

Standard Operating Procedure Spill Control Procedures	
SOP Number: <u>SOP-SCP-02</u>	Category: <u>Lab Process</u>
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1.0 POLICY

The W. J. Henderson Centre for Patient Oriented Research (WJHCPOR) is responsible for protecting users, research participants, volunteers, visitors, Kingston Health Sciences Centre (KHSC) employees, and KHSC's equipment and facilities from hazardous spills. The WJHCPOR will provide a fast and safe means of containment and clean-up of hazardous spills.

2.0 PURPOSE

In the event of a spill, competent, prompt action is necessary for immediate clean-up to reduce and eliminate the hazards present.

3.0 PROCEDURE

User is responsible for:

- Cleaning up of all minor spills. KHSC's Environmental Services may act in a supportive role by either assisting in containing a spill or cleaning the area after the initial clean-up process has been completed. If the spill exceeds the scope of the user's experience, training, or willingness to respond, the user must notify **immediately** their manager/supervisor and the designated KGHRI staff member who will assist.
- Ensuring proper incident reporting procedures are followed in the event of a spill.
 - For Minor Spills (less than 4 Litres), users **MUST** complete a **Spill Incident Report Form** that is available in the binder on the shelf above the centrifuges in the Research Centrifuge Room (Connell 4, Room 2-4-041) and also located in the hanging folders throughout the WJHCPOR where the standard operating procedures (SOP) binders are located (behind reception desk, along the east and west corridors, and in the Clinical Investigation Unit (CIU) (Connell 4, Room 2-4-021-0). Completed forms must be submitted to the designated KGHRI staff member within twenty-four (24) hours of the spill.

- For Major Spills (more than 4 Litres) report **immediately** to their supervisor/manager, the designated KGHRI staff member, and the appropriate institutional occupational health, safety and wellness department. KHSC employees need to complete a KHSC Employee Incident Report through the online Safe Reporting tool for workplace incidents. Queen's University Faculty, employees, students and trainees need to complete a Queen's Incident Report located on Queen's Environmental Health & Safety website.

KGHRI is responsible for:

- Providing orientation and training to all users of the WJHCPOR related to proper handling of spills.
- Ensuring that users of the WJHCPOR are familiar with the materials used and stored in the WJHCPOR and the spill procedures to be used in the event of an incident.
- Ensuring that sufficient quantities and appropriate types of spill control materials (i.e. Oxivir®/Accel® INTERvention, Sporicidal, Surface Safe), as prescribed in the MSDS, are available to contain and clean-up a minor spill.
- Ensuring that Biohazard and Cytotoxic (Chemotherapy) Spill Kits are readily available for all users of the WJHCPOR.
- Ensuring that spill control materials are located in a readily accessible location, close to the area where hazardous materials are handled.
- Ensuring that any required PPE is readily available for users of the WJHCPOR.
- Ensuring that all spills are safely and effectively cleaned up. This includes situations which involve the assistance of users of the WJHCPOR.
- Recording information regarding any spills and ensuring all major spill incidents (over 4 Litres) are reported to the appropriate institutional occupational health, safety and wellness department.
- Investigating the causes of minor and major spills and ensuring appropriate follow-up is conducted.

Decontamination of Minor Spills (less than 4 Litres)

Clean-up

- Communicate to others working in the area that there is a spill. If working in the Research Centrifuge Room (Connell 4, Room 2-4-041) or Research Freezer Room (Connell 4, Room 2-4-024), post a Biohazard Spill Sign on the glass window of the door until the spill is cleaned up. The Biohazard Spill Signs are located in the cupboard under the dirty sink beside the lab fridge in the Research Centrifuge Room.

