

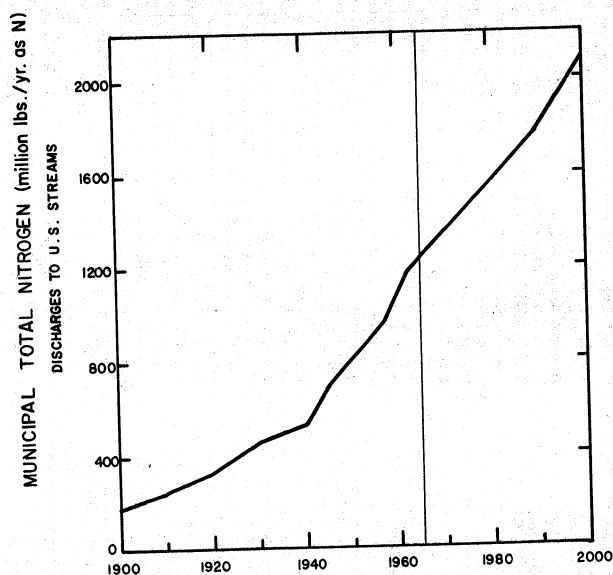


FIGURE 4. Estimate of total nitrogen discharges to U.S. streams from municipal outfalls (A.D. 1900-2000).

problems can also be created in downstream water supplies, and even sizable "fish kills" may be triggered.

The effects of refractory organics on water quality are not as well understood. Taste and odor, tainting of fish flesh, foaming, and fish kills have been attributed to such materials. Except for recognized toxicants, the effects of refractory organics on human health, if any, are unknown.

Even simple inorganic salts can pollute water if present in sufficient amounts. Public Health Service Drinking Water Standards specify that the total dissolved solids (TDS) in a drinking-water supply should not be present in excess of 500 mg./l. Yet each use of a water supply by a municipality adds an increment of 300 to 400 mg./l. of such salts to the water. Conventional waste-treatment techniques are virtually ineffective in removing these salts.

Deferring for the moment problems arising from treatment-resistant pollutants, what is the future picture of classic BOD pollution? On a nationwide basis, the changes in municipal BOD load over this century are estimated in FIGURE 6. That portion of the curve between 1900 and 1930 illustrates the increasing waste load due to the increasing population at a time when no facilities, either for primary or secondary waste treatment, were in common use. In 1930, for example, only about 15 per cent of municipal sewage received primary treatment and less than six per cent received secondary. During the 1930's construction of treatment plants was accelerated, and for the first time in the nation's history, BOD discharges decreased. During World War II discharges sharply increased, while during the postwar years they remained