Diversification beyond the ready-made garment (RMG) sector is a top priority for Bangladesh to continue to deliver large-scale job creation and reduce poverty. The leather sector, and its wider value chain, represents one of the best opportunities for Bangladesh to diversify its exports and create jobs through better integration into global value chains (GVCs). Taking advantage of these opportunities will require Bangladesh’s producers, across the entire leather value chain, to meet not just national but also global standards for environmental, social, and quality (ESQ) practices.

This Handbook on Social and Environmental Compliance in Bangladesh’s Leather Industry represents an important starting point in the leather industry’s push to achieve global ESQ standards. By bringing together all the critical requirements in an easy-to-follow format as well as descriptions on how to meet standards for ESQ compliance in one place, it provides a common source of information around which the sector can build its knowledge and begin to strengthen its capacities.

During the preparation of the handbook, the team also met with a number of relevant industry associations such as Leathergoods and Footwear Manufacturers and Exporters Association of Bangladesh (LFMEAB), Bangladesh Tanners Association (BTA), and Bangladesh Finished Leather, Leather Goods and Footwear Exporters Association (BFLLFEA) as well as various research organizations such as the Centre of Excellence for Leather Skill Bangladesh Ltd. (COEL) to get their inputs and feedback so it meets the practical needs of the industry related to improving social and environmental compliance.

However, a handbook alone is only the starting point. Real change will require firms to take action to translate these requirements into practical improvements in their own enterprises to have this compliance certified, and then to reap the benefits of this through expansion into export markets and GVCs.

Any such handbook is a living document that requires to be updated on a regular basis as different countries, markets, and brands update their own environmental and social compliance standards from time to time. This offers, at the same time, an opportunity for the relevant industry associations to offer a much-sought-for service to its members by providing updated information in regard to compliance standards in order to strengthen their footprints in export as well as domestic markets.
Acknowledgements

The *Handbook on Social and Environmental Compliance in Bangladesh’s Leather Industry* is developed through joint collaboration of Ministry of Commerce (MoC) and the World Bank Group (WBG). The initiative was funded jointly by the Let’s Work Partnership Program (World Bank’s Jobs Umbrella Trust Fund, which is supported by the Department for International Development/UK AID, and the Governments of Norway, Germany, Austria, the Austrian Development Agency, and the Swedish International Development Cooperation Agency) and the Bangladesh Investment Climate Fund II (a Department for International Development trust fund) program of the International Finance Corporation (IFC). Throughout the groundwork phase, the handbook has drawn insights from a number of individuals, ministries, government agencies, industry associations, organizations and institutions from Bangladesh and abroad.

The overall guidance for the development of the handbook was provided by a core team at the MOC, headed by Md. Obaidul Azam, Additional Secretary and Project Director, Export Competitiveness for Jobs Project. Valuable inputs form other high level MoC officials were also taken from time to time as needed. The core team expresses its gratitude to the Ministry of Industries, the Ministry of Labor and Employment, and Department of Environment of the Government of Bangladesh for their valuable inputs.

Technical guidance was also received from the WBG team consisting of Thomas Farole, Lead Economist; Michael Olavi Engman, Senior Economist, Hosna Ferdous Sumi, Private Sector Specialist; Mrinal Sircar, Country Coordinator for Let’s Work Partnership.

The team remains thankful to all the individuals, organizations and institutions whose valuable inputs and insights have enriched the publication.
The economy of Bangladesh has made tremendous strides in the last few decades. This growth needs to sustain, and further accelerate in order for Bangladesh to attain the middle-income country status as stipulated in the Vision 2021 of the Government of Bangladesh.

In this context, diversification of our export basket beyond ready-made garments, and access to new markets by leveraging trade and foreign direct investment is a significant strategic component of our export-led growth strategy. One of the most promising sectors for export diversification is leather, leather goods and footwear which is currently the second largest contributor to our export earnings and providing direct employment to about 558,000 people in leather and leather goods production, while providing indirect employment to an additional 30,000 people in allied industries. To give a further boost to the sector, the Government of Bangladesh announced leather, leather goods and leather footwear as the “Product of the Year” in January 2017.

While the sector needs to further integrate itself with the global value chain, improvement of social and environmental compliance standards are critical factors to harness this growth potential.

I am indeed delighted to see a very productive collaboration between the Ministry of Commerce and the World Bank Group in facilitating the industry improve its compliance standards by way of preparing a ‘Handbook on Social and Environmental Compliance in Bangladesh’s Leather Industry’. The handbook, published both in Bangla and English, should serve as a very useful tool for the enterprises in leather, leather goods and footwear sector to improve their social and environmental compliance standards across the value chain, and thereby create a solid ground for better access to export markets and boost our export in the sector.

I also take this opportunity to urge upon the industry associations to make the best use of this handbook, taking care of its regular updates, and encouraging their members address the compliance issues seriously in their best business interest.

I sincerely wish this pioneering publication would contribute to developing a socially and environmentally compliant value chain in our leather industry, which would eventually result in a sustainable growth of the sector.

Shubhashish Bose
Secretary, Ministry of Commerce
Government of Bangladesh
Message
The World Bank Group

I am delighted to know about the publication of a handbook on *Social and Environmental Compliance in Bangladesh’s Leather Industry* which is the result of a very productive collaboration between the Ministry of Commerce and the World Bank Group. Leather is one of the most potential sectors to diversify Bangladesh’s exports beyond ready-made garments, and create new and better jobs. Growing awareness of consumers about social and environmental concerns makes it an imperative for Bangladeshi entrepreneurs to demonstrate greater commitments and continuous efforts to improve compliance and quality standards to ensure better and sustained access to international markets.

The World Bank Group will continue to support the government of Bangladesh and the private sector in this area through the ‘Export Competitiveness for Jobs’ and ‘Enhancing Sector Competitiveness and Export Diversification’ projects. These complementary projects will provide investment, policy and regulatory reform support to the high potential sectors like leather, leather goods and footwear to improve environmental, social and quality standards and compete in global markets.

I believe, the entrepreneurs will find this publication very useful and will make best use of it to improve their compliance which in turn will contribute significantly in branding Bangladesh as a reliable sourcing destination for leather, leather goods and footwear products.

The World Bank Group
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<tr>
<td>BAT</td>
<td>Best Available Technology</td>
</tr>
<tr>
<td>BLA</td>
<td>Bangladesh Labor Act</td>
</tr>
<tr>
<td>BNBC</td>
<td>Bangladesh National Building Code</td>
</tr>
<tr>
<td>BOD</td>
<td>Biological Oxygen Demand</td>
</tr>
<tr>
<td>BSCI</td>
<td>Business Social Compliance Initiative</td>
</tr>
<tr>
<td>BUET</td>
<td>Bangladesh University of Engineering and Technology</td>
</tr>
<tr>
<td>CADS</td>
<td>Cooperation at Deutsches Schuh Institut (German Shoe Institute)</td>
</tr>
<tr>
<td>CDA</td>
<td>Chittagong Development Authority</td>
</tr>
<tr>
<td>CETP</td>
<td>Central Effluent Treatment Plant</td>
</tr>
<tr>
<td>COB</td>
<td>Constitution of Bangladesh</td>
</tr>
<tr>
<td>COD</td>
<td>Chemical Oxygen Demand</td>
</tr>
<tr>
<td>dB(A)</td>
<td>A-weighted decibels</td>
</tr>
<tr>
<td>DIFE</td>
<td>Department of Inspection for Factories and Establishment</td>
</tr>
<tr>
<td>DoE</td>
<td>Department of Environment</td>
</tr>
<tr>
<td>ECA</td>
<td>Environmental Conservation Act</td>
</tr>
<tr>
<td>ECC</td>
<td>Environmental Clearance Certificate</td>
</tr>
<tr>
<td>EPB</td>
<td>Export Promotion Bureau</td>
</tr>
<tr>
<td>ETP</td>
<td>Effluent Treatment Plant</td>
</tr>
<tr>
<td>ETI</td>
<td>Ethical Trading Initiative</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>FLA</td>
<td>Fair Labor Association</td>
</tr>
<tr>
<td>FWF</td>
<td>Fair Wear Foundation</td>
</tr>
<tr>
<td>ILO</td>
<td>International Labor Organization</td>
</tr>
<tr>
<td>IUE</td>
<td>International Union of Environment Commission</td>
</tr>
<tr>
<td>IULTCS</td>
<td>International Union of Leather Technologists and Chemists Societies</td>
</tr>
<tr>
<td>LGED</td>
<td>Local Government Engineering Department</td>
</tr>
<tr>
<td>LWG</td>
<td>Leather Working Group</td>
</tr>
<tr>
<td>MSDS</td>
<td>Material Safety Data Sheet</td>
</tr>
<tr>
<td>MRSL</td>
<td>Manufacturing Restricted Substances List</td>
</tr>
<tr>
<td>OSH</td>
<td>Occupational Safety and Health</td>
</tr>
<tr>
<td>PC</td>
<td>Participation Committee</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal Protective Equipment</td>
</tr>
<tr>
<td>RAJUK</td>
<td>Rajdhani Unnayan Kartripakkha</td>
</tr>
<tr>
<td>REACH</td>
<td>Registration, Evaluation, Authorization and Restriction of Chemicals</td>
</tr>
<tr>
<td>RSL</td>
<td>Restricted Substances List</td>
</tr>
<tr>
<td>SDS</td>
<td>Safety Data Sheet</td>
</tr>
<tr>
<td>TCMTB</td>
<td>Thiocyanomethylthiobenzothiazole</td>
</tr>
<tr>
<td>TDS</td>
<td>Technical Data Sheet</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>TNA</td>
<td>Training Needs Assessment</td>
</tr>
<tr>
<td>VOC</td>
<td>Volatile Organic Compound</td>
</tr>
<tr>
<td>WRAP</td>
<td>Worldwide Responsible Accredited Production</td>
</tr>
<tr>
<td>ZDHC</td>
<td>Zero Discharge of Hazardous Chemicals</td>
</tr>
</tbody>
</table>
Chapter 1: Introduction

The handbook presented aims to highlight the potential for improving social and environmental compliance, including Occupational Safety and Health (OSH), in the leather industry. Providing an operational translation of local laws, international standards and company codes, it describes the actions required to ensure that all operations along the supply chain, from the production of the raw material to the manufacturing of leather products, are consistent with national regulations and international environmental and social standards.

The handbook is based on a comprehensive value chain analysis of Bangladesh’s leather industry, which has been carried out from November 2016 to March 2017, and a review of the national legislation and international standards that are applicable to the leather industry. The analysis examined the requirements of social and environmental compliance in different nodes of the supply chain, i.e. slaughterhouses, traders of raw hides and skins, tanneries, and leather footwear producers.

A good knowledge of the state of technology in the leather industry is essential for moving the leather industry towards improved environmental practices and processes. The Bangladesh Labor Law and the Constitution of Bangladesh provide a reference for challenges related to labor standards and Occupational Safety and Health (OSH). Brands and buyers communicate their requirements mostly through corporate codes of conduct and restricted substances lists, but rarely present comprehensive environmental guidelines.

This manual is intended for practitioners. It identifies non-compliances – i.e. the scope for improvement – and comes up with corrective actions which are set into relation to social, environmental and economic implications. Generally, these recommendations refer to currently best available techniques (BAT) or good practices that are sustained by national labor laws and international standards. Benefits are highlighted to underscore the relevance of social, environmental and economic sustainability for both workers and the factory management. If applicable and available, examples for concrete savings in different processes are given.

While the handbook is not prescriptive and cannot address every compliance related challenge, its value is to provide guidance in making decisions that align with corporate and international standards. However, technical guidance and trainings may be necessary to implement these recommendations.

---

1 All information given in this handbook are accurate at time of publication. For up-to-date information on national labor laws and environmental regulations as well as on corporate and international standards, visit the corresponding websites.
2 LABOR STANDARDS

Labor standards address the well-being of the workers in the workplaces. The ILO core conventions serve as the main reference for the protection of basic worker rights.

A proper organizational structure along with defined duties and responsibilities are the most important factors for an effective implementation of labor standards within organizations.

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>No personnel has been assigned for implementing social compliance standards (e.g. BSCI, ETI, WRAP, etc.) or codes of conduct (e.g. customer code).</td>
<td>Assign one person in charge for social compliance. As the person in charge, implement the code of conduct.</td>
<td>Proper implementation of social compliance code and adherence to requirements</td>
<td>Customer code of conduct BSCI, ETI, WRAP</td>
</tr>
<tr>
<td>Welfare officer is not appointed in factories with &gt;500 workers</td>
<td>Appoint the necessary amount of welfare officers. Appoint at least one welfare officer in factories with a workforce &gt;500 employees.</td>
<td>Compliance with legislation in Bangladesh Communication between workers and management will be more effective. Workers have the chance to talk about their personal issues.</td>
<td>Bangladesh Labor Rules 2015 BSCI, ETI, WRAP, FLA</td>
</tr>
</tbody>
</table>

2.1 LICENSES AND OTHERS

Licenses, such as trade license, fire license or building/lay out plan, are mandatory for businesses in manufacturing industries. To obtain licenses and other permits, businesses are requested to apply to and authorized by the corresponding Government authorities. All licenses and permits must be renewed before expiry. Running any business or manufacturing operation without the required valid licenses and permissions is treated as a violation of the national legislation.

In the following, recommendations and benefits are provided to deal with challenges in obtaining licenses.

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire license does not cover all units/buildings/floors.</td>
<td>Take care that all units, buildings and floors of the factory compound are covered by the fire license. Make an application to the fire service and civil defense authority for the fire license of the missing unit(s)/building(s)/floor(s).</td>
<td>Compliance with legislation in Bangladesh. The risk of fines and litigation is reduced. The risk of interruptions and stagnation of production is reduced. Licenses required for loan application are available. Sufficient firefighting equipment for all units/buildings/floors is available.</td>
<td>Fire Prevention Act 2003 BSCI, ETI, WRAP, FWF</td>
</tr>
</tbody>
</table>
| Building layout and/or floor plan have not been approved by the government authority. | Compliance with legislation in Bangladesh.  
The risk of fines and litigation is reduced.  
The risk of interruptions and stagnation of production is reduced.  
Licenses required for loan application are available.  
The workers’ life safety is ensured. | Bangladesh Labor Act (BLA) 2006  
Bangladesh Labor Rules 2015  
Bangladesh National Building Code (BNBC) 2006  
BSCI, ETI, WRAP |
|---|---|---|
| Provide the approved building layout and floor plans by the government authority.  
Apply for the building construction layout at the Rajuk/LGED/CDA and for the floor plan approval at the “Inspector of Factories”. | | |
| | | |
| A valid factory license is not available. | Compliance with legislation in Bangladesh.  
Factory is allowed to apply for other licenses (e.g. fire license, EPB license, bonded warehouse license).  
The risk of fines and litigation is reduced.  
The risk of interruptions and stagnation of production is reduced.  
Licenses required for loan application are available.  
Workers are provided insurance benefit (if any). | BLA 2006  
BSCI, ETI, WRAP, FWF |
| | | |
| Take care that you have a valid license as per government authority of Bangladesh required.  
Apply for the factory license at the Department of Inspection for Factories and Establishment (DIFE). | | |
| | | |
| A group insurance covering each individual staff member and worker is not available. | Compliance with legislation in Bangladesh.  
Financial security for dependents in case of deadly accident.  
Employees are attracted and retained by the group insurance scheme.  
The group insurance scheme promotes employee satisfaction. | Bangladesh Labor (Amendment) Act 2013  
BSCI, ETI, FLA, WRAP, FWF |
| | | |
| Cover each individual staff member and worker under a proper group insurance policy.  
Apply for the group insurance at any recognized insurance company. | | |
| | | |
| A valid trade license is not available | Compliance with legislation in Bangladesh.  
The factory is allowed to apply for other licenses (e.g. factory license, fire license, bonded warehouse license).  
The risk of fines and litigation is reduced.  
The risk of interruptions and stagnation of production is reduced.  
Licenses required for loan application are available. | Local Government Ordinance  
BSCI, ETI, WRAP |
| | | |
| Take care that you have a valid trade license as per government authority required.  
Apply for the trade license at the concerned local government authority. | | |
| | | |
For a checklist of fire license, factory layout and extension layout plan, and trade license, see Annex 7.1.1.

2.2 FORCED LABOR

According to the ILO, "forced labor refers to situations in which persons are coerced to work through the use of violence or intimidation, or by more subtle means such as accumulated debt, retention of identity papers or threats of denunciation to immigration authorities."²

All forms of forced labor are prohibited according to the Article 34 of the "Constitution of Bangladesh". Many forms of forced labor can be observed in an organization: workers are not allowed to leave the workplace if they fail to complete their work target or quota; or they are not allowed to use the toilets; or workers have to work for a very long period to repay the loan or an advance taken against salaries.

