

III. SLUDGE HANDLING AND DISPOSAL

No discussion of treatment of mine drainage, whether such treatment be neutralization, oxidation, demineralization or any combination of these, is complete without consideration of the facets of sludge removal. These might include conditioning, dewatering, drying, materials recovery and disposal. Industry has often found the economic disposal of sludge from their waste treatment processes to be one of the most difficult problems encountered. As experience and research in the treatment of mine water develops, it is becoming increasingly evident that the disposal of these waste products will emerge as a major problem.

In the lime neutralization process the resulting sludge, mostly hydrated iron oxide, is allowed to settle in large basins or lagoons. If the lagoons are used for de-watering and drying, subsurface drainage must be provided and they must periodically be taken out of service while removal of the concentrated sludge is accomplished by hydraulic dredges, draglines, or bulldozers for final disposal. Otherwise, the sludge is pumped from the lagoon bed with suitable apparatus and the solids discarded. These solids are insoluble in water and can be buried without danger that they may redissolve to any considerable extent and again contribute to contamination of streams. In the mining areas, land suitable for construction of sludge ponds and burial of solids is often not available due to the steepness of the terrain where suitable land is available. It has been assumed that burial costs will amount to \$1.00 per ton on the basis of the dry solids.(58)

Unfortunately, the precipitated material retains significant quantities of water, in some cases up to 98 percent, so that disposal involves handling not only of the solids but large quantities of water. Mechanical means of reducing the amount of water in this sludge by the use of clarifiers and filters, particularly