List the Hazards and risk controls as per risk assessment

<table>
<thead>
<tr>
<th>Associated risk assessment reference</th>
<th>Hazards</th>
<th>Risk controls</th>
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</table>
| S226, N422                           | 1. Burns  
2. Infection and skin exposure to waste  
3. Spills | 1. A secondary container, be familiar with SWP for biological spills  
2. Gloves, PPE if required;  
3. Protection gloves maybe required; be familiar with and follow the procedure correctly |

List resources required including personal protective clothing, chemicals and equipment needed

1. PPE
2. Double biological hazardous waste bags
3. Thick gloves

List step by step instructions or order for undertaking the task

1. Introduction: this SWP applies to
   1.1 Sterilisation of solid and liquid consumables such as tips, PBS etc,  
   1.2. Heat-based decontamination of solid waste materials such as disposable used plastic ware (flasks, plates, pipettes, tips, and tubes), used gloves, contaminated paper towel, etc. Other than residual liquids, this is NOT the decontamination route for liquid biological waste. All liquid biological waste should be emptied into a container for chemical decontamination using 1% bleach (unless specific decontaminates applied depending on the biosocial materials).

2. Training
   2.1. Users must be trained and competent in operations in order to be authorised to operate the faculty autoclave machines.  
   2.2. Training will be comprised of the following steps: submit a training request to pharmacy.labsupport@sydney.edu.au, review the operational procedure and successfully complete associated quiz (Appendix 1); complete a practical instruction on the use of the autoclave followed by regular evaluation of users by technical staff.  
   2.3. After successful completion of training, users will be qualified as authorised users to operate autoclave machines.

3. Booking
   3.1. Online booking is available using the link http://www.brownbearsw.com/cal/autoclavescalendar/  
   3.2. Password for booking is 12345.
3.3 Users are required to fill in the following information: Name, room/lab number, phone number, description of material being sterilized when they book the time.
3.4. A typical process run will take 90 minutes. Fluid cycles will require twice that.
3.5. The Autoclave will be available in the following times: 8:30 – 16:30, Monday to Friday.

4. Turning on/off the autoclaves

4.1. Procedure to turn on and off the Atherton cyber Autoclave in S226
• Turn on the power switch on the wall behind the autoclave.
• In the home screen, choose Special Purpose Cycles (Figure 1).
• Under special purpose cycles, choose WARM-UP CYCLE (Figure 2).
• Warm up takes around half hour.

Figure 1
Figure 2

• To turn off the autoclave, after unloading the material, leave the door open and switch off power on the wall switch.
• It is the last user’s responsibility to turn off the autoclave.

4.2. Procedure to turn on and off the Atherton Tangent Autoclave in N422
• Turn on the power switch on the wall behind the autoclave.
• In the home screen, choose Special
• Under special purpose family, choose WARM-UP CYCLE
• Warm up takes around half hour

Figure 1
Figure 2

• To turn off the autoclave, after unloading the material, leave the door open and switch off power on the wall switch.
• It is the last user’s responsibility to turn off the autoclave.

5. Material preparations & loading

5.1. Material preparations
• All materials for sterilisation must have autoclave tape placed on them; each item is to then be initialled by the user. Use a piece of autoclave tape to affix a chemical indicator strip on one item in each cycle.
• Schott bottles and glass containers should only be 2/3 filled and lids loosely fitted; empty bottles should contain ½ teaspoon of water to ensure complete sterilisation.
• Any waste materials for decontamination must be double bagged. All bags must be half full and contain no sharps.
• Do not overload the steriliser, limits of 2 bags of waste for decontamination in S226 autoclave machine and 3 bags for decontamination in N422 autoclave machine. 10L of glass containers per load is permitted.
• When materials are ready for sterilising they are to be placed onto the carriage of the loading trolley, open waste bags widely in order to make sure the steam could penetrate to the whole bag; half cup of water should be added into the bag.

5.2. S226 Unit Loading Procedure
• The trolley uses battery power to load and unload. The battery is located on a charging unit on the back wall on the right side of the autoclave. If not already attached, take the battery from the charger and connect it to the trolley.
• If the door is not already open, use the Touch screen to open the door, manoeuvre the carriage/loading trolley in line with the chamber opening and engage the trolley on the rails inside the autoclave.
• Press and hold the Green button on the left side of the trolley until the trolley stops.
• Once the carriage has been loaded into the autoclave chamber check that it is clear of the door and that no materials in the carriage are touching the sides of the chamber. This is especially important for plastic bags.
• Press and hold the Green button on the right side of the trolley to disengage the trolley.
• Place the trolley in its position next to the autoclave.

5.3. N422 Unit Loading Procedure
• If the door is not already open, use the Touch screen to open the door, manoeuvre the carriage/loading trolley in line with the chamber opening.
• Disengage the brake on the loading trolley securing the carriage and lock the brake onto the autoclave loading rails to prevent the trolley from moving. Push the carriage along the guide rails into the chamber until it stops.
• Once the carriage has been loaded into the autoclave chamber check that it is clear of the door and that no materials in the carriage are touching the sides of the chamber. This is especially important for plastic bags.
• Disengage the brake of the trolley from the loading rails and manoeuvre it away from the chamber opening.
• Place the trolley in its position next to the autoclave.