How to deal with forced labor will be highlighted below.

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees are not allowed to leave the factory compound at any time they want after work.</td>
<td>Make sure workers are free to leave the factory compound at any time after their work.</td>
<td>Compliance with legislation in Bangladesh. Free choice of employment is ensured. Productivity increases if workers enjoy free choice of employment with adequate payment and working hours. Firms do not need to invest in coercive capacity (e.g. surveillance, punishment). Firms prevent costs generated by strikes and rebellions against coercion (e.g. lost production and revenue). Firms do not need to invest in avoiding state intervention (e.g. bribery, corruption, profit sharing).</td>
<td>Constitution of Bangladesh BSCI, ETI, WRAP, ILO, FLA, FWF</td>
</tr>
</tbody>
</table>

| Workers are not allowed to leave the factory compound unless the daily target production is reached. | Employees have the right to leave the factory compound at any time they want after work. Overtime must always be voluntary. Do not hinder workers from leaving the factory after the working day, no matter how high the output was. | Compliance with legislation in Bangladesh. Free choice of employment is ensured. Productivity increases if workers enjoy free choice of employment with adequate payment and working hours. | Constitution of Bangladesh BSCI, ETI, WRAP, ILO, FLA, FWF |

For a checklist of how forced labor can be avoided, see Annex 7.1.2.

### 2.3 FREEDOM OF ASSOCIATION

Workers have the right to form and join unions or organizations of their own choosing with the objective of promoting or protecting the employees' interest (ILO conventions 87, 98, 135 and ILO recommendation 143, Bangladesh Labor Law and Article 38 of the Constitution of Bangladesh).

Under any circumstances, employers are not allowed to prevent workers from forming and joining unions or organizations and take disciplinary measures.

In an organization where 50 or more workers are employed, a "Participation Committee" should be formed. The committee must comprise both employers' and workers' representatives. The workers' representative must be elected by the workers. The "Participation Committee" will work to promote mutual trust, understanding and cooperation between the employer and the workers.

<table>
<thead>
<tr>
<th><strong>Non-compliances</strong></th>
<th><strong>Corrective Actions</strong></th>
<th><strong>Benefit</strong></th>
<th><strong>Relevant for</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>No valid and properly elected union or workers' representative i.e. participation committee (PC) is available and/or allowed.</td>
<td>Provide valid and properly elected union or workers' representatives. Document the election process.</td>
<td>Compliance with legislation in Bangladesh. Freedom of association is ensured. Communication between workers and management is ensured. Disputes are settled by discussion, not by confrontation. Trust between management and workers is established.</td>
<td>BLA 2006 BSCI, ETI, WRAP, ILO, FLA, FWF</td>
</tr>
<tr>
<td>The PC has not been formed as per legal requirements.</td>
<td>Carry out the formation of PC as stated in the Bangladesh labor rules 2015.</td>
<td>Compliance with legislation in Bangladesh. Valid negotiation between workers and management is ensured. Trust between management and workers is established if PC has been formed properly.</td>
<td>Bangladesh Labor (Amendment) Act 2013 BSCI, ETI, WRAP, FWF</td>
</tr>
</tbody>
</table>
For recommendations on how freedom of association can be achieved, see Annex 7.1.3.

### 2.4 RIGHT TO ORGANIZE AND COLLECTIVE BARGAINING

Collective bargaining is a negotiation process between employer and employees representatives to promote and protect employees’ interest with regard to wages, occupational safety and health, and other issues.

In an organization, workers should be allowed to organize themselves independently and freely for the purpose of negotiations with the employer.

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>A union or workers’ representative, such as a participation committee (PC), is not available to bargain with the factory management collectively and negotiate claims on the workers’ behalf (e.g. wages, health and safety issues, etc.)</td>
<td>Allow a union or workers’ representative to bargain with the management and negotiate claims of workers on their behalf, for instance, regarding wages, safety and health, and other issues.</td>
<td>Compliance with legislation in Bangladesh. The negotiation between workers and management on wages and safety and health issues, among others, is ensured. Both the employer and the employee act collectively and not individually in arriving at an agreement. Collective bargaining develops better understanding between the employer and the employees. The interests of both the employer and the employees are protected. Governmental interventions are kept at bay.</td>
<td>BLA 2006 BSCI, ETI, WRAP, FLA, FWF</td>
</tr>
</tbody>
</table>

For steps towards establishing collective bargaining processes, see Annex 7.1.4.

### 2.5 EQUAL REMUNERATION
Workers should get equal wages for equal work, irrespective of gender, religion, race, political affiliations, etc. It should not be accepted by no means if the equal wage is not fixed or paid for equal work, which would lead to a violation of the Bangladesh Labor Law.

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal remuneration for the same types of work e.g. between male and female workers is not ensured.</td>
<td>Give women and men equal pay for work of equal value.</td>
<td>Compliance with legislation in Bangladesh. Equal remuneration for work of equal value is ensured for men and women. Offering the same pay scale for male and female workers can help a company avoid possible legal consequences. Companies that give equal pay to men and women may find an increase in productivity that comes from higher morale and employee commitment. Productive female workers may be more likely to remain with the organization if they believe they are being compensated fairly. Companies with a reputation for compensating men and women equally may have access to a larger talent pool when recruiting and hiring. Companies find it easier to recruit and retain a skilled workforce if they can select among equally skilled (and paid) male and female workers. A transparent pay structure gives employees the confidence that their pay is fair and non-discriminatory.</td>
<td>BIA 2006 BSCI, ETI, WRAP, ILO, FWF</td>
</tr>
</tbody>
</table>

For practical steps on how to achieve equal remuneration, see Annex 7.1.5.

2.6 DISCRIMINATION

Discrimination is defined in the ILO Convention No. 111 as any distinction, exclusion or preference made on the basis of race, color, sex, religion, political opinion, national extraction or social origin, which has the effect of nullifying or impairing equality of opportunity or treatment in employment or occupation.3

3 [http://www.ilo.org/legacy/english/dialogue/ifpdial/ilg/noframes/ch7.htm#5](http://www.ilo.org/legacy/english/dialogue/ifpdial/ilg/noframes/ch7.htm#5)
The Constitution of Bangladesh claims that all citizens are equal and are entitled to equal protection before the law.

In an organization, employees should not be discriminated against on grounds of race, creed, sex, maternal status, political affiliation, national origin or sexual orientation.

By law, employees have equal opportunities for promotions, training, fringe benefits and any other benefits.

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humiliating penalties and practices are in place.</td>
<td>Humiliating penalties and practices are not allowed. No fine can be imposed to the workers for any kind of damage without following disciplinary procedures.</td>
<td>Compliance with legislation in Bangladesh. Workplace relations are smoother, with less conflict and disruption, and reduced employee turnover. The workers’ morale and motivation is increased as they are treated respectfully. Productivity is enhanced. Legal liability and costs are minimized. Corporate image as a responsible employer is enhanced. Diverse skills and experience of staff can be used more effectively. Clients respond positively to nondiscriminatory workplaces, which may lead to market loyalty, enhancing continuity and profit.</td>
<td>BLA 2006 BSCI, ETI, WRAP</td>
</tr>
</tbody>
</table>

A company is advised to take the following steps to create a non-discriminatory working environment:

- Develop policies and procedures prohibiting discrimination.
- Assign responsible personnel to monitor, document, update and control implementation.
- Educate all your employees about discrimination.
- Encourage workers to respect each other’s differences.
- Deal with any complaints of discrimination promptly and confidentially.
- Review the policy regularly to ensure that its effectiveness is maintained.
For more detailed information on what is required to have a non-discriminatory working environment in place, see Annex 7.1.6.

### 2.7 MINIMUM AGE

According to the Bangladesh Labor Law, a “child” cannot be employed for work. “Child means a person who has not completed his fourteenth year of age”.

An adolescent can be employed under certain terms and conditions prescribed in the Bangladesh Labor Law (section 34-44). “Adolescent means a person who has completed his fourteenth year but has not completed eighteen year of age”.

The worst forms of child labor comprise work in leather footwear factories and tanneries “... which, by its nature or the environment where it takes place, is likely to harm the health, safety or morals of children (referred to as hazardous child labor)”.

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age verifying documents are not available for each worker, e.g. in the personnel file.</td>
<td>Keep age verifying documents in the workers personal file, e.g. a copy of the personal identification or passport.</td>
<td>Compliance with legislation in Bangladesh. Workers do not lose their job due to suspicion of age.</td>
<td>BLA 2006 BSCI, ETI, WRAP, FWF</td>
</tr>
<tr>
<td>Underage workers are found doing repetitive factory work.</td>
<td>Stop hiring children below the minimum age. Remove children from tasks and environments that are considered dangerous for them but not for adults (e.g. heavy loads, night work, heavy machinery). Make sure children below the minimum working age have access to appropriate education. Encourage children of legal working age to combine their work with formal Technical and Vocational Education and Training (TVET).</td>
<td>Compliance with legislation in Bangladesh. The quality and productivity of adult workers is higher. Children miss the chance to acquire proper education if stuck doing poor quality jobs.</td>
<td>BLA 2006 BSCI, ETI, WRAP, FWF</td>
</tr>
<tr>
<td>The working hours and special working conditions of adolescent workers are not established. The adolescent workers are engaged in dangerous or hazardous work (e.g. the use of chemicals, bonding upper to leather/rubber soles with solvent-based adhesives).</td>
<td>Ensure that adolescent workers only work limited working hours, i.e. 5 hours normal working hours and 1 hour overtime maximum per day. Provide formal description or policies. Give adolescent workers decent work which does not affect their health, personal development or education.</td>
<td>Compliance with legislation in Bangladesh. Adolescent workers have the opportunity to continue their education. Health and safety is ensured as adolescent workers do not engage in any kind of dangerous or hazardous work.</td>
<td>BLA 2006 BSCI, ETI, WRAP, FWF</td>
</tr>
</tbody>
</table>

For more information on how to comply with the requirements of minimum working age, see Annex 7.1.7.

### 2.8 REGULAR EMPLOYMENT
Regular employment focuses on the recognized employment relationship between employer and employees in line with the national law and international standards. Regular employment covers employment contracts, other legal required documents, subcontractor monitoring and monitoring of home workers, if applicable.

The following information is to be included in the working contract:

- Name of the employee
- Job title
- Date of commencement of employment
- Nature of employment i.e. part time, full time, casual, daily basis
- Total wages including wage breakdown
- Overtime (if any) and hourly rate
- The amount of notice period that is required to be given by both employer and employee to end the employment relationship.
- Leave entitlement

In addition to these requirements, make sure the following non-compliances are avoided:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel files are not available for all workers.</td>
<td>Provide personnel files for all workers.</td>
<td>Compliance with legislation in Bangladesh. Ensure job security. Financial security for dependents in case of deadly accident. A personnel filing system helps to give promotion or take layoff decisions. Personnel files keep track of activities such as trainings, vacations or conflicts, among others.</td>
<td>BLA 2006 BSCI, ETI, WRAP, FWF</td>
</tr>
<tr>
<td>Personnel files are available for all workers but are incomplete.</td>
<td>Make sure that the personnel files at least contain: - Photograph of the employee - Copy of working contract with worker’s acknowledgement - Service book - Copy of photo ID card - Leave records - Fitness certificate including proof of age - Employment application - Resume - Copy of certificates</td>
<td>Compliance with legislation in Bangladesh. Job security is ensured. Financial security for dependents in case of a deadly accident is ensured. A personnel filing system helps to give promotion or take layoff decisions. Personnel files keep track of activities such as trainings, vacations or conflicts, among others.</td>
<td>BLA 2006 BSCI, ETI, WRAP, FWF</td>
</tr>
<tr>
<td>Working contracts are not available for each worker.</td>
<td>Make formal working contracts with each worker, including home worker. Provide working contracts to each worker.</td>
<td>Compliance with legislation in Bangladesh. Job security is ensured.</td>
<td>BLA 2006 BSCI, ETI, WRAP, FWF</td>
</tr>
</tbody>
</table>
Add relevant terms in the employment contract (e.g. non-disclosure agreement, responsibilities of the employee, benefits, vacation and sick day policies, ownership agreement, method for resolving disputes, etc.).

Financial security for dependents in case of a deadly accident is ensured. Terms added into the employment contract limit the reasons for an employee to leave the company. Employment contracts help attract the best workers into your company. Employment contracts allow more control of how employees work.

<table>
<thead>
<tr>
<th>Photo I.D. cards are not provided to each worker.</th>
<th>Provide a photo I.D. to each worker.</th>
<th>Compliance with legislation in Bangladesh. Job security is ensured. Identity in case of an accident is ensured. Employees having an I.D. card are an integrated part of the company and have access to the company’s premises. Every employee feels part of the same business. Allows to keep track of an employee’s in and out time.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photo I.D. cards are not provided to each worker.</td>
<td>Provide a photo I.D. to each worker.</td>
<td>Compliance with legislation in Bangladesh. Job security is ensured. Transparency of the job history of workers is ensured.</td>
</tr>
<tr>
<td>Photo I.D. cards are not provided to each worker.</td>
<td>Provide a photo I.D. to each worker.</td>
<td>Compliance with legislation in Bangladesh. Job security is ensured.</td>
</tr>
<tr>
<td>Photo I.D. cards are not provided to each worker.</td>
<td>Provide a photo I.D. to each worker.</td>
<td>Compliance with legislation in Bangladesh. Job security is ensured.</td>
</tr>
</tbody>
</table>

For a checklist on the compliance with regular employment requirements, see [Annex 7.1.8](#).

### 2.9 WORKING HOURS

Working hours refer to the regulations prescribed in the national laws, ILO conventions and other international standards. They comprise regular working hours, the weekly rest day, overtime working hours, and public holidays, among others.
It is essential for employers to understand the toxic economic relation between excessive overtime and productivity:

- Excessive overtime causes stress and exhausted workers.
- Permanent overexertion leads to a loss of concentration, less accuracy, which results in fewer orders being completed in time.
- Low performance means low productivity and lower quality, with more rework and more down-time, less output, more accidents and illness, and more absenteeism eventually producing a cost explosion with regard to materials, labor and utilities.

See also how the following non-compliances can be avoided and what is the pay-off to your company:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>No time recording system for each individual worker is in place to measure the beginning and end of a workday.</td>
<td>Implement a proper time recording system, which record each individual workers’ beginning and end of a workday (in and out time).</td>
<td>Compliance with legislation in Bangladesh.</td>
<td>BLA 2006</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Record of the workers’ working time is kept.</td>
<td>BSCI, ETI, WRAP, FLA, FWF</td>
</tr>
<tr>
<td>Working time on average and over the course of a year is not within the legal maximum amount of 60 hours per week including overtime.</td>
<td>Do not exceed the working time. The legal maximum amount is 60 hours per week including overtime. Pay for overtime working hours at an additional bonus with twice the basic salary.</td>
<td>Compliance with legislation in Bangladesh. Workers are not exhausted; they get time to recover. Negative impacts on safety and health in the workplace are avoided. Absenteeism is reduced. Less overtime means better quality and higher productivity. Reworks and rejections are reduced. Less defective products ensure a sustained business volume. Employers do not have to pay extra costs for overtime payment. Overhead expenditure decreases.</td>
<td>BLA 2006 BSCI, ETI, WRAP, FLA, FWF</td>
</tr>
<tr>
<td>On average, workers do not have one day off after 6 consecutive working days.</td>
<td>Give all workers one day off after every 6 consecutive working days.</td>
<td>Compliance with legislation in Bangladesh. Workers have time to recover. Productivity is maintained. Absenteeism is reduced.</td>
<td>BLA 2006 BSCI, ETI, WRAP, FLA, FWF</td>
</tr>
<tr>
<td>Female workers are employed in night shifts.</td>
<td>Ask for a written consent of each female worker in case they are working in shifts between 10pm and 6pm. Ensure a safe way to and from work for female workers who are working between 10pm and 6am.</td>
<td>Compliance with legislation in Bangladesh. The safety of female workers is ensured. Female workers have more time to rest.</td>
<td>BLA 2006 BSCI, ETI, WRAP, ILO, FLA, FWF</td>
</tr>
</tbody>
</table>
For a checklist of the documents required to comply with the regulations on work hours, see Annex 7.1.9.

