

Fate of biocides used in the leather industry and their environmental impact

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INTERNATIONAL UNION OF LEATHER TECHNOLOGISTS AND CHEMISTS SOCIETIES

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When biocide is needed

Stages when skin/hide are stored, transported before processing to finished leather



Cured skin

Wet leather



The need to optimize fungicide use









Retention of biocides applied to cured skin after liming and deliming







PCMC OPP OIT

Fungicides uptake experiment





Degradation of TCMTB on wetblue leather during storage



Note: It wasn't until TCMTB fully degraded, that visible fungal infestation was observed.

TCMTB on wet blue leather was completely degraded in seven to nine months.

(Note: low initial offer 250ppm wet wt.)





Tracking TCMTB degradation products



An elevation of 2-MBT level was detected at the timepoint before TCMTB fully degraded and then subsequently decline

Benzothiazole was barely detected until TCMTB almost fully degraded.





Conclusion:

- 1. Partial retention of biocides applied to the cured in later processing could be beneficial for cost saving but also imposes challenge for regulation compliance.
- 2. Recycling the processing float and carefully modifying the dosage, less biocide will be discarded in wastewater.
- 3. Temperature has dominant effect on the degradation rate of TCMTB.