

MICROBIOLOGY SAFETY GUIDELINES

Revised: September 2016





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EMERGENCY NUMBERS

USBD	021-808 2333
FIRE DEPARTMENT	021-808 8888
POLICE	021-809 5003
AMBULANCE	021-883 3444 10177 / 082911
FRIDGE	021-808 4666 021-808 2333 (after hours)
FACILITY MANAGEMENT	021-808 4666
STUDENT HEALTH	021-808 3496
TOXICOLOGY TYGERBERG	021-931 6129
MEDI-CLINIC	021-883 8571
STELLENBOSCH HOSPITAL	021-887 0310



UNIVERSITY POLICY ON OCCUPATIONAL HEALTH AND SAFETY

It is the aim of the university to protect staff, students and visitors, assets and resources as far as possible from physical risks, especially occupational health and safety risks. To achieve this, accepted risk management practices are followed to prevent loss and thereby minimize the costs.

The university is also bound to keep all legal and statutory laws as set out in the Occupational Health and Safety Act (Act 85 of 1993). The university thus demands that all staff and students accept their responsibilities as set out in this act.

The university expects that staff and students must fully accept the risk management policy and follow its directives. Staff members who have managerial or supervisory functions are considered co-responsible and liable in terms of article 8(2)(i) of the named act, to ensure that all necessary steps are taken so that physical risks, especially those concerning occupational health and safety, be identified and evaluated. These risks should further be handled and managed according to the stipulations of the laws and the university's standard operating work procedures.

Purpose driven risk management financing methods that result in cost effective insurance, and the provision of funds to include risk prevention remains a high priority at the university but is subject to practical and economic limitations.

The university is further bound to ensure that risk management practices, procedures and systems (other than the above prescriptions) are developed so that the policy on occupational health and safety is effectively maintained in the workplace.



DEPARTMENT OF MICROBIOLOGY POLICY DOCUMENT

It is the official policy of the Department of Microbiology to provide a safe and happy working environment for all its staff members and students. Furthermore the Department will strive to provide adequate facilities to enable all registered students to receive the best possible training. The Department will make these facilities available to post graduate students registered in other departments at the University of Stellenbosch during normal working hours only as long as it does not affect its own student's productivity. These students will be expected to adhere to all health and safety policies and procedures in place in the Department of Microbiology. All after hours work in the department may only be conducted with the consent of the study leader or laboratory manager.

The Amended Occupational Health and Safety Act (No 85 of 1993) of the Department of Labour states the following:

GENERAL DUTIES OF EMPLOYEES AT WORK

Every employee, including students, shall

- a) Take reasonable care for the health and safety of himself and other persons who may be affected by his acts or omissions;
- b) Cooperate with the employer or person nominated by the employer so that the duty or requirement stipulated by the employer is complied with;
- c) Carry out any lawful order given to him and obey the health and safety rules and procedures laid down by his employer in the interest of health and safety
- d) If any situation which is unsafe or unhealthy comes to his attention, as soon as practicable, report such situation to his employer or to the health and safety representative for his workplace or section thereof.



SAFETY RULES

1. Make sure you know how to evacuate the building in case of an emergency. Escape routes are illustrated on all the notice boards.
2. Obey the fire marshals and safety representatives.
3. Make sure you know where the safety equipment (fire alarm trigger, smother blanket, fire extinguisher, main gas tap, main electrical switch, first aid kit, emergency shower and eye-bath) in the laboratory is.
4. All chemicals should be considered dangerous. Make sure you read the Material Safety Data Sheet (MSDS) when working with a chemical for the first time. MSDS for all dangerous chemicals must be kept in the laboratory.
5. Report all incidents (spills, accidents, injuries, thefts) to the Health and Safety representative of the laboratory and Safety Officer (A311).
6. Chemical spill kits are available at the emergency shower.
7. Always wear a laboratory coat as well as other prescribed protective wear (gloves, goggles or face shield) when working in the laboratory.
8. You must wear shoes in the laboratory.
9. Do not eat, drink, store food or smoke in the laboratory.
10. Do not pipette by mouth.
11. Make sure you know and practice the correct waste removal procedures before discarding any waste.
12. Each person is responsible for keeping his bench space and work area neat and clean.
13. Switch off all electrical or gas equipment when not in use or when leaving the lab at the end of the day. Only authorized personnel can modify electrical equipment.
14. All after hours work must be done with the permission of the project supervisor. Unauthorized persons are not allowed in the laboratories.
15. Safety procedures are available on the Department's webpage (www.sun.ac.za/microbiology/safety).
16. Standard operating instructions for departmental equipment is listed on the web page (www.sun.ac.za/microbiology/facilities).



