

Chlorides Chloride is a constituent of concern in wastewater as it can affect the final reuse applications of treated wastewater. The oxidation states of nitrogen are summarized (Sawyer et al., 2003). Chlorides in natural water result from the leaching of chloride containing rocks and soils with which the water comes in contact, and in coastal areas from saltwater intrusion. In addition, agricultural, industrial, and domestic wastewaters discharged to surface waters are a source of chlorides. The production of nitrogen from the atmosphere is termed nitrogen fixation. Because fixation is a biologically mediated process and because

NaNO_3 deposits are relatively scarce, most sources of nitrogen in soil/groundwater are of biological origin. Alkalinity Alkalinity in wastewater results from the presence of the hydroxides $[\text{OH}^-]$, carbonates $[\text{CO}_3^{2-}]$, and bicarbonates $[\text{HCO}_3^-]$ of elements such as calcium, magnesium, sodium, potassium, and ammonia. 7 and 8. Where control of algal growths in the receiving water is necessary, removal or reduction of nitrogen in wastewater prior to discharge may be desirable. Borates, silicates, phosphates, and similar compounds can also contribute to the alkalinity. The alkalinity in wastewater helps to resist changes in pH caused by the addition of acids. Sodium nitrate (NaNO_3) is found principally in mineral deposits in Chile and in the manure found in sea birds' rookeries. Because conventional methods of waste treatment do not remove chloride to any significant extent, higher than usual chloride concentrations can be taken as an indication that a body of water is being used for waste disposal. Nitrogen The elements nitrogen and phosphorus, essential to the growth of microorganisms, plants, and animals, are known as nutrients or biostimulants. 6 and 7, respectively), in biological nutrient removal (see Chap. Of these, calcium and magnesium bicarbonates are most common