms used in the laboratory. Each worker in the laboratory should know how to access SDS sheets.
- Each researcher is responsible for keeping an accurate and updated inventory of the following materials:
  - Chemicals, biologicals, reagents and miscellaneous items
  - Import permits and logbooks of infectious materials

### 8.9 Decommissioning Procedures

**The Omics Resource Centre will NOT provide workspace assigned to graduate students, Post-Doctoral Fellows, visiting scientists, scientists and technicians. All workspace, equipment and storage belong to ORC and is shared.**

Therefore, all areas must be tidied up after each use by ORC visitors and this will be supervised by the ORC lab manager. After the end of a user-driven project run all parts of the project must be removed from ORC laboratories. This will include:

- All cultures, germplasms clones and DNA destroyed or responsibly transferred to another person in the lab.
- All chemicals and solutions disposed.
- All lab notebooks up to date and legible, handed over to the PI.
- Notify Laboratory Manager that door access should be deleted.

The PI and the Lab Manager must provide the information that all decommissioning procedures have been completed.

**It is very important that you very clearly label everything that is stored in any of the fridges and freezers in the ORC so that this procedure can be facilitated.**

### 8.10 Handling of Liquid Nitrogen

Liquid Nitrogen supply tanks are located in a locked compound within the loading dock of WCVB Bldg.

**The ORC has own nitrogen handling and dispensing equipment which is located in WCVB room 2260.1.**

ORC staff and users will need to resupply ORC nitrogen stock from the supply tanks at the WCVL loading dock by signing into sign-in sheet at the loading dock whenever liquid nitrogen is taken out of the supply tank.

Personal Protective Equipment (lab coats, cryogenic gloves, face shield) should be worn while transferring liquids from one vessel to another.

All transfers from liquid nitrogen supply tanks to ORC storage tanks or other handling vessels (such as styrofoam boxes with lids or insulated buckets) must be made using a transfer hose which is provided. Transfer hoses are greater than 3 ft, attached at one end to valve (on tank) labelled “liquid” and attached to a phase separator at the other end. Phase separators are very fragile and need to be handled with great care.

Pour the liquid nitrogen slowly at first, because the interior of the flask may still be at room temperature and rapid boil off will occur, creating splashes.

### **8.11 Handling of Dry Ice**

This procedure describes methods for safely using, storing, and handling dry ice. This procedure applies to all ORC personnel whose work involves Dry Ice.

Dry ice is the solid form of carbon dioxide that is available in flakes, pellets or block form and is non-combustible. Dry Ice will sublime (vaporize directly to the gas state) at a temperature of -78.5C (-109.3F) or higher. Dry ice will sublime about 5 to 10 pounds every 24 hours (blocks last longer) in a typical storage cooler.

Handle dry ice with appropriate insulated gloves. Using bare hands can result in burns/frostbite to the skin in a short period of time.

Use of dry ice in poorly ventilated areas can result in the depletion of the oxygen level resulting in asphyxiation.

Placing dry ice into a tightly sealed container can produce sufficient gas build up to cause an explosion.

#### **Shipping**

All packages containing dry ice must be shipped by an individual holding a valid Transportation of Dangerous Good certificate (ORC lab manager).

1. Samples should be sealed in a burst-proof bag containing absorbent materials (available from Manager/Safety Resources) and placed in a Styrofoam box containing dry ice.
  - Initial container (leak proof, if liquid)
  - Containment box (if appropriate)
  - Absorbent material
  - Outer containment
  - Shipping box
2. Styrofoam box should not be taped shut.
3. A list detailing contents should be placed on top of the Styrofoam box but inside the packaging (e.g. xx ml exempt animal specimen (bovine DNA) in plates).
4. The packaging must be labeled on opposite sides with “this side up” arrows.
5. On one side of the box attach:
  - Dry ice label with the amount of dry ice.

- UN1845 Dry Ice label.
- Address labels for shipper and receiver. These should be clearly distinguishable from each other.

### Controls


- Dry ice is to be stored in a well-ventilated location and placed in a Styrofoam, chest, insulated cooler, or a special cooler designed for the storage of dry ice.
- Because of the thermal expansion of dry ice (one pound of dry ice produces about 250 liters of gaseous carbon dioxide), do not store in a tightly sealed container.
- Do not use or store dry ice in confined areas, walk-in refrigerators, environmental chambers, or rooms without ventilation.
- Dry ice baths should be open to the atmosphere to avoid pressure build up.
- Storage containers require hazard communication labeling.
- Personnel handling dry ice shall be trained on the hazards.

