

SUMMARY

There are twenty tanneries in the Republic of South Africa, which process approximately two million hides annually. Water usage by these tanneries is approximately 600 000 m³ per annum and almost all of this becomes waste water. The range of specific water intake (SWI) for full tanning was found to be 320-744 l/hide with the average being 432 l/hide. A target SWI figure has been proposed at 432 l/hide.

The water requirement is dependent on the specific tanning process. In most cases potable domestic water is used, but some tanneries depend on good quality river water, and for selected processes purified domestic sewage effluent can be utilised where available. Furthermore, if tannery effluent is treated sufficiently, it can be blended with other water for specific applications.

The range of specific pollution load (SPL) was found to be 0,9 - 6,8 kg COD/hide with a mean of 3,7 kg COD/hide, 2,6 - 8,9 kg TDS/hide, with a mean of 7,7 kg TDS/hide, 0,5 - 1,4 kg SS/hide with a mean of 0,8 kg SS/hide and 0,01 - 0,2 kg Cr/hide with a mean of 0,1 kg Cr/hide. Target figures have been proposed of 1,0 kg COD/hide, 3,0 kg TDS/hide, 0,5 kg SS/hide and <0,01 kg Cr/hide.

Investigations have shown that the technology for economic effluent purification to river water standards does not exist, and that the systems used by tanneries depend on the requirements of the Department of Water Affairs and local authorities. Where dilution with domestic sewage and subsequent treatment by local authorities are inadequate, the alternatives are irrigation or evaporation ponds, with pre-treatment to remove sulphide and settleable solids.

A summary is given of the main systems used for waste-water and solid waste disposal and the biological and physico-chemical treatment methods investigated and reported in the "Guide to Waste Water Management in the Tanning and Fellmongering Industries" published by the Water Research Commission (No. ISBN O 908356 52 8).

Results of large-scale applications and monitoring of treatment systems are also summarised. Recent large-scale investigations in the field of effluent treatment include lime and chrome recycling and recovery of chrome, recovery of fat and grease, and anaerobic digestion.