

Fine points of colorimeter use

Hot Training Topics PASEC

Recently we took time to carefully examine the use of the colorimeter for different tests. What we were trying to do is to identify specific measures/procedures that users must take to ensure accurate testing using this device. These ideas are either not mentioned in the manual or are not clear in the manual directions. This list is just a starting point. Others will have ideas about how to use the colorimeter in an optimal way.

1. Dissolved Oxygen test.

- a. Develop a compulsive habit to wipe the vials that are used with the colorimeter in order to remove possible fingerprints that are usually not visible. All tests in the colorimeter use the transmission of light and anything beyond the solution being tested that affects the transmission of light will result in error.
- b. When inserting the vial into the colorimeter use the black cloth wrapped around the vial rather than using your fingers.
- c. Ensure that the blue plastic caps are full of stream water before beginning the test.

2. Nitrate test.

- a. Ensure that the desired test is displayed by pressing the "Conc." button. The correct display must be NO_3 not $\text{NO}_3\text{--N}$. The difference in these two tests is a constant factor. The NO_3 test yields results that are comparable with the test that does not use the colorimeter. The button can be pressed several times without affecting the procedure. The button will not be active until the program number for this test has been activated. In other words one must be "inside" the procedure before this button will be effective.
- b. It is important that all the powder in the packet is added to the 10ml stream sample. It is not uncommon that some of the powder is trapped in the corner of the packets. One way to check this is to cut one side of the packet to the corner and then look into the remaining corner for powder residues. Another, perhaps simpler way to do this is to use the small screw driver in the kit to stretch the two corners of the packet so that any powder trapped there can be scraped out. Clean the screw driver when finished because if it is used in more than one test there could be contamination.

3. Orthophosphate test.

- a. The "Conc." button is active in this test also but the program for this test starts with the desired test. The other test is Total Phosphate that we do not currently use.
- b. See the comments in 2b regarding the process of ensuring all powder in the packets is added to the stream sample.
- c. Wiping the bottom inch of the bottles with the black cloth many times needs to be a part of this test also.

4. General issues.

- a. The black cloth is used two times each month and many times for each testing session. We need to know what the life time of this cloth is. Is it appropriate to wash it periodically? Do we need a supply of these cloths?
- b. Team 5 is convinced that the colorimeter tests must use at least two team members for each test. Part of the problem is that the detail of the tests must be committed to memory and since we only think about this briefly about 1 hour each month, some procedural detail may fade from memory. Having a mini-manual addendum might help this process.
- c. We need to say something about what to do when we get a "limit" reading for some test. In our testing a week ago we got the limit reached signal for two downstream tests but normal readings for each of those upstream tests. We did not repeat the tests because we ran out of time. We think that there may have been a reason that the downstream tests were out of range.