

# Water Quality - Chemistry

## SUBJECTS

Chemistry, Limnology, Ecology

## OVERVIEW

Water quality is measured in multiple ways and for multiple reasons. 'Good' water quality can depend on what the water is being used for (e.g. swimming, drinking, wildlife/fish, etc.). In Minnesota, we pride ourselves on our water resources and having fresh clean water is a high priority in the state. Ensuring our water systems are of high quality protects human, ecosystem, and economic health of the state. Basic chemistry is one way to paint a detailed picture of water quality.

### V. SUPERVISOR GUIDE

### STUDENT GUIDE

<b>OBJECTIVES</b>	To teach how common chemistry tools can be applied in the real world.	To learn how to apply knowledge of chemistry to real world application.
<b>BACKGROUND INFORMATION</b>	See 'Water Quality Chemistries - Parameter Descriptions and Prompts' document for details on the four chemical and physical parameters used to collect chemical water quality samples. Each parameter's description is to be read by the students prior to or during chemical testing of that parameter. Each parameter's prompts are to be used by the Supervisor in discussions about each parameter.	
<b>COMPREHEND</b>	The methods of each sample and what they mean. Able to facilitate questions and lead students to answers about what can affect each sample.	Understand how each measurement is affected by different human and natural factors. Understand basics of 'good' ranges for wildlife.

<b>EQUIPMENT</b>	<b>RESOURCES</b>	<b>TAKEAWAY</b>
<ul style="list-style-type: none"> <li>- Jar with secchi disk</li> <li>- Thermometer sticker</li> <li>- Glass vial, with cap</li> <li>- Plastic tube, with cap</li> <li>- 2 DO tablets</li> <li>- 1 pH tablet</li> </ul>	<ul style="list-style-type: none"> <li>- Color charts (DO and pH)</li> <li>- 'Water Quality Chemistries – Parameter Descriptions and Prompts' document</li> </ul>	<ul style="list-style-type: none"> <li>- Good water quality is important for the health of an ecosystems (including humans).</li> <li>- Many things have an impact on each parameter.</li> </ul>

**V. SUPERVISOR GUIDE**

**STUDENT GUIDE**

<p><b>ACTIVITY</b></p>	<ol style="list-style-type: none"> <li>1. Before students arrive, have your station set up with sampling supplies: testing kit, water sample (if unsafe for students to collect), and clipboard/datasheet/pen (sometimes students will come to you with their clipboard, datasheet, and pen).</li> <li>2. When students arrive to your station, explain to them what they will be doing and why. Get them interested and participating in the 'why' part of your discussion. Introduce the water body and begin your sampling procedures.</li> <li>3. See the 'Water Quality Chemistries – Instructions' document for step-by-step instructions on how to test each parameter. Be sure to discuss each parameter before or during the test – some tests take very little time to complete and others take a few minutes to fully react. Use your time wisely.</li> </ol>	<ol style="list-style-type: none"> <li>1. Follow along with your Volunteer Supervisor as they lead you through each test.</li> <li>2. Write each result onto your datasheet.</li> <li>3. Participate in conversations and discussions about each parameter.</li> <li>4. Write down your answers to each question on the datasheet.</li> </ol>
<p><b>QUESTIONS TO ASK AT THE END</b></p>	<p>Do you think today's testing indicates a high quality or low quality water body? How would this affect the surrounding ecosystem? Fish? Birds? People swimming? Boating?</p> <p>Do you think this water is healthy for the surrounding neighborhoods?</p>	