Determination of Ammonia Nitrogen in Tannery Wastewater and Analysis of its Origin

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Abstract: The content of ammonia nitrogen in wastewaters from various operations in conventional pig and cattle wet blue processings was determined by distillation-titration method. The distribution and origin of ammonia nitrogen in these wastewaters were analyzed. The results indicate that the concentrations of ammonia nitrogen in deliming and bating wastewaters are the highest, and these two operations are mainly responsible for high ammonia nitrogen impact in tannery wastewater. It was found that the reaction of proteins and trypsin in bating does not generate ammonia nitrogen, and therefore, the ammonia nitrogen in hair-burning process is also considerable due to the decomposition of hair keratin, while it decreases remarkably by using enzymatic unhairing. In liming/reliming operations, ammonia nitrogen production results from the hydrolysis of the amide side-chains of protein. Meanwhile, skin and hide proteins could be degraded into ammonia nitrogen through the ammonification of microorganism during the preservation of raw stock and soaking if the antiseptic treatment did not work effectively. Some leather chemicals contain ammonia nitrogen. They are other sources of ammonia nitrogen determined in tannery wastewater.

Key words: ammonia nitrogen; tannery wastewater; distillation-titration method; organic nitrogen