POSITIONS OF FIRE ALARMS IN MICROBIOLOGY

In Block A, the alarms are wall mounted in 6 different positions:

- Main westerly entrance behind red doors
- Same passage opposite kitchen A308
- Easterly end of same passage at emergency exit door
- In laboratory passage outside lab A358
- In laboratory passage outside centrifuge room A339
- In laboratory passage outside lab A315

In Block B, the alarm is mounted in the hallway next to the notice board outside lab B315 as well as on the wall next to the stairs outside lab B212.

FIRE TEAM

CHIEF FIRE MARSHAL

Trudy Jansen	trudy@sun.ac.za	5853	A310
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FIRE MARSHALS

Jane de Kock	jdk@sun.ac.za	5808	A311
Jenade Daniels	jenade@sun.ac.za	5886	B311
Marc Stuurman	marcs@sun.ac.za	5809	B310
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Kim Trollope	kim@sun.ac.za	5852	A322
Ricardo Smart	16147987@sun.ac.za	5807	A330
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Elanna Bester	elanna@sun.ac.za	5805	A346
Thando Ndlovu	18557570@sun.ac.za	5803	A358



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FIRST AID TEAM

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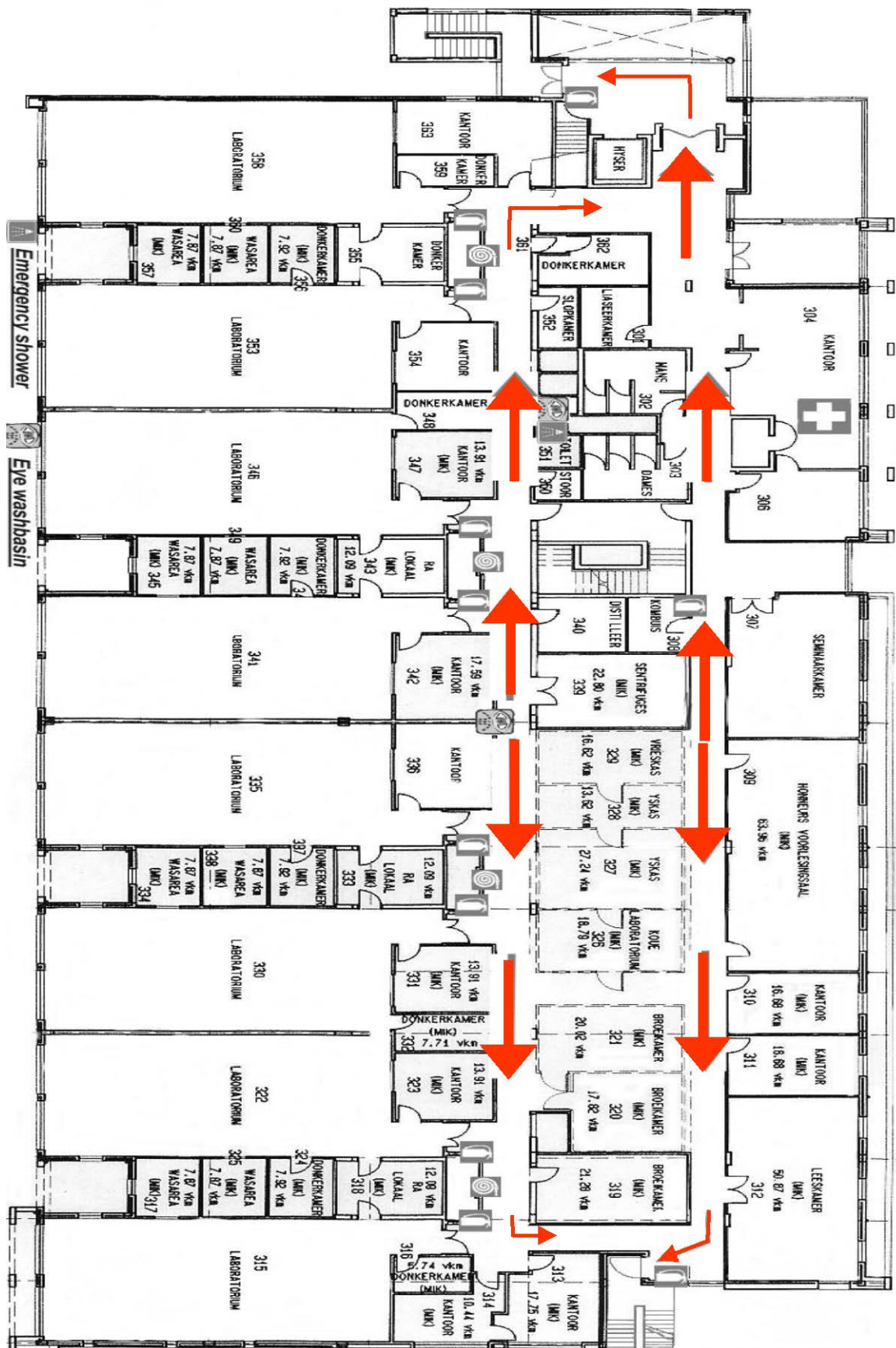


PROCEDURE IN CASE OF FIRE

1. Report any fire to the departmental fire and safety team immediately.
2. Follow instructions from Fire Marshalls and Safety Officers/Representatives in case of a fire.
3. Switch off electrical supply at main switch outside lab door.
4. Switch off gas supply at tap on southern wall.
5. Phone Facilities Management (4666) to switch off the air conditioning.
6. Phone Risk Management (2333) for help.
7. Use smother blanket in case of a small fire.
8. Use water on all paper or wood fires. Water hoses are only used for big fires.
9. Use CO₂ extinguishers on all other fires including electrical fires.
10. Use dry chemical powder cylinders if other methods do not succeed. Use dry chemical powder if a liquid is burning.
11. If the fire is out of control and a danger, do not attempt to put it out, evacuate the building immediately.
12. If the fire alarm rings after hours, contact USBD (2333) and evacuate the building immediately. Take the after hour log book with you if possible to the assembly point.
13. Place an “all clear” sign on the door as you leave to indicate that the room has been evacuated.
14. Do not use the lift during an evacuation.
15. Do not use the central stairwell as an emergency exit, unless both emergency exits are inaccessible.
16. Gather for a head count at the emergency gathering area which is on the grass outside the Engineering building.
17. Do not enter the building again until it has been declared safe to enter by the local Fire Department.



