

KCMC Biotechnology Laboratory

STANDARD OPERATING PROCEDURE

Effective Date
19 July 2006

SOP-Number
EQP.002-03

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Date
16 November 2006

Title: **TEMPERATURE MONITORING**

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Approvals/Date:

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This SOP has been read and understood by:

Name	Date
Signatures on original copy filed in office.	
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Annual Review	
By	Date

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Document History:

Version Number	Reason for Changes	Date
EQP.002-02	Change in refrigerator temperature range from 2-10 to 2-8° C and RT range from 22-28 ° C to 18-25 ° C.	30 Oct 2006
EQP.002-03	Add Liquid nitrogen freezer	01 Apr 2007

Copies distributed to:

Name	Date

Title: TEMPERATURE MONITORING

PURPOSE

To assure proper conditions for storage of reagents, samples, and performing temperature sensitive tests through daily temperature monitoring.

SCOPE

Temperatures in temperature sensitive equipment as well as room temperature are checked daily and documented. This SOP applies to all Biotechnology Laboratory personnel monitoring/recording temperatures.

SAFETY PRECAUTIONS

Thermometers should be treated as contaminated. Adhere to standard precautions and use appropriate personal protective equipment to protect against exposure to infectious agents/bloodborne pathogens. Consult Standard Operating Procedure SAF.002 Biohazard Safety for more information.

EQUIPMENT MONITORED

- Freezers (-80° C, -20° C)
- Liquid Nitrogen Freezer
- Incubators
- Refrigerators
- Water Baths (in use)
- Heat Blocks
- Refrigerated Centrifuges
- Room Temperature

THERMOMETERS

A calibrated thermometer i.e. one that has been verified using National Institute of Science and Technology (NIST) Certified Thermometer that bears a unique identification number are placed in all temperature sensitive equipment and in rooms where temperature sensitive testing is performed. Refer to SOP EQP.001 Thermometer Calibration.

FREQUENCY OF TEMPERATURE RECORDING

Twice per day; in the morning prior to commencing work and late afternoon prior to departing work area.

QC TEMPERATURE RECORD FORMS (TEMP RECORD 1 – JAN to JUN, TEMP RECORD 2- JUL to DEC)

The following information is included on forms:

- Equipment Name/Manufacturer (Mfgr)
- Equipment Location
- Model
- Serial number
- Acceptable temperature range
- Year

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Actual Temperature reading

Technician initials

RECORDING TEMPERATURES

1. Enter temperature in the box corresponding to the date.
2. Enter technician initials next to the temperature record.
3. Compare temperature with acceptable range. If not within the range, complete QC DEVIATION FORM.
4. Initiate appropriate corrective action and document on above form.
5. Submit for supervisor review.

ACCEPTABLE RESULTS

EQUIPMENT	ACCEPTABLE RANGE
Freezer Liquid Nitrogen	-150 to - 190 ° C
Freezer (-80 ° C)	-80 to - 90 ° C
Freezer (-20 ° C	-15 to - 25 ° C
Incubators	34 – 36° C
Refrigerators	2-8 ° C*
Water Baths 36°	34 – 36° C
Water Baths 56°	55 – 57° C
Heat Blocks	+/- 1° C from setting
Refrigerated centrifuge	+/- 2° C from setting
Room Temperature	18-25 ° C*

*** Suggested range: Consult acceptable temperature range for all reagents, etc. stored and adjust range accordingly. Range should be appropriate for all reagents stored at that temperature.**

CORRECTIVE ACTIONS

EQUIPMENT	STEP 1	STEP 2	Step 3 (if necessary)
Liquid Nitrogen	If temperature is above -150° C but below -80° C . Examine power supply and LN levels, LN tank and connections.	If temperature is above -80° C remove contents to a -80 freezer. Examine LN levels and power supply. Prepare to move contents to LN dewars	Contact technical service
Freezers (-80° C)	If temperature is above -60° C remove contents to another freezer. Examine interior to assess need for defrosting.	Defrost freezer if necessary. Adjust temperature control and monitor every hour until within range. Record these temperatures on the QC deviation form.	Contact technical service.
Freezers (-20° C)	If temperature goes above -15° C move contents to another freezer.	Manually adjust temperature control and monitor temperature every hour until within range.	Contact KCMC engineering department for service.

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Incubators	If temperature exceeds the highest acceptable temperature, move contents to another incubator or place at room temperature while making adjustments. If temperature is below acceptable range, move contents to another incubator if possible; if not they may remain for a few hours until acceptable temperature is attained.	Manually adjust temperature control and monitor temperature every hour until within range. Record these temperatures on QC Deviation Form	Move contents to another incubator and contact technical service for repair.
Refrigerators	Move contents to another refrigerator.	Manually adjust temperature control and monitor temperature every hour until within range.	Contact KCMC service.
Water Baths	Do not use water bath. Adjust temperature control. Allow several hours to equilibrate.	Remove water, clean, refill and adjust temperature control.	Remove from use. Contact technical service.
Heat Blocks	Do not use heat block. Adjust temperature control (if applicable) and retest at 3 different commonly used temperatures.	Remove from use and arrange service. Alternatively: Affix a conversion factor to the heat block so that correct temperature can be achieved (e.g. Set temperature 2° higher than desired temperature.) Consult supervisor.	Replace heat block if repair unsuccessful.
Refrigerated centrifuges	Do not use centrifuge for temperature sensitive items. Adjust temperature control and retest.	Contact technical service.	
Room Temperature	Adjust AC, open lab doors to circulate air.	Contact KCMC for service to air conditioner.	

REFERENCES - NA

APPENDIX A – Temperature Record Forms

APPENDIX B - QC Deviation Form