2.10 WAGES AND BENEFITS

Wages and benefits payable to the employees are defined by the national legislations. They cover payment for overtime work, service benefits, gratuity, maternity benefits, and deduction from wages and leave benefits. Wages must be:

- Understandable to workers
- Paid in a currency or bank transfer
- Paid in timely and regular fashion
- Accurately calculated
- Paid in accordance with the contract at least equal to minimum or industry wage
- Paid with a pay slip in the local language

To prevent your company from wage violations, pay heed to the following recommendations and benefits:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers are not paid as per legal minimum wage.</td>
<td>Ensure the payment of the minimum wage for all workers.</td>
<td>Compliance with legislation in Bangladesh. Staff turnover is decreased and skilled workforce is maintained. Workers at least receive the legal minimum. Payment below minimum wage lowers morale and motivation.</td>
<td>BLA 2006 BSCI, ETI, WRAP, ILO, FLA, FWF</td>
</tr>
<tr>
<td>Wages are not paid on time as legally required.</td>
<td>Pay wages within the first 7 working days of the following month.</td>
<td>Compliance with legislation in Bangladesh. Penalties for failing to pay wages are avoided. Timely payment of wages lures good and skilled workers to company. Timely payment of wages indicates that employer is financially strong. Timely payment prevents workers from leaving the company.</td>
<td>BLA 2006 BSCI, ETI, WRAP, FLA, FWF</td>
</tr>
<tr>
<td>Workers do not receive pay slips with detailed information on relevant aspects, e.g. hours worked, pieces produced (if piece rate is applicable), amount of payment,</td>
<td>Provide pay slips for each worker with detailed information on relevant details, e.g. hours worked, pieces produced, amount of payment, benefits, deductions, etc.</td>
<td>Compliance with legislation in Bangladesh. Workers have detailed information about the hours worked, number of pieces produced, wage payment, Bangladesh Labor Rules 2015 Minimum Wage Gazette Notification</td>
<td>Bangladesh Labor Rules 2015 Minimum Wage Gazette Notification</td>
</tr>
<tr>
<td>Requirement</td>
<td>Action</td>
<td>Compliance with legislation in Bangladesh.</td>
<td>Source</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Monetary penalty system is in place for workers (risk of salary decrease below minimum wage level).</td>
<td>Do not impose monetary penalties without following labor laws.</td>
<td>Compliance with legislation in Bangladesh. Workers are not scared but motivated if they know they will not face monetary penalties.</td>
<td>Annex 7.1.10</td>
</tr>
<tr>
<td>Employer does not contribute to statutory group insurance funds for each employee.</td>
<td>Pay the group insurance contribution/premium.</td>
<td>Compliance with legislation in Bangladesh. The workers are not deducted any amount of money from their earnings with regard to contribution to statutory group insurance fund. Financial security for dependents in case of a deadly accident is ensured.</td>
<td>Bangladesh Labor Rules 2015</td>
</tr>
<tr>
<td>Annual leave is not ensured or granted for the workers.</td>
<td>Ensure annual leave as per legal requirement.</td>
<td>Compliance with legislation in Bangladesh. Workers have time to recover. Workers get money in case of not taking the leave.</td>
<td>BLA 2006 BSCI, ETI, WRAP</td>
</tr>
<tr>
<td>Maternity leave and benefits are not ensured for pregnant female workers or new mothers.</td>
<td>Ensure maternity leave and benefits as per legal requirement.</td>
<td>Compliance with legislation in Bangladesh. Women who have maternity leave are more motivated to return to work after their child's birth. Employee turnover is reduced. Companies do not have to spend resources on finding replacement workers. Talented and skilled female employees are prevented from leaving the company.</td>
<td>BLA 2006 BSCI, ETI, WRAP, FLA, ILO, FWF</td>
</tr>
<tr>
<td>Overtime payment is not ensured for the workers.</td>
<td>Pay an overtime payment, which is twice the basic salary.</td>
<td>Compliance with legislation in Bangladesh. Extra earnings for extra work are ensured.</td>
<td>BLA 2006 BSCI, ETI, WRAP, FWF</td>
</tr>
<tr>
<td>Absent deduction is made on gross salary instead of basic salary.</td>
<td>Make absent deduction on the basic salary only.</td>
<td>Compliance with legislation in Bangladesh. No extra money is deducted.</td>
<td>Bangladesh Labor Rules 2015 BSCI, ETI, WRAP</td>
</tr>
</tbody>
</table>
3 OCCUPATIONAL SAFETY AND HEALTH

Occupational Safety and Health (OSH) is concerned to ensure safety, health and welfare of the workers at the workplace. According to the United Nations Declarations of Human Rights (Article 23, 1948), “everyone has the right to work, to free choice of employment, to just and favorable conditions of work”.

This section covers fire, electrical, machine, first aid, chemical and personal safety of the workers at their workplaces, amongst others.

3.1 HEALTH AND SAFETY COMMITTEE

According to the Bangladesh Labor (Amendment) Act 2013, a health and safety committee must be formed if fifty or more workers are employed in the factory. The health and safety committee must consist of equal representatives from the management and the workers. The committee is dedicated to continuously improving health and safety related issues.

The non-compliances identified below need to be addressed in specific corrective actions:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health and safety committee is not formed.</td>
<td>Form a health and safety committee as per legal requirement.</td>
<td>Compliance with legislation in Bangladesh. A health and safety committee improves the communication between management and workers, creates a safer working environment, increases safety awareness, and enhances the employees’ morale. It strengthens the monitoring system, resulting in better risk management. Risks can be identified beforehand and action can be taken before any unexpected situation arises.</td>
<td>Bangladesh Labor (Amendment) Act 2013 BSCI, SA8000, ETI, WRAP, FLA, FWF</td>
</tr>
<tr>
<td></td>
<td>Ensure the health and safety committee meets at least once in every 3 months. The committee is in charge of training as well as risk and safety management in all relevant areas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The formation of the health and safety committee is not in line with legal requirements.</td>
<td>Make sure that the formation of the health and safety committee is in line with local laws. Document the formation process.</td>
<td>Compliance with legislation in Bangladesh.</td>
<td>Bangladesh Labor Rules 2015</td>
</tr>
</tbody>
</table>

The basic requirements to form a safety committee are as follows:

- Where there are 50 or more workers regularly employed, a safety committee must be formed.

- For existing establishments, a safety committee must be formed within 6 months of the application of the Bangladesh Labor Rules 2015. For new establishments which started production after the application of the Bangladesh Labor Rules 2015, a safety committee must be formed within 9 months of the application of the Bangladesh Labor Rule 2015.

- The total number of the safety committee members should be not less than 6 persons and not more than 12 persons. The ratio of the members is determined by the number of employees (see table below):
Table 1: Ratio workers-members in Safety Committee

<table>
<thead>
<tr>
<th>Number of workers employed</th>
<th>Number of members in Safety Committee</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 – 500</td>
<td>6</td>
</tr>
<tr>
<td>501 – 1000</td>
<td>8</td>
</tr>
<tr>
<td>1001 – 3000</td>
<td>10</td>
</tr>
<tr>
<td>3001 – more</td>
<td>12</td>
</tr>
</tbody>
</table>

For more specific information on how health and safety committees are to be formed, review Annex 7.2.1.

3.2 EMERGENCY AND EVACUATION PLANS

This section refers to the actions that should be taken to ensure safe evacuation in the event of an emergency situation such as fire, earthquakes or similar incidents.

The following non-compliances in terms of emergency and evacuation plans are frequently being identified in tanneries and leather footwear factories. The corrective actions suggested below will address them effectively, with a sizable return for the company:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escape routes are not clearly marked.</td>
<td>Mark all escape routes clearly.</td>
<td>Compliance with legislation in Bangladesh.</td>
<td>BLA 2006, Bangladesh Labor Rules 2015</td>
</tr>
<tr>
<td></td>
<td>Install and maintain sufficient arrows and exit signs, which are indicating the</td>
<td>The workers can clearly identify escape routes and emergency exits.</td>
<td>BSCI, FLA, ETI, SA8000, WRAP, FWF, LWG</td>
</tr>
<tr>
<td></td>
<td>direction of emergency exits.</td>
<td>Companies reduce the risk of facing legal actions due to major injuries and loss of lives.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Companies reduce the risk of paying compensation for major injuries and death.</td>
<td></td>
</tr>
<tr>
<td>Floor marking, arrows and exit signs indicating the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>direction of emergency exits are insufficient.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Escape routes are not wide enough and are not free</td>
<td>Ensure the escape routes are 100cm wide and if this is not possible, they cannot</td>
<td>Compliance with legislation in Bangladesh.</td>
<td>BLA 2006, Bangladesh Labor Rules 2015</td>
</tr>
<tr>
<td>from obstructions.</td>
<td>be less than 75cm wide.</td>
<td>Escape routes are free from obstruction.</td>
<td>BSCI, FWF, SA8000, ETI, WRAP, FLA</td>
</tr>
<tr>
<td></td>
<td>Keep the escape routes always free from obstructions.</td>
<td>Employees are aware that escape routes are not be obstructed under no circumstances.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Train workers to keep escape routes always free from obstruction.</td>
<td>Companies reduce the risk of facing legal actions due to major injuries and loss of lives.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Companies reduce the risk of paying compensation for major injuries and death.</td>
<td></td>
</tr>
<tr>
<td>Exit signs are not visibly marked.</td>
<td>Mark exit signs clearly to ensure the visibility under extreme conditions,</td>
<td>Compliance with legislation in Bangladesh</td>
<td>BLA 2006, Bangladesh Labor Rules 2015</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>BSCI, FWF, SA8000, ETI, WRAP, FLA</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Requirement</th>
<th>Action</th>
<th>Compliance</th>
<th>Legislation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visible exit signs help the employees to locate the nearest exit from a certain distance in the case of fire and smoke.</td>
<td></td>
<td></td>
<td>Bangladesh Labor Rules 2015</td>
</tr>
<tr>
<td>Companies reduce the risk of facing legal actions due to major injuries and loss of lives.</td>
<td></td>
<td></td>
<td>BNBC 2006</td>
</tr>
<tr>
<td>Companies reduce the risk of paying compensation for major injuries and death.</td>
<td></td>
<td></td>
<td>BNBC 2006</td>
</tr>
<tr>
<td>Exit signs are not connected with independent power supply.</td>
<td>Connect the exit signs with independent power supply or use an individual battery supported lighting system.</td>
<td>Compliance with local law.</td>
<td>Fire Prevention and Extinction Rules 2014</td>
</tr>
<tr>
<td>In the case of power failure during an emergency situation, exit signs still are visible thanks to battery or independent power supply.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employees can see and locate the exits.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Companies reduce the risk of facing legal actions due to major injuries and loss of lives.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Companies reduce the risk of paying compensation for major injuries and death.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evacuation plans are not posted on each floor/section.</td>
<td>Post evacuation plans on each floor/section.</td>
<td>Compliance with legislation in Bangladesh.</td>
<td>BLA 2006</td>
</tr>
<tr>
<td>The workers are provided clear indications and have a better understanding of escape routes, nearest emergency exits, locations of the firefighting equipment, fire alarms, first aid kits, and staircases.</td>
<td></td>
<td></td>
<td>Bangladesh Labor Rules 2015</td>
</tr>
<tr>
<td>Companies reduce the risk of facing legal actions due to major injuries and loss of lives.</td>
<td></td>
<td></td>
<td>BSCI, FWF, SA8000, ETI, WRAP, FLA LWG</td>
</tr>
<tr>
<td>Companies reduce the risk of paying compensation for major injuries and death.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency exits are obstructed, locked and not easily accessible.</td>
<td>Keep emergency exits always free, unlocked, and unobstructed. Ensure they are easily accessible.</td>
<td>Compliance with legislation in Bangladesh.</td>
<td>BLA 2006</td>
</tr>
<tr>
<td>Workers can easily leave the factory floor in the case of an emergency situation.</td>
<td></td>
<td></td>
<td>Bangladesh Labor Rules 2015</td>
</tr>
<tr>
<td>Companies reduce the risk of facing legal actions due to major injuries and loss of lives.</td>
<td></td>
<td></td>
<td>BNBC 2006</td>
</tr>
<tr>
<td>Companies reduce the risk of paying compensation for major injuries and death.</td>
<td></td>
<td></td>
<td>BSCI, FWF, SA8000, ETI, WRAP, FLA LWG</td>
</tr>
</tbody>
</table>
### Five basic steps should be followed to develop an effective emergency response plan:

**Step 1:** Preparation of policies and procedures on emergency response

**Step 2:** Risk assessments
Step 3: Preparation of emergency plan

Step 4: Well-planned emergency drills

Step 5: Communication and training of employees/workers

For a more detailed explanation of each step, see Annex 7.2.2.

### 3.3 HEALTH EXAMINATIONS

Health examinations should be conducted for workers who are involved in dangerous and hazardous work, as per the Bangladesh Labor Rule 2015. The examinations should be conducted by a registered doctor and the expenses should be borne by the employer.

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health examinations are not carried out for all workers who are involved in dangerous and hazardous work.</td>
<td>Conduct health examinations by a registered physician for (at least) the workers who are involved in dangerous and hazardous work. Conduct health examination at least once per year.</td>
<td>Compliance with legislation in Bangladesh. Health hazards and risks to workers are controlled and regularly monitored. Health and well-being of the workers are ensured.</td>
<td>BLA 2006 Bangladesh Labor Rules 2015</td>
</tr>
</tbody>
</table>

### 3.4 LIGHTING

Inadequate lighting has a direct impact on the workers’ health and concentration level, and, consequently, affects the overall productivity and quality of the product. Hence, sufficient and suitable lighting should be provided. It is usually better to maximize the use of natural lights, although in some cases artificial lights prove ideal.

The non-compliances below are frequently found in factories and are to be addressed with suitable corrective actions:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lighting conditions are poor and insufficient.</td>
<td>Provide sufficient and suitable lighting. Use natural light as much as possible.</td>
<td>Compliance with legislation in Bangladesh. Proper and adequate lighting reduces the strain on the eyes of the employees and reduces the risk of headaches and bad eyesight in the long run. Absenteeism with an impact on the production process is reduced. Sufficient light increases the concentration level of the workers. Sufficient light reduces the time to find the correct materials for production.</td>
<td>BLA 2006 Bangladesh Labor Rules 2015 BNBC 2006</td>
</tr>
</tbody>
</table>
As a reference, the arrangements of lighting of the workplace of the workers should be at least 350 Lux at the height of 1.0 meter from the floor. The table below highlights the energy efficiency of LED-bulbs compared with CFL and traditional lamps:

<table>
<thead>
<tr>
<th>Energy efficiency</th>
<th>Light Emitting Diodes (LED)</th>
<th>Incandescent Light Bulbs</th>
<th>Compact Fluorescents (CFL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life span (average)</td>
<td>50,000 hours</td>
<td>1,200 hours</td>
<td>8,000 hours</td>
</tr>
<tr>
<td>Watts of electricity used</td>
<td>6 – 8 watts</td>
<td>60 watts</td>
<td>13 – 15 watts</td>
</tr>
<tr>
<td>Kilo-watts of electricity used</td>
<td>329 kWh/year</td>
<td>3,285 kWh/year</td>
<td>765 kWh/year</td>
</tr>
<tr>
<td>Lumens</td>
<td>800</td>
<td>800</td>
<td>800</td>
</tr>
</tbody>
</table>

Lights have a longer lifespan with sustained and higher performance (LUX). Energy costs are reduced.

To improve lighting-related energy consumption levels, an effective monitoring system should ensure the lights in different sections are working properly. Regular maintenance of lighting will increase the life span of the lights and will provide better performance for a longer period of time.

Annex 7.2.3 comprises sample checklists for monthly maintenance, corrective actions and follow-up.

### 3.5 HOUSEKEEPING

Housekeeping and cleanliness play a very important role on the employees’ health and overall efficiencies of the workers. It covers the overall cleanliness of the production floor, toilets, provided drinking water and personal hygiene.

According to the Bangladesh Labor Law, "every factory shall be kept clean and free from effluvia arising from any drain privy or other nuisance" and "there shall be effective measures to protect workers from dust and fume of such nature likely to be injurious or offensive to the workers".

The non-compliances identified hamper productivity severely and require adequate responses:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production area is not clean.</td>
<td>Implement a system to ensure that the production area is cleaned on a regular basis. Establish the 5S method (sort, set in order, shine, standardize, sustain). Ensure cleanliness at the entire factory compound, factory floors, all workplaces, rest areas, and facilities.</td>
<td>Compliance with legislation in Bangladesh. A clean and tidy production floor improves the employees’ efficiency level as search time for materials and down time are reduced. Productivity and product quality are improved.</td>
<td>BLA 2006 Bangladesh Labor Rules 2015</td>
</tr>
</tbody>
</table>
For more information on housekeeping and 5S, see Annex 7.2.4.

