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THE TOXIC PRICE OF LEATHER

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ABSTRACT

Tanning industry is a one of the traditional business industry in India. The leather based industries can emphasize to be the world's one of the largest industrial sector based upon a by product. Leather and leather goods are vital role in the foreign exchange earnings. There are several processes involved in leather making, one of the process is tanning. In tanning process, higher concentration of chromium is commonly used. Whereas chromium is regarded as one of the toxic heavy metal. The disposal of these chromium effluent into water bodies is known to cause various ill effects to tannery workers. In this review, we have also dealt about current problems and constraints for development of leather industry.

KEY WORDS : Leather industry, Tanning process, Pollution, Health hazards, Problems

1.INTRODUCTION

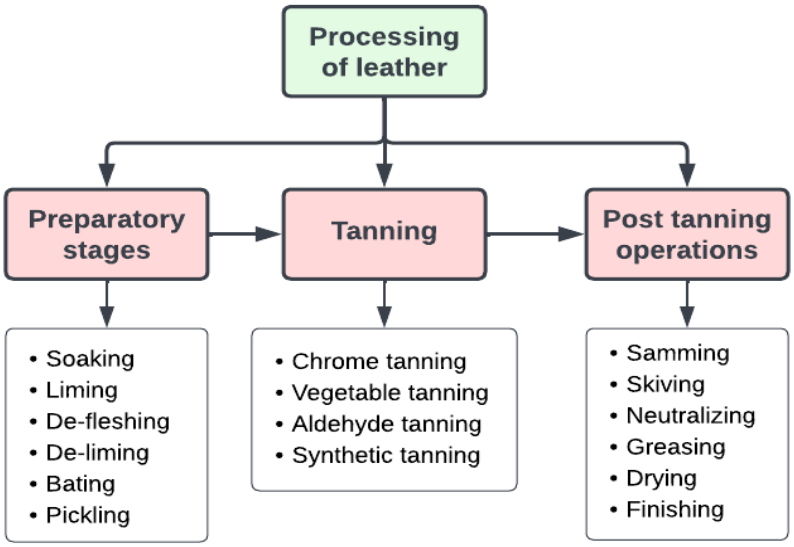
Leather industry is a very old manufacturing sector producing a broad range of goods such as leather footwear, leather bags etc. Leather and its products are one of the most traded products globally. The primary raw material for any leather processing industry is derived from slaughter houses and waste from the meat industry. This raw material is processed and converted into usable leather in tanneries with use of harmful chemicals such as chromium. These chemicals also causes health hazards to the tannery workers. Thus, leather industry consumes resources and produces pollutants which are toxic and hazardous to the environment.

OBJECTIVE OF THE STUDY

- To know about the tanning process
- To examine the impact of tanneries on workers life
- To know about the vegetable tanning
- To analyze the current problems of the industry

2. METHODOLOGY

STEPS INVOLVED IN LEATHER PROCESSING



Flow chart of leather processing

2.1 Soaking

Soaking is the first step involved in tanning where the preserved raw skins or salted skins are treated with water to make the skin dirt free and soft.[1] The main purpose of soaking is to remove salt, rehydrate the dry skin and also to remove unwanted materials like blood, soil, dung, etc. The soaking time depends on condition of skins or hides. [2]

2.2 Liming

The second operation is liming which involves the removal of hair and unwanted materials which are not transferred to leather. It also loosens the epidermis and also remove soluble skin proteins. It uses lime and sodium sulphide as liquor [3]. Dehairing and fleshing is also done in order to remove extra flesh and allow tannins to penetrate easily.

2.3 Deliming

Deliming is the process of adjusting pH between 8-9 which enhances the enzyme activity and converts proteins into soluble forms. It uses ammonium sulphate and results in de-swelling of pelts.[4]

2.4 Bating

Bating makes the grain surface soft and flexible. It prepares skin for tanning. It is an enzymatic operation which removes unwanted proteins and increases the degree of stretch [5].

2.5 Degreasing

Degreasing is a process used to remove extra fat and oils which allows the tannin to penetrate easily through the skin.

2.6 Tanning

Tanning is the main operation which converts skin or hide to stable material called leather. In this step tannins are allowed to interact with the prepared skin which act on collagen and make it stable

2.7 Fixing

Formic acid is mostly used in this process which ensures homogenous tanning of hides in leather processing[6].

3.DISCUSSIONS

HEALTH HAZARDS OF WORKERS

The tanning process is applied with various tanning materials able to form stable bonds with collagen in order to provide the leather with a stable form and high thermal stability. Chromium is one of the harmful chemical which is used in tanning process. The chromate mimics the sulphate in its structure and surface charge which can enter the cell and cause cancer, eye irritation and skin allergies. There is a high risk of getting cancers to the workers exposed to hexavalent chromium for a prolonged time. It has been reported lung cancer among workers in chromium chemical production.[7].Repeated exposure to hexavalent can also damage the respiratory tract and may also cause nasal cancer[8]. Direct eye contact of chromate cause permanent eye damage and eye irritation[9]. Prolonged exposure to skin cause skin allergies, dryness, fissured skin, skin ulcers and swelling [10]. In other way some workers may develop allergic sensitization where exposure to small amount cause serious skin rash. Other effects of chromium include dizziness, growth problems, reproductive disorders, discoloration and erosion of teeth .

3.1 VEGETABLE TANNING

Vegetable tanning is the most suitable ecofriendly process which results in release of less pollutants to the environment [11]. It involves usage of tannins extracted from various parts of a plants such as quebracho (20%), chest nut (10.7%) and behra nuts etc. They are mainly used due to the presence of high tannin concentration.[12].The process of vegetable tanning are,

1. Pre- tanning
2. Tanning
3. Dyeing
4. Hot stuffing
5. Drying
6. Finishing the leather

3.2 PROBLEMS AND CONSTRAINTS FOR THE DEVELOPMENT OF LEATHER INDUSTRY

1. Poor livestock management
2. Poor quality raw material supply as a result of ante-mortem and post-mortem handling of hides and skins
3. Low off-take and recovery rates
4. Lack of skills, technology, intermediate inputs and processing equipment
5. Stiff competition among the existing tanners
6. Low utilization of industry capacity
7. Lack of or poor policies for the specific development of the sector
8. Poor linkages among different organizations involved with hides and skins

4. CONCLUSION

Leather products are manufactured by tanning processes with the use of harmful chemicals. From this we examine that these chemicals causes several health hazards to the tannery workers and this affect their quality of life. An alternative to harmful chemicals can be followed to reduce the health risk of workers. Hence a vegetable tanning process can be followed to attain eco friendly results. Tanning industries also causes pollution to the global environment and this can be reduced by implementing advanced technology in leather process and effluent treatment plans can solve the environmental problems.

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