

## **A STUDY ON THE EFFECTS OF TANNERY POLLUTANTS IN SEMBATTU AREA TIRUCHIRAPALLI, TAMILNADU**

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**Key words :** Environmental pollution, tannery water pollution.

### **ABSTRACT**

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**One of the industries that cause pollution of considerable magnitude in Tiruchirapalli district is tannery. Sembattu, the study area known for its location of the airport in the district is a fast developing urban site. Number of tanneries located in the area whose effluents often left untreated affect the land and water of the surrounding regions. Based on the chemical analysis of the water samples collected the chemical entities that deteriorate the area have been identified.**

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### **INTRODUCTION**

Leather production involves tanning. Tanning is a chemical process converting the semi soluble proteins called the collagen present in the corium of animal skin and hides into tough, flexible, insoluble and highly durable leather. Tanning is of two types 1. chrome tanning 2 vegetable tanning. In the study area chrome tanning method is adopted. The serious disadvantage in this method is the generation of large amount of waste water. Hence treatment of waste water is essential. Screening and biological treatment of wastes are employed in the study area without much success. Screens are used to remove fleshing, hair and other floating substances. In most of the tanneries, sedimentation tanks are used to remove the suspended solids. The chromium is removed along with the sludge. The sludge is dried over sand. No appreciable reduction of dissolved solids, BOD, COD, colour and chloride can be achieved in this treatment process. In the biological treatment chemical coagulation is used. Several coagulants like Alum, Ferric chloride,

and Ferrous sulphate have been used. Ferrous sulphate is said to be the best coagulate for the effective removal of colour, chromium, sulfides, BOD and suspended solids from chrome tan wastes.

## MATERIALS AND METHODS

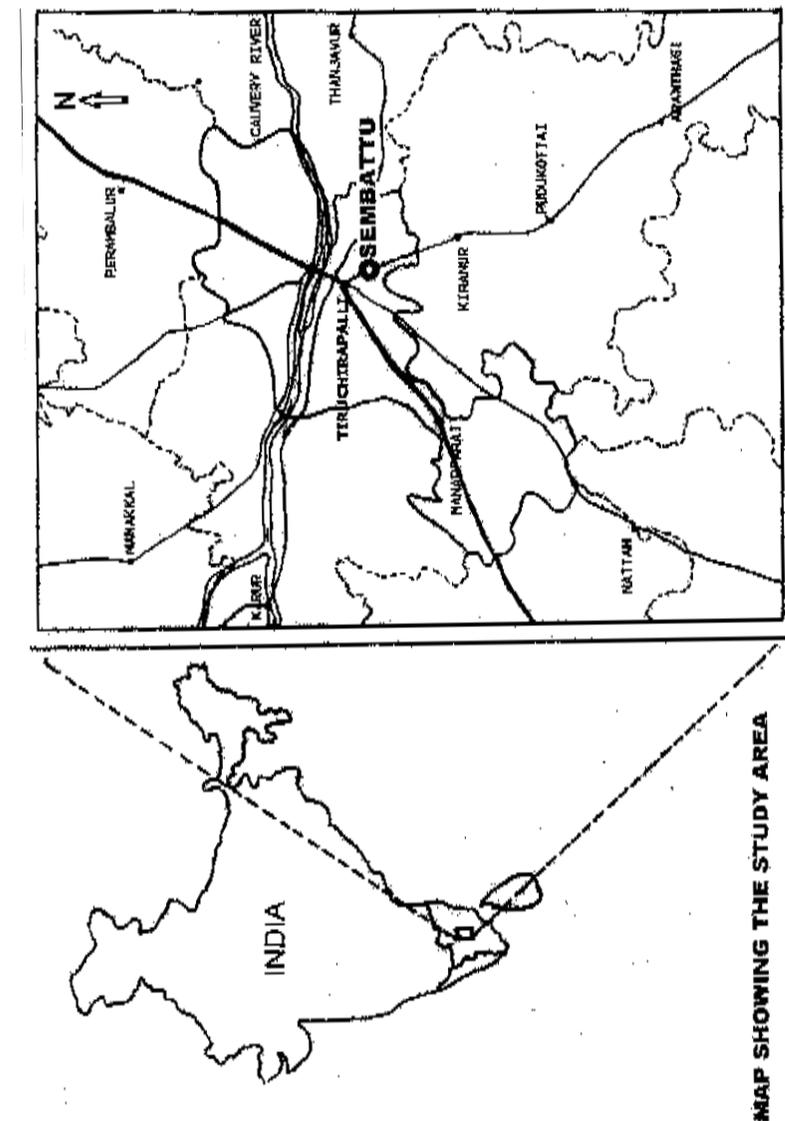
Water samples were collected from twelve locations in the study area as per the standard procedure. pH was determined using EC digital pH meter. Determination of Dissolved oxygen, Chlorides, total hardness, iron, lead and manganese were done using the methods APHA (1989) and Trivedy and Goel (1986). The results are presented in table 1.

