THE UNIVERSITY OF ADELAIDE AUSTRALIA

SAFE OPERATING PROCEDURE:

X-RAY DEVELOPERS/PROCESSORS

LOCATION DETAILS		
School/Branch: School of Molecular & Biomedical Science		
SAFE OPERATING PROCEDURE DETAILS		
Date Prepared: **16/02/2007**	Date Reviewed: **03/11/2010**	Version: 2
PREPARED BY: Name, position, & Signature (insert names of supervisor, HSO, subject matter expert)		
Tony Richardson – Infrastructure Manager Kate Millan – Health & Safety Officer		Signature:
RISK ASSESSMENT		
See risk assessment dated: **17/02/2010**		Risk Rating: **Medium**

RISKS IDENTIFIED

- Fixer & developer concentrates
- Fixer & Developer at working stregth (chronic exposure)
- Splashing with with developer and/or fixer when the machine is opened to clear jams
- Ionising Radiationfrom from Autoradiographs
- Moving Heavy Containers (Waste 20 Kg)
- Working in the dark or low light conditions (safe lights)

SAFETY PRECAUTIONS

The following control measures MUST be adhered to:

- Correct PPE for diluting fixer and developer concentrates and clearing jams
- Exposure to working strength developer and fixer must be less than 2hours/day and 5 hours/week
- Autoradiographs must be wrapped to prevent direct contact
- Correct lifting techniques
- Observe dark and low light safety procedures

PERSONAL PROTECTIVE EQUIPMENT REQUIRED

The following PPE must be worn at all times:

- Lab coat, gloves and eye protection

SAFE OPERATING PROCEDURE

SOP X-Ray Film Processors

- Competence **must be demonstrated**, to a School accredited instructor, and recorded in the Schools training records before you can operate this machine alone.
- X-Ray processors automate the developing, fixing, washing and drying of film. The School has two: one in room 524 in the MSS building and one in room 2.29a in the MLS building.
- Note: This is a heavily used piece of equipment! Please ensure all work that can be completed in the lab is done there.

Problems/Hazards

1. Developer and Fixer: developer Agfa G153 and Fixer G354 are acute hazards as concentrate and at working concentration chronic exposure is a hazard (see: Chemwatch).
2. Radiation: some photographs, to be processed, are auto-radiographs.
3. Jamming: For various reasons the film will jam inside the machine and it must be opened to free the film, the operator may be exposed to the risk of splashing from the solutions. The design of the material means that the

inside must be contaminated by the solutions and they may be touched.
4. Waste overflow: as the developer fixer and water are used they run to waste containers, if not changed these may overflow.
5. Operating in the dark or under "safe lights".
6. Heavy waste containers.

USING THE X-RAY FILM DEVELOPER/PROCESSOR

Preparing Solutions: If a tank is empty or near empty you must replenish it, never start the machine unless the tanks are 10% full.

Developer

- Remove the developer replenishment container from the processor
- Rinse clean
- Add 1.25 litres of RO water to the tank
- Pour in the bottle of Part A concentrate and mix. (Skin contact or ingestion must be avoided, wear gloves, eye protection and gown)
- Pour in the bottle of part B concentrate and mix. (Skin contact or ingestion must be avoided, wear gloves, eye protection and gown)
- Replace the replenishment container on the machine.

Fixer

- Remove the fixer replenishment container from the processor
- Rinse clean
- Add 2.0 litres of RO water to the tank
- Pour in the bottle of concentrate and mix. (Skin contact or ingestion must be avoided, wear gloves, eye protection and gown)
- Replace the replenishment container on the machine.

Water

- Replenish with RO water.

Drier Heat Setting: This is set by the School workshop technician; no other person will adjust this.

Radiation Work: Any material containing radionuclides must be wrapped to prevent any cross contamination.

Before Running

1. Turn on the "Room in Use" light.
2. Check that the Waste containers are no more than two thirds full. If they are this level or higher replace them with an empty tank. Any spill from a waste tank must be reported to the Safety Co-ordinator as a safety incident. NOTE: A full container weighs 20 - 25 Kg care must be taken, in removing it, enlist assistance if you need it.
3. Report full tanks to Chris Cursaro immediately.
4. To change a tank: Remove waste tube (hang it over the orange tray to catch drips), cap the tank (use the cap from the empty container), lift (carefully) and place under the sink area, put the empty tank into the orange bund tray and place the waste tube into it.
5. Check that the replenishment tanks are full; the machine must never be switched on if any replenishment container is empty.
6. Check that the processor covers are closed. (the machine will not work if they are not)
7. Fill out the log book (note if you have made up developer or fixer)
8. Switch on at the power point. The internal heater will take 7 mins to heat the machine to operating temperature. The machine will automatically turn off after 30 mins.

Running

1. If the machine has not been used for 5 days press the "additional replenishment" button.
2. Check that the feed table and exit tray are clean.
3. Film size: The processor is easily jammed by short films. No film should be less that 130 mm on its longest

axis and it must fed into the machine with the long axis in the direction of flow.

4. Push a film into the feed slot until the LED light, on the additional replenishment button, shows a red light.
5. When the light goes out the next film can be fed in.
6. When film processing is completed clean the feed table and exit tray any other place that has been contaminated by chemicals.
7. Turn off the "room in use" light.
8. Clearing Jams
9. Some exposure to the chemicals can be expected when the processor is opened. The hazard level of the liquids is low; PPE: gown, eye protection must be used when the processor is opened any splashes onto skin should be well washed off.

Maintenance

- The interior of the machines are cleaned annually by the supplier's technicians.

ADMINISTRATION

Note: This Safe Operating Procedure must be reviewed :
a) after any accident, incident or near miss;
b) if equipment, substances or processes change;
c) every 5 years