

# Water quality conclusion

How does biotic sampling compare with chemical testing of water?

## Directions

Complete the following water data charts based upon your previous chemical, physical, and biotic sampling.

### Biotic sampling

Sensitive	Somewhat sensitive	Tolerant
<input type="checkbox"/> Caddisfly Larvae <input type="checkbox"/> Hellgramite <input type="checkbox"/> Mayfly Larvae <input type="checkbox"/> Gilled Snails <input type="checkbox"/> Rifle Beetle Adult <input type="checkbox"/> Stonefly Larvae <input type="checkbox"/> Water Penny Larvae	<input type="checkbox"/> Beetle Larvae <input type="checkbox"/> Clams <input type="checkbox"/> Crane Fly Larvae <input type="checkbox"/> Crayfish <input type="checkbox"/> Damselfly Larvae <input type="checkbox"/> Dragonfly Larvae <input type="checkbox"/> Scuds <input type="checkbox"/> Sowbugs <input type="checkbox"/> Fishfly Larvae <input type="checkbox"/> Alderfly Larvae <input type="checkbox"/> Watersnipe Larvae	<input type="checkbox"/> Aquatic Worms <input type="checkbox"/> Blackfly Larvae <input type="checkbox"/> Leeches <input type="checkbox"/> Midge Larvae <input type="checkbox"/> Lunged Snails
<p style="text-align: center;"><b>boxes checked × 3</b> = _____ <b>index value</b></p>	<p style="text-align: center;"><b>boxes checked × 2</b> = _____ <b>index value</b></p>	<p style="text-align: center;">boxes checked × 1 = _____ <b>index value</b></p>
<p><b>Water quality rating</b> <b>Total index value = _____</b></p>	Excellent (> 22)	Fair (11–16)
	Good (17–22)	Poor (< 11)

### Chemical and physical testing

Temperature: _____ °C	<p><b>Water odors</b></p> <input type="checkbox"/> normal/none <input type="checkbox"/> sewage <input type="checkbox"/> petroleum
Dissolved oxygen: _____	
pH: _____	<p><b>Water surface oils</b></p> <input type="checkbox"/> slick <input type="checkbox"/> sheen <input type="checkbox"/> globs
Turbidity: _____	
Phosphate: _____	<p><b>Turbidity (if not measured)</b></p> <input type="checkbox"/> clear <input type="checkbox"/> slightly turbid <input type="checkbox"/> turbid
Nitrite: _____	
Nitrate: _____	

## Reflection

1. Compare both the chemical water quality tests and the macroinvertebrate sampling results.  
How does the chemical testing compare with the biotic testing? Do they both predict the same overall water quality or are the results inconsistent?
2. Explain: How it is possible to have different results? How do chemical/physical tests differ from biotic data?
3. Determine the water quality for the collected water samples above.

*Portions of this activity adapted from Barbour, M.T., J. Gerritsen, B.D. Snyder, and J.B. Stribling. 1999. Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates and Fish, Second Edition. EPA 841-B-99-002. U.S. Environmental Protection Agency; Office of Water; Washington, D.C.*