- Use appropriate personal protective equipment (PPE): laboratory coat, gloves, face shield or goggles, etc.
- Bring the Biohazard Spill Kit to the site of the spill. Biohazardous Spill Kits are located in each of the exam rooms (in cupboard under exam bed), CIU (near yellow and red biohazardous waste bins/containers), and in the Research Centrifuge Room (in the cupboard under the dirty sink beside the lab fridge).
- Cover spill with paper towels to avoid splashing during the addition of disinfectant. Pour disinfectant (Oxivir® solution) over the paper towels and immediate surrounding area. Apply Oxivir® solution beginning at the outer margin of the spill working toward the center.
- Let stand 30 minutes. Place the “Wet Floor” sign near the spill area to alert other users. Leave the sign in place until the area has been thoroughly cleaned and the floor is dry.
- If there is broken glass or other sharps involved, use a dustpan or a piece of stiff cardboard to collect the material and deposit into a puncture resistant container (yellow sharps waste bin/container) for disposal. Glass fragments should be handled with forceps/tongs. Dustpans should be autoclaved or cleaned with a disinfectant (Oxivir® solution). Pour contents of disinfectant (Oxivir®) into the plastic tub (located in the cupboard under the dirty sink beside the lab fridge) allowing the dustpan/forceps/tongs to soak in the biological safety cabinet (BSC). After the recommended contact time with Oxivir® solution (5 minutes), remove the tub from BSC and place dustpan/forceps/tongs into dirty sink. Rinse dustpan/forceps/tongs thoroughly with water in the dirty sink. Wash contents with soap and water using cleaning tub (located in the cupboard under the dirty sink beside the lab fridge). Rinse dustpan/forceps/tongs and lay out to dry using paper towels on bench. Return dustpan/forceps/tongs to Biohazard Spill Kit when dry. Dispose spent disinfectant (Oxivir®) from tub and soapy water from cleaning tub down the dirty sink with running water. Put the tubs back into the cupboard under the dirty sink.
 - If users have not received proper training and orientation in order to access the Research Centrifuge Room, please reach out to the designated KGHRI staff member to request cleaning of the dustpan/forceps/tongs to be carried out by the designated KGHRI staff member.
- Discard paper towel and spill material in appropriate leak proof yellow-coloured biohazardous waste bin/container.
- Decontaminate surface again with Oxivir® solution and paper towels or use Oxivir®/Accel® INTERVention wipes. Leave the “Wet Floor” sign near the spill area to alert other users until the area is dry.
- For spills involving cytotoxic drugs and/or bodily fluids, wastes, and biospecimens from research participants undergoing cytotoxic drug treatment, use the Cytotoxic (Chemotherapy) Spill Kits and deactivation agent (Surface Safe).
 - Cytotoxic (Chemotherapy) Spill Kits and deactivation agent (Surface Safe) are located in the large storage cabinet in the CIU (Connell 4, Room 2-4-021-0) and in

the cupboard under the dirty sink beside the lab fridge in the Research Centrifuge Room (Connell 4, Room 2-4-041) located within the WJHCPOR.

