

# CKDu Information and Research Centre

## Standard Operation Procedure

### pH Measurements

#### 1. Introduction

##### 1.1. Purpose

The purpose of this standard operating procedure (SOP) is to establish all the necessary steps to use, store, and care for a pH electrode. Specific attention is given to address the differences in measuring solid and liquid samples.

##### 1.2. Scope

Applicable to digital pH meters located in CKDu Centre.

#### 2. Materials

- pH meter with electrode
- Pure water (e.g., deionized (DI))
- pH calibration buffers (e.g., pH 4.01, 7.01, 10.01)
- pH electrode cleaning solution
- pH electrode storage solution
- Beakers

#### 3. Procedures

##### 3.1. Electrode Preparation

- Remove protective cap/storage bottle from the electrode.
- Inspect the electrode for any scratches or cracks. If present, replace the electrode.
- Shake the electrode down to remove any air bubbles inside the glass bulb.
- Ensure that the electrode was cleaned and stored properly.
- Rinse electrode with pure water to remove any salt deposits.

##### 3.2. Calibration

- Fill a beaker with enough pH calibration buffer to cover the electrode junction (about 75 mL in a 100 mL beaker).
- Place the electrode in the beaker containing pH calibration buffer and gently stir.
- Confirm the calibration point when the reading is stable, or when the digits do not change for at least 5 seconds.
- Repeat for additional calibration points. Be sure to rinse with pure water between calibration points. At least two calibration points are recommended.

##### 3.3. Measurement

- Rinse the electrode with pure water.
- Immerse the tip in the sample and stir gently or use a magnetic stirrer.
- Wait until the reading is stable, or when the digits do not change for at least 5 seconds before recording the measurement.
- Rinse the electrode with pure water until all residues are removed.
- Repeat this procedure for additional samples.

##### 3.4. Electrode Cleaning

- Fill a 100 mL beaker with approximately 75 mL cleaning solution.
- Place the pH electrode into the cleaning solution for at least 15 minutes, making sure the junction is covered.
- If a refillable electrode is visibly contaminated, drain the reference electrolyte chamber with a syringe or capillary pipette and refill with fresh electrolyte. Allow the electrode to stand upright for one hour.
- Place in storage solution for at least 1 hour and re-calibrate before next use.

##### 3.5. Electrode Storage

- Replace the storage solution in the protective cap or bottle.
- Submerge the glass bulb and junction in protective cap or bottle with solution.

