

OSH SURVEY OF TANNERIES



Korangi Leather Area (KLA)

Karachi



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SURVEY REPORT

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Content

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Executive Summary

The Korangi Leather Area (KLA) in Karachi, Pakistan, represents a vital hub for the leather tanning industry, encompassing over 120+ operational tanneries. This sector is not only pivotal to the local economy but also contributes significantly to Pakistan's export portfolio, with a balanced mix of tanned leather and value-added products. However, the process of leather tanning and product manufacturing is fraught with occupational hazards, primarily due to the extensive use of chemicals and heavy machinery.

The tanning industry of Karachi is primarily concentrated in Korangi since most of the operating tanneries are located there. The leather sector in Karachi comprises of two types of manufacturing activities: wet processing factories (tanneries); and value addition units (garments making and stitching). Total leather exports are comprised of ~ 48% tanned leather and ~52% value added products. Tanneries are involved in processing the raw material partially or fully to finished leather (from raw hide or skin to finished leather, the tanning unit might process only from raw to wet blue, or from wet blue to finished leather, or from raw to finished). There are more than 100 tanneries in Karachi, almost all of them located in one cluster – sector 7/A of Korangi Industrial Area.

Currently, the practices surrounding Occupational Safety and Health (OSH) in KLA require urgent evaluation and enhancement to protect the workforce and align with international compliance standards, such as those set by the Leather Working Group (LWG). The informal handling and sale of tanning byproducts, such as tallow, underscore the need for a structured approach to industrial waste management that also considers worker safety and environmental impact.

As per the survey, most of the large-scale tanneries are following safety but no proper trainings are being provided or systems are developed. Light and ventilation system is proper thorough out most of the tanneries and they are having proper waste disposal mechanism. However, proper safety education and trainings are required specially in the low scale tanneries. Around 66% comply to maintenance, equipment, risk assessment and 91% comply to chemical handling and safety through standard and non-standard methods. 99% tanneries comply to good housekeeping. Equipment and machineries are well managed mainly due to business dependency on them, however, standard operating procedures are missing. 99% tanneries provide PPEs to their workers, however, compliance to the use of PPEs is not fully observed by the workers in some tanneries. This can be improved if penalty-reward policy can be implemented along with the proper trainings.

Improvement chances are present in every process area of the tanneries, ventilation systems can be improved, chemical and electrical safety education needs to be provided rather than depending only on the experience. Improvements can be made in some areas like chemical transfer procedure, incident report mechanism, employment training, work place safety by following safety standards and implementing regulatory requirements. Tanneries do not carry out any kind of environmental monitoring and testing, other than certified tanneries, thus the impact of the processes on the health of their respective workers cannot be evaluated.

OSH survey of tannery operations reveals critical insights into the current safety and health practices within the industry. To address these issues and enhance overall workplace safety, we recommend implementing more rigorous safety protocols, investing in worker training, and improving personal

protective equipment utilization. We urge tannery owners and other stakeholders to prioritize these actions to mitigate risks and ensure a safer working environment.

Consultant Profile

Syed Yasir possess more than 12 years professional experience and have worked with different international and local companies in middle east and Pakistan. He has served as an environmental consultant for different companies and Industries for around 8 years. He has acquainted himself with environmental management systems, initial environmental examination, environmental and social impact assessment, environmental laws and principles, environmental monitoring and testing etc. He has conducted several environmental audits and participated in environmental monitoring activities to achieve the environmental compliance and business goals for the clients.

Conformity, Assessment & Sustainability Services Company (CASSCO) has been established in 2012 as a partner. People in the marketplace recognize and trust CASSCO's services through its team of professionals, providing business services for Management Consulting of International Standards Implementation, Maintenance, Monitoring & Evaluation of Projects, Environmental Services for Testing & Analysis of Environmental Compliance parameters, Environmental Impact Assessments, Environmental Management & Monitoring Plan, Independent Inspections, Audits, Assessments & Trainings.

We aim to provide efficient, timely and cost-effective services to our local and international customers, keeping in view quality conscious approach, thus helping them to meet the day-to-day challenges of business risks and opportunities, quality/environmental and health and safety compliance/maintenance, social and economic impacts, human resources requirements and trainings & development needs.

To align our processes according to the internationally recognized quality standard, CASSCO achieved Certification of Quality Management System as per ISO 9001: 2015 Environmental Management System ISO 14001:2015 Standards and our Laboratory is in the process of achieving ISO 17025 accreditation. CASSCO's services are yet unique with a focus to continual improvement, following on the particular industry's best practices, benchmarking and using recognized methodologies of project management in evaluation of scope, execution of projects and completion of deliverables in a professional and innovative manner.

Introduction

Introduction

Leather is a by-product of the meat industry and its main source of raw material is cattle hides and skins. It is the primary product of tanning sector, and is further processed by value adding industries such as footwear, garments, furniture and automotive.

Tanning is the process of treating skins and hides of animals, mostly cattle, to produce leather. Historically, the tanning industry was characterized by small or medium-size family businesses. However, with increase in demand of tanned leather and finished leather products, tanning processes evolved with the formation of larger players in the industry. Today, there are various ways for tanning hides and skins into leather. The quality of hides/skins is largely affected by the livestock management processes, slaughtering expertise, preservation methods and grading techniques through which they are produced. Globally, leather is one of the most widely traded commodities in the world. This industry plays a significant role in the contribution of economy of the world. The major exporters of the leather are USA, Brazil, Italy, China, Germany and Italy being the largest exporter with an estimated amount of 3394.4 million USD. While USA contributes largely to the import having around 18.7% share worldwide.

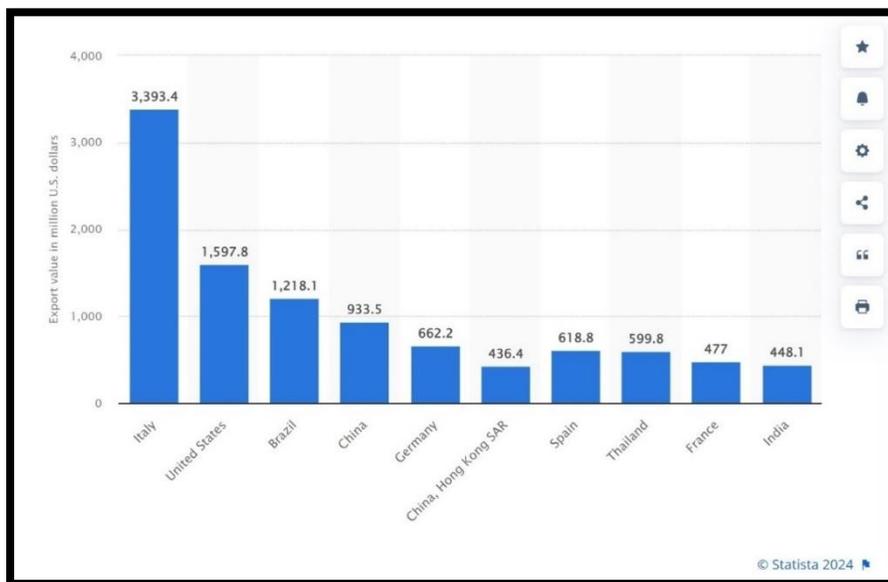


Figure 1. Leading Exporters by Country, 2022 (in million USD)

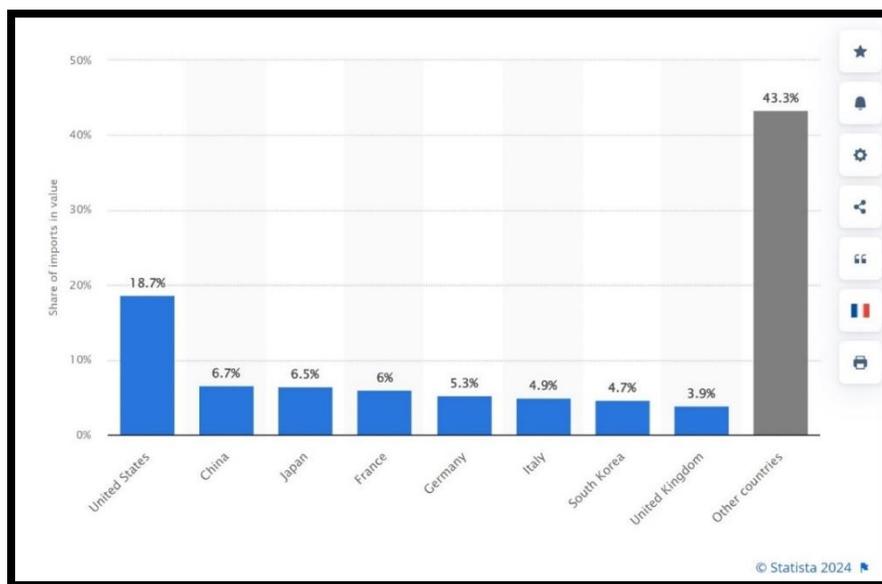


Figure 2. Leading Importers by Country, 2022

Pakistan has a well-established leather industry with abundant supply of raw material. More than 800 tanneries produce finished leather for both exports as well as for domestic consumption in the country. The leather industry in Pakistan is largely export-oriented with top 25 tanneries contributing around two-thirds of total share. Large tanneries are located in three main clusters around Karachi, Lahore and Sialkot. According to Pakistan Bureau of Statistics, leather industry ranks the second biggest export-oriented industry of the country after textiles. Moreover, Pakistan's share in world leather trade is almost 1%. Leather exports from Pakistan can be categorized under five broad categories: 1) gloves 2) finished leather 3) footwear 4) garments and 5) other leather goods. According to the Pakistan Tanner Association (PTA), leather contributes 5.0% to GDP and 5.4% to the country's foreign exchange earnings. Germany, USA, United Kingdom, Turkey, Japan, France & UAE are major export markets of Pakistani leather products.

Currently the industry is experiencing a downturn; facing a challenging operating environment with significant pressure on sales and margins. On account of 78% of the nation's total leather and leather production serving as exports to the country, a mass of adverse external factors largely affected the local leather industry. Not only external factors but certain internal factors also contributed highly to the demeaning performance of leather industry. These factors include high utility and labor costs, scarcity of skilled labor, outdated machinery and infrastructure, energy & water crises, low grade quality of hides & skins and delay in export rebates.

Among other internal factors, another significant issue contributing negatively to the leather industry is continuous load shedding. Such issues give rise to the probability of the unmet targeted export orders in time as well as fetching foreign exchange for the country. Tanning industry must be relieved from these problems in order to keep up with the demand of importers and protect itself from exchange rate fluctuations. According to Pakistan Tanners Association (PTA), Pakistan is the only country that experienced a negative growth in exports as opposed to the positive growth in its regional competitors namely India, China and Bangladesh.

In Pakistan, leather industry helps in economy of the country by creating hundreds of jobs and attracting foreign currency. But OSH conditions of the industry is poor. There are several reasons for the tanneries to not comply the proper OSH, which are lack of investment, awareness among the owners and labor, unskilled, illiterate and poor financial conditions of the labors. The compliance to safety of the workers can play a major role in the development of tanneries which eventually, enhance the job circles as well the economy of the country.

Occupational Health & Safety

OSH defined as **Occupational, Safety and Health** is the discipline that deals with the safety and health of the workers during their job/work by providing injury free and protected environment. OSH helps in catering the health hazards and dangerous working conditions of the workers causing from machineries, working at height, exposure to chemicals. It also includes the hygienic conditions of the workers. The purpose of OSH is to improve the working conditions and reduce the occupational hazards to the minimum. The OSH not only considers the safety of workers within the specific organization but also their families, customers, suppliers and visitors as well.

OSH in Tanneries:

From the production of raw leather to finished goods, it is a labor intensive and harmful process. Tanning comprises of the following processes:

1. Pre-Process
2. Pre-Tanning Process
3. Tanning Processes
4. Wet Finishing Process
5. Dry Machining
6. Finishing

Preprocessing involves the treatment of skin with salt and trimming is done. In pre-tanning the skin is soaked and water and then hairs are removed using lime. Fleshing is also carried out in this process. Deliming is carried out using Ammonium Sulfate and forwarded further for bating and degreasing (using soap). Tanning is basically the treatment of skin with acid, which is called pickling, for preservation. The tanned skins are called wet blue. This wet blue will be sliced into desired thickness, if required, and then taken to wet finishing

process. In this process fat liquoring is done to give the desired softness and dyes are used to give the color. Afterwards, the leather is dried using different methods like vacuum drying, stacking, shaving trimming and pressing. Finally, it is sent to finishing department to get the desired products.

All these process uses many types of chemicals, machineries and process that requires safety and use of protective equipment to avoid any injury or casualty.

Since the manufacturing of leather involves a lot of water as well, thus the floors becomes wet during the process that can be an occupational hazard as well.

As discussed above there are several areas that creates problems relating to the occupational safety and health of workers, every specific area has potential source of hazards. The categories of hazards are as follows:

Chemicals:

The lack of awareness and knowledge of proper storage of chemicals. Also, handling of hazardous chemicals is not as per the standard. There is no complete closed system for transfer of any type of chemicals whether hazardous or nonhazardous, either it is a liquid or in powder form. Local supplier didn't provide the safety data sheets. Also, if provided, most of the tanneries do not have translated version in local language and not available at site. Mostly, Labor is also not aware or trained in this matter verbally.

Machines:

Two types of machines are being used i.e., locally manufactured or imported. Usually, the machineries are very old and are decades old. Newly imported machines have all the active and passive devices; however, old and local machines do not have such safety devices.

Machines poses two types of hazards, namely, mechanical hazards and electrical hazards. Mechanical hazards are like noise and vibration of machines while running, dangers of injuries due to unavailability of active and passive devices. Electrical hazards are caused by inadequate maintenance of electrical installations, corrosion, poor quality of insulations, open panels etc. This negligence may cause a serious injury, electric shock or can even cause a fatality to the workers.

Working Area and Environment:

Other than mechanical and electrical hazards there are other hazards such as high temperature, suffocation, dust/mist, poor lighting and housekeeping. Poor handling of volatile materials and powder chemicals causes poor air quality in the working area. Thus, there are threshold limits defined by OSHA for the safety of workers in specific area. However, due to lack of awareness long term exposure may cause harm in the long run to the workers. Few tanneries do not have enough extraction system and ventilation, also, good housekeeping has not been observed. Wet floors is another factor to be taken care of because at the time of running of drums the water is being splashed on the floor that can cause injury. Few tanneries also miss the safety at the platforms of drum.

