Technical Procedure for the pH Meter

- **1.0 Purpose** This procedure specifies the required elements for the calibration and use of the pH meter.
- **2.0** Scope This procedure applies to the pH meter used in the Drug Chemistry Section Toxicology Unit of the State Crime Laboratory.

3.0 Definitions

- **Performance verification** The initial confirmation of the reliability of a previously or externally validated method or instrument.
- **Quality control (QC) check** Periodic confirmation of the reliability of equipment, instrumentation, and/or reagents.

4.0 Equipment, Materials and Reagents

4.1 Equipment

• pH Meter with Electrode - pH combination, double junction, Ag/AgCl reference and thermometer

4.2 Materials

- Eye protection
- Beakers
- Wash bottle

4.3 Commercial Reagents

- Buffer solutions, pH 4.00 and pH 7.00, and other buffer solution strengths as needed
- 4 M Potassium Chloride saturated solution

5.0 Procedure

5.1 Standards and Controls – N/A

5.2 Calibrations

- **5.2.1** Perform daily when in use.
- **5.2.2** Set the function selector to the pH position.
- **5.2.3** Obtain two buffer solutions with values that bracket the desired measuring range (i.e., pH 4.00 and pH 7.00 for samples that fall between pH 4 and 7).
- **5.2.4** Open the fill hole on the electrode.
- **5.2.5** Place a beaker containing the buffer nearest in value to pH 7 in position and immerse the electrode and thermometer into the solution.
- **5.2.6** Standardize the pH meter to the buffer.

5.2.7	Remove the electrode and thermometer from the buffer solution.

- **5.2.8** Rinse the electrode and thermometer with deionized water.
- **5.2.9** Place a beaker containing the second buffer in position, and immerse the electrode and thermometer into the solution.
- **5.2.10** Standardize the pH meter to the buffer.
- **5.2.11** Remove the electrode and thermometer from the buffer and rinse with distilled water.
- **5.2.12** Close the fill hole on the electrode.
- **5.2.13** The slope (electrode efficiency) must be greater than 95 %. The calibration may be repeated if necessary to meet the requirement.
- **5.2.14** Notify the Key Operator or designee if a slope greater than 95 % cannot be obtained.
- **5.2.15** The Key Operator or designee shall evaluate the instrument and replace the electrode if necessary.
- **5.2.16** If the problem cannot be corrected by replacing the electrode, the Key Operator or designee shall obtain service or replacement. The instrument shall be placed out of service until a slope greater than 95 % is obtained.
- **5.2.17** Record all calibrations in the instrument logbook.
 - **5.2.17.1** Record the date, operator initials, lot number, expiration date and pH of buffers used and the slope obtained.

5.3 Maintenance

- **5.3.1** Fill the electrode with 4 M potassium chloride saturated solution as needed.
- **5.3.2** Record all maintenance in the instrument logbook.
 - **5.3.2.1** Record the date, initials and description of maintenance performed.

5.4 Sampling

5.4.1 Ensure that the liquid to be measured is well mixed using shaking and/or vortexing prior to measuring.

5.5 Application of Procedure on Evidence

- **5.5.1** Set the function selector to pH and open the fill hole on the electrode.
- **5.5.2** Immerse the electrode and thermometer into the sample solution.
- **5.5.3** Read the pH of the sample from the display and record value.
- **5.5.4** Remove the electrode and thermometer from the solution.

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		5.5.5	Rinse the electrode and thermometer with deionized water before proceeding with t next measurement.	he		
		5.5.6	Close the fill hole on the electrode.			
		5.5.7	Record the date, initials and liquid measured in the logbook.			
	5.6	Calcul	lations – N/A			
	5.7	Uncert	tainty of Measurement – N/A			
6.0	Limitations					
	6.1	Do not	t touch or move the electrode during measurement.			
7.0	.0 Safety					
	7.1	Refer to	to the Laboratory Safety Manual.			
8.0	References					
	pH Meter Operating Instructions. Fisher Scientific.					
	Comba Nover	<i>ination pl</i> nber, 199	oH Electrodes with Silver/Silver Chloride Reference. Part No. 69486/Accumet, published 93.			
9.0	Recor					
	Instrument logbook					
10.0	Attachments – N/A					
Revisi	on Histo	ory				

Revision History						
Effective Date	Version Number	Reason				
09/17/2012	1	J-09 Conversion to ISO format				