in water is a good indication that sewage and associated pathogenic microorganisms may be present. Since coliforms can be detected by relatively simple test procedures they are used to indicate the extent of bacterial pollution from sewage and combined sewer overflows. Tests are usually conducted to determine the number of fecal and total coliforms present in water or wastewater. The number of total coliforms includes those of fecal origin and from non-fecal sources such as soil, grain, or decaying vegetation. In areas where urban runoff is a problem, total coliform levels can be very high, whereas fecal coliform levels may remain minimal as long as sewage is not present in,the water. Often municipal wastes are chlorinated at a treatment plant to kill bacteria before they are discharged to a receiving water.

pH and Alkalinity

The pH of water is a measure of its hydrogen ion (H^+) concentration on an inverse logarithmic scale which ranges from 0 to 14. pH values of less than 7 indicate higher H^+ content and therefore acidic solutions whereas pH values above 7 denote alkaline solutions. The pH of pure water at 25°C is 7.00; however natural waters exhibit a wide range of pH values depending upon their chemical and biological characteristics. Unpolluted river water usually has a pH between 6.5 and 8.5. In productive segments, a diurnal fluctuation in pH may occur as photosynthetic organisms take up dissolved carbon dioxide during the daylight hours. Drastic changes in pH occur when industrial effluents containing strong acids or alkali are discharged to a water body. These pH shifts are often toxic to aquatic organisms. Alkalinity is defined as the capacity of water to neutralize acid. This property is attributed to the presence of several different solute species. These are primarily carbonates and bicarbonates but also hydroxides, borates, silicates, and phosphates. Alkalinity is expressed in milligrams per liter of equivalent calcium carbonate.

Solids

Suspended solids refers to the particulate matter that either floats on the surface of, or is in suspension in water or wastewater, and is removable by laboratory filtering techniques. That matter remaining in the water after filtering is referred to as dissolved solids. Suspended solids in a stream may settle out in sluggishly flowing segments causing sediments to build up on the substrate. This siltation can be particularly harmful to fish eggs and larvae by hindering their mechanisms for obtaining oxygen from the water. Suspended solids analysis provides a reliable measure of the efficiency of treatment facilities. Primary treatment should remove about 50 percent of the suspended solids from an influent while 90 percent removal should result from secondary treatment. The test for total solids measures all suspended and dissolved solids in water. They are measured by evaporating the water from a sample of known volume and weighing the residue. This residue can then be ignited in a furnace to determine the organic portion. Turbidity