ESCAPE ROUTES J.C. SMUTS BLOCK A 3RD FLOOR





ESCAPE ROUTES J.C. SMUTS BLOCK B 3RD FLOOR





PROCEDURE IN CASE OF A BIOHAZARD SPILL

1. Biohazard spills outside a biological safety cabinet

- a) Hold your breath and inform everyone to leave the room immediately with you and close the door.
- b) Warn others to not enter the contaminated area.
- c) Notify your safety representative of the spill immediately.
- d) Remove contaminated garments and put them into an autoclavable bag. Place the bag containing contaminated clothing into the autoclave (room 321, Block B) for effective sterilisation.
- e) Thoroughly wash hands and face and any other exposed area of the body.
- f) Wait for 30 minutes to allow dissipation of aerosols created by the spill if the laboratory has a negative airflow otherwise begin cleanup immediately.
- g) Get a biohazard spill kit located at the emergency shower.
- h) Put on protective clothing including a mask and rubber gloves.
- i) Pour a decontaminant solution around the spill. Spill kit contains 10% bleach for blood and body fluids and 70% ethanol for microorganisms.
- j) Paper towels soaked in the correct decontaminant can also cover the spill.
- k) Leave for 20 minutes for adequate contact time.
- l) Transfer all contaminated cleaning material into a biohazard bag for removal.
- m) Autoclave all contaminated reusable material in autoclave bags (room 321, Block B).

2. Biohazard spills inside a biological safety cabinet

- a) Notify your safety representative and supervisor of the spill immediately.
- b) Prevent escape of contaminants from the cabinet by immediately initiating chemical decontamination.
- c) Obtain spill kit located at emergency shower.
- d) Put on rubber gloves and take care when picking up broken glass or other sharps by using tongs.
- e) Discard sharps into sealed sharps containers.
- f) Wipe walls and work surfaces with the appropriate decontaminant.



- g) Flood the top work surface tray with the decontaminant and leave for 30 minutes (be careful in safety cabinets as Jik corrodes stainless steel after 30 minutes exposure).
- h) Remove excess decontaminant from the surface by wiping with a sponge/paper towel.
- i) Collect all used sponges/paper towel and put into an autoclavable bag and autoclave in room 321, Block B.

3. Biohazard spills outside the laboratory (during transport)

If a biohazard agent is spilled during transport outside the laboratory initiate the clean-up immediately. Alert your safety officer of the spill. As it would already be too late to prevent aerosols, in this case it is better to place extra emphasis on prevention of spills during transport:

- a. Develop a procedure for the removal of bio hazardous materials for incubation, refrigeration, or for any other reason from the laboratory, and enforce adherence to it.
- b. Place all such materials in an unbreakable container that would prevent the escape of liquid or aerosol if it were dropped.
- c. Label the container with the biohazard symbol to ensure no mistake is made as to the contents.

PROCEDURE FOR CHEMICAL SPILLS

- 1. Notify your safety representative as well as all people in the laboratory of the chemical spill immediately.
- 2. Contain spill as best as possible using absorbent paper/s and or appropriate chemicals. If liquid has spilled from a container, return the container to the upright position to prevent further spread of the liquid.
- 3. Close all drains to prevent the spill from reaching the environment.
- 4. Switch off all electrical equipment in the vicinity of the spill.
- 5. Cordon off the area and control access of unnecessary persons.
- 6. Assist any person that has been exposed to chemical contamination.
- 7. First aid kit is available in the laboratory.



8. Spill kit is available at the Emergency shower.
9. Trained first aid workers are available in the department.
10. Technical staff will report spill to USBD (2333) if help is needed.
11. Clean up spill as follows
 - a) Put on all protective clothing, goggles and acid resistant gloves.
 - b) Cover all wet spills with vermiculate
 - c) Clean up dry spills using the scoop.
 - d) Try not to mix chemicals when scooping up.
 - e) Place all dry chemicals in a sturdy plastic bag, tie with bag ties, and label if contents are known and put into blue plastic drum with lid supplied by Enviroserv.
 - f) Pick up all broken glass using tongs and put it into the broken glass containers supplied in every lab. Take note of all information on the labels from broken containers, both safety information and toxicity.
 - g) Put used vermiculate into plastic bags in blue plastic drum.

TREATMENT OF CONTAMINATED PERSON

In the case of serious injuries

- a) The treatment of serious injuries takes precedence over any other consideration.
- b) Call USBD (2333) and request medical assistance.
- c) Inform medical assistance of the nature of the injury, the amount of material, the chemical and any other pertinent information.
- d) Direct someone to meet the emergency medical personnel.
- e) Ensure that the victim is comfortable and cannot be further contaminated by other chemicals.

