Determination of Nitrate Levels in Water using an Ion Selective Electrode

The contamination of drinking water by nitrate is a current problem in many areas. Runoff from farmland is the most common source of the nitrate. Excessive nitrate is a concern for long-term health effects in adults and because if can cause "blue baby" syndrome in infants.

Determine the nitrate concentration in water from several sources. The sources can include ponds, streams, tap-water, bottled water or any other water you wish. Test at least four different sources. Use the nitrate selective electrode and the method of standard additions to determine the levels. When using the method of standard additions, you will have to keep the electrode in calibration mode so you can read the voltages. You can't perform the experiment with the software reading concentration. You will need to prepare a standard solution of suitable concentration for the dilutions (when you add a 1 mL of the standard, it should raise the nitrate concentration by 30-50% of the permissible nitrate concentration for drinking water).

Before you begin, you should find the permissible nitrate concentration for drinking water, learn about what "blue baby syndrome" is and what causes it, how ion-selective electrodes work, and how the method of standard additions works.