



*We're All In It Together*

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Virginia Citizens for Water Quality 2006 Summit  
Afternoon Breakout Session B  
Collecting and Analyzing Dissolved Oxygen  
Notes by Jess Bretz, Alliance for the Chesapeake Bay

Alliance for the Chesapeake Bay's dissolved oxygen procedures can be found at:

<http://www.acb-online.org/project.cfm?vid=206>

### **Dissolved O<sub>2</sub>**

Like terrestrial animals, fish and other aquatic organisms need oxygen to live. As water moves past their gills microscopic bubbles of oxygen gas in the water, called dissolved oxygen (DO), are transferred from the water to their blood. Like any other gas diffusion process, the transfer is efficient only above certain concentrations. In other words, oxygen can be present in the water, but at too low a concentration to sustain aquatic life. Oxygen also is needed by virtually all organisms like algae for many chemical reactions that are important to lake functioning.

Dissolved oxygen concentrations are most often reported in units of milligrams of gas per liter of water - mg/L. (The unit mg/L is equivalent to parts per million = ppm).

Minimum concentration level for open Ocean Waters = 5mg/L

Minimum concentration level for Tidal and Non-Tidal waters = 4mg/l

### **Factors Affecting DO**

- Volume and velocity of air and water flowing in the water body (more air interaction =more DO)
- Climate/Season (cold H<sub>2</sub>O can hold more oxygen)
- The type and number of organisms in the water body (more bacteria/algae bloom less DO)
- Altitude (low altitudes can hold more DO)
- Dissolved or suspended solids (more silt or salt = less DO)
- Amount of nutrients in the water (more food for bacteria = less DO)
- Organic Wastes (more food for bacteria = less DO)
- Riparian Vegetation (more shade, no erosion = more DO)
- Groundwater Inflow (lowers DO first, then increases)

Information on test kits, prices, and monitoring levels can be found at:

<http://www.deq.virginia.gov/watermonitoring/pdf/guidancemanual/cmonman.pdf>