Personal Protection and Emergency Response Plan:

Usually, the tanneries do not have any emergency response plan and fire fighting equipment. Personal Protective Equipment are being provided to labor by almost all tanneries, however, most of the labor do not comply to safety and work without using PPEs. This is due to the poor knowledge and consciousness towards their health and occupational hazards.

Survived

Quantitative and qualitative surveys are two distinct approaches to research, each with its own characteristics and objectives. Here are the key differences between quantitative and qualitative surveys:

Nature of Data:

Quantitative: Focuses on numerical data and statistical analysis. It involves collecting data that can be measured and expressed in terms of quantity. This approach is used to quantify opinions, behaviors, and other variables.

Qualitative: Focuses on non-numerical data. It involves collecting descriptive and subjective information, often in the form of words, images, or narratives. This approach seeks to understand the underlying reasons, motivations, and attitudes.

Research Design:

Quantitative: Typically follows a structured and standardized research design. It often involves large samples, structured questionnaires, and statistical techniques for data analysis.

Qualitative: Adopts a more flexible and open-ended research design. It often uses smaller samples, in-depth interviews, focus groups, or participant observations to gather rich, contextual insights.

Data Collection Methods:

Quantitative: Relies on structured methods such as surveys, experiments, or structured observations. Closed-ended questions with predefined response options are common.

Qualitative: Utilizes open-ended methods like interviews, focus groups, observations, or content analysis. It allows for exploration of ideas and allows participants to express their thoughts in their own words.

Data Analysis:

Quantitative: Involves statistical analysis of numerical data. The results are often presented in the form of charts, graphs, and statistical summaries.

Qualitative: Involves thematic analysis, coding, and interpretation of textual or visual data. Findings are often presented in narrative form.

Generalization:

Quantitative: Aims for generalizability. The findings are expected to be applicable to a broader population.

Qualitative: Focuses on providing an in-depth understanding of a specific context or phenomenon. The goal is not necessarily to generalize findings to a larger population but to gain insights into the studied group.

Purpose:

Quantitative: Often used to test hypotheses, establish relationships, or measure the prevalence of certain phenomena.

Qualitative: Used to explore, describe, or generate hypotheses. It is valuable for understanding complex social phenomena.

Both quantitative and qualitative surveys have their strengths and weaknesses, and researchers often choose the approach that best aligns with their research questions and objectives. In some cases, a mixed-methods approach, combining both quantitative and qualitative elements, may be employed for a more comprehensive understanding of a research topic.

A "Yes/No" survey is typically considered a quantitative survey. In a quantitative survey, the emphasis is on collecting numerical data that can be analyzed statistically. A "Yes/No" question structure provides binary, measurable responses, making it suitable for quantitative analysis. The goal is often to quantify the frequency or proportion of respondents who answer in a particular way.

On the other hand, qualitative surveys involve open-ended questions and seek to gather non-numerical, descriptive data. They aim to explore attitudes, opinions, and experiences in a more nuanced and in-depth manner.

In summary, if the survey is structured around "Yes/No" questions and intends to generate numerical data for statistical analysis, it is considered quantitative. If the survey involves open-ended questions and focuses on gathering descriptive insights, it is qualitative

An industrial survey is the research method which is used to collect and analyze data from any industry targeting specific component/sector such as opportunities, financial positions, career growth, safety and compliance etc. Survey questionnaires determine the quality of the survey. The questions must be designed in such a way that can get the precise, accurate, relevant and honest response from the targeted audience.

Tanneries OSH survey is related to overall occupational health and safety of the workers. It caters all the required responses that can help in achieving a better working environment for the tannery's workers in Karachi.

The survey form comprises of two types 1) Workplace Inspection and 2) Occupational Health and Safety.

These survey forms are designed by the PTA with the collaboration of UNIDO to assess the situation of tanneries. The target audience of survey are all the tannery owners, managers or supervisors that are directly involved in managing the tannery.

Workplace Inspection comprises of the following categories:

1. General Working Conditions
2. House Keeping
3. Work Climate and Facilities
4. Chemical and Material Handling
5. Emergency Preparedness
6. Personal Protective Equipment
7. Equipment/machinery
8. Hazard Controls

Occupational Health and Safety comprises of the following categories:

1. Risk Management
2. Chemicals
3. Machines and Electrical Installations
4. Maintenance

Workplace questions are **Rating Type** on the scale of 1-5 (**low to high**) and OSH questions are **Binary Type** (Yes or No).

The rating type will allow the user to answer in comparison to some standard and binary type means straightforward answer and help the respondent to answer quickly and easily.

Methodology

In this research study we have implemented a quantitative methodological approach for collecting the data which involved the design and development of the survey based on international standards of OSH. The survey was designed specifically to assess overall condition of the tannery from raw material receiving, its processing and finishing.

The survey questions cater the following aspects:

1. How tanneries processing units and exporters set and implement the workplace safety standards.
2. How much awareness tanneries owners and managers have regarding the occupational health and safety of their processes?
3. Growth potential of the tanneries with respect to OSH Compliance.

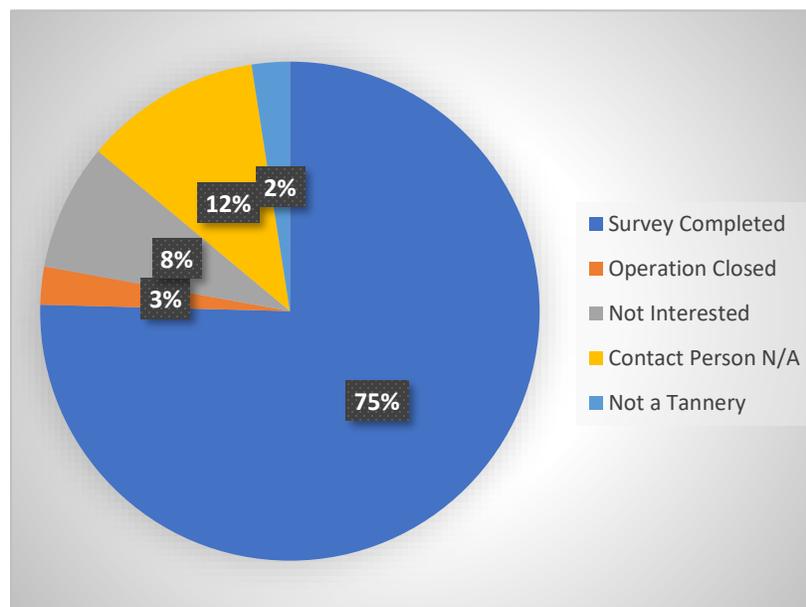
The survey was designed specifically for overall safety assessment of the tannery. Some questions are repetitive and same across the survey, however, it helps the respondent to answer more specifically.

The results of the Occupational Health and Safety survey of Korangi Leather Area cluster are summarized in this report. Both types of questionnaires are answered by the tannery's representatives. Since the local language is Urdu and many participants do not understand English easily thus the questions are explained to them in Urdu language so they can understand the questions clearly and answer precisely.

There are 122 tanneries in the list provided by the PTA (SZ ES). All the tanneries have been visited. Most of the tanneries are co-operative and eager to learn about the occupational, health and safety related to their unit and willing to make the environment better. Some tanneries that have participated show their intent of export and to obtain certification from LWG, some are under the process of LWG certification, which indicates their perception of business growth as well as willing to provide the better and safe environment to their workers. Few of the tanneries refused to participate, some didn't take interest, while despite visiting several times some representatives/owners were not available to answer the questionnaires. Out of 122 companies 30 were non responsive due to various reasons which is shown in below table:

TABLE 1. Summary of Non-Responsive Companies

S. No.	Status	No. of Tanneries
1.	Operations Closed	3
2.	Not Interested/Form Taken but not responded/Refused	10
3.	Owner/Contact Person Not Available	14
4.	Not a Tannery	3
Total Not responded		30





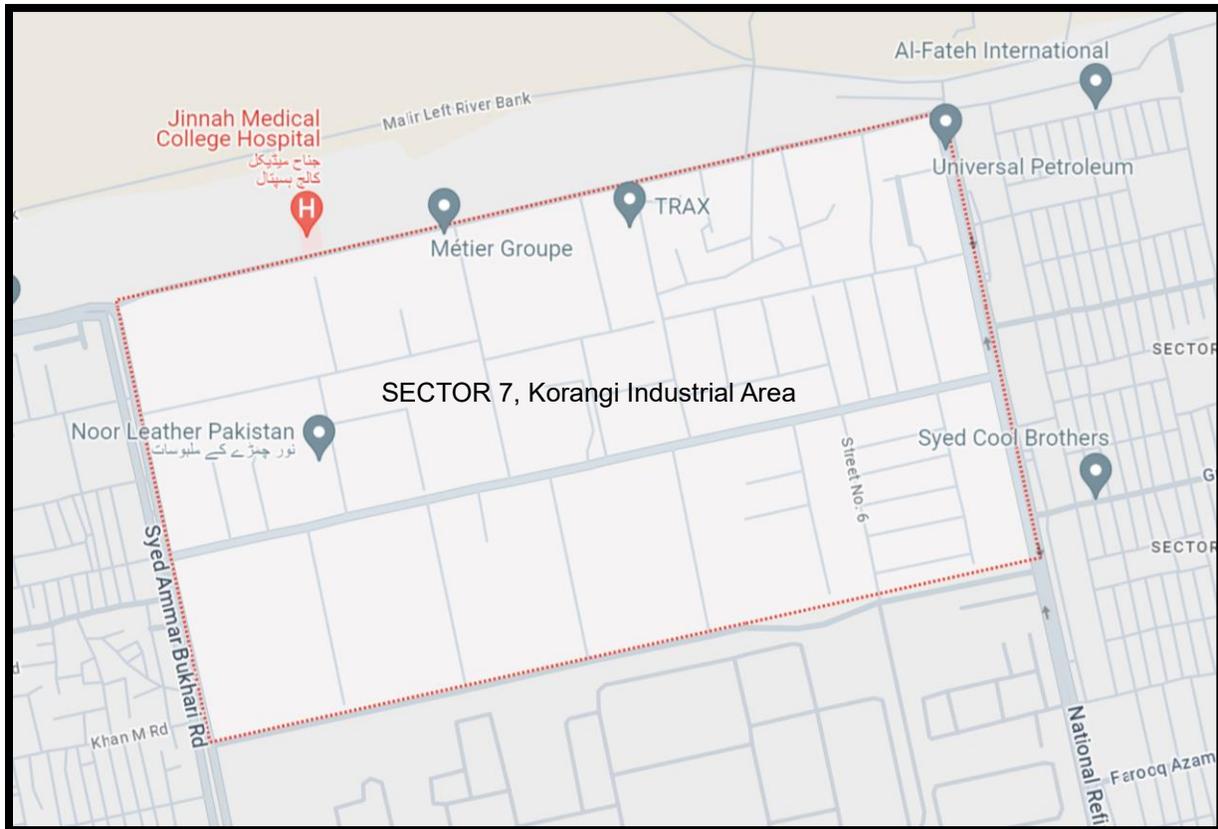
Statistical Analyses

are made on the segments of the survey. The averages of the responses are calculated and summarized. All the data was analyzed using MS Excel and Power BI. Both of this software are utilized for the statistical analyses and graphical presentations. The analysis is descriptive that is average and means are calculated. This helps the research to analyze the significant differences among the tanneries related to different workplace safety and hazards aspects and their impacts.

Findings

Findings

Workplace safety is of very vital importance in the tannery processing and it has an important significance among the stakeholders. The customer and international buyers play a vital role in the improvement of workplace health and safety of the tanneries. Regular audits and assessment related to occupational health and safety by regulatory body as well as customers opens vast business ventures for the local small-scale tanneries, while failure to compliance not only poses risks to workers but also adversely affects the business growth and opportunities. In this report, we will look into the findings, explore the analyzed data and further provide recommendation that can help the tanneries in improving work conditions and comply occupational safety and health standards.



KEY FINDINGS

1. Overall housekeeping of the tanneries is being nicely taken care by the process owners.
2. Safety precautions are taken, which are based on experience rather than any proper knowledge and training related to health, safety and environment.
3. Electrical safety is up to the standard in 99% of the tanneries.
4. Waste Disposal is made proper by collaboration with UNIDO waste management initiative.
5. Lights and ventilation are proper.