3.6 ELECTRICAL SAFETY

Unsafe electrical wirings are a very common reason for fire incidents. To control and mitigate fire hazards, it is very important to have proper and safely insulated electrical wirings. Electrical wirings, for instance, must be checked by certified electricians on a regular basis. More recommendations and benefits are given below:

<table>
<thead>
<tr>
<th>Drinking water facilities are not provided.</th>
<th>Provide adequate and sufficient drinking water facilities for workers in suitable places.</th>
<th>Compliance with legislation in Bangladesh. Adequate and sufficient drinking water facilities prevent workers from dehydration.</th>
<th>BLA 2006 Bangladesh Labor Rules 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of the drinking water is not tested.</td>
<td>Test the quality of the drinking water (physical, chemical and bacteriological parameters) on a regular basis by any institution which is recognized by the government. Test the quality of the drinking water at least once per year.</td>
<td>Compliance with legislation in Bangladesh. The quality of the drinking water can be used for consumptive purposes, so water borne diseases are prevented.</td>
<td>BLA 2006 Bangladesh Labor Rules 2015</td>
</tr>
<tr>
<td>Insufficient number of toilets for male and female workers.</td>
<td>Increase the numbers of male and female toilets as per legal requirement.</td>
<td>Compliance with legislation in Bangladesh. A sufficient number of toilets ensures easy access to the toilet facilities for the workers. The toilets are maintained in adequate sanitary conditions.</td>
<td>BLA 2006 Bangladesh Labor Rules 2015</td>
</tr>
<tr>
<td>Toilets are not separated for male and female workers.</td>
<td>Separate toilets for male and female workers and mark it clearly.</td>
<td>Compliance with legislation in Bangladesh. Male and female toilets are easily identified by appropriate signs.</td>
<td>BLA 2006 Bangladesh Labor Rules 2015</td>
</tr>
<tr>
<td>Toilets are found dirty and unhygienic.</td>
<td>Introduce and implement a system to ensure that the toilets are cleaned every day. Keep toilets always clean and sanitary.</td>
<td>Compliance with legislation in Bangladesh. Clean and hygiene toilets reduce the risk of transmitting infectious diseases The workers' well-being is ensured and absenteeism is reduced.</td>
<td>BLA 2006 Bangladesh Labor Rules 2015</td>
</tr>
<tr>
<td>Non-compliances</td>
<td>Corrective Actions</td>
<td>Benefit</td>
<td>Relevant for</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------</td>
</tr>
</tbody>
</table>
| Electrical installations are not in good working conditions including, for instance, distribution boards, fuse boxes, panels, outlets, wires, switches etc. | Implement a system to ensure that the electrical installations are always kept in good working conditions. Document the regular check-up procedures, processes and results. | Compliance with legislation in Bangladesh. Well-protected electrical installations reduce the risk of electrocution. Proper installed electrical installations also mitigate the risk of fire incidents due to short circuits. Electrical hazards, one of the main reasons for fire, are under better control and thus reduced. The risk of legal actions and compensation payments due to accidents are minimized. Electrical loads and distribution processes are under better control; hence, energy costs are reduced. | Bangladesh Labor Rules 2015  
BNBC 2006 |
| Electrical insulations and wires are not properly fixed.                       | Take the initiative to properly fix all electrical insulations and wires.         | Compliance with legislation in Bangladesh. Well-protected electrical installations reduce the risk of electrocution. Proper installed electrical installations also mitigate the risk of fire incidents due to short circuits. Electrical hazards are under better control and thus reduced. The risk of legal actions and compensation payments due to accidents are minimized. Electrical loads and distribution processes are under better control; hence, energy costs are reduced. | Bangladesh Labor Rules 2015  
BNBC 2006 |
| Electrical wires are not properly insulated and/or insulation is broken.       | Insulate the electrical wires properly to ensure electrical safety. Ensure the insulations are fully intact. Otherwise change broken insulations. Document the regular check-up procedures, processes and results. | Compliance with legislation in Bangladesh. Well-protected and insulated electrical wires reduce the risks of electrocutions. Proper insulated electrical wires also mitigate the risk of fire incidents due to short circuits. Electrical hazards are under better control and thus reduced. | Bangladesh Labor Rules 2015  
BNBC 2006 |
<table>
<thead>
<tr>
<th>High voltage/danger and warning signs are not posted at relevant working areas.</th>
<th>Post high voltage/danger and warning signs at all relevant working areas. Ensure that only authorized and specially trained personnel work at high voltage/danger zones.</th>
<th>Compliance with legislation in Bangladesh. Visual warning signs increase the awareness of dangers caused by electrical installations and reduce the risk of electrocutions. Electrical hazards are under better control and thus reduced. The risk of legal actions and compensation payments due to accidents are minimized. Electrical loads and distribution processes are under better control; hence, energy costs are reduced.</th>
<th>Bangladesh Labor Rules 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>The factory does not have a system/process in place to check the electrical insulations and wirings on a regular basis.</td>
<td>Introduce and implement a system/defined process to check the electrical insulations and wirings on a regular basis. Document the regular check-ups, corrective measures and the outcomes.</td>
<td>Compliance with legislation in Bangladesh. Regular and periodical checks of electrical installations and wirings allow for quick preventive and corrective actions to reduce the hazards that could cause major electrical incidents (e.g. electrocution, fire). Electrical hazards are under better control and thus reduced. The risk of legal actions and compensation payments due to accidents are minimized. Electrical loads and distribution processes are under better control, so energy costs are reduced.</td>
<td>Bangladesh Labor Rules 2015</td>
</tr>
<tr>
<td>There are no certified electricians available.</td>
<td>Appoint a certified electrician for the maintenance of the electrical insulations and wirings. Make sure that the electrician is certified by a governmental approved institution.</td>
<td>Compliance with legislation in Bangladesh. Electrical installations and wirings are properly handled and maintained by a competent certified personnel. Electrical hazards are under better control and thus reduced.</td>
<td>Bangladesh Labor Rules 2015</td>
</tr>
</tbody>
</table>
For a guideline on how electrical installations are maintained, see Annex 7.2.5.

### 3.7 FIRE SAFETY

Fire safety is one of the most crucial areas to ensure the safety of the employees. In order to ensure fire safety and reduce the risks of fire incidents, adequate and appropriate fire indicators and firefighting equipment must be provided, inspected and maintained.

Relevant non-compliances are opposed to adequate corrective actions that entail benefits to both employers and workers.

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>The number of inspected fire extinguishers and firefighting equipment is insufficient.</td>
<td>Provide the necessary number of fire extinguishers and firefighting equipment as defined in the fire license.</td>
<td>Compliance with legislation in Bangladesh. Adequate, appropriate and sufficient firefighting equipment ensures a quick response to fire. The fire is extinguished before it gets out of control. The risk of accidents is reduced. The risk of legal actions and compensation payments is reduced. The risk of damaging reputation affecting future business is reduced.</td>
<td>BLA 2006 Bangladesh Labor Rules 2015 Fire and Civil Defense Act 2003; Fire Prevention &amp; Extinction Rule 2014</td>
</tr>
</tbody>
</table>

Fire extinguishers are not installed and marked properly.
Fire extinguishers are obstructed.

Install and mark the fire extinguishers properly. Keep all fire extinguishers and firefighting equipment always free from obstructions.

Compliance with legislation in Bangladesh. The location of the fire extinguishers can be easily identified and is easily accessible. Trained firefighters can easily identify the types of fire extinguishers, and know which one to use for what type of fire. Unobstructed fire extinguishers are easily accessible for use in the case of fire and allow for a quick and effective response.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Recommendation</th>
<th>Compliance with legislation in Bangladesh</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is no functioning fire alarm system in place.</td>
<td>Install an adequate fire alarm system.</td>
<td>A functional fire alarm system ensures immediate warning to the employees to start evacuating the floors.</td>
<td>BLA 2006</td>
</tr>
<tr>
<td></td>
<td>Provide an independent power supply for the fire alarm systems to ensure that</td>
<td></td>
<td>Bangladesh Rules 2015</td>
</tr>
<tr>
<td></td>
<td>the fire alarms are still operational in case of a general power failure.</td>
<td></td>
<td>Fire and Civil Defense Act 2003; Fire Prevention &amp; Extinction Rule 2014</td>
</tr>
<tr>
<td>The fire alarm system is not connected with independent power backup system.</td>
<td>Provide an independent power supply for the fire alarm systems to ensure that</td>
<td>Compliance with legislation in Bangladesh.</td>
<td>Fire and Civil Defense Act 2003; Fire Prevention &amp; Extinction Rule 2014</td>
</tr>
<tr>
<td></td>
<td>the fire alarms are still operational in case of a general power failure.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A smoke and heat detection system is not installed.</td>
<td>Install the adequate and sufficient amount of smoke and heat detectors in all</td>
<td>Compliance with legislation in Bangladesh.</td>
<td>Fire and Civil Defense Act 2003; Fire Prevention &amp; Extinction Rule 2014</td>
</tr>
<tr>
<td></td>
<td>buildings, floors and sections as defined in the fire license.</td>
<td>Smoke and heat detection systems immediately indicate sudden smoke and abnormal heat generation. The</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>responsible persons can respond immediately to assess the situation and take preventive measures to avoid any bigger incidents. The risk of accidents is reduced.</td>
<td></td>
</tr>
</tbody>
</table>

There is no functioning fire alarm system in place.

Install an adequate fire alarm system.

Provide an independent power supply for the fire alarm systems to ensure that the fire alarms are still operational in case of a general power failure.

Compliance with legislation in Bangladesh.

A functional fire alarm system ensures immediate warning to the employees to start evacuating the floors.

The risk of accidents is reduced.

The risk of legal actions and compensation payments is reduced.

The risk of damaging reputation affecting future business is reduced.

There is no functioning fire alarm system in place.

Install an adequate fire alarm system.

Provide an independent power supply for the fire alarm systems to ensure that the fire alarms are still operational in case of a general power failure.

Compliance with legislation in Bangladesh.

A functional fire alarm system ensures immediate warning to the employees to start evacuating the floors.

The risk of accidents is reduced.

The risk of legal actions and compensation payments is reduced.

The risk of damaging reputation affecting future business is reduced.

The fire alarm system is not connected with independent power backup system.

Provide an independent power supply for the fire alarm systems to ensure that the fire alarms are still operational in case of a general power failure.

Compliance with legislation in Bangladesh.

A battery backup or independent power backup fire alarm system ensures that the warning siren continues even in the event of a power failure.

The risk of accidents is reduced.

The risk of legal actions and compensation payments is reduced.

The risk of damaging reputation affecting future business is reduced.

A smoke and heat detection system is not installed.

Smoke and heat detection systems were found inadequate and insufficient.

Install the adequate and sufficient amount of smoke and heat detectors in all buildings, floors and sections as defined in the fire license.

Compliance with legislation in Bangladesh.

Smoke and heat detection systems immediately indicate sudden smoke and abnormal heat generation.

The responsible persons can respond immediately to assess the situation and take preventive measures to avoid any bigger incidents.

The risk of accidents is reduced.
For basic guidelines for improving the overall fire safety management, see Annex 7.2.6.

### 3.8 MACHINE SAFETY

Machine safety must be provided to ensure the workers’ personal safety. Without periodical maintenance and adequate and appropriate safety guards, the possibility of injuries is considerably higher. It is the employers’ responsibility to ensure maintenance of and provide safety guards for the machinery.

The challenges in machine safety and how to overcome them, are outlined below:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequate and appropriate safety guards are not provided at machines with rotating or moving parts.</td>
<td>Provide adequate and appropriate safety guards at all machines with rotating or moving parts.</td>
<td>Compliance with legislation in Bangladesh. Safety guards on rotating and moving parts reduce the workers’ risk of getting injured. The risk of legal actions and compensation payments is reduced.</td>
<td>BLA 2006 Bangladesh Labor Rules 2015 Department of Inspection for Factories and Establishments</td>
</tr>
<tr>
<td>The steam boiler is not well protected.</td>
<td>Protect the steam boiler properly. Preferably, store the steam boiler in a separate area/building.</td>
<td>Compliance with legislation in Bangladesh. A well-protected steam boiler mitigates the risks of fatal disasters in the event of an explosion. Regular maintenance of machines increases the operational efficiency of the machines. The breakdown time is reduced. The production process is not interrupted. The lead time is reduced.</td>
<td>BLA 2006 Boiler Act Department of Inspection for Factories and Establishments</td>
</tr>
</tbody>
</table>

The risk of legal actions and compensation payments is reduced.
The risk of damaging reputation affecting future business is reduced.

The factory does not have a valid fire insurance. Ensure a valid fire insurance. A valid fire insurance allows the management to claim insurance money. A fire insurance can recover losses caused by a fire incident and help resume business operations as early as possible.
3.9 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Personal protective equipment (PPE) is used as a last resort, whenever risks to health and safety cannot be adequately controlled in other ways. PPE protects the user against health and safety risks at work. It includes items such as safety helmets, gloves, eye protection, high-visibility clothing, or respiratory protective equipment, among others.

It is the employers’ responsibility to provide adequate and appropriate PPE to the employees and to ensure in regular awareness trainings that they use them.

An effective personal protective equipment in factories can be established by remediing non-compliances through practical corrective actions that provide considerable benefits to both employers and workers.

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequate and appropriate personal protective equipment (PPE) is not provided to the workers.</td>
<td>Avoid, if possible, health hazards and the need for PPE. If hazards cannot be avoided, provide adequate and appropriate PPE to all workers.</td>
<td>Compliance with legislation in Bangladesh. Adequate and appropriate PPE protects the user against health or safety hazards at work. The risk of long-term illness and the risk of fatal incidents are reduced.</td>
<td>BLA 2006 Bangladesh Labor Rules 2015</td>
</tr>
</tbody>
</table>

For more information on how to ensure machine safety, see Annex 7.2.7.
3.10 VENTILATION

Emissions of toxic substances such as sulfides, ammonia and many organic solvents may reach levels requiring rigorous ventilation of the workplace. Leather dust from mechanical operations and powdered dyestuffs can also require special ventilation arrangements. The odor from substances such as sulfides, thiols, organic solvents, and from putrefaction may constitute a major problem.
An adequate ventilation by circulation of fresh air should be arranged and temperature of the production floor should be kept within a comfortable level. The table below shows how the non-compliances identified can be avoided and the benefits that accrue to workers and factory management.

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>The room temperature is not continuously measured and monitored.</td>
<td>Install thermometers in the working areas to monitor the room temperature on a regular basis. Document the room temperature. Keep the temperature at a comfortable level.</td>
<td>Compliance with legislation in Bangladesh. Monitoring temperature gives an idea of high-temperature zones on the production floor. Additional fans, open windows and exhaust fans keep the temperature at a comfortable level in the high-temperature zones.</td>
<td>BLA 2006 Bangladesh Labor Rules 2015 BNBC 2006</td>
</tr>
<tr>
<td>Room temperature is not acceptable at some or all areas of the production floor.</td>
<td>Install exhaust fans to keep the room temperature in acceptable conditions.</td>
<td>Compliance with legislation in Bangladesh. The temperature is at a comfortable level. The risk of workers getting dehydrated due to sweating is reduced. Other health hazards, such as headaches, limiting the working efficiency, are reduced. The productivity of the employees is increased. Negative effects of sweat on production process and resulting rejection and rework are reduced, and thus results in better quality and lower production costs. Sickness and thus absenteeism is reduced.</td>
<td>BLA 2006 Bangladesh Labor Rules 2015 BNBC 2006</td>
</tr>
<tr>
<td>Proper ventilation is not provided in the production area.</td>
<td>Arrange a sufficient airflow to improve the ventilation in the production floor(s).</td>
<td>Compliance with legislation in Bangladesh. Proper ventilation in the production floor helps keep the temperature at a comfortable level. The risk of health hazards, such as dehydration due to sweating and headaches, is reduced. The productivity of the employees is increased. Negative effects of sweat on production process and resulting rejection and rework are reduced, and thus results in better quality and lower production costs.</td>
<td>BLA 2006 Bangladesh Labor Rules 2015 BNBC 2006</td>
</tr>
</tbody>
</table>
For more information on adequate ventilation and how to improve the air quality level, see Annex 7.2.9.

### 3.11 CHEMICAL MANAGEMENT

The use of chemicals in various leather production processes often negatively impacts on the workers’ health and the environment. An effective chemical management system will mitigate the potential risks of such adverse effects.

A sustainable chemical management system helps the organization to ensure proper storage, handling, transfer and disposal of chemical substances.

