

IUE – 9: RECOMMENDATIONS FOR SEWERS ADAPTED FOR TANNERY EFFLUENTS

2008 Updated document

Common effluent treatment plants (CETP) are often used for collective treatment of tannery waste water. To reach the plant, sewers are used, but sometimes their characteristics are not adapted to the special requirements of typical tannery effluent. The following recommendations are proposed to prevent any damage or accident that might happen when using inadequate or inappropriate equipment.

1. Hydrogen sulfide

Acidification of any sulfide containing liquors generates hydrogen sulfide. Therefore alkaline and acid floats should be kept separate in the tannery.

All sulfur compounds can generate hydrogen sulfide mainly under anaerobic conditions. Tanneries processing raw hides/skins mainly use sodium sulfide to remove hair or wool. Tannery effluent may contain sodium sulfide and therefore it is highly dangerous for anybody to enter a sewer without proper monitoring and without respiratory safety equipment. Even with careful sulfide oxidation in the tannery, there is a risk (see IUE Recommendations for Odour Control in Tanneries) of H₂S being developed in the sewer under acidic conditions and this gas has severe effects on unprotected humans, depending on concentration and exposure time. It is recommended that mechanical systems are used to clean sewers.

Sulfide and other sulfur compounds are also a danger for concrete sewers, because they can be oxidised to sulfate, which solubilises the calcium content of cement and concrete and thereby damages the fabric of the sewer. It is recommended that tanneries should use plastic sewers or plastic lined sewers. PVC, polyethylene or fibre reinforced plastic sewers are suitable for transporting tannery effluent.

2. Solids deposit

Tannery effluent typically contains a large amount of suspended solids (1 to 3 g/l) and when the flow circulation is too slow, deposits can occur, so clogging is likely. It is recommended that smooth materials should be used for the sewer and to maintain a minimum slope of 1 cm per metre in length. Manholes should be installed at each angle of the sewer and the distance between two manholes should not exceed 50 metres.

In order to reduce clogging in the sewer, it is recommended that solid waste should be separated from effluent streams, by using a screening unit with holes or spaces between bars not larger than 10 mm. Some mechanical screening equipment with finer mesh (2 mm or less) can be used to reduce the quantity of hairs and fibres sent to the effluent treatment plant. Appropriate pretreatment is required if effluents are transferred to a common effluent treatment plant.

3. Rain water

In order to prevent any increase in volume of tannery effluent, it is recommended that rainwater from the tannery's roof should be collected as carefully as possible, then sent in a separate sewer to surface water disposal. Alternatively, if the collected volume is great enough to be of value, it might be used in processing, e.g. soaking or even dyeing, since it will be soft water.

IUE Commission
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