Analyses

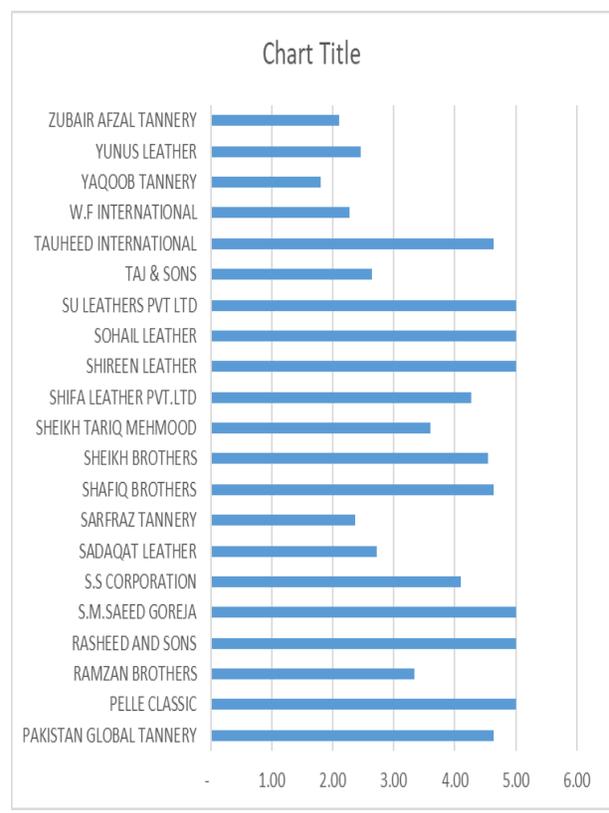
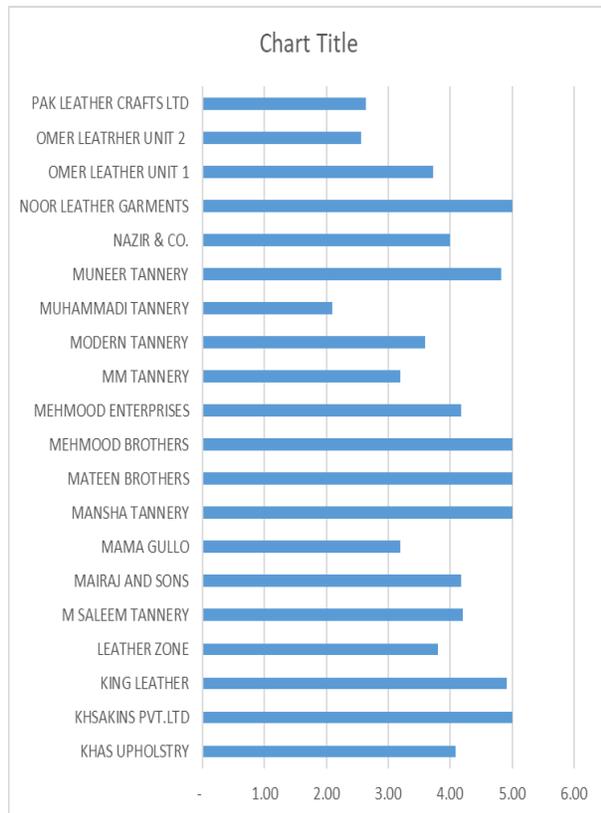
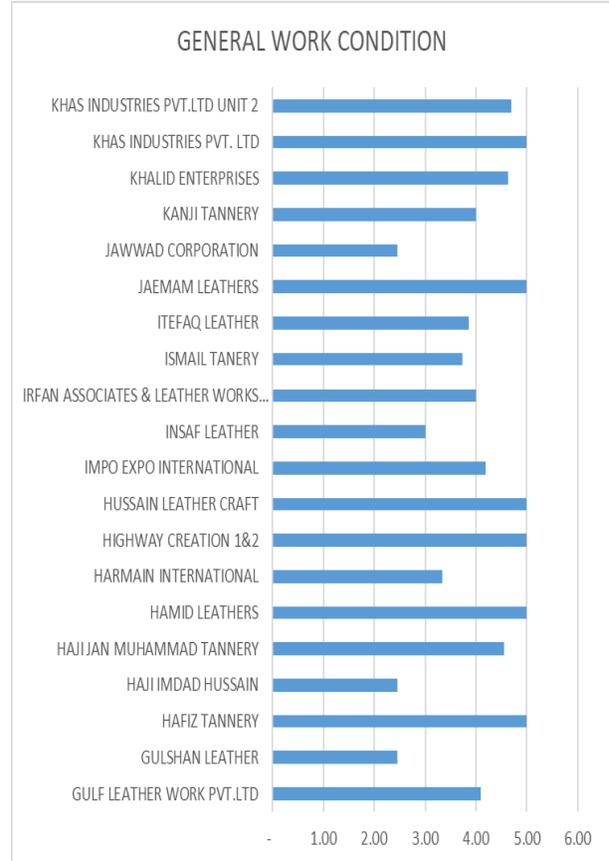
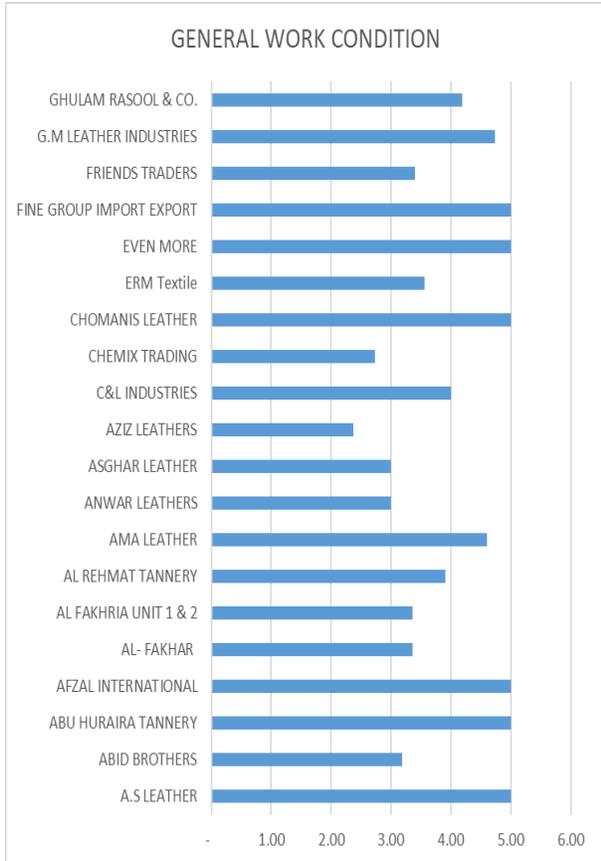
General Work Conditions



Around 25 out of 81 respondents have maintained their general work conditions up to the mark which makes around 31% of the total responses.



General Work Conditions of Participants-----



Housekeeping

Chemical/Material Handling,

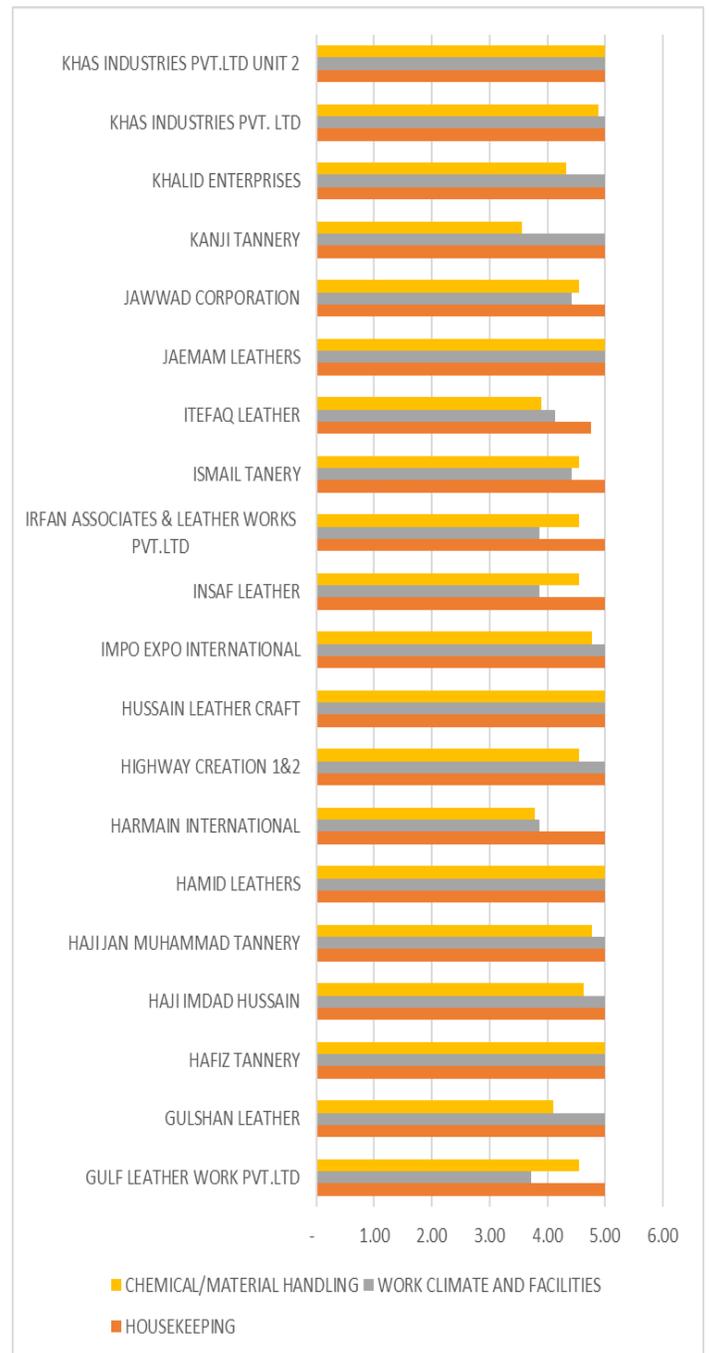
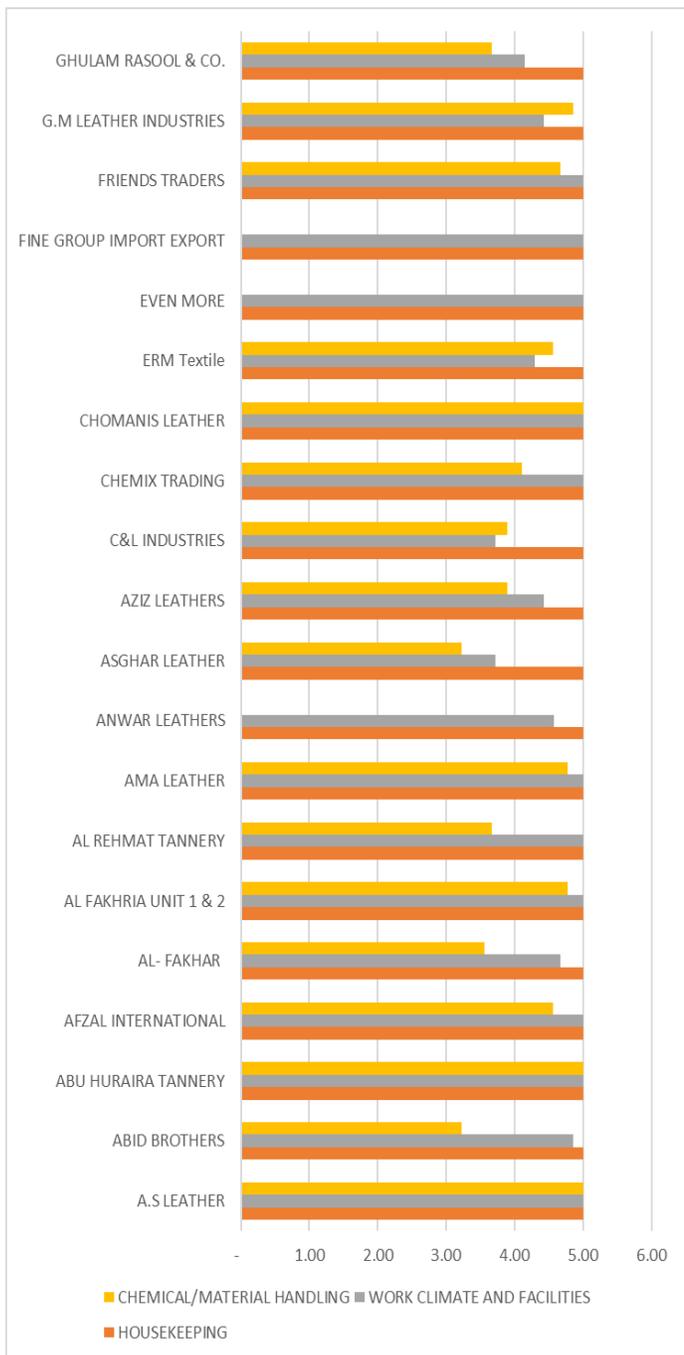
Work Climate and Facilities



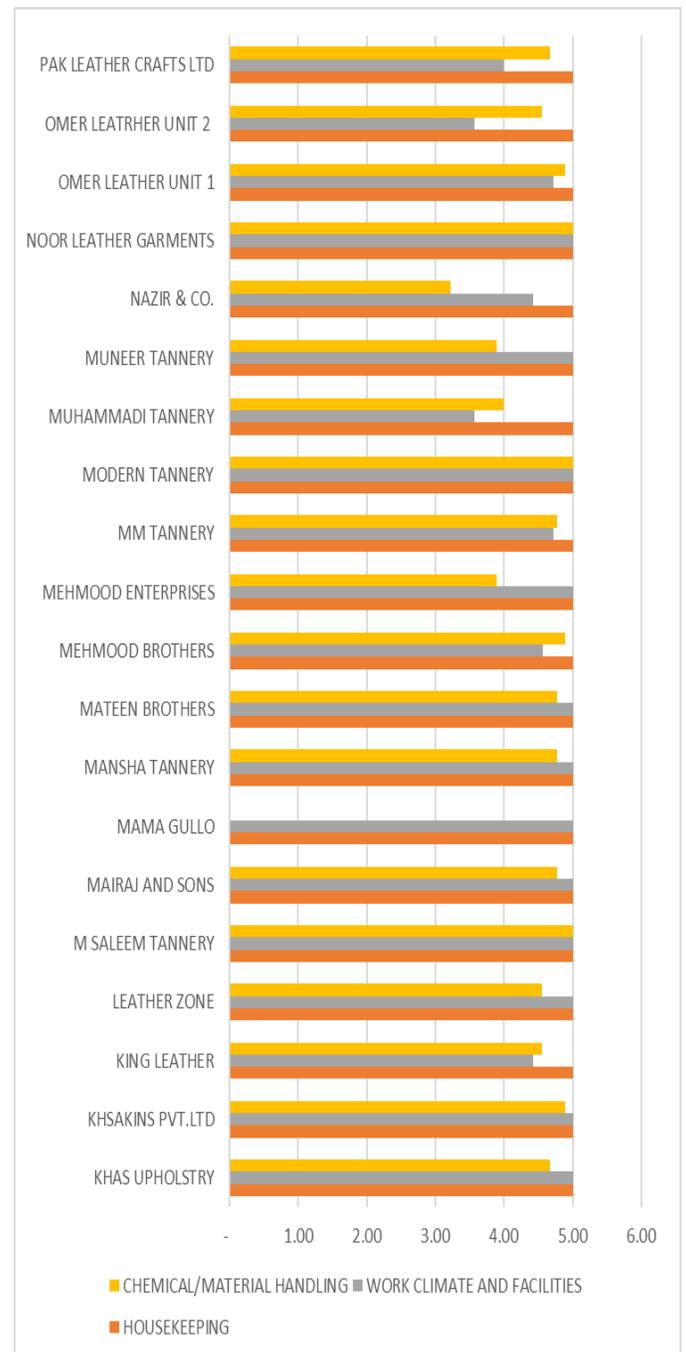
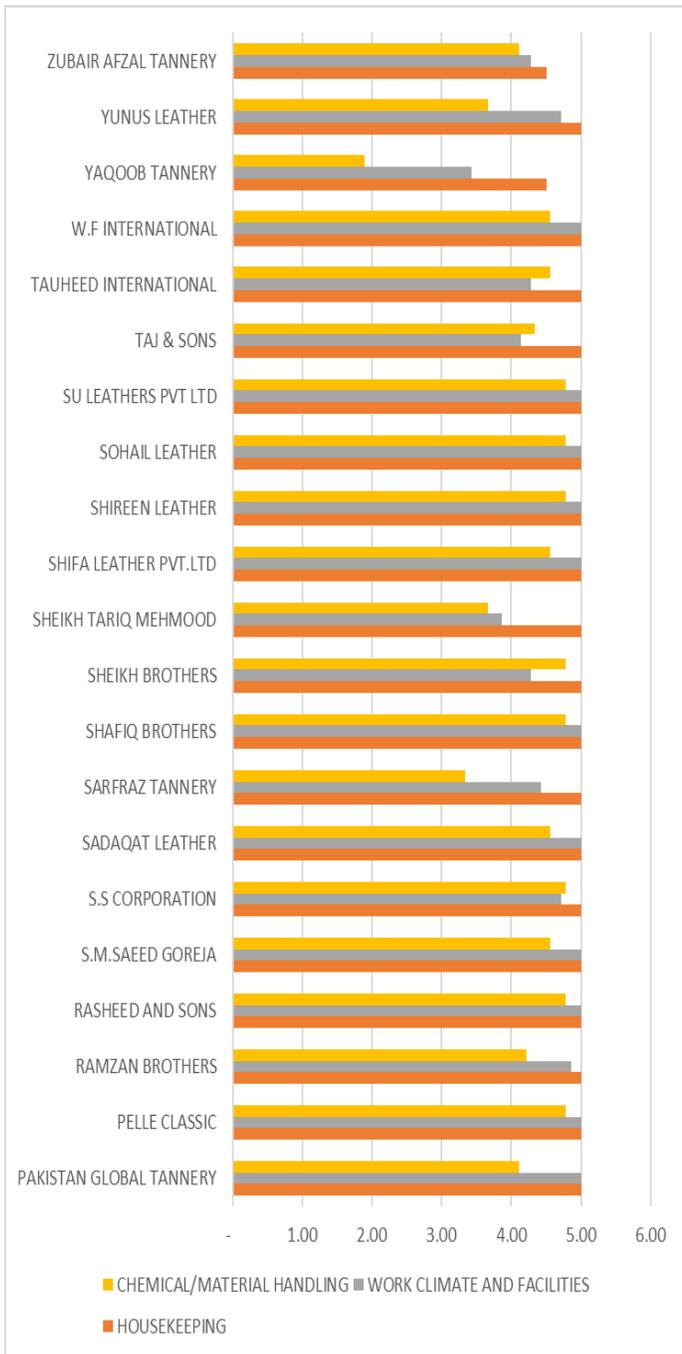
Overall housekeeping is very well maintained in tanneries. While, Housekeeping, chemical/material handling and work climate and conditions, all of three are up to the mark in only LWG certified or any other international certified tannery.



