9.3.4 Terrestrial Liming Summary

In conclusion, although in principle the liming of land might neutralize an acidifying pollutant (Ulrich 1972) it has the following serious limitations. First, it would not prevent direct injury to plant tissues, even where in agricultural situations it is already being used as a soil amendment. Secondly, in the typical forest situation it would be very difficult to apply. Thirdly, the effects of lime in the boreal and north temperature forest are complex and often far from beneficial.

9.4 DRINKING WATER SUPPLY

Low pH conditions in municipal water supplies can cause corrosion of the plumbing materials. The estimated costs for controlling corrosion were based on adding lime to water to stabilize it. This should control corrosion of lead pipes as well as corrosion of cast iron water mains, and is the corrosion control technique most likely to be used by water utilities.

9.5 COSTS OF CORROSION CONTROL

Costs for corrosion control by lime stabilization were estimated by Hudson and Gilcreas (1976) to total $0.30 U.S. per capita for operation and amortization costs in 1976. Average per capita costs for lime stabilization were estimated by Davis et al. (1979) to range from $0.18 to $0.57 U.S., depending on the extent of chemical treatment provided to stabilize the water.

Corrosion control by calcium carbonate stabilization and deposition of a protective calcium carbonate film has been suggested by EPA as an effective approach to nonselectively provide protection to a number of materials, including asbestos cement, lead, iron, galvanized steel, copper, and alloys that may be used in water distribution systems or plumbing. Annual per capita costs for corrosion control by addition of lime were estimated by USEPA (1979). Costs are a function of plant size, as shown in Table 9-1.

The methods used to calculate corrosion costs in the USEPA Statement of Basis and Purpose were developed by Gumerman et al. (1979). An example of calculation of cost for corrosion control by addition of lime at 30 mg/L for pH control in a 5 million gallons per day (MGD) plant is given in Table 9-2. The costs are shown for operation at 70% of capacity (3.5 MGD). The principle items of expense are capital amortization, labor, and chemical used. Chemical consumption is the cost category most sensitive to water quality changes.