The following recommendations help establish a compliant management system that is beneficial to both workers and the management:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Required for</th>
</tr>
</thead>
<tbody>
<tr>
<td>All chemicals are not listed in an inventory.</td>
<td>List all chemicals in a chemical inventory list.</td>
<td>An overview of all chemicals that are used in different production processes is given.</td>
<td>LWG, ZDHC</td>
</tr>
<tr>
<td>Chemicals are not stored properly.</td>
<td>Store the chemicals as per instruction that is given by the manufacturer in the Material Safety Data Sheet (MSDS).</td>
<td>The risks of violent reactions in case of mixing due to spillage is reduced.</td>
<td>LWG, ZDHC</td>
</tr>
<tr>
<td>Chemicals are not labelled correctly and/or sufficiently.</td>
<td>Label all containers, including secondary containers, with the identity of the chemical(s) and a warning phrase or symbol indicating the chemical’s hazard(s).</td>
<td>Thanks to proper labelling, the workers’ awareness of safe handling, storage, health and environmental hazards of a specific chemical is increased.</td>
<td>LWG, CADS, ZDHC, REACH</td>
</tr>
<tr>
<td>Chemicals have been found in plastic bottles.</td>
<td>Use appropriate containers for storing chemicals.</td>
<td>Thanks to an appropriate compatible container to keep chemicals, the risk of chemical reactions with the incompatible containers is reduced.</td>
<td>LWG, ZDHC</td>
</tr>
</tbody>
</table>

in better quality and lower production costs.
Sickness and thus absenteeism is reduced.
A list of chemicals that are incompatible with each other and more information on the chemicals some buyers suggest to use or restrict as well as how to implement an effective chemical management system can be found in Annex 7.2.10.

### 3.12 NOISE MANAGEMENT

The noise level must be kept within the acceptable limit as defined by The Environment Conservation Rules 1997.

The following challenges have been found in factory visits and should be addressed adequately to prevent noise pollution:
For more information on how to control the noise level, see Annex 7.2.11.

### 3.13 FIRST AID

It is mandatory for employers to provide sufficient first aid and emergency treatment facilities to ensure quick response in case of an accident or indisposed employees at the workplace.

The following non-compliances are often found in factories and need to be addressed effectively, as will be highlighted below:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient noise levels particularly of tannery machines are beyond the acceptable</td>
<td>Prevent noise generation at source.</td>
<td>Compliance with legislation in Bangladesh.</td>
<td>The Environment Conservation Rules 1997</td>
</tr>
<tr>
<td>limit.</td>
<td>Maintain and replace old equipment.</td>
<td>The risk of workers losing their hearing abilities in the long run is</td>
<td>Noise Pollution Control Rules 2006</td>
</tr>
<tr>
<td></td>
<td>Change operating speeds to avoid resonances.</td>
<td>reduced.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Place as much distance as possible between the noise source and those likely to be</td>
<td>Emissions of noise and vibration are reduced and controlled.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>be affected by it.</td>
<td>Thanks to the reduction of noise, a major cause of stress, the risk of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use adequate drives to prevent the transmission of vibration.</td>
<td>accidents is reduced.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Install noise barriers.</td>
<td>Workers can concentrate better; productivity and product quality is</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Silence exhaust outlets.</td>
<td>ensured.</td>
<td></td>
</tr>
<tr>
<td>Noise levels are not measured and documented over time.</td>
<td>Install a noise level measurement in all relevant areas or provide regularly a</td>
<td>Compliance with legislation in Bangladesh.</td>
<td>The Environment Conservation Rules 1997</td>
</tr>
<tr>
<td></td>
<td>noise level assessments.</td>
<td>Noise assessments help control and manage the noise level within</td>
<td>Noise Pollution Control Rules 2006</td>
</tr>
<tr>
<td></td>
<td>Keep a documentation of the daily noise level.</td>
<td>acceptable limits.</td>
<td>BSCI, ETI</td>
</tr>
<tr>
<td></td>
<td>Ensure that appropriate PPE is used if the noise level exceeds 80dB(A).</td>
<td>Adequate actions are taken, such as sound barriers are constructed, high</td>
<td>LWG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>noise prone working areas are relocated, and appropriate noise PPE is</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>provided.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Workers can concentrate better; productivity and product quality are</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>increased.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The risk of accidents is reduced</td>
<td></td>
</tr>
</tbody>
</table>

For more information on how to control the noise level, see Annex 7.2.11.
<table>
<thead>
<tr>
<th>Issue</th>
<th>Improvement</th>
<th>Legislation</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>First aid kits are not fully and adequately equipped.</td>
<td>Keep adequate and appropriate contents in line with the legal requirements available in each first aid kit.</td>
<td>Compliance with legislation in Bangladesh. Proper first aid management with appropriate and suitable first aid kits is ensured. The risk of infections and other health related issues is reduced. The production process is not interrupted. The production costs are reduced.</td>
<td></td>
</tr>
<tr>
<td>Content of the first aid kit is expired and/or not usable.</td>
<td>Ensure the content of first aid kits is always durable.</td>
<td>Compliance with legislation in Bangladesh. The risk of infections and other health related issues is reduced. The production process is not interrupted. The production costs are reduced.</td>
<td></td>
</tr>
<tr>
<td>Trained first aiders did not receive a six-months training course on first aid medication.</td>
<td>Ensure that the first aiders attend at least a six-months training course from an institution recognized by the government.</td>
<td>Compliance with legislation in Bangladesh. First aid procedures are conducted by trained and certified first aid personnel. Appropriate and effective first aid management is ensured. Quick response ensures fast treatment of the workers. The risk of long-term treatment is reduced. The risk of legal actions and compensation payments due to disability or death is reduced.</td>
<td></td>
</tr>
<tr>
<td>Insufficient number of trained first aiders.</td>
<td>Assign at least one trained first aider for each first aid kit, hence one trained first aider for every 150 workers.</td>
<td>Compliance with legislation in Bangladesh. First aid procedures are conducted by trained and certified first aid personnel. Appropriate and effective first aid management is ensured.</td>
<td></td>
</tr>
</tbody>
</table>
3.14 TRAINING

Training and capacity building development is one of the most important factors to establish labor and social standards in the organization.

Training should be conducted on a regular basis, with topics covering crucial areas such as skill development, health and safety issues as well as other labor related issues. All training records must contain detailed information on training contents, the list of participants, and photos, among others.

Trainings have a considerable positive impact on personal and company development. The measures outlined below should be followed to establish an effective and systematic training culture in your company.

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>The factory does not conduct systematic and regular training on health and safety issues.</td>
<td>Conduct a systematic and regular training on health and safety issues.</td>
<td>Trainings on safety and health issues are provided on a regular basis.</td>
<td>BSCI, ETI, SA800, FLA, WRAP</td>
</tr>
</tbody>
</table>

For guidelines for effective first aid management, see Annex 7.2.12.
<table>
<thead>
<tr>
<th>The health and safety committee arrange and provide training on health and safety issues.</th>
<th>The awareness of safety and health issues is increased.</th>
<th>Customer codes of conduct</th>
</tr>
</thead>
<tbody>
<tr>
<td>The overall safety standards of the workplace are gradually improved.</td>
<td>Work related accidents are decreased.</td>
<td>BSCI, ETI, SA800, FLA, WRAP</td>
</tr>
<tr>
<td>Human resources are optimally utilized.</td>
<td>The productivity of the employees is increased.</td>
<td>Customer codes of conduct</td>
</tr>
<tr>
<td>Team work and team spirit are improved.</td>
<td>A culture of learning and continuous development within the organization is established.</td>
<td></td>
</tr>
<tr>
<td>Technical and other skills are developed.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Homeworkers are neither covered by training regulations nor do they receive regular training.

Introduce a system to ensure homeworkers are also included in training programs.

Trainings on safety and health issues are provided to homeworkers on a regular basis.

The homeworkers’ awareness of safety and health issues is increased.

The overall safety standards of the homeworkers’ workplace are gradually improved.

Work related accidents at the homeworkers’ workplace are reduced.

Human resources are optimally utilized.

The productivity of the employees is increased.

Team work and team spirit are improved.

A culture of learning and continuous development within the organization is established.

Technical and other skills are developed.

For more information on trainings, see Annex 7.2.13.
4 ENVIRONMENT GUIDELINES

There is an increasing need for environmental due diligence in the supply chain. The non-compliances identified at each production stage are matched with good practices to improve the environmental performance of the leather industry. They are not exhaustive and may sometimes not be applicable to the Bangladeshi reality yet, particularly if there is specific knowledge and investment required. The corrective actions were referenced to best available techniques (BAT). In this regard, clean technologies are understood as the environmentally and economically best practicable technology, i.e. the best available technology which does not entail excessive costs.

Notes point to limitations as some techniques, for instance, may require more skills, more chemicals, a higher demand of energy for implementation, or have side effects. Recommended actions that aim, for instance, for a reduction of energy and water consumption or improving waste management are considered relevant for achieving a Leather Working Group (LWG) certificate as they share the same goal, even though the specific measure may not be required by this standard.

The Environment Conservation Rules 1997 classify the production of leather goods and footwear as Orange B, while tanneries fall under category Red. Industrial units of both categories require an Environmental Clearance Certificate (ECC) supported by a number of documents such as reports on the feasibility of the industrial project, layout plans and design of Effluent Treatment Plants (ETP), no objection certificates from local authorities, among others. For more information, please see Annex 7.3.1.

4.1 THE PRODUCTION OF RAW HIDES AND SKINS

Hides and skins are a by-product of animal, and more specifically, meat production. Being a renewable resource, hides and skins are the raw material for the leather industry. The conditions under which, in the Bangladeshi context, bovine and ovine animals are bred, kept, slaughtered and flayed matter for reasons of product quality and environmental compliance.

The following non-compliances are very specific to the Bangladesh context and thus cannot always be responded with corrective actions that proved best available techniques (BAT) elsewhere:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw material is contaminated by pesticides used in animal husbandry.</td>
<td>Ensure that contracts with raw material suppliers specify that hides and skins are free from pesticides.</td>
<td>Discharge of pesticide residues in tannery effluent is prevented.</td>
<td>BAT</td>
</tr>
<tr>
<td>Bovine animals are fast and non-professionally flayed in peak season (Eid-ul-Azha), causing flay cuts, among others.</td>
<td>Butchers should attend training programs on accurate flaying.</td>
<td>Flaying skills are improved. The tanneries record less flay cuts. Both leather quality and export earnings are increased.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Butchers should be employed on a permanent basis.</td>
<td>The incentives to slaughter and flay the animals as fast as possible are removed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Butchers should operate in central slaughtering facilities on Eid-ul-Azha.</td>
<td>Central slaughtering facilities provide more control of adequate flaying and preservation.</td>
<td></td>
</tr>
<tr>
<td>Hide quality is negatively affected by manual flaying. Flay cuts penetrate into the corium structure, where they result in weak areas.</td>
<td>Machine pulled hides ensure minimum hide damage during the take-off process.</td>
<td>Pulled hides have less flay cuts and fetch higher prices. To flay a cattle hide by hand takes up to 15 minutes, while mechanical flaying requires just a few minutes.</td>
<td></td>
</tr>
</tbody>
</table>
Note:
- Unstable power supply and unqualified engineers may aggravate installing mechanical hide pullers.
- Mechanical hide pulling machines do not necessarily have to be electrically operated.

A loss of substance means less pressure during certain leather making processes (e.g. vacuum drying).

The raw hides and skins cannot be traced back to their origin.

Identify each animal on rearing farms with an ear tag.

At the slaughterhouse:
- Earmark each hide, providing information on the date of slaughter, the name of the slaughterhouse, the name of the rearing farm, and the quality defects, before selling to the customer.
- Stamp the hides at the time of slaughter – that provides the greatest security.
- Use material that is harmless to animals.

At the tanneries:
- Sort and grade the hides as usual per customer requirements, including the hide-specific information.

Note:
- Hide stamping systems are considered by LWG as the most effective method to provide traceability. It has to be checked whether Bangladesh can provide the technical requirements for implementation.
- Sourcing directly from slaughterhouses enhances the opportunity to trace raw material as opposed to buying through traders or producing from semi-processed material.

Hides and skins can be traced back to the farms of their origin.

Document the process in which the organization ensures traceability of incoming raw material to the slaughterhouse.

4.2 PRESERVATION OF RAW HIDES AND SKINS
The hides and skins have to be preserved adequately to avoid decomposition damages. Short-term preservation of hides and skins can be realized by:
- Crushed ice
- Refrigerated storage
- Biocides

Green hides and skins can be cooled by crushed ice, ice-water or cold storage if the time between flaying and processing in the tannery is no more than 5-8 days. The cooling chain of 2 °C must not be interrupted during transport and storage. In so doing, the use of salt can be avoided.

The following advices are to be considered for short-term preservation methods:
- The slaughterhouse must be close to the tannery, so the time between slaughter and further treatment is reduced to a minimum (a few hours).
- Depending on the cooling method, the raw hides and skins must be processed almost instantly. Storage (ideally at +2°C) can extend preservation for up to three weeks, although some dehydration is to be expected.
- Energy costs can become unaffordable if the hides are stored for an extended period (more than one week).
- It might be necessary to compensate delivery failures with some cured material.
- It is more challenging to form batches of consistent size and quality as limited time is available before processing.
- More biocides might be needed when processing green hides.

If, for any reasons, short-term preservation methods cannot be applied to the Bangladeshi context, the tanners and traders of raw hides and skins are suggested to consider long-term preservation methods:
- Salting
- Brining
- Drying
- Salt drying

In Bangladesh, the most common method to preserve raw hides and skins is salting, although the continuous use of salt has led to soil degradation and pollution of ground water. Whenever possible, the processing of green hides and skins is the best solution to reduce salt pollution.

Against the backdrop of non-compliant practices identified, alternative preservation techniques are pointed out below:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>The raw hides and skins are inadequately preserved. The application of salt is often delayed.</td>
<td>Remove excessive and fats. Wash the hides properly to remove dirt and other contamination. If cleaner preservation technologies, such as cooling, are not available, apply a sufficient amount of salt (approx. 30-50% of the weight of the hide).</td>
<td>Less amount of water is needed in soaking. Less tanning (e.g. syntans) and finishing chemicals are required to repair the leather. Less rejection from poor quality. The quality of the leather is improved. Production costs are reduced. The traders understand the importance of proper preservation for the leather quality.</td>
<td>BAT</td>
</tr>
<tr>
<td>Traders of raw hides and skins should attend training programs on timely and accurate preservation.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Green hides are not cooled properly. Apply the following methods to cool the hides and skins properly:
- Spread the hides and skins on a clean marble floor right after flaying, with the flesh side in contact with the floor.
- Process the hides and skins immediately in a mixer containing ice cubes.
- Pass the hides and skins through a tank of glycol-cooled water and ice.
- Cool the hides and skins by CO₂ snow.
- Cool the hides and skins by refrigerated storage units.

Make sure that the hides hang on hooks to cool off and drain the blood. If the facilities can be made available, store the hides in cases filled with ice.

Note:
- This preservation technique might economically and technically not be feasible in Bangladesh.
- Preserving raw hides and skins in ice is more problematic than cooling due to melting of the ice, run-off of water and the potential for bacterial growth on wetted pelt.

Hides and skins have not been given sufficient salt. Unless cleaner preservation technologies, such as cooling, are available, apply a sufficient amount of salt (approx. 30-50% of the weight of the hide is required).

Cover the hides and skins with a 1 to 2 cm thick layer of salt.

Preserve the hides and skins immediately, but no later than 2 hours after slaughtering.

Note:
- Air-dried hides are free of salt but usually require more soaking time.
- Shade drying of small skins is a low cost and environmentally-friendly process.

The hides and skins are BAT properly preserved for a short-term period. No damages have happened. Saline effluents are prevented. No salt pollution will occur in soaking. The amount of water is reduced as fresh hides require less water for soaking than salted hides.

The hides and skins are BAT properly preserved for a short-term period. No damages have happened. Saline effluents are prevented. No salt pollution will occur in soaking. The amount of water is reduced as fresh hides require less water for soaking than salted hides.

Preservation and thus quality of the hides and skins is ensured. Timely preservation requires less tanning and finishing chemicals to repair quality defects.

Timely preservation requires less tanning and finishing chemicals to repair quality defects.
4.3 STORAGE

Proper storage is particularly relevant for a country producing under hot and humid conditions. Odor emissions and deterioration of the raw material require adequate preventive measures. Depending on the preservation method, green hides and skins should be stored on pallets in ventilated or chilled areas, while salted hides and skins require cool and dry storage facilities.