- Users who have received the appropriate education and training (i.e. research nurses and/or clinicians) are responsible for primary cleaning of **ALL** cytotoxic spills using Cytotoxic (Chemotherapy) Spill Kits and deactivation agent (Surface Safe). KHSC's Environmental Services staff are responsible for the secondary cleaning of any residues left from the Surface Safe. KHSC's Environmental Services needs to be notified immediately by users to complete this task.
- The Cytotoxic Spill Signs are located in the hanging folders in the CIU (next to CIU Procedure Room and next to the television) and in the cupboard under the dirty sink beside the lab fridge in the Research Centrifuge Room (Connell 4, Room 2-4-041). Users **MUST** post Cytotoxic Spill signs during **ALL** clean-ups. Cytotoxic Spill Signs **MUST** stay up until KHSC's Environmental Services has completed their secondary clean. KHSC's Environmental Services will take down the Cytotoxic Spill Signs once their secondary clean has been completed and place the signs back into their storage location.
- Follow the instructions on the Cytotoxic (Chemotherapy) Spill Kits and deactivation agent (Surface Safe).
 - Use appropriate PPE. PPE includes chemotherapy gowns, chemotherapy approved gloves, safety glasses and/or face shields, and N95 respirator (if applicable).
 - Open the absorbent power pack, located in the Cytotoxic (Chemotherapy) Spill Kit, sprinkle evenly over the spill, and remove solidified materials with the scoop and scraper provided in the kit.
 - Discard spill materials in appropriate leak proof red-coloured biohazardous waste bin/container.
 - Use the deactivation agent (Surface Safe). Surface Safe is a two-step applicator kit that cleans and deactivates chemotherapy drugs on work surfaces. Each applicator kit contains two (2) different wipes/towelettes that are individually packaged and numbered to help ensure clean-up is completed in the correct order. Each applicator kit (one package) can treat approximately 2 sq. ft. of work area. If the spill area is more than 2 sq. ft., use more than one package to clean the spill area:
 - Use Packet #1 to clean the contaminated surface. Wipe the entire area where the spill occurred.
 - Use Packet #2 to neutralize the contaminated surface that was cleaned in the step above. Wipe the entire area where the spill occurred.
 - Discard wipes/towelettes from each packet into appropriate leak proof red-coloured biohazardous waste bin/container.

- Place the “Wet Floor” sign near the spill area to alert other users and KHSC’s Environmental Services. Contact KHSC’s Environmental Services to request secondary cleaning of the spill area.
- For the proper cleaning of spills from wastes and biospecimens from research participants infected with *Clostridium difficile* (*C. difficile*), users **MUST** use the Sporidical disinfectant that is located in the large storage cabinet in the CIU (Connell 4, Room 2-4-021-0) and in the cabinet beneath the dirty sink next to the lab fridge. **DO NOT** USE Oxivir® for the primary clean-up.
 - Cover spill with paper towels to avoid splashing during the addition of disinfectant. Pour Sporidical disinfectant over the paper towels and immediate surrounding area.
 - Apply Sporidical disinfectant solution beginning at the outer margin of the spill working toward the center.
 - Let stand 10 minutes. Place the “Wet Floor” sign near the spill area to alert other users. Leave the sign in place until the area has been thoroughly cleaned and the floor is dry.
 - If there is broken glass or other sharps involved, use a dustpan or a piece of stiff cardboard to collect the material and deposit into a puncture resistant container (yellow sharps waste bin/container) for disposal. Glass fragments should be handled with forceps/tongs. Dustpans should be autoclaved or cleaned with Sporidical disinfectant. Pour contents of Sporidical disinfectant into the plastic tub (located in the cupboard under the dirty sink beside the lab fridge) allowing the dustpan/forceps/tongs to soak in the biological safety cabinet (BSC). After the recommended contact time with Sporidical disinfectant (10 minutes), remove the tub from BSC and place dustpan/forceps/tongs into dirty sink. Rinse dustpan/forceps/tongs thoroughly with water in the dirty sink. Wash contents with soap and water using cleaning tub (located in the cupboard under the dirty sink beside the lab fridge). Rinse dustpan/forceps/tongs and lay out to dry using paper towels on bench. Return dustpan/forceps/tongs to Biohazard Spill Kit when dry. Dispose spent Sporidical disinfectant from tub and soapy water from cleaning tub down the dirty sink with running water. Put the tubs back into the cupboard under the dirty sink.
 - If users have not received proper training and orientation in order to access the Research Centrifuge Room, please reach out to the designated KGHRI staff member to request cleaning of the dustpan/forceps/tongs to be carried out by the designated KGHRI staff member.
 - Discard paper towel and spill material in appropriate leak proof yellow-coloured biohazardous waste bin/container.
 - Decontaminate surface again with Oxivir® solution and paper towels or use Oxivir®/Accel® INTERVention wipes (secondary clean-up). Leave the “Wet Floor” sign near the spill area to alert other users until the area is dry.

