



Orange-Senqu River Awareness Kit

The River Basin →

- Introduction
- ▶ Geography
- ▶ Climate and Weather
- ▶ Hydrology
- ▶ **Water Quality**
 - Principles of Water Quality
 - Water Temperature
 - Dissolved Oxygen
 - pH
 - Total Dissolved Solids and Conductivity
 - Suspended Sediment
 - Salinity
 - Hardness
 - Nutrients
 - Metals
- Biological Water Quality Parameters
- Spiritual Meaning of Water
- Human Impacts to Water Quality
- Acidity, Heavy Metals and Radionuclides
- Groundwater Quality
- Water Quality Fitness for Use
- ▶ Ecology and Biodiversity
- References



Water Quality: Principles of Water Quality: **Dissolved Oxygen**

The amount of oxygen that dissolves in water can vary daily and seasonally, and decreases with higher temperature, salinity, and elevation. The maximum solubility of oxygen in water at one atmosphere ranges from about 15 mg/L at 0°C to 8 mg/L at 30°C. That is, ice-cold water can hold twice as much dissolved oxygen as warm water. Dissolved oxygen comes from the atmosphere and from photosynthesis by aquatic plants, and is depleted through both chemical oxidation and respiration by aquatic animals and microorganisms, especially during the decomposition of plant biomass and other organic material.

Surface water, near the water-atmosphere interface and with sufficient light for photosynthesis, is generally saturated or even supersaturated with oxygen. Deeper water receives oxygen through mixing by wind, currents, and inflows. Mixing and aeration also occur at waterfalls and rapids. Dissolved oxygen can be greatly depleted during summer months, in stagnant pools, or where algal blooms occur.

Dissolved oxygen is essential for a healthy aquatic ecosystem. Fish and aquatic organisms need oxygen dissolved in the water to survive. The need depends on the species and life stage; some are adapted to lower oxygen conditions, others require higher concentrations. Dissolved oxygen can affect the solubility and availability of nutrients, which can be released from sediments under conditions of low dissolved oxygen.



Water is mixed with oxygen in waterfalls.
Source: Source: Lesotho Water Commission 2002
(click to enlarge)

Feedback

[send a general website comment](#)

[report a specific problem with this page](#)

Next: pH ▶

Interactive

Basin Map

Explore the sub-basins of the Orange-Senqu River

[enter](#)

Video Tour

Tour video scenes along the Orange-Senqu River related to the River Basin

[enter](#)

Geography Maps

Investigate land cover and terrestrial ecoregions in the basin

[enter](#)

Water Cycle

Examine how the hydrologic cycle moves water through and around the earth

[enter](#)

Food Web

Explore the interactions of living organisms in aquatic environments

[enter](#)