Detailed corrective actions are set out below:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
</table>
| Slaughterhouses have no facilities to cool the hides before they are collected. | Set up cold storage facilities. Introduce carbon dioxide cooling.  
**Note:**  
- Chilling is an environmentally-friendly short-term preservation method. The temperature depends on the required duration of preservation.  
- Cooling and chilling require energy. | Fresh hides are cooled adequately.  
The discharge of salt to the wastewater is prevented.  
The soaking time is reduced.  
Carbon dioxide gas presents no health and safety risk. | BAT |
| Stacked hides, even though they are cooled, can maintain a high temperature for several hours, causing putrefaction. | If the facilities can be made available, store the hides in cases filled with ice. Otherwise, hook up the hides so they can cool off and stock them in the cold storage room. | The hides and skins are properly preserved. The cooling chain has not been disrupted.  
The use of bactericides and salt is avoided. | BAT |
| Biocides (e.g. insecticides, fungicides) are used in animal treatment prior to slaughtering or in the preservation of raw hides and skins. | All biocides are potentially toxic. If possible, avoid using biocides in the preservation of raw hides and skins.  
The International Union of Environment Commission (IUE) and the International Union of Leather Technologists and Chemists Societies (IULTCS) recommend the use of antiseptics with low environment impact and toxicity, which can help increase storage time of | The use of biocides in preservation is avoided.  
The discharge of biocides to the effluent is minimized | |
In the beamhouse section the hides are soaked, limed, fleshed, and unhaired prior to tanning. The main challenges of beamhouse operations are the massive water consumption and the large quantities of liquid and solid waste. The treatment and disposal of effluents will be dealt with in 4.9 and 4.10.

4.4.1 SOAKING

The preserved raw hides are soaked in water to regain their normal water contents. Dirt, manure, blood, and preservatives, among others, are removed to prepare the hides for further processing. The main challenge in soaking is to minimize the consumption of water, as pointed out below:

- Suitable preservatives may be: TCMTB (Thiocyanomethylthio benzothiazole), isothiazolones, potassium dimethyl dithiocarbamate, sodium chlorite, benzalkonium chloride, sodium fluoride and boric acid.

Note:

- Review the use of antiseptics regularly against changing legislation and corporate codes.
- For the EU market, use only the biocides approved by the Regulation (EU) No 528/2012 of the European Parliament and the Council of the European Union.

Make sure the cooling chain maintains a temperature of 2 °C and is not interrupted during transport and storage.

Note:

- Transporting raw hides and skins in refrigerated trucks may not be feasible or economical in Bangladesh.
- For distances of up to 3 hours driving time, no cooling at all is considered necessary.
- For longer distances, the hides can be stored in lattice boxes with a layer of ice splinters over each hide. As for Bangladesh, this method is economically not feasible.
<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green hides coming in are dirty.</td>
<td>Use clean hides and skins, with little to no manure adhering to the exterior.</td>
<td>Water consumption can be reduced enormously by 200%-3,000%.</td>
<td>BAT</td>
</tr>
<tr>
<td></td>
<td>Establish long-term relationships to slaughterhouses and raw material suppliers to ensure quality.</td>
<td>Manure damage is reduced.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Waste and BOD is reduced.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clean hides facilitate green fleshing.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The quality of the leather is improved.</td>
<td></td>
</tr>
<tr>
<td>Salted hides are soaked.</td>
<td>Process fresh, unsalted hides as far as they are available.</td>
<td>There is no salt in the effluent from soaking.</td>
<td>BAT</td>
</tr>
<tr>
<td></td>
<td>Reduce the amount of salt used as far as possible.</td>
<td>Soaking time is reduced.</td>
<td>LWG</td>
</tr>
<tr>
<td></td>
<td>Ensure short delivery times or a temperature-controlled transport and storage.</td>
<td>The yield increases by 1-1.5%.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use enzymes instead of salt to remove proteins.</td>
<td>The quality of the hides and skins is improved, so they can be processed easier.</td>
<td></td>
</tr>
<tr>
<td>Salt is not removed from raw hides and skins properly.</td>
<td>If green processing is not applicable or too challenging to implement, shake off loose salt from hides mechanically or manually and recover it.</td>
<td>The salt input into the soaking process and in the tannery effluent is reduced.</td>
<td>BAT</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong></td>
<td>Emissions of salt are limited to the salt dissolved in the raw hides and skins.</td>
<td>LWG</td>
</tr>
<tr>
<td></td>
<td>Use specific equipment (e.g. mechanical brushes, drums) for mechanical desalting.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mechanical desalting can affect the quality of the hides as salt crystals may produce abrasion of the grain while drumming.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The reuse of salt is limited to pickle processes after dissolution and removal of solids. It must not be reused for curing purposes, given its contamination with bacteria and organic material.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Salt recovery involves high costs compared to fresh salt.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleshing is carried out after liming.</td>
<td>Carry out green fleshing before any processing activities, or immediately after soaking of salted hides.</td>
<td>The fleshings are free from liming and unhairing agents.</td>
<td>BAT</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong></td>
<td>Chemicals penetrate quicker and more uniformly the hide.</td>
<td>LWG</td>
</tr>
<tr>
<td></td>
<td>Remove adhering dung and dirt by washing and soaking.</td>
<td>The consumption of chemicals is reduced by 10-20%.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A well-set machine is required, with blades exactly adjusted to avoid a further fleshing step after liming.</td>
<td>The amount of fleshings generated during green fleshing is significantly lower than during lime fleshing.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The consumption of water is reduced by 10-20%.</td>
<td></td>
</tr>
</tbody>
</table>
In the fleshing process, the hides and skins are prepared for the removal of adhering flesh and fat. Excessive organic material is mechanically scraped off. Fleshing can be performed prior to soaking, after soaking, after liming or after pickling (e.g. sheep skins). Green fleshing refers to the fleshing process prior to liming and unhairing. Lime fleshing means fleshing is carried out after liming and unhairing.

The challenges identified should be responded with environmentally-friendly, cost-saving corrective actions, as highlighted below:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hides are fleshed after liming.</td>
<td>Flesh green hides after soaking. <strong>Note:</strong> Green fleshing requires a well-set machine to avoid a further fleshing step after liming.</td>
<td>A lower quantity of fleshings is generated. Chemicals can penetrate into the hides more quickly and uniformly. The consumption of chemicals and water in the beamhouse is reduced by 10-20% - if no additional fleshing step is needed. A higher amount of tallow is recovered without being subjected to the hydrolyzing liming process. The content of free fatty acid is lower, the quality is better.</td>
<td>BAT LWG</td>
</tr>
</tbody>
</table>
In liming and unhairing, the hair, epidermis, and, to some degree, interfibrillary proteins are removed. In this stage, the hides and skins are prepared for removing flesh and fats.

The non-compliances found in the unhairing process should be responded with clean and effective actions, as outlined below:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lime and sulfides are destroying the hair in unhairing process</td>
<td>Use hair-saving technology and ensure opportunities for reuse of the saved hair. Make sure hair root is dissolved and the whole hair conserved. Recover the hair before dissolution, either when it is separated during the liming process, or at the end of the hair saving process. Reduce sodium sulfide consumption by using enzymes (not suitable for leather with a visible grain) or organic sulfur compounds (e.g. mercaptoethanol, salts of thioglycolic acid, formamidinesulfinic acid).</td>
<td>Hair is separated from the effluent. A solid waste is produced, which can be reused as filling material or fertilizer. Organic loads in the effluent are reduced. Recovery of hair before dissolution can lead to a COD reduction of 15-20% for the mixed tannery effluent and a total nitrogen decrease of 25-30%. The volume of sludge generated for disposal or treatment is reduced. The use of wastewater treatment chemicals is reduced. Low-sulfide systems lead to a considerable reduction of the discharge of sulfides.</td>
<td>BAT LWG</td>
</tr>
<tr>
<td>Note: All hair dissolving processes contribute to the COD/BOD in tanning effluents.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Inorganic sulfide is used for unhairing process. | Use organic sulfur compounds or enzymes in the unhairing of bovine hides. | Inorganic sodium sulfide is substituted by enzyme preparations. The high sulfide content in the wastewater of liming and unhairing is reduced. | BAT LWG      |
| Note: Additional use of enzymes is not applicable to tanneries producing aniline leather. |

| Sulfides have not been completely removed during deliming and may be released to air. | Add hydrogen peroxide or sodium metabisulfite to the float. | No sulfides will be released to the air. | BAT LWG      |
4.4.4 DELIMING AND BATING

The objective of the deliming process is to gradually lower the pH, to increase the temperature and to remove residual chemicals and degraded skin components. If the hides are chrome tanned, further processing by bating (and pickling) is required to eventually remove hair roots and pigments.

The use of ammonium compounds and ammonium salts weighs on the environment and needs to be addressed by adequate corrective actions:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium compounds are used in deliming.</td>
<td>Avoid the use of ammonium compounds in deliming and use substitute deliming agents (e.g. CO₂).</td>
<td>Carbon dioxide deliming mostly for bovine hides can reduce ammonium compounds (e.g. ammoniacal nitrogen) in the wastewater significantly. Gaseous ammonia releases during deliming are reduced.</td>
<td>BAT LWG</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Does not work for materials the thickness of which is over 1.5mm.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Additional CO₂ is released to the atmosphere.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ammonium salts are used in deliming.</td>
<td>Weak organic acids can replace ammonium salts.</td>
<td>The discharge of nitrogen in the effluents is reduced. Less sulfur compounds and odor are emitted to the air.</td>
<td>BAT LWG</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- These agents increase the COD load.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Ammonium-free deliming may be much more expensive than deliming with ammonium salts.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If ammonium salts cannot be replaced, make sure that ventilation is good to protect from ammonia gases released to air.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Take precautions to prevent the release of odor.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.4.5 SPLITTING

Splitting is meant to produce hides or skins of a set thickness. The hides are split into a grain layer and a flesh layer. The process can be carried out either in the limed or in the tanned condition, which entails specific actions, as it is outlined below:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hides are split after tanning.</td>
<td>Carry out the splitting operation at an earlier stage of processing (liming) if split is not to be sold as a co-product.</td>
<td>Chromium is saved as the penetration is improved. The amount of solid waste containing chromium is reduced. Untanned byproducts can be used for food casings (e.g. sausage) or the production of gelatin.</td>
<td>BAT</td>
</tr>
</tbody>
</table>
Over 80% of the worldwide leathers are tanned with chromium(III) salts. It requires improvements in tanning methods and process parameters to reduce the environmental impact. The non-compliances found in the following production stages are addressed with adequate actions to attain a better environmental performance.

### 4.5 TANYARD OPERATIONS

Degreasing is particularly relevant for processing sheep skins, given the high natural fat content. Excessive amounts of grease may impede tanning agents and dyes to penetrate the hides uniformly. Degreasing is to be carried out before the chrome tanning process to prevent chromium salts from reacting with the grease and form insoluble chromium soaps, the removal of which takes great effort.

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halogenated solvents (e.g. tetrachloroethene, chlorobenzene, hexachlorobenzene) are used in degreasing.</td>
<td>Use non-halogenated solvents, such as linear alkyl polyglycol ethers, carboxylates, alkyl ether sulphates and alkyl sulphate.</td>
<td>VOC emissions are reduced.</td>
<td>BAT LWG</td>
</tr>
<tr>
<td></td>
<td>Store, handle and transport solvents carefully to avoid contamination through spillage.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Establish preventive measures, such as closed cycle degreasing machines, solvent recycling, emission abatement, and soil protection.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Change to an aqueous degreasing system with non-ionic surfactants.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tanneries use NPE-based surfactants in aqueous degreasing.</td>
<td>Use ethoxylated alcohols instead of alkylphenol ethoxylates. Substitute nonylphenol and nonylphenol ethoxylate (NPE) by aliphatic polyethoxylates. <strong>Note:</strong> Due to the foam level generated, aliphatic polyethoxylate can only be used to a limited extent.</td>
<td>The emissions of volatile organic solvents are minimized or avoided. Aliphatic polyethoxylates are biodegradable under aerobic and anaerobic conditions. Less COD is discharged to wastewater streams.</td>
<td>BAT LWG</td>
</tr>
</tbody>
</table>
4.5.2 PICKLING

Pickling aims to reduce the pH of the pelt before mineral and vegetable tanning processes are initiated. This process sterilizes the skin, ends the bating action and allows for a better penetration of the tanning agents. The non-compliances can be confined to the discharge of salt and the emissions of hydrogen sulfide into the air:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt pickling increases the discharge of salt to the wastewater.</td>
<td>Use salt-free systems.</td>
<td>The discharge of chloride and sulfate salts is reduced.</td>
<td>BAT LWG</td>
</tr>
<tr>
<td>Hydrogen sulfide is released during deliming and pickling processes.</td>
<td>Add small quantities of oxidizing compounds, such as hydrogen peroxide or sodium bisulfite.</td>
<td>Emissions of hydrogen sulfide to air are reduced.</td>
<td>BAT</td>
</tr>
<tr>
<td>Improve washing processes to remove sulfide before deliming and pickling.</td>
<td></td>
<td>Severe odor pollution is prevented.</td>
<td></td>
</tr>
</tbody>
</table>

4.5.3 TANNING

The tanning process seeks to stabilize the collagen fibre by tanning agents, so putrefaction of the hides is stopped. There are a number of tanning methods, of which mineral (chromium) and vegetable tanning, next to syntans, aldehydes and oil tannage, are the most common ones. As most of the leather in Bangladesh is tanned using chromium(III) salts, guidance is given on the correct use of chrome tanning agents (see below):

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due to inadequate pre-tanning with non-chrome</td>
<td>The right selection of tanning agents (e.g. aluminum salts, aluminum with polyacrylates,</td>
<td>The chromium uptake is improved and the input of chromium is reduced.</td>
<td>LWG</td>
</tr>
<tr>
<td>tanning agents, the chromium input is still high (5-8%).</td>
<td>glutaraldehyde derivatives, syntans, titanium salts, colloidal silica) ensures the typical properties of the leather.</td>
<td>There is less solid waste containing chromium. Less water is consumed. By-products from splitting and shaving are chromium-free. This facilitates reuse, recycling or disposal of the waste. Chromium-free pretanning improves the quality (e.g. grain tightness) of the leather. Glutaraldehyde is reported to have no environmental impact.</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Aluminum is highly soluble and thus carries an environmental risk higher than chromium.</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>- Pretanning with glutaraldehyde requires a higher dosage of fungicides than chromium tanning.</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>- Pretanning with glutaraldehyde requires subsequent tanning with syntans or vegetable tanning agents.</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>- Wet-white tanning increases both processing time and chemical costs.</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Optimize the operating parameters (e.g. pH, float, temperature, time, drum speed).</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Measure the chromium content of the leather tanned on-site.</td>
<td></td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conventional chromium tanning carried out in long floats results in poor exhaustion.</th>
<th>Modify existing equipment or use modern tannery machines for short floats.</th>
<th>Short floats reduce water consumption. Short floats reduce the chromium input and achieve a higher chromium concentration. The chromium uptake is improved significantly. The effluent volume is reduced. A lower amount of chromium discharge leads to reduced chromium in the sludge.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Short floats use less amounts of process water in relation to the amount of hides and skins.</td>
<td>BAT LWG</td>
</tr>
<tr>
<td></td>
<td>Avoid paddles and pits wherever possible.</td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>- The rotation of process vessels containing a limited amount of water requires more robust geared drives because the mass being rotated is uneven.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Short floats cannot be applied to the processing of calfskins.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chromium is discharged untreated.</th>
<th>Install a chromium recovery unit based on precipitation and separation and reuse chromium in the tannery. Use the chromium sludge as a raw material by another industry.</th>
<th>The recovered chromium sulfate solution can replace up to 35% of the chrome tanning salts. The amount of chromium discharged to the wastewater is reduced.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Attention:</strong></td>
<td>BAT LWG</td>
</tr>
</tbody>
</table>
How to avoid the formation of chromium(VI) in leather and leather products.

Chromium occurs in various oxidation stages. Over 80% of all worldwide leather is tanned with chromium(III) salts which is classified as harmless. Under specific conditions chromium(III) converts to chromium(VI) through oxidation. Chromium(VI) is allergenic and causes skin rash; some compounds can even be carcinogenic if inhaled.

Chromium(VI) can be formed in the following stages of production:
- Leather manufacturing process
- Leather goods/footwear manufacturing process
- During storage and transport of leather products

Thanks to the Ordinance EU 301/2014, leather and leather products containing 3mg or more chromium(VI) per kg leather of the total dry weight are prohibited to be marketed in the European Union. The limit value is based on EN ISO 17075 and must be maintained over the product’s entire lifecycle.

The following factors may have an influence on the formation of chromium(VI):
- Higher pH values
- Oxidizing organic substances; oxygen in combination with elevated temperatures
- Light
- Low relative air humidity (under 35%) during storage
- Thermal post-treatment
- UV radiation
- Fatliquors based on polyunsaturated fats (e.g. natural fatliquors, such as fish oils) if they are not sufficiently stabilized against oxidation
- Incomplete degreasing of skins with a higher proportion of skin fat (e.g. lambskins)

The following substances and processes turned out to be effective in avoiding the formation of chromium(VI):
- Use low quantities of vegetable tanning agents in retanning (approx. 1-3%)
- Use reducing leather agents in neutralization

There are two sources of pollution with chromium(VI):
- External pollution with chromium(VI)
- The formation of chromium(VI) in leather and leather products

### 4.5.4.1 External pollution with chromium(VI)

- Reduced fastness and less brightness of colors may be potential side effects.
- Chromium in the sludge is minimized.
- Chromium discharged to the environment is reduced.