Decontamination of Major Spills (greater than 4 Litres)

- Secure the area. Hold your breath and leave the spill area immediately closing the door behind you.
- Call 4444 to initiate **CODE BROWN** and give a detailed description of the location (wing and room number) and type of spill to the switchboard operator. Immediately notify the designated KGHRI staff member of the major spill. The switchboard operator will call KHSC's Maintenance Department and KHSC's Protection Services who will need to turn up/off/down ventilation systems and arrive the area. Let the switchboard operator and KHSC's Maintenance Department know if there is a particular aerosol hazard.
- Allow 10 to 30 minutes for potential aerosol to settle (if aerosols are expected) before you enter back into the room.

Clean-up

- The user of WJHCPOR and the designated KGHRI staff member are responsible for ensuring that any major spill is safely and effectively cleaned up with the assistance of KHSC's Maintenance, Protection Services and Environmental Services departments. If the spill exceeds the scope of the user's or KGHRI staff member's experience, KHSC's Maintenance, Protection Services and Environmental Services departments will assist with providing internal/external expertise and/or resources.
- The user of WJHCPOR and the designated KGHRI staff member are responsible for ensuring that information about the material/biospecimen spilled is available for those involved in the clean-up to ensure proper classification, appropriate equipment is available, necessary precautions are taken, appropriate expertise is available to assist and internal/external resources are requested, if needed.

Spill inside a Biological Safety Cabinet (BSC)

- The size of the spill is determined by how far it spreads, and less by its volume. When a small spill occurs inside a BSC, the user is not considered contaminated unless a splash or spillage has escaped the BSC; however, the gloves and sleeves may be contaminated.
- A large spill in a BSC may result in material escaping the BSC and the user becoming contaminated. In this case, the outer layer of PPE is considered potentially contaminated and should be removed at the BSC.

The following general procedure is recommended for spills inside a BSC:

- Remove gloves and discard within the BSC. If two pairs are worn, discard the outermost layer. If sleeves are potentially contaminated, the laboratory coat or gown should also be removed and placed in the laundry bin behind the research centrifuge room door. Fresh gloves should be donned and if necessary, also a fresh laboratory coat or gown.
- Leave the BSC blower on and the sash at the appropriate level.

- Follow the instructions outlined in the orientation and training session for general spill clean-up of BSC, keeping head outside the BSC at all times. See “Biological Safety Cabinet” SOP.
- Remove any debris using forceps, tweezers or tongs and place in the yellow Sharps waste bin/container inside BSC.
- Surface disinfect all objects within the BSC (e.g. pipettes, tube holders, etc.) using Oxivir®/Accel® INTERVention wipes before removing them from the BSC.
- If material has spilled through the grill of the BSC, pour some disinfectant (Oxivir® solution) through the grill to flood the catch tray underneath.
- Wipe all inside surfaces of BSC with disinfectant (Oxivir®/Accel® INTERVention wipes).
- Raise the work surface, clean the catch tray (you may need to soak up the Oxivir® solution in the catch tray with paper towels), and then replace the work surface.
- All used paper towels soaked in Oxivir® and/or Oxivir®/ Accel® INTERVention wipes and contaminated gloves are to be discarded in the yellow biohazard waste bin/container.
- Allow BSC to run for at least 10 minutes before resuming work or shutting down.
- For the proper clean-up of all spills in the BSC related to stool wastes and biospecimens from research participants infected with Clostridium difficile (C. difficile), users **MUST** use the Sporicidal disinfectant that is located in the cabinet beneath the dirty sink. **DO NOT** USE Oxivir®/Accel® INTERVention wipes for the primary clean-up. Oxivir®/Accel® INTERVention wipes can only used as part of the secondary clean-up.

