

## SAFE OPERATING PROCEDURE

### LOCATION DETAILS

School/Branch: Medical Sciences, Pharmacology

### SAFE OPERATING PROCEDURE DETAILS

Task/activity (including specify particular equipment, substance)  
Mettler AE163 Balance

Date prepared:  
21/8/2008

**PREPARED BY** Name, Position and Signature (insert names of the supervisor, HSR, HSO and operator involved)

Name Gordon A. Crabb

Position Lab Manager, HSO

Signature



### RISK ASSESSMENT

Has a risk assessment been completed and have all other environmental considerations been made?

Yes ☒ No ☐

See Risk Assessment dated:  
1/7/2008

Risk Rating:

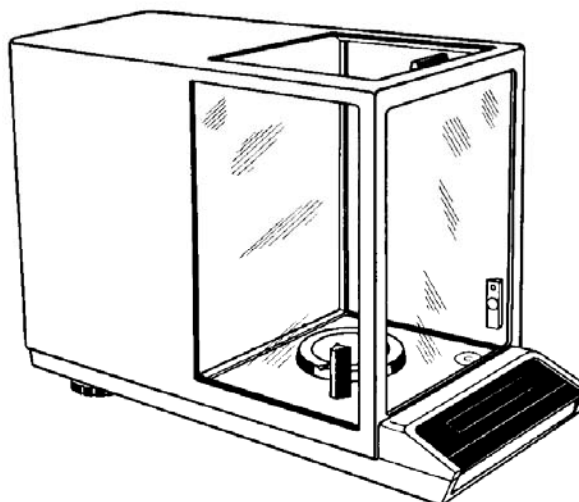
- ☒ Low  
☐ Medium  
☐ High  
☐ Very High

### SAFE OPERATING PROCEDURE DETAILS

Procedure (Include control measures listed in risk assessment within the procedure):

#### SOP for Calibration and Use of the Mettler AE163 Analytical Balance

### AE163



## 1.0 SCOPE AND APPLICATION

Although this SOP covers the operation and calibration check of the Mettler AE163 electronic analytical balance used for sample and standard weighing, similar procedures can be applied to other balances.

## 2.0 SUMMARY OF METHOD

A variety of types of electronic balances are used to determine the weight of samples and reagents. Each balance functions differently. Therefore, before using any balance familiarise yourself with the proper use of each balance as described in Section 5.0.

## 3.0 INTERFERENCES

Air drafts, spilled substances, vibrations, and temperature fluctuations should be eliminated prior to any weighing requiring precision greater than 0.1 g. Static electricity can be reduced using an anti-static brush.

## 4.0 APPARATUS AND MATERIALS

- 4.1 Weighing boats or appropriate container
- 4.2 Class 2 weights
- 4.3 Electronic balances, Mettler AE163
- 4.4 Gloves & safety glasses (face mask recommended for hazardous material)

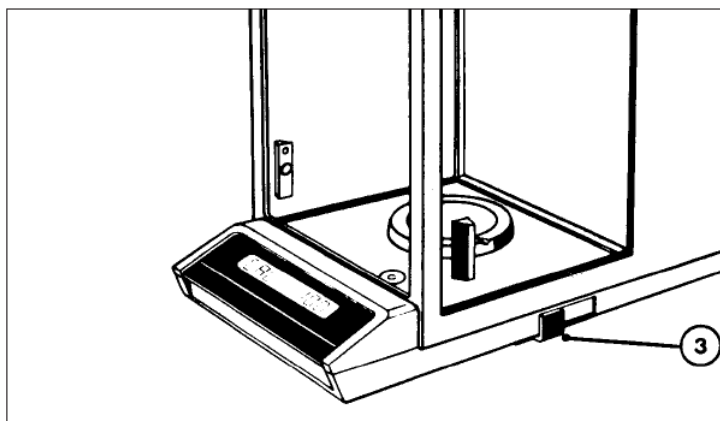
## 5.0 USE OF BALANCES

- 5.1 Choose a balance appropriate for the range of the object to be weighed and the precision of a particular analysis.
- 5.2 Prior to use, the balance should be checked for spilled substances and to ensure that the balance is level, on a stable surface, and free from drafts or air currents. Spilled solids should be brushed away.
- 5.3 The pan of balance should be checked to ensure that it is properly seated on the pan mechanism.
- 5.4 Turn on the balance. If an error message is received in lieu of the tare value, notify your supervisor immediately.
- 5.5 Press the tare button and wait until a stable zero point reading is obtained. Re-press the tare button if necessary.
- 5.6 Select the range by pressing the control bar until the balance displays rn9 (rng = range)
- 5.7 Releasing and then briefly pressing the control bar again, allows you to switch between the 30 g range and the 160 g weighing range.
- 5.8 When the desired weighing range has been selected, wait: Display "- - -", then 0.0000 . The balance is now in the weighing mode.
- 5.9 Place the object to be weighed on the pan, in the centre area.
  - 5.9.1 allow the reading to stabilise and record the weight.
  - 5.9.2 if a container or weighing paper is to be used, press the tare button and wait until a stable zero point reading is obtained. Add the substance to be weighed, allow the reading to stabilize, and record the weight.
- 5.10 Allow samples/containers to reach room temperature before weighing. Hot samples will generate an upward convection of warm air that will cause an inaccurate reading.
- 5.11 Samples that are extremely hygroscopic or lose water rapidly must be weighed in a closed container.
- 5.12 Volatile liquids must be weighed in a closed container or with a trapping solvent.
- 5.13 "Lumps" are often caused by moisture or electrostatic charge and may not constitute a representative sample.
- 5.14 When weighing a sample or reagent, discard excess material that has been removed from the original container. Do not return material to its original container.
- 5.15 Do not use regular paper for weighing. Use weighing boats or tare an appropriate container.
- 5.16 Do not weigh containers containing a magnetic stir bar. The magnetic field generated

- may cause unpredictable effects on the electronic balance.
- 5.17 Fingerprints may cause an inaccurate value. Make sure hands are clean and dry and do not contribute to the weighing.
  - 5.18 Be sure to use a clean and dry spatula or other transfer device to avoid contamination of the article to be weighed.
  - 5.19 A brush designed for the purpose can be used to eliminate electrostatic charge on the balance pan. Do not weigh objects that can carry an electrostatic charge, such as some plastics. Charged materials can result in unpredictable balance behaviour and weighing.
  - 5.20 Turn off balance. Wash & replace spatula in the rack. Clean up any rubbish or spillages near or on balance, close balance doors

### 6.0 SELF CALIBRATION

- 6.1 The calibration weight is placed in position by means of the calibration lever (3).



- 6.2 As soon as "CAL 100" appears (the 100 blinks), slowly move the calibration lever towards the rear all the way to the stop.
- 6.3 First, "CAL - - - -" appears, then "100.0000". When the display "CAL 0" appears (0 blinks), move lever back to original position.
- 6.4 Wait: display "- - - -" followed by "0.0000" appears.
- 6.5 The balance is now calibrated in both weighing ranges.

Note: This Safe Operating Procedure must be reviewed :

- a) after any accident, incident or near miss;
- b) when training new staff;
- c) if adopted by new work group;
- d) if equipment, substances or processes change; or
- e) within 5 years of date of issue.