



The real cost of a kilo of salt

Part 1

1: SALINITY AND THE TANNING SECTOR: RESPONSIBILITY AND ACTIONS

2: SALINITY: THE ELIMINATION OF SALT FROM ACID PICKLE

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Even an optimist would be worried if making a survey that focuses on the effects of salinity. A cross-section of literature throws up the following statements:

- Globally, soil salination is spreading at a rate estimated at 15,000 to 25,000 km²/year.
- Yields of all irrigated land—1.2 million km²—have fallen in recent years.
- In some semi-arid countries, 10-50% of the irrigated land is affected to a greater or lesser degree, with average yield decreases of 10-25% for many crops. There are little or no time series data to allow reliable estimates of the rates of change in salinated areas; it could be 1.0 to 1.5 million ha/year.
- 200,000 to 300,000 km² of the world's irrigated area suffers serious salination, and 600,000 to 800,000 km² are moderately affected.
- In India, Pakistan and China, 20% of irrigated land suffers from salinity. This is over and above land areas previously abandoned.
- 60% of the world's irrigated regions need upgrading to remain in good working order.
- Rejuvenating salt-covered fields costs US\$100,000 to 200,000/km², and efforts often fail.
- In the USA and Canada—a major component of the global breadbasket—yields are falling. It is estimated that one third of the soils in Canada now contains sufficient salts to reduce spring wheat yield by 10% or more.

More than 40 publications have been studied in the preparation of this feature, and discussions have taken place with specialists within Europe, USA and India. In addition, information is available for verification in scientific publications, the Internet, and from organisations within the United Nations and the World Bank.

Additional Information

World Leather has addressed the avoidance and consequences of salinity generated by the leather industry over a long period of time. With total control of materials received and discharged, each tanner carries the responsibility for the effects of salinity stemming from site. And many tanners are under threat: if generally accepted limits for discharge for salinity were fully enforced a considerable number would face closure.

The following article discusses the outcome of salinity and sets out ways that the problem might be addressed. But valuable information has already been published in *World Leather* and should be taken into account. A list of the most important papers presented in the last five years follows:

- [1] A practical alternative to salt for the preservation of hides and skins: CRAFT ENV4-CT-2001-50 130 and INCO-DEV ICA4-CT-2002-10039—May 2005.



- [2] Phosphates within salt-free pickle systems: Thomas Schauwecker, BK Guilini GmbH—May 2005.

- [3] The use of non-swelling acids in pickle to minimise the chloride content in wastewaters: Alois Puntener, TFL—December/January 2004/5.

- [4] Salinity within tannery effluent: Jakov Buljan—December/January 2004/5.

- [5] Addressing salinity in tannery effluents and uses for land irrigation in Australia and India: Catherine A. Money, CSIRO—December/January 2004/5.

- [6] Reducing salinity in the pickle-tanning process: R. Palop, Cromogenia-Units S.A.—Part 1 April 2004, Part 2 May 2004.

- [7] Soil injection of sludges and irrigation with effluents from increased crop yields (full-scale tannery/agricultural application): R. Meldrum—October 2002.

- [8] Total dissolved solids management (TDS) in tanneries: A. Sahasranaman & S. Sampath Kumar—November 2001.

- [9] India: Working with nature (Irrigation with tannery effluent to create a woodland): In-house edit R. Daniels—May 2001.

- [10] Rationalisation of the tanning process: avoiding pickling and basification: Seta S/A—October 2000.

- [11] The availability of water globally was published in November 1997 under the heading of "Somebody else's problem". This discusses matters that are not leather-specific, but considered useful as background information. This is available to readers free of charge, and a copy of the paper will be sent on request. Contact wl@worldtrades.co.uk inserting the word Salinity as the subject and a copy of the paper will be returned as an attached file.

[12] Back to Basics: The Environment

- [12i] An extended listing of 45 previously published papers that relate to salinity can be found in the Annex of Back to Basics: The Environment under Category 9: Salinity, and Category 10: Land irrigation and solid waste as a crop nutrient.

- [12ii] This publication also provides the most comprehensive overview of materials consumed and wastes generated as TDS, Chloride, and Sulfate from the various stages of leather manufacture. Presented as a schematic, detail is given of the range of concentrations of these pollutants found in a major cross-section of tannery effluents before and after treatment.

(Note: Back to Basics: The Environment is specifically written for the leather industry to provide a clear and precise overview of all aspects of tannery effluent treatment)