Housekeeping, Chemical/Material Handling, Work Climate and Facilities of Participants-----



Housekeeping, Chemical/Material Handling, Work Climate and Facilities of Participants-----



Hazard Controls

Equipment/Machinery,

PPE & Emergency

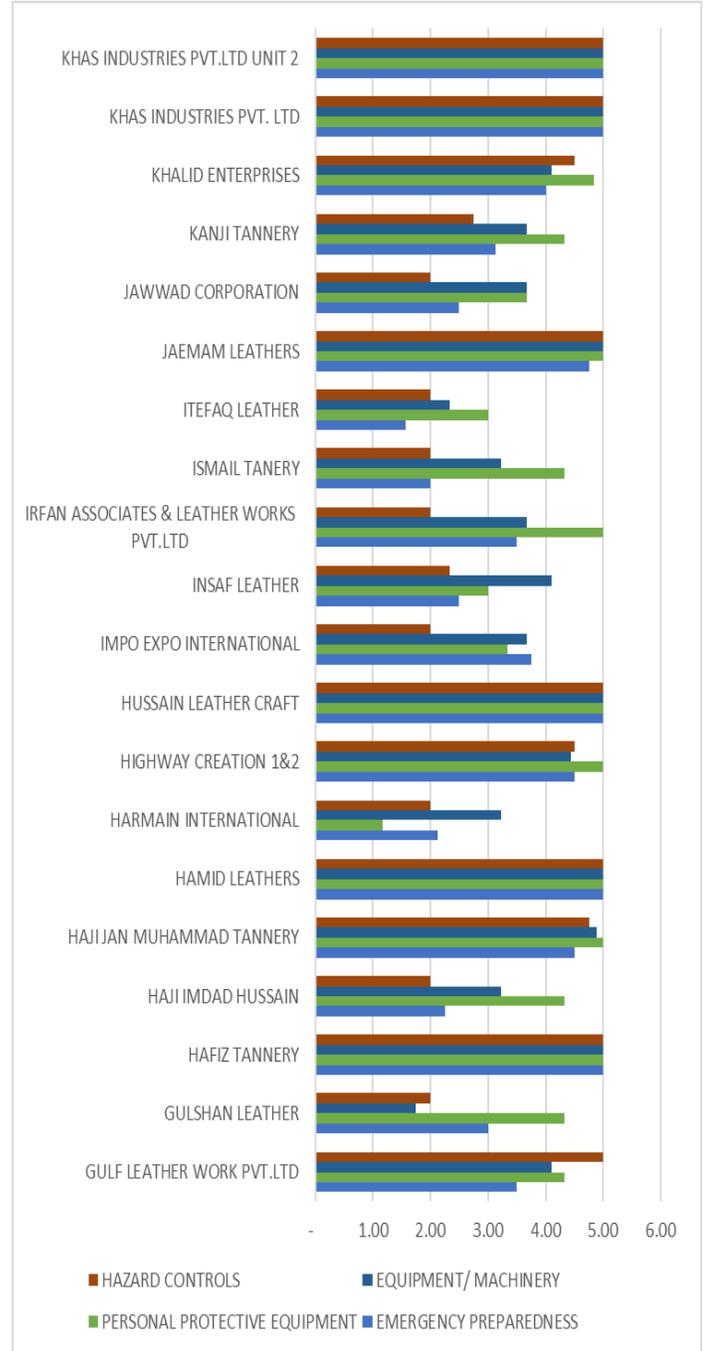
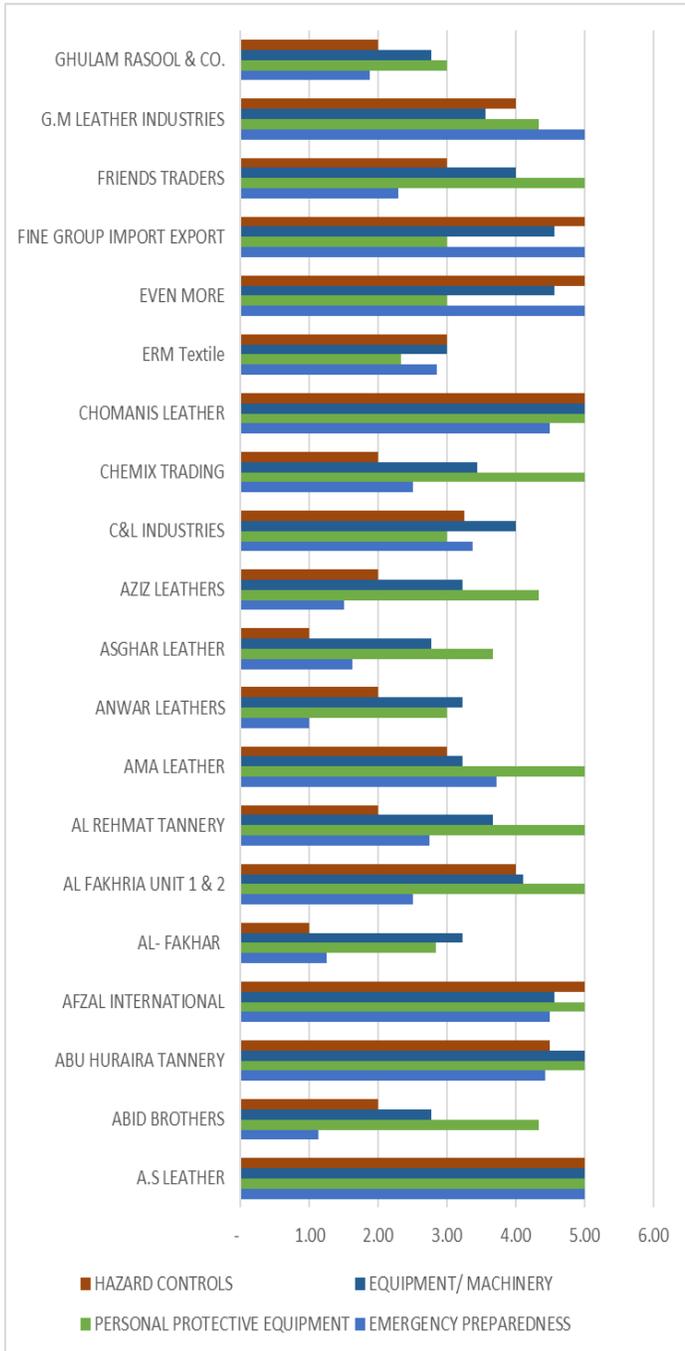
Preparedness



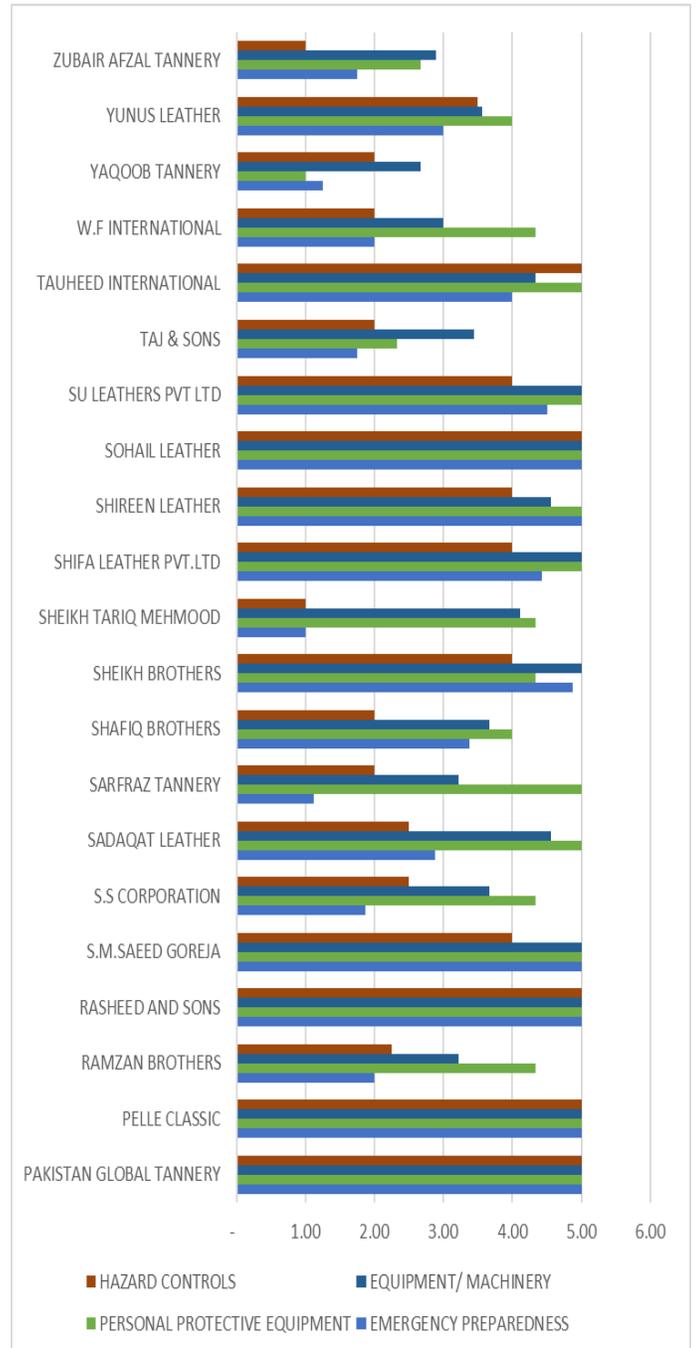
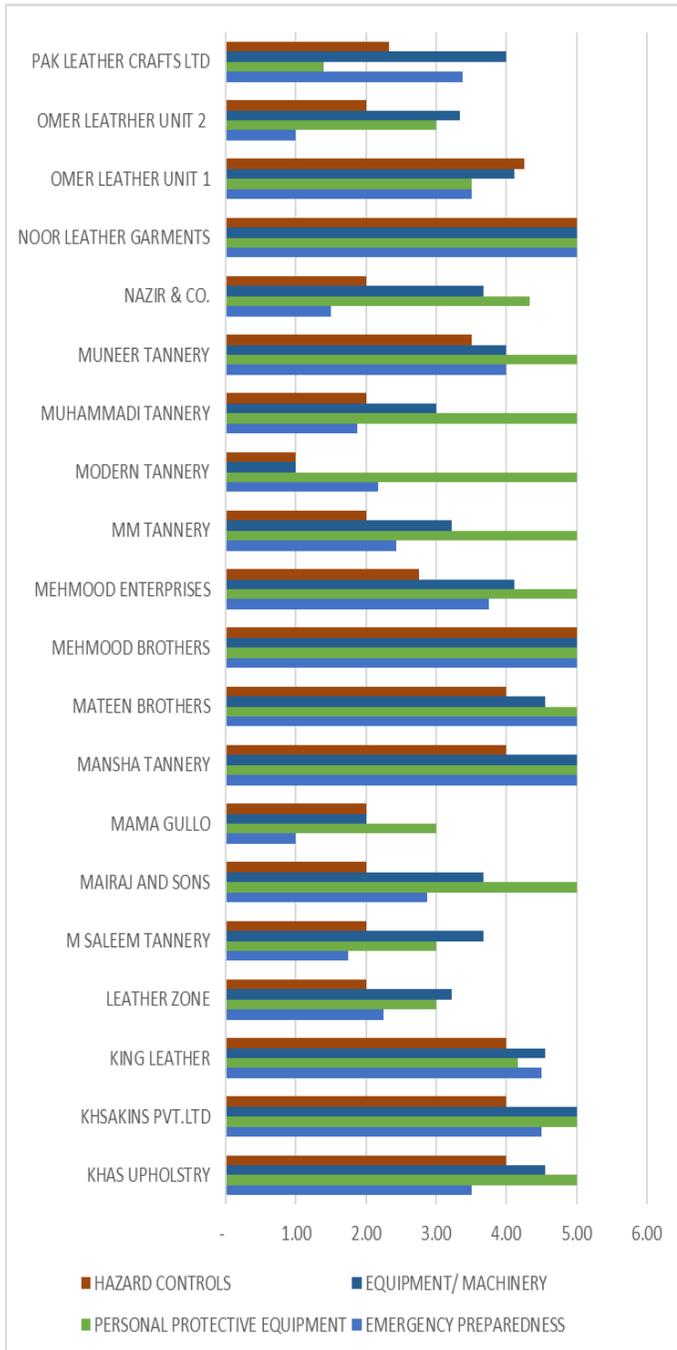
Around 14% comply to all Hazard Controls, Equipment/machinery Safety, PPEs and Emergency Preparedness. Other than these, 18% comply maximum to Emergency Preparedness. 99% tanneries provide PPEs to their workers, however, compliance by workers varies in industries. Almost 26% participants comply in Hazards Control. Equipment/machineries are well managed and around 40% responded positively to maximum questions related to equipment/machineries safety.