**TABLE - 1**  
**The physico chemical characteristics of water collected from the study area**

Sr. No.	pH	Total hardness (ppm)	Dissolved oxygen (ppm)	Iron (ppm)	Manganese (ppm)	Chlorides (ppm)	Lead (ppm)
1.	9	625	0.3	22	0.5	320	0.8
2.	9	618	0.25	20	0.8	300	0.8
3.	8.7	642	0.3	25	0.7	340	0.5
4.	8.5	627	0.3	28	0.5	280	0.9
5.	8.6	600	0.3	21	0.6	420	0.85
6.	8.6	614	0.3	23	0.8	320	0.67
7.	8.5	618	0.25	20	0.6	310	0.5
8.	8.6	620	0.3	21	0.5	320	0.6
9.	8.3	610	0.3	25	0.5	310	0.6
10.	8.5	620	0.4	23	0.3	320	0.5
11.	8.3	630	0.6	25	0.4	320	0.6
12.	8.4	620	0.4	24	0.5	310	0.4

## DISCUSSION

Though, tanneries are economic ventures involving huge amount of investment of money, employment of man power, they cause a pollution of very high order. Tanneries by their effluents affect air, water and the land characteristics. They affect both physical and chemical environment. Since the physical environment exerts a dominating influence on the culture and civilization its impairment should at any cost be avoided. Man as a geological agent, by lack of proper planning, without foresight of the sensitivity of the environment has become an influence of negative significance at the cost of development of the society. Absence of organic matter, low turbidity, color, obnoxious odor, hardness greater than 600 ppm iron, manganese and lead greater than 20, 0.5 and 0.4 ppm respectively and alkalinity greater than 8.5 are the characteristic features of the tannery effluents in the study area. The pollution in the study area if left to be continued will affect the cost of main-



tenance of even the unpolluted living space nearer to the study area. Hence it is recommended that the landscapes in and around Sembattu have to be divided into number of zones. Thus zones of maximum pollution can be separated from the area without much pollution. Once separated the population in the zones of maximum pollution should be raised to an awareness level about the implications of the dangers. Such a public awareness may make people to keep the environment cleaner to a maximum possible level. The continued trouble with deteriorating environment as in the case of an area with tanneries will definitely worsen if proper measures are not taken immediately. Greater emphasis in law on environmental reduction and its implementation are the need of the hour.

## CONCLUSION

Environmental Contaminants- The solid wastewater and air have been found to be instrumental in affecting the organic character of the soil making it unsuitable for agriculture, water as a non potable and air filled with bad odors (Central Pollution Control Board, 1995 and Mohammad Ajmal and Rasi Uddin, 1986).

Environmental Additions- The place has been rendered unsightly substances detectable and shown by experiments to be a potential danger to life.

Environmental Hazard- The organisms especially plants are at immediate risk.

Chronic pollutants- Addition of alkaline salts, increasing hardness and high levels of iron, manganese and lead are identified as chronic factors and the situation will deteriorate unless measures to improve the conditions are not taken (Fergusson, 1990).

Biological damage- This is severe but recovery is possible in some places, if sufficient action is taken immediately.

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