Spill Inside a Centrifuge

- If a breakage occurs or is suspected while a centrifuge is running, the motor should be switched off and the centrifuge lid left closed for 30 minutes to allow aerosols to settle. Should a breakage be discovered only after the centrifuge lid has been opened, the lid should be closed immediately and left closed for 30 minutes to allow aerosols to settle.
- Inform the designated KGHRI staff member.
- Follow the instructions outlined in for general spill clean-up. See “Centrifuge Safety” SOP.
- Use Oxivir® with paper towels or Oxivir®/Accel® INTERVention wipes to clean the centrifuges. Obtain Oxivir® and Oxivir®/Accel® INTERVention wipes located in the cabinet under the dirty sink.
- Open centrifuge carefully to avoid disturbing the contents which may be up against the lid. Assess the extent of the spill and damage of the tubes, buckets, rotor and

inner surfaces of the centrifuge.

- Remove any debris using forceps, tweezers or tongs and place in the yellow Sharps waste bin/container.
- Carefully remove rotors and buckets and place in the plastic centrifuge tub located under the dirty sink. Move the centrifuge tub to the biological safety cabinet (BSC) for further cleaning. Pour contents of disinfectant (Oxivir®) into centrifuge tub allowing the rotors and buckets to soak in the BSC. Ensure all reusable items used in the clean-up (forceps, tweezers, tongs, dustpans, etc.) are also soaked in disinfectant (Oxivir®).
- After the recommended contact time with Oxivir® solution (5 minutes), remove the centrifuge tub from BSC and place contents into dirty sink. Rinse contents thoroughly with water in the dirty sink. Wash contents with soap and water using cleaning tub located in the cabinet under the dirty sink. Rinse contents and lay out to dry using paper towels on bench. Return contents to the centrifuge or storage bin when dry.
- Dispose spent disinfectant (Oxivir®) from centrifuge tub and soapy water from cleaning tub down the dirty sink with running water.
- Wipe the inside of the centrifuge with Oxivir®/Accel® INTERVention wipes. Take steps to inactivate any contamination on surfaces before touching the surfaces. If needed, use paper towels dampened with disinfectant (Oxivir®) to clean the inside of the centrifuge.
- All used paper towels soaked in Oxivir® and/or Oxivir®/Accel® INTERVention wipes are to be discarded in the yellow biohazard waste bin/container.
- Remember to wipe out the BSC with Oxivir®/Accel® INTERVention wipes as per normal cleaning procedures outlined in Biological Safety Cabinet SOP.
- Place all other waste (e.g. paper towels used to dry centrifuge parts that were not soaked in Oxivir®) into regular waste bin/container.

4.0 REFERENCES

- Queen's University Environmental Health & Safety Spill Response Procedures SOP-HAZMAT-01 Generic Spill Response.
- Public Health Agency of Canada Spill Procedures document.
- KHSC's Clinical Laboratory Services Safety Manual, SF 6-50.01 6, Biological Spill Control.
- Canadian Biosafety Handbook (CBH)-2nd Edition (March 2016).