<table>
<thead>
<tr>
<th>Non-renewable vegetable tannins are used.</th>
<th>Use vegetable tannins originating from trees other than Quebracho (e.g. olive leaves).</th>
<th>Only renewable vegetable tannins are used.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The shaving process yields large amounts of shavings.</td>
<td>Accurate splitting can minimize shavings. Dry shaving requires an adequate dust collection system.</td>
<td>Less shavings have to be disposed of. Less dust is produced during dry shaving.</td>
</tr>
</tbody>
</table>

**BAT**

The shaving process yields large amounts of shavings.

Accurate splitting can minimize shavings.

Dry shaving requires an adequate dust collection system.

Less shavings have to be disposed of.

Less dust is produced during dry shaving.
Leather products can be externally polluted with chromium(VI) through:

- Contaminated tanning salts
  - Contaminated chromium tanning agents contain chromium(VI) from new production
  - Contaminated chromium tanning agents contain chromium(VI) from chromium(III) recovery
  - Contaminated tanning liquors containing chromium(VI) are multiply used
- Dyes containing chromium(VI)
  - C.I. 77600 Pigment Yellow 34
  - C.I. 77603 Pigment Yellow 34
  - C.I. 77605 Pigment Red 104
- Contaminated water or contaminated tanning tubs and tools

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>The leather has been polluted with chromium(VI) through contaminated tools and inputs.</td>
<td>Use certified products or chemicals from safe sources. Do not use chemicals from old inventories; observe the use-by date. Have your chemicals guaranteed chromium(VI)-free by the manufacturer. Do not use chromium tanning agents which you have recycled yourself without a preliminary test being carried out for chromium(VI) Only use recycled chromium tanning agents from preparation companies which guarantee chromium(VI)-free preparation. Do not use pigments containing chromium(VI). Ensure thorough cleaning of the tanning tubs and tools. Do not use water polluted with chromium(VI) to clean apparatus, tubs, tools etc. Do not use water polluted with chromium(VI) during the tanning process.</td>
<td>External contamination with chromium(VI) is avoided. Neither workers nor consumers are exposed to the human carcinogen. The quality of the leather is increased. Trust in the tannery is established.</td>
<td>LWG</td>
</tr>
</tbody>
</table>

4.5.4.2 THE FORMATION OF CHROMIUM(VI) IN LEATHER PRODUCTS

Different conditions allow the formation of chromium(VI). It requires knowledge to handle oxidizing chemicals and to control high pH values, which are critical to the formation of chromium(VI).

The following recommendations provide guidance on how the formation of chromium(VI) in leather products can be avoided:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium(VI) is formed in the beamhouse.</td>
<td>Check the pH values during the individual process steps.</td>
<td>The formation of chromium(VI) in the beamhouse is prevented.</td>
<td>BAT LWG</td>
</tr>
</tbody>
</table>
Ensure sufficient removal of the naturally occurring residual fat, which possesses an oxidative potential.

Do not use halogenated organic degreasing agents.

Avoid products with oxidative potential, e.g. peroxide, permanganate or perborate. If using these products, check the oxidative potential with iodine-starch paper and, if necessary, reduce the oxidation agent using a reducing agent prior to the addition of chromium.

Use aqueous degreasing agents.

Reduce the excessive use of ammonia and ammonium salts.

Wash the limed hides carefully after liming and decalcifying.

### During tanning chromium(VI) is formed.

- Use certified chrome tanning agents from certified manufacturers from reliable sources.
- Carefully check the pH values during the individual process steps.
- Avoid excessively high pH-value peaks over pH 8.
- Ensure as complete a fixation of the chrome tanning agent as possible.
- Check the pH value of the chrome tanning tub liquor if it is to be reused; this should lie below pH 4.
- Do not use self-recycled chrome tanning agents without prior inspection for chromium(VI) (e.g. EN ISO 19071)
- Only use recycled chrome tanning agents from preparation companies who are able to guarantee that their products are free of chromium(VI)

### Chrome(VI) is formed in post-tanning operations

- Check the pH values carefully during the individual process steps.
- Avoid pH values over pH 8 through the use of neutralization tanning agents or buffering substances.
- Carry out retanning using vegetable tanning agents; this can suppress the formation of chromium(VI) during storage.
- Do not use aggressive bleaches; do not use peroxides and potassium

Neither workers nor consumers are exposed to the human carcinogen.

The quality of the leather is increased.

Trust in the tannery is established.

The formation of chromium(VI) in pickling and tanning is prevented.

Neither workers nor consumers are exposed to the human carcinogen.

The quality of the leather is increased.

Trust in the tannery is established.
It is recommendable to establish an internal quality management and thorough technical audits by an independent third-party (e.g. LWG) to institutionalize and implement these measures.

### 4.6 POST-TANNING OPERATIONS

Post-tanning operations add certain properties to the leather (e.g. water repellence/resistance, oleophobicity, gas permeability, flame retarding, abrasion, anti-electrostatic, etc.). Substantial releases of permanganate (KMnO4) as bleaching agents after tanning.

Do not use dyes containing chromium(VI).

Reduce the use of ammonia or its salts when purging or dyeing; use dispersing syntans instead.

The pH value of the crust should lie below pH 5, ideally at pH 3.5 – 4.

Avoid direct solar irradiation and high temperatures during drying.

Do not use fatliquors with a high proportion of unsaturated fatty acids, such as fish oils. Make sure the iodine count is as low as possible when selecting an appropriate fatliquor.

Use fatliquors with oxidation protection, synthetic fatliquors and/or softening polymers from certified manufacturers.

<table>
<thead>
<tr>
<th>In finishing chromium(VI) is formed.</th>
<th>Use suitable chemicals from certified manufacturers from safe sources.</th>
<th>The formation of chromium(VI) in finishing is prevented.</th>
<th>BAT LWG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Do not use finishing agents with alkaline adhesive coatings.</td>
<td>Neither workers nor consumers are exposed to the human carcinogen.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Do not use pigments containing chromium(VI).</td>
<td>The quality of the leather is increased.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use suitable finishing products (e.g. colours and coatings), which ideally feature antioxidation properties.</td>
<td>Trust in the tannery is established.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Avoid excessively high temperatures during final finishing.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chromium(VI) is formed in semi-finished leather, finished leather and leather products.</th>
<th>Avoid the formation of mold over the entire process</th>
<th>The formation of chromium(VI) during storage and transport is prevented.</th>
<th>BAT LWG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Avoid containers fumigated with ammonia for transportation.</td>
<td>Neither workers nor consumers are exposed to the human carcinogen.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check the chromium(VI) content of the leather after extended storage periods.</td>
<td>The quality of the leather is increased.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trust in the tannery is established.</td>
<td></td>
</tr>
</tbody>
</table>
wastewater result from retanning and fatliquoring processes. Effluents will contain chromium if chromium retanning is applied.

Post-tanning operations contribute to the production of finished leather and thus are particularly relevant for value addition. Non-compliances need to be addressed by adequate corrective actions:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>A high amount of retanning agents is discharged to the wastewater.</td>
<td>Optimize processing parameters (e.g. chemical inputs, reaction time, pH, and temperature) during post-tanning to minimize chemical waste and environmental pollution.</td>
<td>The maximal uptake of retanning chemicals is ensured. Chemicals are used more efficiently. The discharge of retanning agents to the wastewater is reduced. COD is reduced. As the effluent volume and pollution load decreases, the cost decreases, too.</td>
<td>BAT LWG</td>
</tr>
<tr>
<td>A high amount of metals is found in the wastewater.</td>
<td>Screen fine chrome fibers from the shaving operations at the leather surface with a wedge wire screen. Use high-exhaustion chrome-tanning systems. Allow the leather sufficiently to age before the post-tanning treatment.</td>
<td>The amount of metals in the wastewater is reduced.</td>
<td>BAT LWG</td>
</tr>
<tr>
<td>Dye fixation is poor.</td>
<td>Optimize processing parameters (e.g. chemical inputs, reaction time, pH, and temperature). Use dyeing auxiliaries (e.g. amphoteric polymers) to enhance dye intensity. Improve dye fixation by processing at higher temperatures (60 °C) and a short float. End the operation at a low pH value (3.5) but prevent chromium from leaching out from the leather.</td>
<td>A maximum uptake of dyes is ensured. A high exhaustion of dyes reduces both wastage of expensive dyes and the concentration of dyes in wastewater.</td>
<td>BAT LWG</td>
</tr>
<tr>
<td>A high amount of fatliquors is discharged to the wastewater.</td>
<td>Optimize process parameters (e.g. chemical inputs, reaction time, pH and temperature). Add dyeing auxiliaries (e.g. amphoteric polymers) to improve the exhaustion of fatliquors.</td>
<td>A maximum uptake of fatliquors is ensured. A higher exhaustion of fatliquors reduces COD levels in the effluents.</td>
<td>BAT LWG</td>
</tr>
<tr>
<td>Ammonium, which can cause the formation of chromium(VI) in leather, is used as a penetrating agent.</td>
<td>Substitute amino resins by other filling agents. Substitute ammonia by other (anionic) dye penetrators. Enhance penetration of dyes by accurate neutralization. Add proper neutralizing salts (e.g. sodium bicarbonate, sodium formate,</td>
<td>Discharges of nitrogen are avoided.</td>
<td>BAT LWG</td>
</tr>
</tbody>
</table>
**4.7 FINISHING OPERATIONS**

Finishing operations improve the appearance by mechanical treatment and apply a surface coat to the leather. Even hides with natural defects can be turned into high quality leather thanks to new chemicals and elaborate finishing technology. While beamhouse and tanning operations have huge implications for the consumption of water and energy, the environmental impact of finishing is largely determined by the use of chemicals.

See below, how challenges in finishing can be overcome:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust from milling and buffing operations is not collected properly.</td>
<td>Install a dust extraction system.</td>
<td>The dust is properly collected and disposed of.</td>
<td>BAT</td>
</tr>
<tr>
<td>Organic solvent-based coating agents (e.g. butyl acetate, ethyl acetate, acetone, methyl isobutyl ketone, methyl ethyl ketone) are used.</td>
<td>Use water-borne coating agents (e.g. water-soluble lacquers). Use improved methods of application, such as modern spraying techniques and roller coating. Install a wet scrubbing exhaust air equipment in spraying unit to eliminate dust particulate and aerosols.</td>
<td>Organic solvent emissions are reduced. The emission of VOCs are minimized or even avoided.</td>
<td>BAT LWG</td>
</tr>
<tr>
<td>Spraying units produce off-spray, harming the workers’ health.</td>
<td>Replace spraying of leather by curtain coating or roller coating. Curtain coating:</td>
<td>The discharge of solvents to the air is reduced. The amounts of waste and solvent emissions to the air are reduced.</td>
<td>BAT LWG</td>
</tr>
</tbody>
</table>
Footwear is the most important market for leather. However, footwear manufacturing uses materials such as chromium tanned leather or solvent-based chemicals which affect human health and the environment. The manufacturing process and the materials vary according to the type of the shoe to be produced (e.g. children shoes, safety boots, sports shoes etc.), using different techniques and adhesive systems.

Non-compliances can be identified considerably less, although no less important:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
</table>
| Solvent-based adhesives evaporating into the atmosphere are used for bonding of soles and uppers. | The substitution of solvent-based adhesives by water-based adhesives or hot melts offers the highest potential for reducing emissions.  
- Water-based adhesives are VOC-free.  
- VOC in hot melts based on polyester, polyamide and vinyl acetate are reduced or eliminated. | Water-based adhesives prevent risk of flammability in storage, transportation and during application.  
VOC emissions are reduced.  
Water-based adhesives do not generate hazardous waste. | BAT |

Note:
- For water-based adhesives, longer drying times at room temperature are required.
- Only low temperatures ensure stability.
- Water-based adhesives have a lower initial strength (slower hardening) and a poorer surface penetration, but a higher final strength after drying.
Use injection molding instead of gluing sole parts, which is VOC-free. Thereby, the sole is directly molded onto the shoe without adhesives.

If solvent-based adhesives cannot be substituted:
- Close containers of volatile material whenever possible.
- Sew up sole and insole manually for certain type of shoes (e.g. moccasins).
- Use VOC-reduced systems (e.g. high solid adhesives).
- Use biofiltration to destroy VOC.
- Use oxidation systems (thermal, catalytic, plasma or UV oxidization) to destroy solvents.

<table>
<thead>
<tr>
<th>Large quantities of waste are generated by manual cutting machines.</th>
<th>Use automatic computer assisted cutting.</th>
<th>Automated cutting machines reduce the amount of raw material waste.</th>
<th>BAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>The drafting process of sole molds and shoe upper patterns is still carried out manually.</td>
<td>Introduce computer aided design and manufacture of footwear soles (CAD/CAM).</td>
<td>The CAD/CAM software keeps raw material waste to a minimum. CAD/CAM saves time as designs can altered without erasing and redrawing.</td>
<td>BAT</td>
</tr>
<tr>
<td>Insoles are produced on the basis of physical prototypes.</td>
<td>Use computer-aided design tools (digitizer, software) to devise anatomic insoles.</td>
<td>Insole material is saved. Energy is reduced.</td>
<td>BAT</td>
</tr>
<tr>
<td>The surface is treated with solvent-based chemicals.</td>
<td>Use water-based finishing chemicals (e.g. polishes, creams, waxes, dressings, varnishes).</td>
<td>The surface is treated with water-based finishing chemicals</td>
<td>BAT</td>
</tr>
<tr>
<td>Panel goods are used for soles, causing stamping waste and emissions through, for instance, application of adhesives.</td>
<td>Pre-sized goods reduce waste, emissions and work input.</td>
<td>Stamping waste is minimized. Solvent emissions are reduced. Energy is saved.</td>
<td>BAT</td>
</tr>
</tbody>
</table>

4.9 WASTE MANAGEMENT

The tanning processes, as portrayed in Figure 1, require raw material, energy and chemicals as inputs and have a considerable impact on the environment. Wastewater contains pollutants from the chemicals used for processing raw hides and skins. The untreated discharge of large amounts of solid waste resulting from fleshing, splitting or shaving processes, among others, is as much harmful to the environment as gases released into the air.
To avoid odors as well as atmospheric, water and soil pollution from uncontrolled and untreated discharges, it is essential to introduce sustainable practices and cleaner technologies to the tanning industry (see 4.1 to 4.8).

Effluents, solid waste and gases are discharged in the course of leather processing and while much can be done to prevent waste at each individual operation through cleaner technologies, only end-of-pipe solutions, such as common effluent treatment plants (CETP), can treat and eventually remove waste.

Figure 1: The tanning process – inputs and outputs

The complexity of the tanning process involves a variety of inputs and outputs, the latter of which require an adequate and appropriate treatment.

Table 3 shows the different types of solid and liquid wastes, their use as a by-product, and the operations that can be carried out to minimize waste sent for disposal. Waste reuse is preferred over waste recycling, which itself is preferred over other recovery:

**Table 3: Best Available Techniques (BAT) of waste management**

<table>
<thead>
<tr>
<th>Waste</th>
<th>Use as a by-product</th>
<th>Reuse after preparation</th>
<th>Recycling as</th>
<th>Other recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hair and wool</td>
<td>Filling material</td>
<td>Protein hydrolysate</td>
<td>Fertilizer</td>
<td>Energy recovery (e.g. generation of biogas by anaerobic digestion)</td>
</tr>
<tr>
<td>Raw trimmings</td>
<td></td>
<td></td>
<td>Hide glue</td>
<td>Energy recovery</td>
</tr>
<tr>
<td>Limed trimmings</td>
<td>Collagen production</td>
<td>Technical gelatin, tallow, protein hydrolysate</td>
<td>Hide glue</td>
<td>Production of substitute fuel</td>
</tr>
<tr>
<td>Fleshings</td>
<td></td>
<td>Tallow, protein hydrolysate</td>
<td>Hide glue</td>
<td>Energy recovery (e.g. substitute fuel; generation of biogas by anaerobic digestion)</td>
</tr>
<tr>
<td>Untanned splits</td>
<td>Processed further to sausage casings</td>
<td>Technical gelatin, protein hydrolysate</td>
<td>Energy recovery (e.g. generation of biogas by anaerobic digestion)</td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------------------------------</td>
<td>---------------------------------------</td>
<td>---------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Collagen production</td>
<td>Hide glue</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>dog chews</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tanned splits and trimmings</th>
<th>Finished for use in small leather goods</th>
<th>Leather fiberboard from non-finished trimmings</th>
<th>Energy recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Collagen production</td>
<td>Protein hydrolysate</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tanned shavings</th>
<th>Leather fiberboard</th>
<th>Energy recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Protein hydrolysate</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fats, grease and oil</th>
<th>Commodity market</th>
<th>Energy recovery (e.g. generation of biogas by anaerobic digestion; thermal treatment)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Sludge from waste water treatment</th>
<th>Landscaping</th>
<th>Agriculture</th>
<th>Construction material for landfills</th>
<th>Energy recovery (e.g. generation of biogas by anaerobic digestion; thermal treatment)</th>
</tr>
</thead>
</table>

**Note:** Further processing of specific wastes depends on the contamination with chemicals.

Sources: Sludge Management Guideline 2016; Joint Research Centre 2013 (European Integrated Pollution Prevention and Control Bureau)

The recovery of organic materials that are not contaminated with chemicals provide economic and environmental advantages. The recovery and further processing of fats, proteins and other raw materials requires linkages to other industries. A proper way of disposal needs to be found if no other users of by-products are available.