Hazards Control, Equipment/Machinery Safety, Personnel Protective Equipment & Emergency Preparedness-----



Hazards Control, Equipment/Machinery Safety, Personnel Protective Equipment & Emergency Preparedness-----



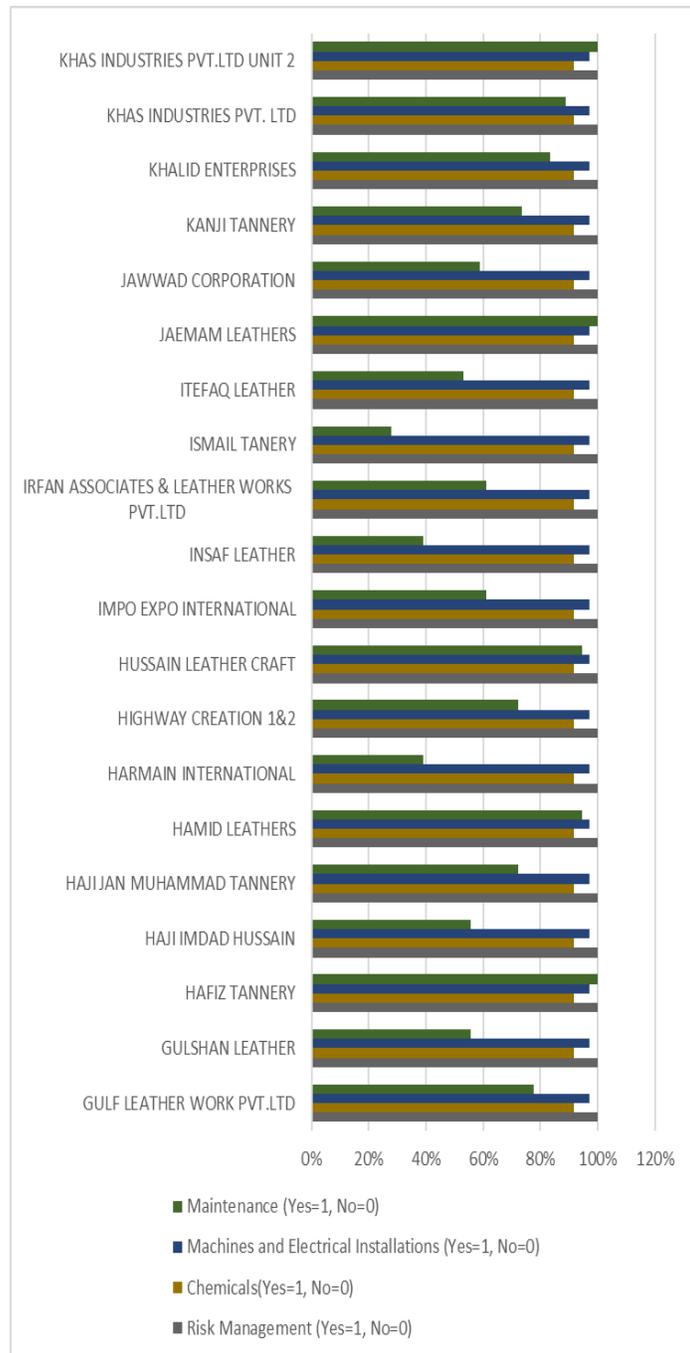
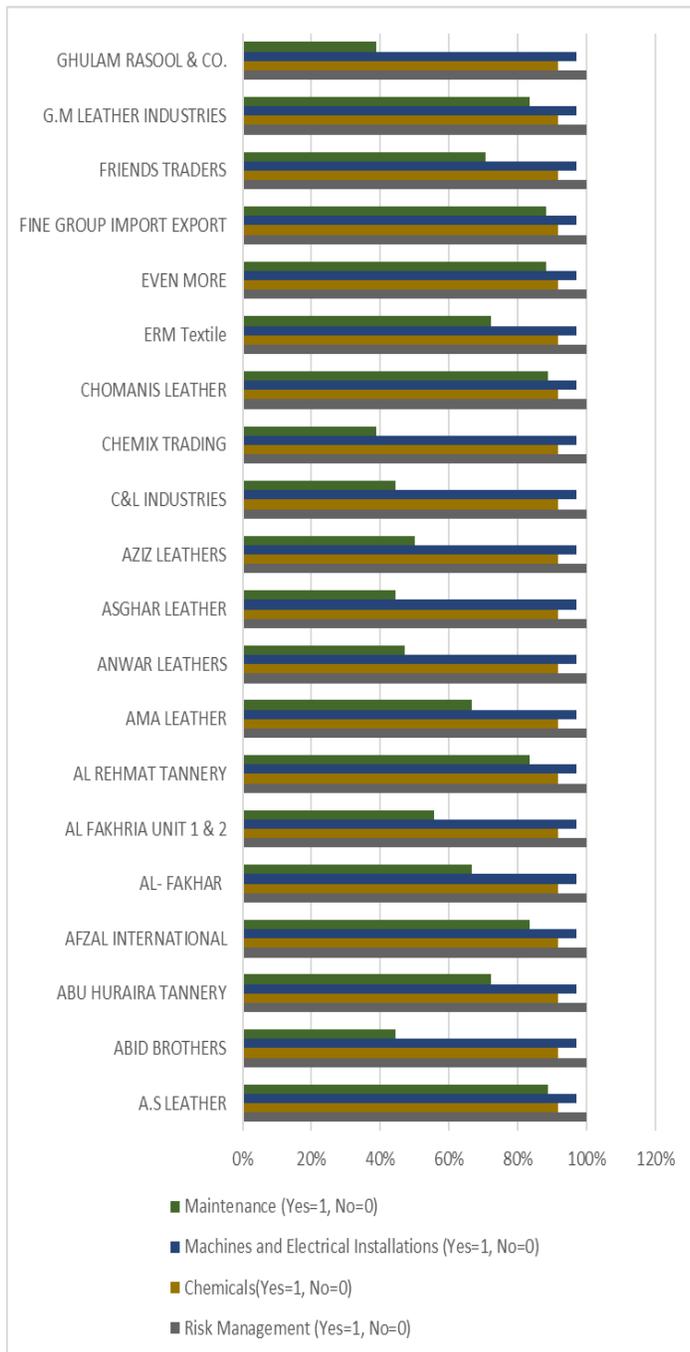
Maintenance, Chemical, Mechanical, Electrical Safety & Risk Management



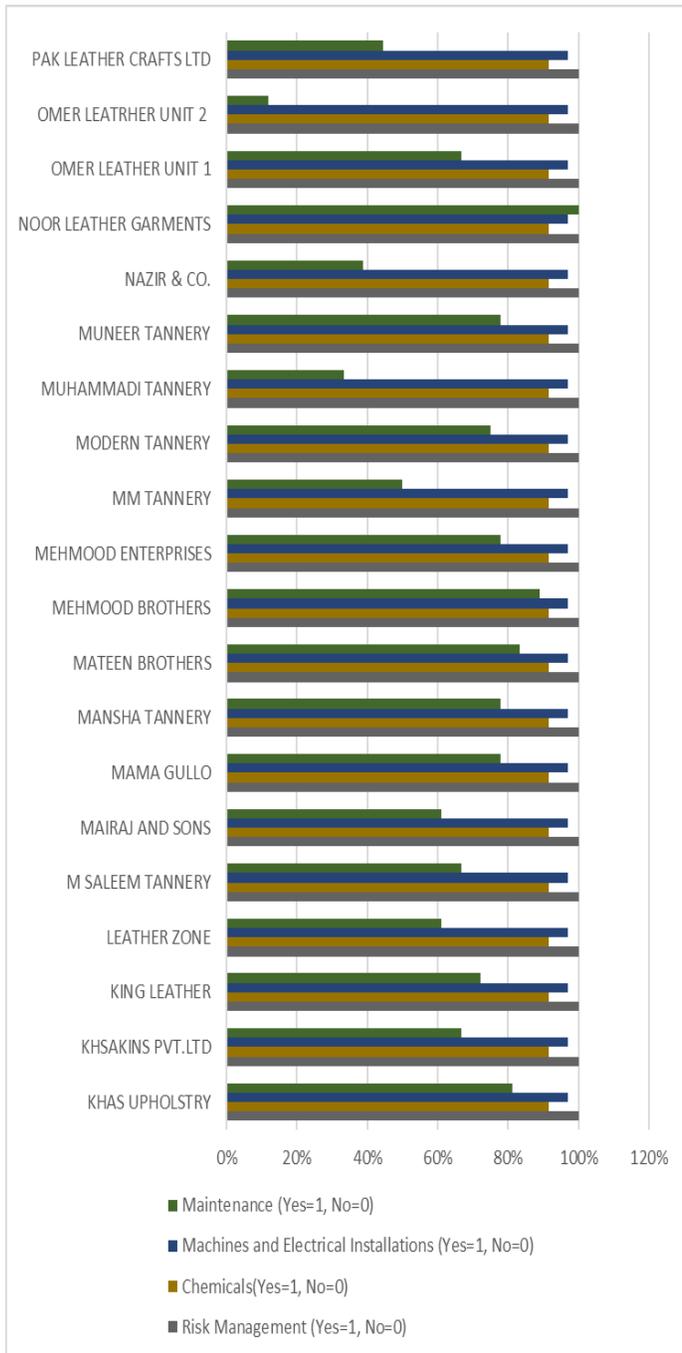
Overall companies are maintaining their chemical, mechanical and electrical installations. This maintenance is need based and mostly companies are not aware of the standard. E.g., Chemical handling workers are aware of the hazards and emergency response but purely based on experience they are not aware of safety data sheets and precautions as per recommendations. Risk assessment is only carried out by certified tanneries.



Maintenance, Mechanical and Electrical Installations, Risk Assessment-----



Maintenance, Mechanical and Electrical Installations, Risk Assessment-----



Overall Performance-----

The below chart represents the summary of the survey.

In statistical analysis, especially when dealing with categorical data where responses are binary (yes/no, true/false, etc.), it's common practice to represent these categories numerically for ease of computation and analysis. The Yes/No are mentioned with the category for ease of understanding in the below chart. For examples the average value of machines and electrical installations is 0.97, It suggests that, on average, installations related to machines and electrical systems are present or satisfactory in the evaluated context. This means that across all assessments or evaluations where this binary system is used, the installations are reported as adequate or compliant in approximately 97% of cases.

We also have a scale ranging from 1 to 5 (1 being lowest and 5 being highest).

Tanneries scoring close to or at the highest limit (5) indicate that they are performing well in terms of chemical handling practices, demonstrating effective maintenance, safety protocols, and compliance with environmental and health regulations.

Total Entities 81	Average of CHEMICAL/MATERIAL HANDLING 4.21	Average of EMERGENCY PREPAREDNESS 3.31
	Average of Chemicals(Yes=1, No=0) 0.92	Average of EQUIPMENT/ MACHINERY 3.94
	Average of GENERAL WORK CONDITION 3.96	Standard deviation of HAZARD CONTROLS 1.35
	Average of HOUSEKEEPING 4.98	Average of Machines and Electrical Installations (Yes=1, No=0) 0.97
	Average of Maintenance (Yes=1, No=0) 0.67	Average of PERSONAL PROTECTIVE EQUIPMENT 4.24
	Average of Risk Management (Yes=1, No=0) 1.00	Average of WORK CLIMATE AND FACILITIES 4.68

For example a rating of 4.21 out of 5 suggests that, on average, the chemical handling practices in tanneries are perceived positively, with room for improvement, this average score can be used to assess overall performance or to benchmark against industry standards or regulatory requirements.

In summary, the higher results reflect a positive assessment of tanneries, where the average score of near to 5 indicates strong performance, but with a small margin for further enhancement to reach the maximum rating of 5.

On the contrary, if the values are less e.g., 1.35 in hazard controls, it typically reflects a situation where the performance or compliance with standards regarding hazard control in tanneries is perceived to be inadequate. This low score suggests that there are serious concerns or deficiencies in how hazards related to the operations are being identified, managed, and mitigated.

