

## pH Meter Procedures

1. Sign out sheet.
2. Remove electrode and rinse with distilled water (Avoid rubbing or wiping electrode bulb, to reduce chance of error due to polarization).
3. Open fill hole on electrode by sliding down rubber cover.
4. Put electrode in calibration buffer 1 (pH 4 or 7).
5. Do a two-point calibration according to manufacturer instructions (located beside pH meter).
6. Buffer solution(s). If buffering multiple solutions rinse electrode with de-ionized water between solutions. DO NOT use tap water and DO NOT let stir bar come in contact with electrode.
7. Remove and rinse electrode with de-ionized water. Do NOT use tap water.
8. Replace rubber cover over fill hole and put electrode into KCl to soak.
9. Turn pH meter off and stirrer/hot plate.
10. Clean up area thoroughly.
  - place acids/bases in plastic trays
  - wipe down bench top
  - empty waste beakers and put in tray by sink to be washed
11. Report any acids/bases spills, damage to electrode or malfunctioning to Jhony or Melanie.

### Measuring Hints

- Always used fresh buffers for calibration. Choose buffers that are no more than 3 pH units apart.
- Check electrode slope daily by performing a two-buffer calibration. Slope should be 92 to 102%.

- Place a piece of insulation material (e.g., Styrofoam or cardboard) between magnetic stirrer and beaker to prevent error from transfer of heat to sample.
- After use in especially dirty or viscous samples or when electrode response becomes sluggish, empty the electrode completely and hold the junction open under running water. Empty any water from the electrode and refill with fresh internal filling solution. Briefly flush the junction to ensure that the junction contains fresh filling solution. Maintain a proper level of filling solution.

## **Electrode Maintenance (done by Miller Lab)**

### **Weekly**

1. Inspect the electrode for scratches, cracks, salt crystal built-up, or membrane/junction deposits.
2. Rinse off any salt built-up with distilled water, and remove any membrane/junction deposits as directed in cleaning procedures below.
3. Drain the reference chamber, flush it with fresh filling solution and refill the chamber.

### **Cleaning Electrode**

Open junction by depressing cap and holding. Place opened junction under warm, running tap water for 15 seconds.

General-Soak in 0.1 M HCl or 0.1 M HNO<sub>3</sub> for half an hour.

A second general cleaning procedure involves soaking the electrode in a 1:10 dilution of household laundry bleach in a 0.1-0.5% liquid detergent solution in hot water with vigorous stirring for 15 minutes.

Removal of membrane/Junction deposits

Protein-Soak in 1% pepsin in 0.1 M HCl, for 15 minutes.

Inorganic- Soak in 0.1 M tetrasodium EDTA solution for 15 minutes.

Grease and Oil- Rinse with mild detergent or methanol solution.

After any of these cleaning procedures, drain and refill the reference chamber and soak the electrode in storage solution for at least one hour.