6 Sterilisation cycles

6.1. S226 Unit
• At the touch screen select which family of steriliser cycles you wish to run; from either the Favourites folder or General Purpose cycles folder.
• In the general purpose folder choose the cycle required; porous loads, hard goods, or fluids cycle.
• In the Favourites folder select one of the cycles appropriate for the material being sterilised.
• To select a particular cycle, just touch its icon then press the Start Cycle tab on the screen that appears. The door will close automatically and the cycle will start. Write your name in the Operator space on the printout.

6.2. N422 Unit
• At the touch screen select which family of steriliser cycles you wish to run from either the Favourites folder or General Purpose cycles folder.
• In the general purpose folder choose the cycle required; porous loads, hard goods, or fluids cycle.
• In the Favourites folder select one of the cycles appropriate for the material being sterilised.
• To select a particular cycle, just touch its icon. Confirm the cycle’s settings by touching the ‘tick’ icon. The door will close automatically and the cycle will start. Write your name in the Operator space on the printout.

NB: all the cycles are set up to meet the requirement for decontamination in accordance with AS/NZS 2243.3:2002
• The coldest part of the load must be exposed to a minimum temperature of 121°C (at 103 kPa) for at least 15 minutes, our cycle sets up for 50 minutes; or 134°C (at 203 kPa) for at least 4 minutes in accordance with AS/NZS 2243.3:2002 (p.57-59);
• Measures must be taken to ensure that loads that have been processed can be differentiated from loads that have not, autoclave tape in use is a good indicator;
• Chemical indicators are used for each load, which use a combination of moisture, heat and time to progressively change colour with the time exposed at the specified temperature
• The effectiveness of decontamination by autoclave is tested by chemical indicator at each cycle, and enzyme indicators are tested monthly, results are properly documented.
• NLRD/GMO waste is to be generated, transported and decontaminated separately from Exempt GMO and non-GMO work according to Office of the Gene Technology Regulator (OGTR) policy. Any heat-based treatment must be performed using a combination of temperature and time that has been validated as effective in rendering the GMOs non-viable.

6.3. Aborting a cycle

Note: Aborting a Fluid Cycle will take as long as the cycle itself. If you have accidentally run dry material using a Fluid cycle just let it run its course, which will be twice as long as a dry cycle.
• A selected steriliser cycle will be terminated if any of the following occurs:
  - A machine fault that makes it impossible to complete the cycle
  - A machine fault that makes it undesirable to continue the cycle
  - The operator decides to abort the cycle
• If a machine fault occurs please contact pharmacy.labsupport@sydney.edu.au for instructions.
• To terminate a cycle, simply touch the STOP icon at the cycle graph screen. An authorised user ID is required to abort a cycle.
• Depending on the cycle’s status, an emergency abort will be offered. Users must be cautious handling materials after an emergency abort as they may be dangerously hot.

7. Unloading

7.1. S226 Unit
• After a cycle has finished, check that Passed is printed at the top of the printout. If it says Fail, contact the person responsible for the autoclave maintenance – currently email pharmacy.whs@sydney.edu.au.
• Press Door Closed on the touch screen and the door will open.
• As the trolley is battery operated protective gloves are not necessary to remove the carriage. The carriage itself however will be hot as will the contents. Be careful not to touch the carriage. Gloves have been provided for removing the hot materials.
• Attach the trolley with battery. Press and hold the Red button and the carriage will slide onto the trolley. Keep holding the red button until the carriage stops.
• Press and hold the Green button on the right side of the trolley to disengage the trolley.
• Place the trolley in its position next to the autoclave.
• Check that the autoclave tape and chemical indicator have passed, indicating that the materials have been properly sterilized. If this is not the case contact the person responsible for the autoclave maintenance – currently email pharmacy.whs@sydney.edu.au.
• All materials that have been sterilised are to be removed from the autoclave room once they are safe to handle. Sterilised waste is to be transferred into the garbage bags supplied. These are to be sealed and disposed of:
  o General dry waste into the garbage skip located outside the McLeay Museum
  o Animal waste into the yellow bin outside the faculty Solvent Store
  o Human waste into the purple bin outside the faculty Solvent Store
• Write your name on the Unloaded By section of the printout. Remove the printout and write ‘Indicators Passed’ at the top. Place the printout into the nearby filing cabinet drawer.

