

Effects of Global Change on Water Quality

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Abstract

Global change is a widely discussed environmental issue. Climate change, related to continued increases in atmospheric CO₂ and other greenhouse gas concentrations, is the most frequently studied indicator of global change. While definitive proof remains elusive, trends seem to indicate that mean annual tropospheric temperatures are increasing, leading to a wide variety of heat related environmental impacts. In addition to temperature-related climate change, *per se*, global change can be initiated and sustained by other factors, including: population increases and resultant impacts on resource utilization; land use change, including soil loss and deforestation; change in precipitation patterns and resultant drought or flood conditions; change in ultraviolet light penetration due to disturbances in ozone levels in the stratosphere; introduction of xenobiotics into ecosystems, including chemicals of both industrial and agricultural origin; change in nutrient status in both terrestrial and aquatic ecosystems; sea level rise and salt water intrusion, resulting in diminishment of fresh water resources; and, a wide variety of additional environmental impacts. Integrating global change concepts into courses dealing with water quality, is an important way to challenge students to think beyond what might be initially considered as local issues and be challenged by connecting a series of events that result in diminished water quality on scales that can extend from the local to continental and ultimately to global dimensions. This paper presents observed or predicted water quality changes that are, or likely will be, occurring around the world and indicates their connectivity to water quality [predominantly chemistry oriented] course material in an environmental engineering curriculum.