Pilot Study

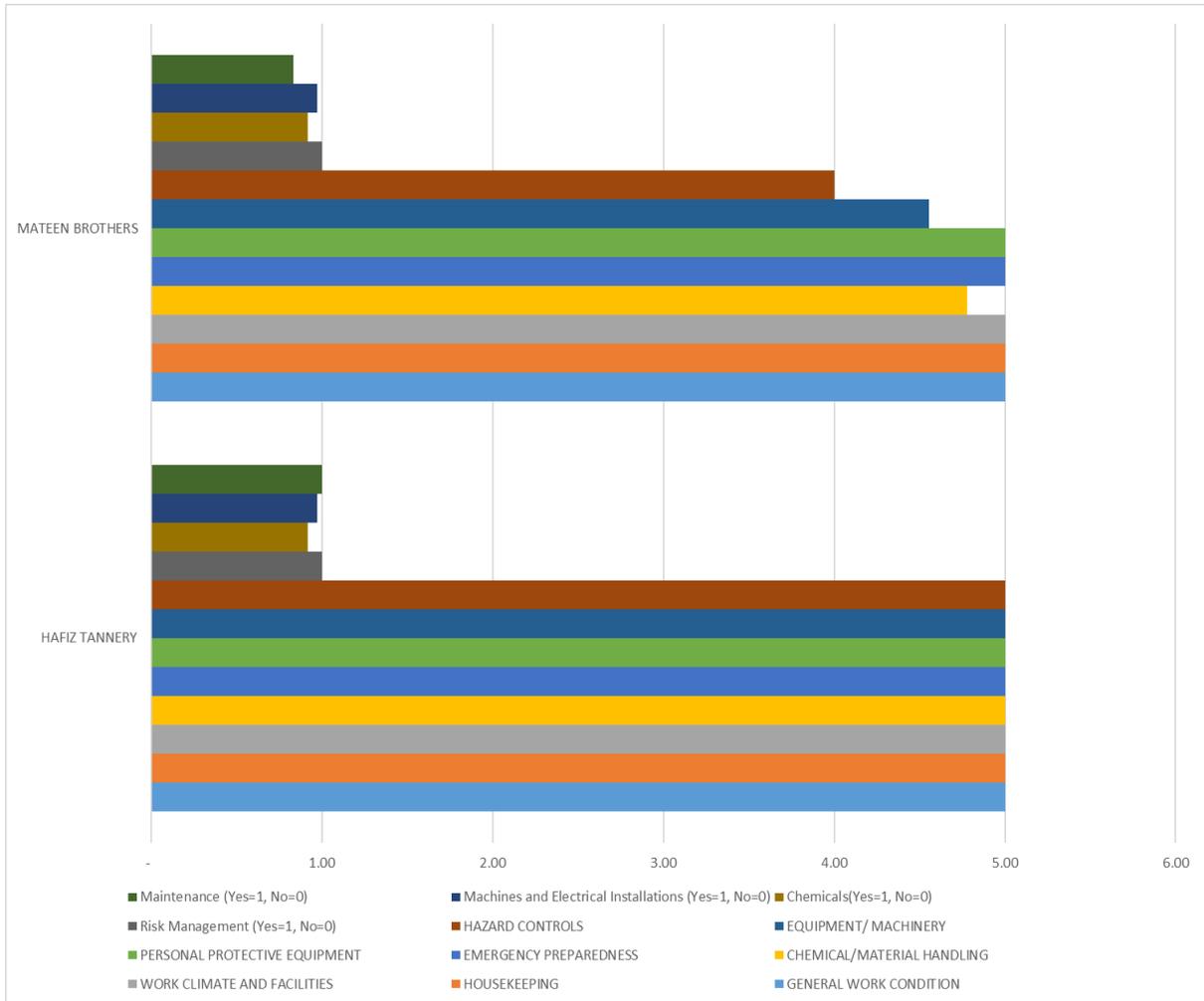
Among the 81 participants 17 tanneries are LWG certified and 40% other tanneries show their willingness to obtain the certification in future. Among the LWG certified, two tanneries, were selected for pilot study. The questionnaires are applied to them to recognize inconsistencies, shortages, and errors in the questions as well as scope of the survey.

The following points are considered during the study:

Types of Questions	To observe variations in the questions and their relevancy to the objectives of the research.
Difficulty of Questions	The difficulty in the content of questions is measured and it is assessed in response to the participants
Compliance of Questions	It is to check whether the questions are complying to the scope of research and applicable to the tannery OSH requirements.
Sequence of Questions	Whether the questions are arranged properly and can address the issues appropriately for the respondent to answer precisely.
Behavior of Participant	It is primarily observed that the participant is able to respond efficiently and its scope of business cover all the criteria mentioned in the questionnaire.
Compliance of Participant	It is initially identified that the participant of pilot study complies up to maximum extent of the research questions.



As per the response to survey questions of these tanneries, they are well managed, complying safety standards and are keen to keep the workplace and climate safe and healthy for their workers.



One of the key factors that helps in improvement and acquiring of the standard is the interest of the owner. Once the owner is interested, he started to carry out the SWOT analysis i. e. identifying the strengths, weaknesses, opportunities and threats of industry. This is the baseline in acquiring any standard. The main hindrance is the lack of awareness among the working staff regarding the health safety and environment of their workspace. This can be controlled by continuous training of the workers so that they realize the importance of occupational safety and hazards that can be fatal to their lives. Next comes the budget, since the implementation of standard require a huge amount of budget, therefore, customer demand is also the focus of the owner.

Since acquiring the OSH standard is a voluntary action it is not easy to convince the business owners to adopt to it. However, if proper awareness session is conducted and information is imparted to the owners regarding the outcome, of implementing occupational health and safety controls, such as efficiency of the workers will improve as they feel safe in their workplace, quality enhancement of their product and eventually revenue generation etc. then they will adapt to it certainly.

Conclusion

Conclusion

The industrial survey and research rely on the self-supported data. Therefore, participants may under or over-report the questions. The uncertainty remains in the data provided by the participants due to various reasons such as working culture and awareness towards the safety and health issues among the workers. During the survey these points are undertaken and questions are translated and posted to the respondents in simple narrations so that they can participate fairly and precisely. During the survey it has been observed that people lack awareness related to workplace safety and health hazards. Many process owners are keen to learn more and willing to work for the betterment of their workers. The hinderance in achieving these standards are:

- **Financial Issues**-Most owners and managers were concerned about the financial restraints in implementing the safety standards. Current financial crisis across Pakistan and among the declining leather market, they are reluctant to achieve certifications.

- **Lack of Awareness among Process Owners**-During the survey it has been observed that process owners and managers are unaware of the safety issues and consider some issues trivial to be resolved.

- **Unsafe Culture**- One of the main reasons of unsafe working environment is that the third world countries working class do not consider their safety as an important issue. Generations have passed by working in unsafe and hazardous environment. This culture is a major hinderance in reducing occupational hazards. Even if the PPEs are provided, safety instructions are placed, most workers do not follow any guideline.

- **Lack of Due Diligence-** Regular audits plays a vital role in creating and maintaining the safe environment. If all the stock holders practice due diligence, then it would be helpful in the betterment of the tanneries.

- **Lack of Government Support-** No industry can sustain without the support from government, same phenomenon stands for tanneries. Tannery processes utilizes a lot of water and energy to run the machineries and generate solid and liquid waste that is harmful to the environment in many ways. Only by public private partnership these issues can be resolved.

Pakistan Occupational Health and Safety Act was enforced in 2018 and afterwards Sindh Occupational Health and Safety Act was enforced in 2019. These Acts are generic and encompasses under law every activity or process in the region that can be hazardous to the worker associated. However, separate Act or regulation is required for leather sector specifically. Every process industry has its own mechanism of procedures that should be dealt explicitly in order to control and monitor the occupational hazards and health safety concerns of the workers.

Recommendations

1

Ensure due diligence for health and safety in tannery workplaces, by the cooperation of all stakeholders of the leather supply chain, for the adoption of standard across the supply chain. Many tanneries lack in proper auditing system and survey, usually the owners are not interested due to hurdles in business and shortage of finances.

2

Free on-line interactive risk assessment tool (OiRA tannery tool [OiRA Tools | Online interactive Risk Assessment \(europa.eu\)](#)) needs to be promoted within the tanneries and across the leather supply chain. Measures shall be taken to translate it into local languages so as to widely spread its benefits. Since the tool is not easily understandable locally by many tannery owners and workers mainly due to language barrier, therefore, audits check lists can be prepared in the light of OiRA tools, as per the local culture and business capacity of the tanneries. Trainings shall then be provided to the business/process owners.

3

Other than OIRA, UNIDO training manuals (<https://leatherpanel.org/publications>) shall be made public and regular sessions and workshops needs be held to make awareness among the tannery workers as well as the general public.

4

The development of free and regular trainings programs and training material in local language.

5

Local machinery and chemical suppliers shall ensure the supply of operating manuals and safety data sheets, respectively.

Trainings must be imparted by both of the suppliers to ensure safe usage of their products. It will also help in creating a safe environment for the workers as well as increase their knowledge and awareness related to hazards and safety.

6

Financial support shall be announced for those tanneries who are willing to achieve LWG and working to provide the hazard free environment to their workers.

7

All stakeholders shall be requested to join hands in the improvement of industry including government authorities.

Based on the comprehensive findings of the recent Occupational Safety and Health (OSH) survey conducted, following recommendations are being suggested. The survey revealed that some tanneries have made significant strides in ensuring a safe and health-conscious work environment. Their current safety practices and protocols are commendable; however, there are tanneries where further enhancements could be beneficial. The recommendations provided aim to support tanneries in continuing to strengthen their safety measures, align with best practices, and maintain compliance with regulatory standards, ultimately encouraging a safer and more efficient workplace within the tannery industry.

1. GENERAL WORKING CONDITIONS

Working conditions in a tannery are crucial for ensuring safety, efficiency, and well-being of workers. Here are some recommendations for various aspects of working conditions:

- i. **Regular Cleaning:** Implement a strict schedule for cleaning all areas, especially those prone to chemical spills or dust accumulation.
 - ii. **Proper Waste Management:** Ensure proper disposal of chemicals and waste materials according to environmental regulations.
 - iii. **Storage:** Store chemicals and materials in designated areas with clear labeling and safety instructions.
 - iv. **Ventilation:** Maintain good ventilation to reduce chemical fumes and dust buildup.
- a. Handrails and Passages:**
- i. **Safety Rails:** Install sturdy handrails along staircases and elevated walkways to prevent falls.
 - ii. **Clear Passages:** Keep passages clear of obstacles to facilitate easy movement of workers and equipment.
 - iii. **Non-slip Surfaces:** Ensure that floors are non-slip to prevent accidents, especially in areas prone to spills.
- b. Windows and Lighting:**
- i. **Natural Light:** Maximize natural lighting where possible to reduce dependence on artificial lighting.

- ii. **Well-lit Areas:** Ensure adequate artificial lighting in all work areas, especially in areas where precision work is performed.
- iii. **Clean Windows:** Keep windows clean to allow maximum light penetration and maintain a pleasant working environment.

c. General Recommendations:

1. **Personal Protective Equipment (PPE):** Mandate the use of appropriate PPE such as gloves, goggles, masks, and aprons to protect against chemical exposure.
2. **Training:** Provide regular training on safety procedures, chemical handling, and emergency protocols.
3. **Emergency Equipment:** Install and maintain fire extinguishers, first aid kits, eye wash stations, and emergency showers.
4. **Noise Control:** Implement measures to reduce noise levels where machinery or processes generate excessive noise.
5. **Compliance Checks:** Conduct regular inspections to ensure compliance with local health and safety regulations.
6. **Employee Feedback:** Encourage feedback from employees regarding safety concerns and suggestions for improvement.

2. HOUSEKEEPING

Housekeeping in a tannery is essential for maintaining cleanliness, safety, and efficiency. Some recommendations for effective housekeeping practices in a tannery is as follows:

2.1 Daily Cleaning Schedule: Establish a daily cleaning routine that covers all areas of the tannery, including production floors, storage areas, offices, and common spaces.

2.2 Cleaning Procedures:

- i. **Sweeping and Vacuuming:** Regularly sweep or vacuum floors to remove dust, dirt, and debris.
- ii. **Mopping:** Use appropriate cleaning agents to mop floors, especially in areas prone to spills or chemical residue.

2.3 Dust Removal: Dust all surfaces, including shelves, equipment, and ledges, using damp cloths or electrostatic dusting tools to minimize airborne particles.

2.4 Chemical Spill Management:

- i. Have spill kits readily available and clearly marked.
- ii. Train employees on how to respond to chemical spills promptly and safely.
- iii. Ensure spills are cleaned up immediately to prevent contamination and safety hazards.

2.5 Waste Management:

- i. Provide clearly labeled bins for different types of waste (e.g., general waste, recyclables, hazardous waste).
- ii. Regularly empty and dispose of waste according to local regulations and environmental standards.

2.6 Storage Areas:

- i. Keep storage areas well-organized with clearly labeled containers.
- ii. Store chemicals and materials in appropriate cabinets or shelves to prevent spills and ensure easy access.

2.7 Ventilation and Air Quality:

- i. Maintain good ventilation throughout the tannery to minimize the buildup of chemical fumes and odors.
- ii. Clean ventilation systems and replace filters regularly to ensure efficient air circulation.

2.8 Personal Protective Equipment (PPE):

- i. Provide and enforce the use of PPE such as gloves, goggles, masks, and aprons during cleaning activities to protect workers from chemical exposure.

2.9 High-Risk Areas:

- i. Pay extra attention to cleaning high-risk areas such as chemical storage rooms, mixing areas, and processing equipment to prevent accidents and contamination.

3 Inspect and Maintain Equipment:

- i. Regularly inspect and maintain cleaning equipment (e.g., mops, scrubbers) to ensure they are in good working condition.

4 Training and Supervision:

- i. Train all employees on housekeeping procedures, safety protocols, and the importance of cleanliness.
- ii. Supervise cleaning activities to ensure adherence to procedures and quality standards.

3 WORK CLIMATE AND FACILITIES:

Creating a positive work climate and providing appropriate facilities are very important for enhancing productivity, morale, and overall well-being of employees in a tannery. Here are some recommendations:

3.1 Work Climate:

3.1.1 Communication and Transparency:

- i. Adopt open communication between management and employees to address concerns, provide feedback, and promote a collaborative atmosphere.
- ii. Keep employees informed about company policies, changes, and goals to maintain transparency.

3.1.2 Employee Engagement:

- i. Recognize and reward employees for their contributions and achievements to boost morale.

3.1.3 Safety Culture:

- i. Prioritize safety as a core value, with regular training sessions on safety protocols and emergency procedures.
- ii. Encourage a proactive approach to identifying and addressing safety hazards.
- iii. Create a supportive environment where colleagues help and respect each other.

3.1.4 Career Development:

- i. Provide opportunities for skill development, training programs, and career advancement.

3.2 Facilities:

3.2.1 Workspace Design:

- i. Provide adequate space for equipment and movement, considering the nature of tannery operations.

3.2.2 Rest Areas:

- i. Designate clean and comfortable rest areas where employees can relax during breaks.
- ii. Provide amenities such as drinking water, refrigerators, microwaves, and sitting areas.

3.2.3 Sanitation Facilities:

- i. Maintain clean and well-equipped restroom facilities with adequate supplies.

- ii. Ensure proper hygiene and sanitation practices are followed, especially in areas where chemicals are handled.

3.2.4 Environmental Conditions:

- i. Control indoor temperature and humidity levels to ensure a comfortable working environment.
- ii. Monitor air quality and manage ventilation systems to minimize exposure to chemical fumes and improve air quality.

3.2.5 Security Measures:

- i. Provide access control systems, surveillance cameras, and adequate lighting in parking areas and entrances.

3.2.6 Accessibility:

- i. Install ramps, elevators, and designated parking spaces as required by accessibility standards.

