

Pollution prevention for tannery industry assignment



**ASSIGN
BUSTER**

The assessment identified following pollution prevention opportunities at this facility: recycling the spent chrome tanning wastes, oxidize the sulfide containing wastes, decreasing the volatile organic discharge by changing finishing materials, decreasing water use by batch washing, and using solid wastes from the waste stream as fertilizer. Chromium recycling.

This step allows the collection of the spent chrome tanning solutions, without dilution or contamination, for use in the pickle and tanning process. Since the tannery also tans splits, the spent chrome tanning solution can be used here as well. The tanning of splits results in very good fixation of chromium, so the concentration of chromium in the final effluent should meet effluent regulations. This system results in a saving of about 25 percent in the chromium chemicals used. Solvents. The suppliers of finishing products have developed water-based lacquers with significantly lower volatile solvent contents.

These materials are now widely accepted as quality products, and their use is strongly advised. Process Water. In some hide wetting processes there is an opportunity to recycle the final rinses. The final rinse wastewater in this process is compatible with fluids used for the first wetting of the hides. Solid Waste. Elimination of solid leather waste discharges through the use optimizing in reconstituted leather will ease the burden on landfills. Capital Intensive Modifications. Eliminating sulfides from the effluent is very important, as they will corrode pipes, cause objectionable odors, and may cause fatal accidents.

The sulfide-lime solution, and washes from this process, can be collected without contamination from other solutions. These collected wastes can be placed in a tank and the sulfides oxidized by air with a catalyst. This method is effective and can destroy the sulfide in 4-8 hours. At this point the lime waste, with high BODY and suspended solids, can be used to neutralize the acid wastes that are being continuously discharged. The acid and alkaline wastes from the tanning process will react to produce a expectoration of much of the suspended lids and BODY.

This is done with a mixing tank and automatic pH control. Coagulants can also be added at this point. The neutral streams can then flow to a primary clarifier for the removal of suspended solids as sludge. The sludge can be dewatered in a sand bed to more than 50 percent solids for disposal.

Although this effluent is somewhat high in BODY, over 80 percent of the pollution load have been removed. The sludge is a good soil conditioner, and if used as such, will eliminate possible high disposal costs. Secondary Treatment. In the future, a secondary treatment system can be added for BODY removal.

The secondary system need only be as large as needed for the clarified wastes, and it may consist of a trickle filter, a secondary clarifier, and/ or a filter press. Environmental and Economic Benefits implementation of the suggestions will lead to a number of positive environmental and economic benefits. Chromium recycling will decrease the chromium in the discharge by 80-90 percent. It decreases chromium to less than 3 MGM/l. Costs were estimated at \$20, 000 (US), savings at \$60, 000 per year ND therefore payback period of 4 months.

<https://assignbuster.com/pollution-prevention-for-tannery-industry-assignment/>

The reduction of volatile solvents will decrease VOCE releases to the atmosphere by 60-90 percent. Changes to water usage patterns will decrease effluent volume by 20-40 percent. Elimination of solid leather waste discharges through the use of trimmings in reconstituted leather eases the burden on landfills. This decrease leather waste by 60-80%. Costs were estimated at \$1 0, 000 (US). Destroy sulfides by air oxidation decreases sulfide wastes by 95- 98 percent. Costs were estimated at \$30, 000. (US) With primary and secondary treatment, the BODY an be reduced by 75 percent.