5.0 SOP HISTORY

SOP Number	Date Issued	Summary of Revisions
SOP-SCP-01	01-DEC-2017	Original version.
SOP-SCP-02	01-MAY-2019	<p>Bi-annual review of SOP completed. SOP header format updated. SOP version number updated. SOP effective date updated. Removed “Contacts” section from SOP. Updated section numbers for “References” and “SOP History”. Under Section 3.0, under “Users Responsibilities”, under bullet 1, typo correction: changed “cleanup” to “clean-up”. Under Section 3.0, under “Users Responsibilities”, under bullet 2, under sub-bullet 1, under sentence 1, added “in the Research Centrifuge Room (Connell 4, Room 2-4-041) and also located in the hanging folders throughout the WJHCPOR where the standard operating procedures (SOP) binders are located (behind reception desk, along the east and west corridors, and in the Clinical Investigation Unit (CIU) (Connell 4, Room 2-4-021-0)” to the end of sentence. Under Section 3.0, under “KGHRI Responsibilities”, under bullet 3, added “(i.e. Oxivir®/Accel® INTERVENTION, Sporicidal, Surface Safe)” and typo correction: changed “cleanup” to “clean-up”. Under Section 3.0, under “KGHRI Responsibilities”, under bullet 4, added “and Cytotoxic (Chemotherapy)”. Under Section 3.0, under “Decontamination of Minor Spills (less than 4 Litres)”, under “Clean-Up”, under bullet 1, added wing, floor, and room numbers for Research Centrifuge Room and Research Freezer Room and added more detail around Biohazard Spill Signs. Under Section 3.0, under “Decontamination of Minor Spills (less than 4 Litres)”, under “Clean-Up”, under bullet 3, created a new sentence 2: Biohazardous Spill Kits are located in each of the exam rooms (in cupboard under exam bed), CIU (near yellow and red biohazardous waste bins/containers), and in the Research Centrifuge Room (in the cupboard under the dirty sink beside the lab fridge). Under Section 3.0, under “Decontamination of Minor Spills (less than 4 Litres)”, under “Clean-Up”, under bullet 5, created a new sentence 2: Place the “Wet Floor” sign near the spill area to alert other users. Leave the sign in place until the area has been thoroughly cleaned and the floor is dry. Under Section 3.0, under “Decontamination of Minor Spills (less than 4 Litres)”, under “Clean-Up”, under bullet 6, revised sentences and created new sub-bullet 1. Under Section 3.0, under “Decontamination of Minor Spills (less than 4 Litres)”, under “Clean-Up”, under bullet</p>

		<p>8, revised sentence 1 and created new sentence 2. Under Section 3.0, under “Decontamination of Minor Spills (less than 4 Litres)”, under “Clean-Up”, added new bullet 9 and sub-bullets 1, 2, 3 and 4. Under Section 3.0, under “Decontamination of Minor Spills (less than 4 Litres)”, under “Clean-Up”, added new bullet 10 and sub-bullets 1, 2, 3, 4, 5 and 6. Under Section 3.0, under “Spill inside a Biological Safety Cabinet (BSC)”, under bullet 5, added quotations to “Biological Safety Cabinet”. Under Section 3.0, under “Spill inside a Biological Safety Cabinet (BSC)”, under bullet 7, changed “Oxivir®” to “Oxivir®/Accel® INTERVention”. Under Section 3.0, under “Spill inside a Biological Safety Cabinet (BSC)”, under bullet 9, changed “Oxivir®” to “Oxivir®/Accel® INTERVention”. Under Section 3.0, under “Spill inside a Biological Safety Cabinet (BSC)”, under bullet 11, changed “Oxivir®” to “Oxivir®/Accel® INTERVention”. Under Section 3.0, under “Spill inside a Biological Safety Cabinet (BSC)”, added a new bullet 13. Under Section 3.0, under “Spill Inside a Centrifuge”, under bullet 3, added quotations to “Centrifuge Safety”. Under Section 3.0, under “Spill Inside a Centrifuge”, under bullet 4, revised sentences 1 and 2. Under Section 3.0, under “Spill Inside a Centrifuge”, under bullet 7, changed “cleanup” to “clean-up” and changed “(e.g. forceps, dustpans, etc.)” to “(forceps, tweezers, tongs, dustpans, etc.)”. Under Section 3.0, under “Spill Inside a Centrifuge”, under bullet 10, changed “disinfectant (Oxivir®)” to “Oxivir®/Accel® INTERVention wipes”. Under Section 3.0, under “Spill Inside a Centrifuge”, under bullet 11, changed “Oxivir®” to “Oxivir®/Accel® INTERVention”. Under Section 3.0, under “Spill Inside a Centrifuge”, under bullet 12, changed “Oxivir®” to “Oxivir®/Accel® INTERVention”. Updated “SOP History” section.</p>