4 HAZARD CONTROL

4.1 Chemical Hazards:

4.1.1 Substitution and Minimization:

- i. Substitute hazardous chemicals with less harmful alternatives where possible.
- ii. Minimize the quantity of chemicals used through efficient processes and precise measurements.

4.1.2 Engineering Controls:

- i. Implement engineering controls such as closed systems or ventilation systems to reduce chemical exposure.
- ii. Use local exhaust ventilation at points where chemicals are handled or processed to capture and remove fumes.

4.1.3 Administrative Controls:

- i. Develop and enforce procedures for safe chemical handling, storage, and disposal.
- ii. Provide training to employees on the hazards of chemicals used in the tanning process.

4.1.4 Personal Protective Equipment (PPE):

- i. Provide appropriate PPE such as gloves, goggles, aprons, and respirators to employees handling chemicals.

- ii. Ensure PPE is properly fitted, maintained, and used according to manufacturer guidelines and safety protocols.
- iii. Apply penalty-reward system to ensure proper use of PPEs.

4.2 Physical Hazards:

4.2.1 Machine Guarding:

- i. Install and maintain guards on machinery with moving parts to prevent contact injuries.
- ii. Ensure guards are in place and functional during operation.

4.2.2 Ergonomic Controls:

- i. Provide ergonomic tools and equipment to reduce physical stress on workers e.g., devices such as lift assists, hoists, and conveyors can help reduce the need for manual lifting and carrying, minimizing the risk of back injuries, neumatic or hydraulic lifts etc.

4.2.3 Slips, Trips, and Falls:

- i. Maintain clean and dry floors with adequate drainage.
- ii. Use anti-slip flooring materials and ensure proper lighting in all work areas.
- iii. Mark and maintain clear walkways and aisles free of obstructions.

4.3 Biological Hazards:

4.3.1 Safe Handling of Hides and Skins:

- i. Implement procedures for the safe handling and disposal of animal hides and skins to prevent exposure to pathogens.
- ii. Provide training on proper hygiene practices, including handwashing and use of PPE when handling raw materials.

4.4 Fire and Explosion Hazards:

4.4.1 Fire Prevention:

- i. Store flammable materials in designated areas with proper ventilation and fire suppression systems.
- ii. Regularly inspect and maintain electrical systems, machinery, and heating equipment to prevent ignition sources.

4.4.2 Emergency Response:

- i. Develop and practice fire drills and emergency evacuation procedures.
- ii. Install fire extinguishers in accessible locations and train employees on their proper use.

4.5 Environmental Hazards:

4.5.1 Waste Management:

- i. Implement procedures for the safe storage, handling, and disposal of chemical wastes.
- ii. Ensure compliance with environmental regulations for wastewater treatment and discharge.
- iii. Designate proper areas for skin/hides waste and dispose of as per regulatory requirement.

4.5.2 Air Quality Management:

- i. Monitor and control emissions from tannery operations to minimize environmental impact.
- ii. Use pollution control technologies such as scrubbers or filters where appropriate.

4.5.3 Training and Awareness:

▪ Education and Training:

- i. Provide comprehensive training to all employees on hazard recognition, controls, and emergency procedures.
- ii. Conduct regular refresher training sessions and communicate updates on safety protocols.

▪ Safety Culture:

- i. Create a culture of safety where employees are encouraged to report hazards, near misses, and safety concerns without fear of reprisal.
- ii. Review regular updates to hazard assessments and control measures to ensure ongoing safety compliance.

5 MAINTENANCE:

5.1 Preventive Maintenance:

- i. **Scheduled Inspections:** Establish regular inspection schedules for equipment and machinery to identify potential issues before they cause breakdowns.
- ii. **Routine Maintenance Tasks:** Perform routine tasks such as lubrication, cleaning, and calibration according to manufacturer recommendations.

5.2 Predictive Maintenance:

- i. Use predictive techniques like vibration analysis or thermography to monitor equipment condition and predict failures.

5.3 Corrective Maintenance:

- i. **Root Cause Analysis:** Investigate the cause of failures to implement permanent solutions and prevent recurrence.

5.4 Emergency Maintenance:

- i. **Immediate Response:** Respond quickly to urgent equipment failures or safety hazards to restore functionality and ensure safety.

5.5 Maintenance Practices:

5.5.1 Develop a Maintenance Plan:

- i. Create a comprehensive maintenance plan outlining tasks, schedules, responsibilities, and resources required.
- ii. Prioritize critical equipment and processes based on their impact on production and safety.

5.5.2 Equipment Specific Practices:

- i. **Machinery and Tools:** Follow manufacturer's guidelines for maintenance and calibration of machines and tools used in the tanning process.

5.5.3 HVAC and Ventilation Systems:

- i. Clean filters, inspect ducts, and maintain airflow to ensure proper ventilation and air quality.

5.5.4 Electrical Systems:

- i. Inspect wiring, connections, and grounding regularly to prevent electrical hazards.

5.6 Inventory Management:

- i. Maintain an inventory of spare parts and critical components to facilitate timely repairs and minimize downtime.
- ii. Implement a system for tracking and replenishing inventory based on usage and lead times.

5.7 Training and Certification:

- i. Provide training for maintenance personnel on equipment operation, maintenance procedures, and safety protocols.
- ii. Ensure technicians are certified or trained in specialized maintenance tasks (e.g., electrical work, machinery repair).

5.8 Documentation and Record-Keeping:

- i. Maintain accurate records of maintenance activities, including inspections, repairs, and replacements.
- ii. Use a maintenance management system or software to track equipment history, performance trends, and maintenance schedules.

5.9 Safety Considerations:

- i. Follow safety procedures during maintenance activities, including lockout/tagout procedures to isolate energy sources.
- ii. Provide and enforce the use of appropriate PPE for maintenance tasks, such as gloves, eye protection, and hearing protection.

5.10 Continuous Improvement:

- i. Benchmark maintenance practices against industry standards and best practices to identify areas for improvement.
- ii. Participate in industry associations or forums to learn from peers and stay informed about new technologies and trends.

Road Map

The leather industry plays a significant role in contributing the employment and the economy of Pakistan, it comprises of a various operation of different sizes and capacity. Tanneries in Karachi realizes that handling environmental issues is a key to the sustainable growth for not only the Karachi cluster but all over the Pakistan, however, enforcement of environmental regulations will provide a competitive advantage for tanning industry.

In implementation of OSH regulations and to meet its requirements small tanneries will experience the very substantial burden of additional costs related to OSH management. Consequently, the small-scale tanneries will need a large amount of support both financially and technically from external parties for the implementation of requirements for the tanneries. Substantial prospects exist for the improvement of occupational health and safety conditions. These changes will require advance budgets for training and enhancement of working conditions, especially for small tanneries.

Large infrastructure solutions are expensive and have the potential to place unnecessary financial burden on the Tanneries. Complementary upstream opportunities such as cleaner production and water efficiency programs, which can deliver short term gains by reducing wastewater treatment capital and operational expenditure, require sincere consideration.

The proposed Road Map is an integrated policy for all stake holders namely business owners, government agencies, regulatory bodies and the community, as well to guarantee the sustainable growth of leather industry in Karachi, while protecting the environment and health of the workers and community. It is a representative and systematic methodology to deliver adequate technical and regulatory solutions.

It is suggested that a fair and acceptable monitoring and customer-oriented approach is being taken which incorporate the following points:

Set Standards for Tanneries

Outline and decide performance standards for the leather industry specifically in Pakistan and establish acceptable timelines for tanneries to attain these standards.

Educate Persons

After publishing these standards, educate all the tanneries owners, managers and OSH personnel for better understanding and implementation.

Funding to Fulfil Standard Requirements

Deliver hands-on assistance and professional guidance to tanneries to improve their occupational health and safety performance, as well as help to reinforce authority for compliance through partnership with different stakeholders.

Uphold Achievements

Encourage tannery owners, managers, process owners to comply standards and struggle for more competent system implementation through incentives, raises and rewards.

Due Diligence

Perform regular audits on compliance and accomplishments compared to standards and regulatory requirements.

Law Enforcement

Aggressively inspect and identify the poor performance and implementation of standard.

Some significant areas have been observed to resolve tannery issues. They mutually display comparatively low-cost, short-term activities, and some long-term large capital investments.

Significant emphasize has been sited on waste reduction and pollutant free manufacturing, which is expected to match the establishment of large infrastructure of tannery area. They are listed as follows:

□ Tannery Support

The robust funding and support of the tannery is crucial to the accomplishment of the Road Map. By strengthening the industry and associations, combined struggle to expand and improve the industry will be straight forward to establish among small and large tanneries.

Policies to support the tanneries contain several actions to encourage cooperation among tanneries.

These include but are not limited to:

- *Capacity building with the help of association;*
- *Formation of policies to focus on support to comply for pollution free manufacturing, and creating prospects for continuing development, including formation of compliance officers and information management systems*

- *Liaison with regulatory bodies to ensure collaboration to resolve the aforesaid issues.*

□ **Encourage Pollution Free Manufacturing And Water Proficiency**

This policy is offered as a low budget and instantaneous activity for cleaner production before any infrastructure development. Pollution free process focuses several former efforts to the tanneries and offers substitute policies for leather manufacturing that decreases bulks of waste generation.

□ **Improve Effluent Management**

The expansion of waste-water handling is to improve the performance of the current Common Effluent Treatment Plant (CETP) to cope with present effluent capacity and to handle the irrelevant water sources reaching the CETP e. g. rain water. Together with technical enhancements for the expansion of CETP, the formation of procedures for the adequate administration of wastewater management, which includes evaluating monetary benefits to encourage better enforcement. The employment of ISO certification is suggested to certify that the operation planned is prone to continuing conservation.

□ **Enhance Community Health & Sustainability**

Social growth and improvement of living standards in the KLA are crucial to the achievement of the Road Map. Including, assessments of social and environmental impacts of the tannery industry on the public which includes health and safety, also the establishment of a community run awareness agendas. This will involve the residents in awareness of the impacts of tannery on the environment, and encourages vested decisions in the area to encourage progress. This action is expected to update and authorize the community to advance sustainable businesses and progress long term health, safety and sustainability in the area.

Annexes

SURVEY QUESTIONS

WORK PLACE INSPECTION (1-5 (Low to High))

GENERAL WORK CONDITIONS

1. Are floors (walking and working surfaces) non-slip?
2. Are floor openings covered and guarded?
3. Are staff familiar with the meaning of signs and symbols, risks and first aid, especially concerning hydrogen sulphide (H₂S)?
4. Are aisles and passageways free of obstructions and stumbling hazards?
5. Are aisles and passageways clearly marked for safe movement of persons and materials?
6. Are the railings (hand and toe rail) of platforms, scaffolding, and mezzanine in place and in good order?
7. Are ladders in place and in good order? Are high ladders (higher than 3 metres) provided with ladder guards?
8. Are stairs non-slip and railings in place?
9. Are all exits unobstructed and clearly marked?
10. Are railings (hand and toe rail) on the mezzanine floor in place and in good order?
11. Are windows cleaned at appropriate intervals?

HOUSEKEEPING

12. Is solid waste removed from work area?
13. Are empty barrels removed from the work area?
14. Are floors clean and free of chemical spills?
15. Are drains unclogged and provided with covers?

WORK CLIMATE AND FACILITIES

16. Is ventilation in place and working? Verify by measuring humidity & temperature.
17. Are all lights working and are fittings clean and free of corrosion?
18. Is lighting of the required quality? Check with reference sheet – 5.1.
19. Are toilets cleaned at appropriate intervals?
20. Are changing rooms cleaned at appropriate intervals and in good order?
21. Is clean drinking water available for workers?
22. Are washrooms and showers cleaned at appropriate intervals and in good order?

CHEMICAL/MATERIAL HANDLING

23. Are all chemical containers of used chemicals labelled and marked?
24. Are material safety data sheets of all chemicals readily available?
25. Are staff familiar with the basic content of data sheets?
26. Are all chemicals stored in an orderly manner?
27. Is the transfer and dosing of chemicals done ideally in fully closed systems?

28. Are chemical containers covered (lids, taps)?
29. Is combustible/flammable material kept away from ignition sources?
30. Is raw material in the process kept on pallets/tables/stacks/racks?
31. Is material moved using a trolley?

EMERGENCY PREPAREDNESS

32. Are emergency instructions displayed?
33. Are staff familiar with risks and first aid, especially concerning hydrogen sulphide (H₂S)?
34. Are at least two emergency exits available in the work area?
35. Is the fire fighting equipment installed and in good order?
36. Are eye rinsing stations/emergency showers installed?
37. Are first medical aid kits clean and complete?
38. Is emergency rescue equipment readily available & in its marked location?
39. Is the location of the first medical aid box & first-aider known by worker(s)?

PERSONAL PROTECTIVE EQUIPMENT

40. Is hearing protection provided and used by operators/helpers?
41. Are safety goggles provided and used?
42. Are safety gloves provided and used?
43. Are safety boots/shoes provided and used?
44. Are aprons provided and used?
45. Are respirators (dust, fume, vapour, mist) provided and used?
46. Other PPE as applicable. Check with reference sheet – 6.1.
 - a.
 - b.
 - c.
 - d.

EQUIPMENT/ MACHINERY

47. Are passive safety devices (guards, covers, fences) on prime mover/belts/open gears/transmission parts in place?
48. Are active safety devices available and functional?
49. Is there adequate space available around the machine to allow maintenance, cleaning and removal of waste?
50. Are terminal boxes of electrical motors covered?
51. Are wires around the machine insulated and placed in cable ducts?
52. Are earthing wires free of corrosion and connected to the motor and metallic enclosures?
53. Are operating controls clearly labelled in simple local language and in reach of workers?
54. Are emission levels (noise, vibration, dust, fumes, vapours) within acceptable limits? Verify using monitoring instruments or rules of thumb against occupational exposure limits to reference sheets – 3.1 and 8.1.
55. Are adequate extraction/control facilities available and functioning?

HAZARD CONTROLS

56. Is a lock-out system used during maintenance on machines & electrical installations?
57. Are safety signboards affixed and in good order?
58. Is the “No-smoking” rule followed by all workers?
59. Is the warning/alarm system tested/operational?

ADDITIONAL ASPECTS

- a.
- b.
- c.
- e.

Y/N QUESTIONS

Risk Management

Criteria

1. Are all machines and equipment listed?
2. Is there a risk assessment for the chemicals used in the tannery?
3. Is there a risk assessment for every workstation (mechanical operations, manual labour, etc)?
4. Are hazards that may arise from the machines and chemicals documented?
5. Is management aware of the hazards that may occur from generated emissions and wastes?
6. Are accident reports and previous risks and hazard assessments recorded and analyzed?
7. Are control actions (elimination, prevention and mitigation) implemented in accordance with the risk assessment findings?
8. Are risk assessments conducted after any change in the workplace (new machine, technology, layout, chemicals, etc)?

