

LEATHER TECHNOLOGY AND ENVIRONMENT

LEAD LECTURE

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Scheme of Presentation

- SIZE OF THE PROBLEM
- LIQUID WASTE - ISSUES
- SOLID WASTE - ISSUES
- ZLD – TAMIL NADU – WHY AND HOW?
- ZLD IMPLICATIONS
- ZLD – SUSTAINABILITY, ROLE OF TANNING TECHNOLOGY
- CONCLUSION

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SIZE OF THE PROBLEM

- ✚ **3000 tonnes per day, 100000 cubic meter waste water and 1800 tonnes of solid waste per day**
- ✚ **Estimation: South (45%), Kanpur (25%), Kolkata (18%), Jullunder (7%), Rest (5%)**
- ✚ **Dominance of SMEs (>80%), CETPs main instrument to treat waste water, 20 operational in India**

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SIZE OF THE PROBLEM

- ✚ **Use of many chemicals, not more than 20% absorbed by leather, rest flows with effluent**
- ✚ **Apart from salt, hair, fleshings, trimmings, shavings, dustings, sludge @ 3-4 Kg/dry solid per cubic meter of raw material processed.**
- ✚ **Sludge deemed hazardous due presence of chromium, to be disposed in secure landfill**

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LIQUID WASTE - ISSUES

- ✚ Norms according to recipient – surface, sewage, marine or irrigation
- ✚ Norms strict for surface and irrigation
- ✚ Conventional treatment technology followed by ETP/CETPs
- ✚ Can treat for all parameters except TDS, Cl and SO₄



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LIQUID WASTE - ISSUES

- ✚ RO only technology option for treatment of TDS
- ✚ ZLD mandated in Tamil Nadu – besides recovery of clean water, reject of RO to be evaporated, salt separated and used/disposed safely
- ✚ ZLD must be last option, too expensive and sophisticated
- ✚ 15 CETPs in Tamil Nadu, 13 in various stages of ZLD installation



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SOLID WASTE - ISSUES

- ✚ About 1800 tonnes per day, almost entirely converted into byproducts except for sludge
- ✚ Primitive technology, low value addition
- ✚ Some technology not safe (burning of chrome shavings)
- ✚ Should be deemed as a valuable asset, need for technology upgradation to get value addition
- ✚ Sludge disposal /utilization a major issue




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ZLD – TAMIL NADU – WHY AND HOW?

- ✚ Damage to soil and ground water
- ✚ Dwindling ground water
- ✚ Need to recover water/prevent danger to soil and ground water
- ✚ CETPs move towards ZLD facilitated by GOI funds
- ✚ Status – AEDOL – 4 CETPs, CEMCOT – 7 CETPs, 2 under ASIDE, 2 for dilution




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ZLD IMPLICATIONS

- ✚ Capital cost for upgradation – at current prices, about Rs.1.5 lakh/cubic meter
- ✚ Operational cost: Rs.120-150 per cubic meter
- ✚ Power/Fuel major components, 65% of CEMCOT.



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ZLD IMPLICATIONS

- ✚ First of its type, longevity of costly equipment, RO/Evaporators yet to be assessed
- ✚ Maintenance cost (Replacement of membranes, evaporator parts) yet to be assessed
- ✚ Competitiveness of the industry needs to be protected




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ZLD – SUSTAINABILITY - TECHNICAL

- ✚ Appears workable, 2 plants operating for about 1 year
- ✚ What to do with the recovered salt – its ultimate use or disposal
- ✚ Sudden repairs – temporary closure – assurance to industry reg. operation of factories
- ✚ How to reduce volume of water for evaporation/salt to be recovered – improved tanning technologies, many demonstrated by CLRI, need for open mind for adoption



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ZLD – SUSTAINABILITY - FINANCIAL

- ✚ Capital cost subsidized; if major revamp needed after say, five years, similar support needed if no cheaper alternative emerges.
- ✚ O&M Cost too high, needs some support, in terms of power/fuel cost.




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CONCLUSION

- ✚ Not yet a complete solution, use or disposal of recovered salt, yet an issue
- ✚ Technology available and demonstrated, but the issue is: at what cost?
- ✚ Unique initiative, needs solid support of government for continued success




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CONCLUSION

- ✚ Other countries watching Tamil Nadu's experience in ZLD
- ✚ Competitiveness of industry must be protected
- ✚ Dialogue between industry and government critical for success of the system and survival of industry



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