

2026 WWOA Operator Competition - Laboratory Event

Event Description: Team members will set up a BOD test and calculate BOD results. **Team members will be responsible for supplying safety glasses, calculators, and pens.**

General Notes

- All the items used for the BOD setup will be in a box at the start of the event, except for BOD bottles, BOD meter, and dilution water carboy. All items initially found in this box must be returned to the box when the event is complete. Any items not put back in the box after completion of the event will result in a penalty.
- Teams will have up to 2 minutes, timed by the lead judge, before beginning the event to familiarize themselves with the items on the table and in the box. Teams may not move items during this time. At the end of the 2 minutes, the judge will say “Time”, and team members must remove their hands from the table.
- The timed portion of the event starts when the worksheets are handed to the team captain, and the lead judge says “Start”
- **The event is completed when all tasks have been completed, and the team turns in the bench sheets to the lead judge and says the team is finished.** Time will be tracked by the lead judge and 1 additional judge.
- All team members must participate in the event but are not limited to performing only one task.
- Scoring will be based on the time needed to complete all tasks, with penalties for incorrect calculations and errors during BOD setup.

Information for Preparation

-The “samples” you’ll be setting up the BOD test for are from a facility with year-round UV disinfection.

-You will be provided with different types of measuring devices including a graduated cylinder and various sizes of pipets. You will need to select the appropriate tools for measuring sample volumes and reagents (example-use a 6 ml volumetric pipet correctly for measuring the GGA). Remember, error is additive... it’s better to measure 20ml in one pipetting rather than 10ml+10ml. While the samples used in competition will not contain solids, it is to be assumed that they do as in real life samples.

-A pipet bulb will be provided for pipetting.

-If your facility’s lab performs BOD testing, they will be a great resource. There’s also a section of the WI DNR’s Laboratory Certification Program dedicated to the BOD analysis if additional assistance is needed.

Procedure for BOD Setup

The DO meter must be calibrated before use. You must remove water droplets from the membrane surface and allow to stabilize for 5 minutes (using a timer) before it can be calibrated. Calibration shall be performed by saying “Calibrating” after the 5 minutes have past. Record the calibration information on the bench sheet.

You will be setting up a BOD test with 8 BOD bottles: 1 blank, 2 effluent, 2 influent, 1 GGA, and 2 seed control samples.

Add samples to BOD bottles using the appropriate measuring devices. Sample bottles must be shaken before each sample volume is measured. Sample sizes will be provided at the time of the competition.

Add 2ml of seed to samples requiring seed.

Add nutrients to any samples requiring additional nutrients (sample sizes greater than 200ml). The dilution water will be assumed to contain necessary nutrients already, so you will only add nutrients to BOD bottles as required.

Starting with the blank, followed by the effluent and influent samples, GGA, and seed controls, fill the bottles with dilution water and read the initial D.O's, recording on the bench sheet. The probe must be in each bottle for at least 20 seconds (timed on a timer) before the D.O. can be recorded. Rinse the probe between samples.

Place a stopper, ensure a water seal, and top with a plastic over cap.

Rinse the probe and place it back into probe storage bottle.

****This procedure will be provided during the competition****

What you'll be judged on for the BOD setup portion of the lab event:

- If appropriate sample measuring tools were used and used correctly
- If samples that required seeding had been seeded
- If samples that required extra nutrients received them
- If bottles were filled, stopped, and capped correctly
- If all the required information was filled in on the bench sheet
- If all items were returned to the box at the end of the event.