In case of minor wounds not requiring hospitalisation

- a) Get trained first aid worker to treat the affected person immediately.
- b) Wash the contaminated wound with copious amounts of warm water.
- c) Clean the affected area with swabs.
- d) Encourage minor bleeding.
- e) In the case of contaminated facial wounds, ensure that contamination does not spread to the mouth, ears, eyes or nasal passages.



- f) After decontamination, apply first aid dressing.

If the skin has not been harmed

- a) It is very important that skin contamination be removed immediately. Early, effective removal of the contamination can help to reduce chemical exposure.
- b) During skin decontamination, it is important to proceed from mild treatments to harsher ones only if necessary. Abrasion or any other breaks of the skin must be avoided, as these will allow rapid penetration of the chemicals. Therefore, hard scrubbing is discouraged.
- c) Flush contaminated area with copious amounts of water.
- d) Exercise caution so as to not spread contamination to other areas of the body.
- e) Repeat wash/rinse procedure several times using a soft brush, if necessary.

Exposure to eyes, ears, nose or mouth

- a) Use eyewash station or shower to flush eyes, ears, and nose.
- b) Rinse mouth with water, but do not to swallow the water.

Exposure to hair

- a) Tilt head back so water doesn't run across face.
- b) Be sure to close eyes and mouth during decontamination.
- c) Wash gently with soap and warm water for 2-3 minutes in sink and rinse well.

Treatment of Clothing Contamination

- a) In the event that personal clothing or lab coat becomes contaminated it is important that it be removed quickly to reduce the person's exposure to the chemicals.
- b) All contaminated clothing must be sealed in plastic bags to be removed by Enviroserv.
- c) The emergency shower can be used for major chemical spills



CONTENTS OF CHEMICAL SPILL KIT

1. Drum with lid and side lever locking ring.
2. Spillow phenolic foam absorbent pack or loose PP absorbent. Can be used for all spills except nitric acid (HNO_3).
3. Protective clothing such as neoprene or latex gloves, chemical resistant goggles, acid resistant lab coat or plastic apron, face shield with ratchet headgear, latex shoe covers.
4. Two thick plastic bags (100 micron thick from Enviroserv) and two self-locking vinyl bag ties.
5. Scoop to pick up Spillow packs or loose PP absorbent.
6. Tongs.
7. Powdered zinc or iodine or sulphur for absorbing mercury spills.
8. Activated carbon or vermiculite for blanketing effect on both toxic and flammable spills-suppresses vapours and reduces risk of combustion and explosion.
9. Clean beach sand for acid spills.



FIRST AID FOR STUDENTS

IN CASE OF EMERGENCY: CALL THE LECTURER OR PERSON IN CHARGE

Chemical in eye

1. Keep eyelid open.
2. If the chemical was a base flush with 0.1% Acetic Acid.
3. If the chemical was an acid flush with 0.1% Sodium hydrogen carbonate (NaHCO_3).
4. Flush eye for ± 10 minutes with cold water.
5. Cover eye with sterile gauze
6. Take injured person to US doctor
7. If patient is unconscious patient, place patient in recovery position and monitor (if needed apply CPR)
8. Summon ambulance (10177)
9. Serious exposure: Flush with water under emergency shower for 20 minutes and treat for shock

Burns

Burn with concentrated acid (H_2SO_4 , HCl)

1. Remove contaminated clothes
2. Flush with cool running water for ± 20 minutes
3. Use a paste of (0.1% Sodium hydrogen carbonate (NaHCO_3)) and cover area
4. If patient is conscious take him/her to US doctor

Burn with concentrated base (40% NaOH)

1. Remove contaminated clothing
2. Flush with 1% Acetic Acid solution
3. Flush with cool running water for ± 20 minutes
4. Cover wound with damp sterile gauze
5. If patient is conscious take him/her to US doctor