Chemicals

Criteria

LABELING

1. Are all containers correctly labelled?
2. Do workers understand pictograms?

SAFETY DATA SHEETS

3. Are the SDSs of all chemicals used in the tannery readily available in one designated place?
4. Do the work-floor supervisors and sub-store supervisors know the basic contents of the SDSs pertaining to chemicals used in their respective areas?

5. Are SDSs available in a locally used language or in a language that is understood by the concerned workers?
6. Are workers instructed on how to safely handle chemicals according to the SDSs? Are they aware of the dangers and are they supervised?

CHEMICAL EXPOSURE / HANDLING

7. Are workers trained in handling and using chemicals?
8. Are workers instructed on how to safely handle the chemicals according to the SDSs?
9. Are workers aware of dangers and are they supervised?
10. Are Staff familiar with the meaning of signs and symbols, risks and first aid, especially concerning hydrogen sulphide (H₂S), acids and other dangerous chemicals and substances?
11. Are transfer and dosing of the most hazardous chemicals done in fully closed systems?
12. Is contact with chemicals during transfer and dosing reduced to a minimum?
13. Are trolley/pallet trucks used for moving heavy materials(Barrels, containers, etc.)?
14. Are hand pumps used to transfer liquid chemicals?
15. Are spatulas and scoops readily available to transfer powder chemicals?
16. Is the concentration of chemicals below the required TLV level in terms of both TWA and STEL?
17. Is the use of PPE (gloves, goggles, aprons, boots, respiratory masks etc.) when required, in accordance with SDSs instructions?
18. Are vulnerable groups (e.g. pregnant women, youth, etc.) protected from risks related to the use of dangerous products?
19. Do you control the discharge of floats from paddles and drums by using hose pipes instead of simply opening the drum doors or paddle faucets?
20. Are you continuously taking steps to eliminate or reduce the use of hazardous chemicals?
21. Is the handling of inflammable substances carried out within a closed installation?
22. Do workers with a chromium allergy take special precautions?
23. Are residues disposed of in a prescribed manner?
24. Are small empty containers returned or disposed of in the prescribed manner?

Machines and Electrical Installations

Criteria

GENERAL

1. Is the proper functioning of the machine checked before starting work?
2. Are machines certified for safety? (E.g. CE certificate)
3. Is safety taken into account when purchasing a new machine?
4. Are machine-specific safety checklists regularly conducted for each machine? (See ref. sheets 4.1 - 4.19)

SAFETY DEVICES

5. Is the machine provided with a passive safety device (e.g. guard, cover, fence) preventing contact with prime mover, belts, open gears and transmission parts?
6. Is the machine provided with active safety devices (e.g. dynamic guards operated on a pneumatic, ultrasonic, optical or electrical basis) immediately stopping or reversing the process when actuated?
7. Are they checked every day before starting work?

SITTING OF THE MACHINE

8. Is the machine properly seated in relation to the adequacy of the machine foundation?
9. Is there at least one meter (i.e. three feet) of free space around the machine?
10. Does the available space around the machine facilitate maintenance and waste removal?
11. Is the space in front of the machine sufficient to ensure proper workflow?
12. Do workers collide with each other when loading and unloading material?
13. Are exclusion zones around machines clearly marked?
14. Is there anti-slipping flooring around machines where trips, slips and falls pose a high risk?

OPERATING CONTROLS

15. Do operators receive initial and periodical training of the machinery they use?
16. Are the control switch labels and operating instructions in the local language?
17. Is the emergency OFF button in reach of each operator and helper?
18. Are operators and helpers taking safe work positions?
19. Do workers wear appropriate clothes when using the machine? (PPE, no loose clothes?)

ELECTRICAL INSTALLATIONS

20. Are the electrical installations (e.g. motor, switch gears, terminal boxes, electrical connectors and starters) on the machine of an adequate degree of protection? (e.g. IP 55 for machines in wet and corrosive conditions)
21. Does the electrical starter of the motor not restart when the supply is restored after a power failure?
22. Is the location of the control panel consistent with safety regulations?
23. Are the electric motor body and base frame earthed?
24. Are all switch gear electrical enclosures of connected with corrosion-protected earth wires; if insulated are they marked as per the international colour code?
25. Are electrical rubber safety mats placed in places with high electric shock risk?
26. Are electric wires protected by conduits (armoured)?
27. Are cable glands used (connectors or fittings)?
28. Are junction/terminal boxes used?
29. Are electrical installations unobstructed safely and immediately accessible?
30. Is electrical equipment regularly serviced by a competent person?

EMISSION CONTROL

31. Are emissions levels monitored and controlled?
32. Does the machine generate excessive noise (above 85 dbA), vibration, dust, gas or mist?
33. Are the emissions (noise, vibration, dust, gas, mist, etc) managed in a such way that they do not affect the health and safety of the operator or other workers?
34. Is there an extraction (LEV) or control facility available on the machines generating airborne emissions?
35. Is the extraction or control facility adequate and functioning well (dust and VOC content in air in norm)?

Maintenance Criteria

MAINTENANCE PROVISIONS

1. Are machines cleaned after the completion of work?
2. Is there an operating manual for the machine?
3. Do you follow the operating manual recommendations for machine maintenance?
4. Is the main power off during maintenance?
5. Are periodical maintenance works planned?
6. Are the maintenance details recorded?
7. Are daily pre- and post-operation procedures (checks, cleaning, maintenance) carried out on the machine?
8. Are signs “UNDER REPAIR” or “AT WORK” visibly posted during repair & maintenance work?

WORKING AT HEIGHTS

9. Is there a work permit system for working at heights?
10. Are risk assessments done prior to performing any work at heights?
11. Is the work performed according to the risk assessment recommendations and control measures?
12. Are emergency and rescue procedures in place?
13. Is there protection from falling in place?
14. Are only preselected personnel allowed to perform tasks at height?
15. Is the equipment to be used before work carefully examined?
16. Are work conditions and weather taken into consideration when planning the work?
17. Are ladders or stepladders used as a last resort for light works of short duration?
18. Are ladders overweight?

List of Tanneries

S. No	Name Of Tanneries	Plot No.	VISIT/ NO VISIT	Status	Remarks
1	Hafiz Tannery	1	Visited	Done	
2	Modern Tannery	8	Visited	Done	
3	Mansha Tannery Unit 2	13	Visited	Done	
4	Mansha Tannery Unit 3	14	Visited	Done	
5	Pelle Classics Unit 2	15	Visited	Done	
6	W.F. International	15/5	Visited	Done	
7	Omer Leather Unit 1	17-B	Visited	Done	
8	Pak Leather Craft	18	Visited	Done	
9	Mateen Brothers	18/1	Visited	Done	
10	King Leather	19	Visited	Done	
11	Hussain Leather Craft-I	21	Visited	Done	
12	Leather Zone	22	Visited	Not Done	Operations Closed
13	Mehtab Tannery	25-A	Visited	Done	
14	Asghar Leather	25-B	Visited	Done	
15	Hussain Leather Craft-II	27	Visited	Done	
16	Insaf Leather Unit 1	29	Visited	Done	
17	Hamid leather	32	Visited	Done	
18	Irfan Associates (Pvt) Ltd	40-41	Visited	Done	
19	Bombal Leather	42	Visited	Not Done	Not Interested
20	Main Ghulam Muhammad Tannery	44	Visited	Done	
21	Noor Leather Garments (Pvt) Ltd.	47	Visited	Done	
22	Omer Leather Unit 2	48	Visited	Done	
23	Afzal International	49/1	Visited	Done	
24	G.M Leather Industries	49/2	Visited	Done	
25	Harmain International	49/2-A	Visited	Done	
26	Shaikh Brother	53	Visited	Done	
27	S.M Saeed Goreja	57	Visited	Done	
28	Mahmood Brothers	59	Visited	Done	
29	Faisal Brothers	62	Visited	Not Done	Contact Person N/A
30	Qadri & Qureshi Industry (Pvt) Ltd	69	Visited	Not Done	Contact Person N/A
31	Mehran Tannery	78	Visited	Not Done	Contact Person N/A
32	Gulf Leather Works	80	Visited	Done	
33	Khas Industries (Pvt) Ltd.2	80/1	Visited	Done	
34	Shifa Leather	80/1-A	Visited	Done	

35	Pakistan Global Tannery	85	Visited	Done	
36	Friend Traders	86	Visited	Done	
37	A R Dyeing	86	-	Done	Not a Tannery
38	Muhammad Saleem Tannery	88	Visited	Done	
39	Chamois Leather	92	Visited	Done	
40	Zubair Afzal Tannery	93-A	Visited	Done	
41	S.S Corporation	93-B	Visited	Done	
42	The Leather	94	Visited	Done	
43	Rana Brothers	97	Visited	Not Done	Contact Person N/A
44	Ghulam Rasool & Co.	98-99	Visited	Done	
45	Murtaza Tannery	100	Visited	Not Done	Not Interested
46	Ismail Tannery	101	Visited	Done	
47	Abid Ali	110	Visited	Done	
48	C&L Industries	111-112	Visited	Done	
49	Abid Brothers	113	Visited	Done	
50	Jawad Corporation Unit-1	114	Visited	Done	
51	Noor Leather	119	Visited	Done	
52	Al Firoz Enterprises	123	Visited	Not Done	Not interested
53	Khaskin (Pvt) Ltd	179	Visited	Done	
54	M.Yaqoob M.Rafiq Tannery	187	Visited	Done	
55	Baber Hide	189	Visited	Not Done	Contact Person N/A
56	Venus Leather Industry	198	Visited	Done	
57	Intefaq Leather Industry	203	Visited	Done	
58	Al Rehmat Tannery	204	Visited	Done	
59	Fouji Tannery	205	Visited	Not Done	Refused
60	Riaz Tannery	208	Visited	Not Done	Contact Person N/A
61	A.S. Leather	215	Visited	Done	
62	Sohail Leather (AIZ Tannery)	217	Visited	Done	
63	Tauheed International Unit -1	220	Visited	Done	
64	Muneer Tannery	223	Visited	Done	
65	Bashir Tannery	225	Visited	Not Done	Contact Person N/A
66	Al Fakhra Tannery	226	Visited	Done	
67	Impo Expo International	227	Visited	Done	
68	Chemix Trading	241-244	Visited	Done	
69	I. Zee Tannery	249	Visited	Not Done	Refused
70	Sarfaraz Tannery	252	Visited	Done	
71	Fakhria Tannery Unit 1	287	Visited	Done	
72	Highway Creation (Unit-I)	324-325	Visited	Done	
73	Khas Industries (Pvt) Ltd.	326	Visited	Done	
74	Haji Jan Muhammad Tannery	330	Visited	Done	

75	AMA Leather Industry	331	Visited	Done	
76	Muhammadi Tannery	332	Visited	Done	
77	Fakhria Tannery Unit 2	339	Visited	Done	
78	Loving Leather	341	Visited	Not Done	Contact Person N/A
79	M.M Leather	343-344	Visited	Done	
80	Mansha Tannery Unit 1	345	Visited	Done	
81	Highway Creation (Unit-II)	347	Visited	Done	
82	Mahmood Enterprises	357	Visited	Done	
83	Mama Gullo Tannery	358/2	Visited	Done	
84	VIP Wears (Pvt) Ltd	363	Visited	Done	
85	Jeaman Leather & Leather Clothing	368/7	Visited	Done	
86	Abu Huraira Tannery	372	Visited	Done	
87	Fine Grip Import Export	374	Visited	Done	
88	Ramzan Brothers	375	Visited	Done	
89	Anwar Leather	356	Visited	Done	
90	Dove Malamine Ware	386	Visited	Not Done	Not a Tannery
91	Taj and Sons	387/1	Visited	Done	
92	BNS Tannery	387	Visited	Not Done	Refused
93	Haji Imdad Hussain Tannery	387/6	Visited	Done	
94	S.R.K International	388/9	Visited	Not Done	Contact Person N/A
95	Mansoor Tanneries	389	Visited	Not Done	Not Interested
96	Kanji Tannery	391	Visited	Done	
97	Sadaqat Leather	394	Visited	Done	
98	Star Leather Industries (Pvt) Ltd	395	Visited	Not Done	Not Interested
99	S.M Saeed & Sons	402	Visited	Not Done	Not Interested
100	Aziz Leather Enterprise	403-D	Visited	Done	
101	Shafiq Brothers	404	Visited	Done	
102	Nazir & Co	405-406	Visited	Done	
103	Imran Tannery	415	Visited	Done	
104	Khowaja Liaquat Mehmod Tannery	423-424	Visited	Done	
105	Shaikh Tariq Mehmood Tannery	425	Visited	Done	
106	Asif Rauf Enterprises	427	Visited	Not Done	Contact Person N/A
107	Rasheed Ahmed & Sons	431-432	Visited	Done	
108	Ever More Hand Protection	436	Visited	Done	
109	Muhammad Bashir Tannery	458-459	Visited	Done	
110	Aqsa Trading & Co	480-481	Visited	Not Done	Contact Person N/A
111	Hostachem International	522	-	-	Not a Tannery
112	Waqar & Co.	528	Visited	Not Done	Not Interested
113	Aslam Tannery	531	Visited	Done	
114	Mairaj & Sons	539	Visited	Done	

115	Khalid Enterprises	542,543	Visited	Done	
116	Abdul & Company	545	Visited	Not Done	Operation Closed
117	Tanseer Brothers	557	Visited	Done	
118	Khas Upholstery	558	Visited	Done	
119	Y & Sons International	559	Visited	Not Done	Contact Person N/A
120	Nov Leather (Pvt) Ltd	30/15	VISITED	Not Done	Contact Person N/A
121	Universal Leather (Pvt) Ltd	16/15	VISITED	Not Done	Contact Person N/A
122	MIMA Leather (Pvt) Ltd	4-6/17	VISITED	-	Operations Closed

Abbreviations

KLA	Korangi Leather Area
UNIDO	United Nations Industrial Development Organization
OSH	Occupational Safety & Health
OiRA	Online Interactive Risk Assessment
PTA	Pakistan Tanners Association
PTA SZ ES	Pakistan Tanners Association South Zone Environment Society
KIA	Korangi Industrial Area

The End