7.2. N422 Unit
• After a cycle has finished press the Red Arrow on the touch screen and the door will open.
• As the trolley needs to be removed manually, heat protective gloves must be worn. Put on the cloth gloves supplied on the shelves near the autoclave.
• Care must be taken to avoid contact between bare skin and steriliser chamber, door, carriage, and load. At all times insulated gloves, safety glasses, and lab coats are to be worn when unloading sterilised goods.
• To remove the load, position the transfer trolley in front of the open door of the steriliser ensuring the rails of the trolley are in line with the carriage wheels and engage the lock. Roll the carriage onto the transfer trolley.
• Disengage the lock and roll the trolley with carriage to the space next to the autoclave.
• Check that the autoclave tape and chemical indicator have passed, indicating that the materials have been properly sterilized. If this is not the case contact the person responsible for the autoclave maintenance – currently email pharmacy.labsupport@sydney.edu.au.

• All materials that have been sterilised are to be removed from the autoclave room once they are safe to handle. Sterilised waste is to be transferred into the garbage bags supplied. These are to be sealed and disposed of:
  - General dry waste into the garbage skip located outside the McLeay Museum
  - Animal waste into the yellow bin outside the faculty Solvent Store
  - Human waste into the purple bin outside the faculty Solvent Store

• Write your name on the Unloaded By section of the printout. Remove the printout and write ‘Indicators Passed’ at the top. Place the printout on the nearby shelf.

• If you are finished, or wish to choose a different cycle, select the HOME icon which will return the user to the home screen.

• To repeat the same cycle, select the REPEAT icon after unloading and reloading the trolley.

8. Maintenance

• Report any faults to the person responsible for the autoclave maintenance – currently email pharmacy.labsupport@sydney.edu.au.

• Chemical indicator and auto-clave tap are used in each cycle to monitor the effectiveness of autoclaving.

• Enzyme indicator is used to test the effectiveness monthly.

• The annual calibrated and quarterly programmed maintenance are provided by Atherton, all the reports are documented properly.

List emergency shutdown procedures
1. Abort the cycle; 2. Turn off the machine; 3. Evacuate the room

List Emergency procedures for how to deal with fires, spills or exposure to hazardous substances

Fire: Cover the fire with a fire blanket if it can be fully contained underneath the blanket otherwise use a fire extinguisher (for trained users). Carbon dioxide or dry powder is suitable for flammable liquid spills. Be prepared for re-ignition: do not leave the scene unless fumes or smoke are hazardous. If evacuation is required, follow the emergency shutdown procedure as above.

Spill: see SWP for Biological Spills Clean up

Exposure: remove contaminated protective clothing and examine your clothes for contamination which may have soaked through. If day clothing is contaminated, remove, and wash skin under running water immediately for 15 minutes or until medical assistance arrives.

List Clean up and waste disposal requirements

Clean up: If waste bags leak or spill before being decontaminated, clean up the spill by following SWP for Biological Spills Clean up.

Disposal: Except animal or human tissues, once the solid waste has been autoclaved according to requirements, it may be placed into a general waste bag, and disposed of into the general waste stream.

List references used in the development of this SWP, e.g. codes of practice
1. University WHS website: sydney.edu.au/whs
2. AS/NZS 2243.1:2005-Safety in Laboratories: Planning and Operational Aspects
3. AS/NZS 2243.3:2010-Safety in Laboratories: Microbiological safety and containment
5. AS/NZS 2252.4:2010-Biological safety cabinets Classes I & II-Installation and Use
6. OGTR Guidelines for Certification of a Physical Containment Level 2 Laboratory (v.3.1)
7. OGTR guidelines for the Transport, Storage and Disposal of GMOs (v.1.1)
8. Risk assessment for biohazard spills
9. Risk assessment and SOP for Risk group 2 microorganisms and / or Animals + Animal Tissues and / or Humans/ human tissues
**List competency required – qualifications, certificates, licensing, training - e.g. course or instruction:**

The staff and students who have completed sufficient training, completed the quiz (Appendix 1) and can handle the clean-up procedure; obtain the authorization to operate autoclave machines.

**Staff approved to assess competence for this SWP**

Padmaja Dhanvate  
Sarah Cui
Appendix 1.
Quiz to complete for autoclave operation procedures

**Question 1:** What is the primary use of the Faculty of Pharmacy’s autoclave?

**Question 2:** What is required for the efficient sterilisation of materials?

**Question 3:** Outline the process for booking the autoclave.

**Question 4:** What needs to be included with materials loaded into the autoclave?

**Question 5:** How do you abort a cycle once it has started?

**Question 6:** List the Personal Protection Equipment that must be worn when unloading the autoclave.

**Question 7:** Explain what must be done if there is a fault during a sterilising cycle.

**Question 8:** a) For the unit in N422, What must be done before pushing the carriage off the loading trolley into the autoclave chamber?

b) For the unit in S226, describe how to load and unload the carriage into and out of the chamber.

**Question 9:** What is the maximum number of waste bags and glass containers that can be loaded into the autoclave?

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Date:  
Name:  
Supervisor  
Signature  

SWP Sign off sheet
In signing this section the assessor agrees that the following persons are competent in following this SWP.

<table>
<thead>
<tr>
<th>Name</th>
<th>Signature</th>
<th>Date Competent</th>
<th>Name Assessor/Authoriser</th>
<th>Assessor/Authoriser signature</th>
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</table>