Burn with heat

1. Flush with cool running water for ± 20 minutes
2. Cover wound with damp sterile gauze
3. If patient is conscious take him/her to US doctor



4. If patient is unconscious patient; place patient in recovery position and monitor (if needed apply CPR)
5. Summon ambulance (10177)
6. Serious exposure: Flush with water under emergency shower for 20 minutes and treat for shock

Bleeding wounds

A. Stop the bleeding

1. Apply pressure to wound with dressing or cloth
2. Cover wound with bandage or dressing

B. Serious bleeding

1. Apply direct pressure to wound
2. Try and lift the wound if above the heart level if there is no fracture
3. Lay patient down
4. Apply pressure dressing
5. If direct pressure or lifting does not stop the bleeding; apply pressure to the pressure point closest to the wound (in groin or in upper arm near armpit – see diagram below)
6. Treat patient for shock
7. Keep body temperature constant
8. If patient is unconscious; place patient in recovery position and monitor condition (apply CPR if necessary)
9. Summon ambulance (10177)

Report all incidents to the Safety officer of the department as soon as possible

CPR = Cardio pulmonary resuscitation

RECOVERY POSITION FOR UNCONSCIOUS PERSON (EDUMED, 2001)



1. Place one hand against head



2. Cross the other arm and leg across the body



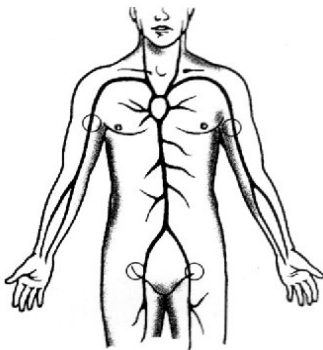

3. Carefully support the head while turning the person (place hand on cheek)



4. Turn the person by the hip and place the arm and knee at a 90° angle. Stabilize the head with the persons hand and arm and remove your hand.

RECOVERY POSITION FOR UNCONSCIOUS PERSON (EDUMED, 2001)



 <p>Drukpunte / Pressure point</p>	 <p>Drukpunt onderarm (EDUMED, 2001)</p>
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Shock with seriously injured person

1. Lay patient down on his back and lift his/her legs (if possible)
2. Stay with patient
3. Consult with US doctor or other medical help
4. Control bleeding and stabilize fractures if needed
5. Try and keep patient calm and still
6. Maintain body temperature
7. Check on patient every 5-10min
8. Do not give the patient anything to eat or drink or smoke until the cause of the shock has been determined and it might be necessary to take the patient to hospital
9. If patient is unconscious turn patient on his/her side and summon ambulance (10177)

Poisoning

1. Identify the poison
2. Phone Tygerberg Toxicology hospital (021-931 6129)
3. Summon Ambulance (10177)
4. Keep patient warm
5. Stay with patient



PROCEDURE IN CASE OF A BOMB SCARE

1. The person receiving the threat should remain calm and follow the instructions as stipulated in the guidelines from USBD.
2. A written procedure should be available in every laboratory and at reception.
3. When the call has been ended, the information must be reported to the safety representatives, Safety officer and Department Head immediately.
4. When a threat has been received the Safety team will decide if the building must be evacuated. If necessary, the evacuation will be triggered immediately and the Safety team will give instructions to staff and students.
5. The safety of staff and students is the primary concern of the US; if property can be protected without compromising safety the necessary steps should be taken. For example to lock cabinets and laboratories, switching of the power and closing the gas lines.
6. Threats should be regarded as real until proven otherwise.
7. The safety team will take the necessary action and report the threat to USBD and SAPD.
8. Be vigilant. Any strange package could be a possible bomb; report it immediately to your safety representative.



