WATER POLLUTION TYPES

Type and Effects	Examples	Major Sources
Infectious Agents- pathogens that cause disease	Bacteria, viruses, protozoa, parasites	Human and animal wastes
Oxygen-Demanding Wastes- deplete dissolved oxygen needed by aquatic species	Biodegradable animal wastes and plant debris	Sewage, animal feedlots, food processing facilities, pulp mills
Plant Nutrients- cause excessive growth of algae and other species	Nitrates and Phosphates	Sewage, animal wastes, inorganic fertilizers
Organic Chemicals- add toxins to aquatic systems	Oil, gasoline, plastics, pesticides, cleaning, solvents	Industry, farms, households
Inorganic Chemicals- add toxins to aquatic systems	Acids, bases, salts, metal compounds	Industry, households, surface runoff
Sediments- disrupt photosynthesis, food webs	Soil, silt	Land erosion
Heavy Metals- cause cancer, disrupt immune and endocrine systems	Lead, mercury, arsenic	Unlined landfills, household chemicals, mining refuse, industrial discharges
Thermal- make some species vulnerable to disease	Heat	Electric power and industrial plants

WATER QUALITY TESTING TECHNIQUES

PHYSICAL WATER QUALITY TESTS	
Temperature	-Temperature impacts solubility of oxygen and the range of tolerance of organisms -Can be affected by the removal of trees, which reduces shade -large inputs of heated water come from industrial discharge and electrical power plants
River/Stream Flow Velocity	-The velocity of the water will impact the ability of oxygen to diffuse into the water -the faster the water flows, the faster oxygen can diffuse
Turbidity	-measure the cloudiness of the water -high turbidity can block sunlight which affects plant growth -measured using a Secchi Disk
CHEMICAL WATER QUALITY TESTS	
pH	-measures the hydrogen ion concentration to determine acidity of alkalinity (basic) -most organisms survive best in pH 6-9
Dissolved Oxygen	-determines how much oxygen is in the water and regulates biodiversity -depends on photosynthesis levels, water temperature, flow rates -cold, fast moving water will have highest levels of DO -this test can indicate presence of fertilizers, oxygen demanding waste such as sewage, feedlot runoff, thermal pollution
Nitrates and Phosphates	-nitrates and phosphates are plant nutrients -excess can lead to cultural eutrophication -this test can indicate presence of fertilizers, sewage, animal waste
Hardness	-determines presence of common metal cations like magnesium, calcium
BIOLOGICAL WATER QUALITY TESTS	
Fecal Coliform	-determines the possibility of fecal (poop) contamination from sewage, septic tanks, animal feedlots
Biological Assessment	-specific organisms are monitored due to their sensitivity to pollution (indicator species)

Benthic Macroinvertebrates	-invertebrates are collected, identified, and categorized as being tolerant or sensitive (mayfly, caddisfly) to pollution -depending on which invertebrates are found give clues to water pollution