### PPE

Safety goggles, cryogenic gloves, lab coat or lab apron must be worn when handling dry ice.

### Disposal of residual dry ice

- Let the unused portion sublime (recommended for well-ventilated areas because it will happen over several days and ventilation will take care of the gas liberation). Sublimation in a fume hood is preferred.
- Never dispose of dry ice in a sink, toilet or other drain.
- Never dispose of dry ice in the trash or garbage
- Never leave surplus dry ice in the corridors.



Shipper's Declaration not Required.

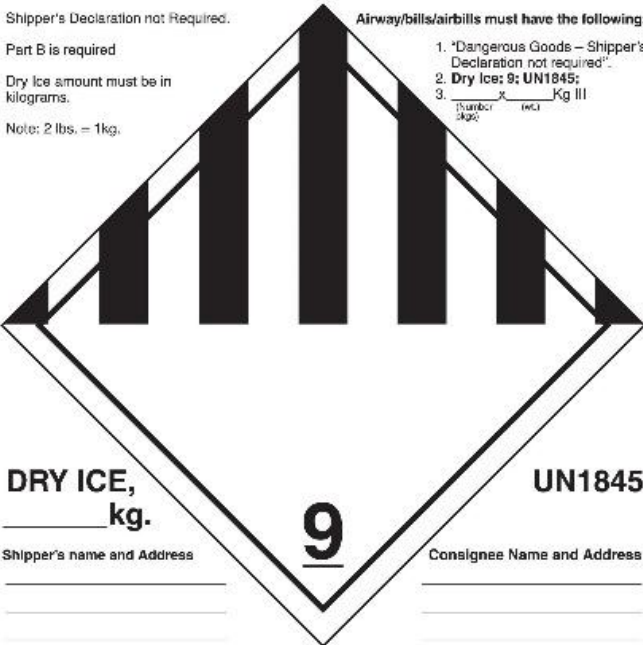
Part B is required

Dry Ice amount must be in kilograms.

Note: 2 lbs. = 1kg.

Airway/bills/airbills must have the following:

1. "Dangerous Goods – Shipper's Declaration not required".
2. Dry Ice: 9; UN1845;
3. \_\_\_\_\_ X \_\_\_\_\_ Kg III  
(Number) (Weight)



**DRY ICE,**  
\_\_\_\_\_ **kg.**

Shipper's name and Address \_\_\_\_\_

Consignee Name and Address \_\_\_\_\_

UN1845

DL 154






## 11 References

- SDS: <http://ccinfoweb.ccohs.ca/SDS/search.html>
- Workers Compensation Board (WCB): <http://www.wcbsask.com/>
- Usask Wellness Resources: [Accidents or Incidents - Wellness | University of Saskatchewan \(usask.ca\)](#)
- Usask Safety Resources: <https://paws2.usask.ca/safety>
- Equipment Release form: <https://wiki.usask.ca/display/public/CPKB/Equipment+Release+Form>
- FMD online service request form <https://wiki.usask.ca/display/public/CPKB/Declaration+and+Disposal+of+Surplus+Assets+Form>
- Hazardous waste form: [https://wwwapps.usask.ca/sys-forms-apps/hazardous\\_waste\\_form/](https://wwwapps.usask.ca/sys-forms-apps/hazardous_waste_form/)
- Training Needs Assessment form: [https://usaskca1.sharepoint.com/:w:/r/sites/srdl/\\_layouts/15/Doc.aspx?sourcedoc=%7BD0A45EFB-0051-4A31-A7DC-14C6F0C9005E%7D&file=Biosafety%20-%20Form%20-%20Training%20Needs%20Assessment.docx&action=default&mobileredirect=true&DefaultItemOpen=1&wdLOR=cB4376229-6D84-43B8-8C09-D45FD109FE8F](https://usaskca1.sharepoint.com/:w:/r/sites/srdl/_layouts/15/Doc.aspx?sourcedoc=%7BD0A45EFB-0051-4A31-A7DC-14C6F0C9005E%7D&file=Biosafety%20-%20Form%20-%20Training%20Needs%20Assessment.docx&action=default&mobileredirect=true&DefaultItemOpen=1&wdLOR=cB4376229-6D84-43B8-8C09-D45FD109FE8F)
- Virox PREempt Concentrate Application Note: <https://info.virox.com/hubfs/PREempt/documents/PREempt-Concentrate-Reference-Sheet-ENG.pdf>