HAZARDOUS WASTE: CHEMICAL OR BIOLOGICAL WASTE PROCEDURE

The Property Services division of the University of Stellenbosch is responsible for the coordinating the pickup of surplus and waste chemical substances from generating departments. To assure compliance with regulations, safe handling, and efficiency of operations, they have established the following standards applicable to the collection, storing, labelling, and packaging of these substances by departments.

USBH Hazardous Waste Manual: <http://www.sun.ac.za/usbd/Wastemanguide.doc>

BASIC PROCEDURE

1. Waste may only be collected in Enviroserve or BBL original or other suitable primary containers.
2. Properly label containers as to the source lab, contents and hazards as prescribed by Enviroserve or BBL. They will not remove waste that is in unlabelled containers.
3. Properly store containers until disposal.
4. Autoclave genetically manipulated biological and pathogenic waste.
5. Before accumulation exceeds the available storage limits within the laboratory area, arrange for the transfer of the substances with your Departmental Waste Controller (A311) who shall coordinate the pickup with Property Services division.
6. The waste controller shall prepare individual containers and complete the Chemical/ Biological Waste Pickup Request Form.
7. This request form is then sent to Property Services for attention of Ms. Meg Pittaway (meg2@sun.ac.za) who shall arrange with Enviroserve or BBL for the removal of these substances.
- 8. Chemical waste pickup in the department takes place every last Friday of the month.**
- 9. Biological waste pickup is scheduled for every Tuesday.**



HAZARDOUS WASTE STORE AREAS

Chemical and biological waste	B118
Radioactive waste	B116
Municipal waste and broken glass	B115

PERSONS RESPONSIBLE FOR HAZARDOUS WASTE IN DEPARTMENT

NAME	WASTE	STORE	TEL	EMAIL
Kerneels Botha / (Biochemistry)	Municipal waste	B115	5811	kerneels@sun.ac.za
Anne Louw (Biochemistry)	Radio-active waste	B116	5873	al@sun.ac.za
Reggie Brandt (Biochemistry)	Chemical waste	B118	5881	rbrandt@sun.ac.za
Marc Stuurman (Microbiology)	Biological waste	B118	5809	marcs@sun.ac.za

PROCEDURES TO FOLLOW WHEN WORKING ALONE AFTER HOURS

1. All after hours work must be done with the permission of the project supervisor. Unauthorized persons are not allowed in the laboratories.
2. In case of any emergency call USBD (2333).
3. General laboratory rules apply at all times.
4. Students that work after hours and need to leave the building alone but feel unsafe should contact USBD and ask for an escort to accompany them to their cars in the parking areas. They are to remain in the foyer of the building until a USBD patrol man arrives to accompany them.
5. If students feel unsafe when arriving at the building after hours, they should likewise stop at USBD and pick up an escort to accompany them into the building.



6. If a fire breaks out in your laboratory while you are alone, follow the procedures listed on the back of the door. Only attempt to fight the fire if you feel confident to do so. Call USBD for help or set off the fire alarm at the break glass units situated around the department.
7. If fire alarm rings while alone in the laboratory after hours:
 - a. Call USBD and notify them. Ask them to identify the zone.
 - b. Leave the Department and go to the foyer of the building. Remember to take your cell-phone and student card with you.
 - c. Check the alarm panel in the foyer as to the location of the fire using the zone given as a tool.
 - d. Call USBD with the location of the fire
 - e. Wait in the foyer until USBD arrive if you feel unsafe to leave the building.
8. Switch off all electrical/gas equipment when not in use or when leaving the lab at the end of the day. Switch off all lights and lock all laboratories when you leave

HAZARDOUS SIGNS



Corrosive



Toxic to environment



Eye wash basin



Toxic



Biohazardous



Flammable



Explosive



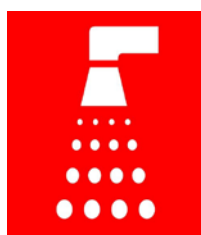
Electrical Current



Irritant



Emergency exit



Emergency shower



Fire extinguisher