Chapter 8 Highlights

1. Rivers and other water bodies should be clean enough to protect human and ecological health. However, quantifying "safe levels" of chemicals is a complicated task that relies heavily on extrapolating from limited toxicity data, and monitoring of ambient water quality is challenging and expensive due to high temporal variability and the large number of water-quality parameters that must be measured.
2. The Clean Water Act (CWA) aims to protect and restore aquatic ecosystems by: (a) restricting pollutant discharges through the *NPDES* program; (b) establishing *water-quality criteria* to protect humans and aquatic organisms; (c) assessing the health of water bodies relative to those criteria; and (d) bringing *impaired waters* back to health through *TMDLs* and other tools.
3. The CWA has had success in addressing *point sources* of pollution through permits and *wastewater treatment plants*, but has had more trouble dealing with *nonpoint sources* and hydrologic, physical, and biotic impacts. *Biomonitoring* is increasingly being used to help identify and address these impacts.
4. The CWA has improved water quality in many ways, but many water bodies are still considered impaired for habitat, recreation, and fishing, primarily due to impacts from agriculture, hydrologic modification, and urban runoff.
5. Wetlands provide valuable ecosystem services, including habitat and flood mitigation, but the use of the CWA to protect wetlands has been stymied by legal battles over which wetlands are subject to federal jurisdiction.
6. The National Environmental Policy Act (NEPA) and the Endangered Species Act (ESA) provide additional tools for the protection of aquatic ecosystems.