Leather, and more specifically, tannery waste is harmful for the environment and thus prohibited to be disposed of in landfills. Other residues, such as chemicals or finishing sludge, are to be treated and disposed of according to their content.

As mentioned above, waste management practices can be prioritized according to the waste management hierarchy (see Figure 2). The following principles apply:

- Avoid or minimize the generation of waste as much as possible.
- Where waste cannot be avoided but has been minimized, reuse and recover waste.
- Where waste cannot be recovered or reused, treat, destroy, and dispose of it in an environmentally sound manner.
- Limit the amount of waste sent for disposal.

Hence:

- Prevention is better than recycle/reuse
- Reuse/recycle is better than treatment
- Treatment is better than disposal
4.9.1 SOLID WASTE MANAGEMENT

Slaughterhouses, traders of hides and skins, tanneries and leather footwear manufacturers produce different types of solid waste. Residues from tanneries can be by-products, nonhazardous waste or hazardous waste. Solid waste generated from traders of raw hides and skins, tanneries and leather footwear producers includes curing salt, hair, animal offcuts, leather offcuts, sludge containing organic material, chromium and sulfur compounds, and empty chemical containers.

The non-compliances found below are to be addressed by suitable corrective actions:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is no waste management policy in place.</td>
<td>Establish precise written guidelines for identifying, collecting, storing and disposing of hazardous and non-hazardous waste (see Annex 7.3.1).</td>
<td>A formal waste management procedure is in place. Hazardous and non-hazardous waste is treated according to its classification.</td>
<td>LWG</td>
</tr>
<tr>
<td>There is no monitoring of the amount of waste per unit.</td>
<td>Calculate on a regular basis (at least monthly) two major waste streams generated per unit of leather produced. Define procedures that are to be implemented if the waste generated exceeds specified levels.</td>
<td>The amount of waste is monitored. It is ensured that excessive quantities of waste are not generated.</td>
<td>LWG</td>
</tr>
<tr>
<td>Public slaughterhouses have no waste management in place.</td>
<td>Separate liquid from organic waste. Screen solids (meat, skin trimmings, hair, bones, hooves, etc.). Adjust the drains with vertical sieves. Collect blood for reuse. If it is not intended for use it should be drained away into a separate pit and not be drained into the wastewater. Install grease traps in the drains and remove the fat regularly. Reuse organic waste as a fertilizer for cultivation.</td>
<td>All waste and by-products are used and/or disposed of adequately.</td>
<td></td>
</tr>
</tbody>
</table>
The following factors influence the quantities of solid waste in manufacturing leather products:

- Poor quality leather increases cutting rate, up to 5 points higher than usual
- Type of leather (grain, split, side, belly etc.); with split, the cutting rate can be 10 points higher than normal
- Size and shape of the leather (lamb, bovine etc.)

Use biogas from animal by-products that are not further utilized (e.g. hind gut, stomach content, fat scrubber) and cover thermal energy demand.

Suppliers of raw hides and skins drain the liquor emanating from salted hides, rich in chloride and nitrogen compounds, into the sewages.

Remove a large amount of the salt sticking to the hide and skin surface by shaking the hides mechanically or manually.

If salt is to be recovered, apply heat treatment for sterilization and drying of the salt.

**Note:**
- The heat treatment increases energy consumption.
- A separate storage area is required to treat the salt.

Organic waste is dumped.

Recycle sludge as compost or soil conditioner or in anaerobic digestion for energy generation.

Use process sludge for composting / agriculture after appropriate assessment for contaminants and potential impacts to soil and groundwater.

Organic waste is recycled and reused.

Hair from the liming/dehairing process, containing lime and sulfides, is not recovered.

Segregate hairs from other waste to facilitate recovery and reuse.

Hair is recovered and reused as filling material or as a fertilizer.

Wet-blue shavings and trimmings containing chromium oxide ($\text{Cr}_2\text{O}_3$), syntans and dyes are dumped, burned or sold to scrap leather processors.

Dispose of non-recoverable and non-recyclable waste and sludge by appropriate methods, depending on the waste hazard classification.

Incineration should be conducted only according to industry good practices to avoid emissions of toxic substances (e.g. chrome (VI), dioxins, etc.).

Wet-blue shavings and trimmings are recycled and reused for leather board and hydrolysis or are adequately disposed of.

Hazardous waste is not segregated from non-hazardous materials.

Segregate hazardous waste from non-hazardous waste.

Mark, segregate and keep different types of waste in sealed containers with spillage containment.

Hazardous waste is correctly segregated from non-hazardous materials.

The volume of total dissolved solids (TDS) in the soak waste liquor is reduced.

Suppliers of raw hides and skins drain the liquor emanating from salted hides, rich in chloride and nitrogen compounds, into the sewages.

Remove a large amount of the salt sticking to the hide and skin surface by shaking the hides mechanically or manually.

If salt is to be recovered, apply heat treatment for sterilization and drying of the salt.

**Note:**
- The heat treatment increases energy consumption.
- A separate storage area is required to treat the salt.

Organic waste is dumped.

Recycle sludge as compost or soil conditioner or in anaerobic digestion for energy generation.

Use process sludge for composting / agriculture after appropriate assessment for contaminants and potential impacts to soil and groundwater.

Organic waste is recycled and reused.

Hair from the liming/dehairing process, containing lime and sulfides, is not recovered.

Segregate hairs from other waste to facilitate recovery and reuse.

Hair is recovered and reused as filling material or as a fertilizer.

Wet-blue shavings and trimmings containing chromium oxide ($\text{Cr}_2\text{O}_3$), syntans and dyes are dumped, burned or sold to scrap leather processors.

Dispose of non-recoverable and non-recyclable waste and sludge by appropriate methods, depending on the waste hazard classification.

Incineration should be conducted only according to industry good practices to avoid emissions of toxic substances (e.g. chrome (VI), dioxins, etc.).

Wet-blue shavings and trimmings are recycled and reused for leather board and hydrolysis or are adequately disposed of.

Hazardous waste is not segregated from non-hazardous materials.

Segregate hazardous waste from non-hazardous waste.

Mark, segregate and keep different types of waste in sealed containers with spillage containment.

Hazardous waste is correctly segregated from non-hazardous materials.
- Ability of the operator (clicker) in charge of cutting
  o Cutting rate can range between 25% and 60%
- Incentives given to the clicker

The following measures help avoid improper disposal of solid waste:

- The disposal of animal offcuts from trimming may be subject to control by specific regulations. Waste storage on site can lead to odor nuisance and may require specific licenses.
- Consider recycling and selling tannery sludge as soil conditioners if they are free from chromium and sulfides.
- Cover tannery sludge with inert material immediately to avoid odors and insect infestation.
- Prevent waste from being stored on site for lengthy periods of time.
- Return packaging of hazardous materials (wherever possible), such as empty drums, to supplier for reuse.
- Develop and implement a waste management plan covering all aspects of waste treatment on site.
- Wherever possible, prioritize reduction of waste over recovery and re-use of raw materials.
- Treat waste on site for example by dewatering of sludge, compacting, rendering (drying and grinding to make bone meal), anaerobic digestion, composting and thermal treatment.

For a detailed sample waste management policy, see Annex 7.3.2.

### 4.9.2 LIQUID WASTE MANAGEMENT

The main releases of waste water originate from wet processing in the beamhouse, the tanning, and the post-tanning operations. Untreated wastewater has a high content of chemical and biochemical oxygen demand (COD, BOD), salt, and process chemicals. Wastewater effluents require on-site treatment before they are discharged to central effluent treatment plants.

The non-compliances identified need to be addressed by adequate corrective actions to ensure the leather industry's competitiveness:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>The effluents are discharged untreated in the sewages.</td>
<td>Discharge effluents into an own/common/municipal effluent treatment plant at the new tannery site. Install primary treatment facilities at the individual tannery.</td>
<td>Direct discharge of effluents into a water body is prevented. The effluents are treated in such a way that they do not enter the environment.</td>
<td>BAT LWG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note: Primary (physical-chemical) treatment is carried out by the tannery itself, whereas the secondary (biological) treatment is carried out by the CETP.</td>
<td></td>
</tr>
<tr>
<td>Solid and organic content is not adequately mechanically treated.</td>
<td>Screen gross solids and other coarse material (e.g. pieces of skin, leather fibers). Skim fats, oils and greases. Remove solids by sedimentation.</td>
<td>Solid waste is separated from the untreated effluents. COD is reduced. The sludge is reduced.</td>
<td>BAT LWG</td>
</tr>
</tbody>
</table>
An adequate wastewater treatment comprises a combination of techniques that can be applied in two or three stages on-site and/or off-site. Table 4 presents BAT to treat the emissions to wastewater effectively:

### Table 4: Treatment of emissions to water

<table>
<thead>
<tr>
<th>Technique</th>
<th>Description</th>
<th>Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mechanical treatment</strong></td>
<td>Screening of gross solids, skimming of fats, oils, and greases and removal of solids by sedimentation.</td>
<td>Generally applicable for on-site and/or off-site treatment.</td>
</tr>
<tr>
<td><strong>Physico-chemical treatment</strong></td>
<td>Sulfide oxidation and/or precipitation, COD and suspended solids removal by, e.g. coagulation and flocculation. Chromium precipitation by increasing pH to 8 or above using an alkali (e.g. calcium hydroxide, magnesium oxide, sodium carbonate, sodium hydroxide, sodium aluminate).</td>
<td>Generally applicable for on-site and/or off-site treatment.</td>
</tr>
<tr>
<td><strong>Biological treatment</strong></td>
<td>Aerobic biological waste water treatment using aeration, including the removal of suspended solids by, e.g. sedimentation, secondary flotation.</td>
<td>Generally applicable for on-site and/or off-site treatment.</td>
</tr>
<tr>
<td><strong>Biological nitrogen elimination</strong></td>
<td>Nitrification of ammoniacal nitrogen compounds to nitrates, followed by the reduction of nitrates to gaseous nitrogen.</td>
<td>Applicable to plants with direct discharge to receiving water. Difficult implementation into existing plants where there are space limitations.</td>
</tr>
</tbody>
</table>

Source: Joint Research Centre 2013, p. 226; The Environment Conservation Rules 1997

Table 5 provides reference values of emission levels for direct discharges of effluents after treatment, as constituted by the Joint Research Centre (Institute for Prospective Technological Studies, Sustainable Production and Consumption Unit, European IPPC Bureau) on behalf of the European Commission in 2013:

### Table 5: Suggested emission levels for direct discharges of effluents after treatment

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Emission levels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mg/l (monthly average values)</td>
</tr>
<tr>
<td>COD</td>
<td>200 – 500 (¹)</td>
</tr>
<tr>
<td>BOD</td>
<td>15 – 25</td>
</tr>
<tr>
<td>Suspended solids</td>
<td>&lt;35</td>
</tr>
<tr>
<td>Ammoniacal nitrogen NH₄-N (as N)</td>
<td>&lt;10</td>
</tr>
</tbody>
</table>
The chromium content of wastewater discharges can be reduced if on-site or off-site chromium precipitation is applied (see Table 4 physico-chemical treatment). The total chromium and sulfide emissions can be reduced through indirect discharges of wastewater from tanneries to effluent treatment plants by applying chromium precipitation and sulfide oxidation. In both cases the efficiency of chromium precipitation is higher in segregated, concentrated chromium-bearing streams.

The following emission levels are suggested as BAT:

Table 6: Suggested emission levels for total chromium and sulfide emissions through indirect discharges of effluents from tanneries to ETPs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Emission levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total chromium (as Cr)</td>
<td>&lt;0.3 – 1</td>
</tr>
<tr>
<td>Sulfide (as S)</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

Source: Joint Research Centre 2013

4.10 WATER CONSUMPTION

Efficient water management is essential for reducing the load of wastewater. In addition to the practices already recommended in the beamhouse and tanning sections, good housekeeping and water-efficient measures can significantly reduce water consumption.

Very often improvements in the use of water bring about gains in energy consumption. For reasons of clarity, we keep the sections of water and energy apart, although there may be content-related overlaps. As the reduction of water consumption is a major requirement by the Leather Working Group (LWG), all measures or corrective actions are considered relevant for achieving this standard.

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>The volume of processing water is not controlled.</td>
<td>Reduce running water losses.</td>
<td>The volume of processing water has been effectively controlled. Loss of water is prevented. Product quality is improved as process conditions (water dosage, chemical dosage, pH, and temperature) are under control.</td>
<td>Bangladesh Water Act 2013 BAT LWG</td>
</tr>
<tr>
<td>Water is used inefficiently.</td>
<td>Avoid overflowing vessels.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fix leaks in pipes and process vessels.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eliminate continuously running pipes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Avoid over-frequent cleaning of floors and drums.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Install technical equipment such as flow meters (in every department) and an automated dosage system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Establish a code of practice for operators about cleaning cycles.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establish preventive and corrective maintenance programs. Train workers in the effective use of process water.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Wet processes utilize running water washes, consuming large quantities of water.</strong> Use batch washing instead of running water washes, i.e. introduce the required quantity of clean water into the processing vessel and use the action of the vessel to achieve the required agitation. Batch washing allows for a better control of the use of water. Savings of more than 50% can be achieved. The final product attains a better uniformity. The effluent volume is reduced.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The existing equipment is not able to use the short float technique.</strong> Modify the existing equipment to use short floats. Water consumption and processing time is reduced significantly. Thanks to increased mechanical action and higher effective concentration, the chemical input is reduced.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Equipment is not properly maintained. Leaks in pipes and process vessels account for considerable losses of water.</strong> Maintain machinery, pumps and piping thoroughly and check for leaks. Check systems for heat carrier liquids and chemical dispensing systems. Prepare maintenance plans for regular maintenance and document all work activities. Include critical machine components such as pumps, valves, level setters, pressure and flow controls in the maintenance plan. Equipment is properly maintained. Losses of water and energy are prevented or minimized.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Water and energy are wasted as production processes are not well-organized.</strong> Describe and communicate production processes in a thorough and comprehensible way, so resources are not wasted. Monitor the consumption of water and energy. Production processes are clearly communicated. Water and energy consumption are monitored and thus properly utilized.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Water is inefficiently used.</strong> Treat the water from tanning and dyeing in a sedimentator and utilize for soaking in the liming drum and as rinse water after liming. Wastewater is reused in soaking and liming operations. Freshwater consumption in soaking and liming can be reduced by 60%. The total water consumption is reduced by 20%.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Improve the knowledge of raw materials and chemicals used.</strong> Monitor the input and output flows of the individual processes continuously. Determine the input and output mass flows for both the plant and Resources, water and energy are more efficiently used.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Note:**
- Short floats may wear on drums and drives.
- Friction and mechanical strains on the leather increase.

**Bangladesh Water Act 2013**

**BAT LWG**
According to the BAT identified in European tanneries, the water consumption levels for processing bovine hides should target the following range:

Table 7: Water consumption levels according to BAT

<table>
<thead>
<tr>
<th>Process stages</th>
<th>Water consumption per ton of raw hide¹ (in m³/t)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unsalted hides</td>
</tr>
<tr>
<td>Raw to wet blue/white</td>
<td>10 to 15</td>
</tr>
<tr>
<td>Post-tanning processes and finishing</td>
<td>6 to 10</td>
</tr>
<tr>
<td>Total</td>
<td>16 to 25</td>
</tr>
</tbody>
</table>

¹ Monthly average values. Processing of calveskins and vegetable tanning may require a higher water consumption.

Source: Joint Research Centre 2013

4.11 ENERGY CONSUMPTION

Energy efficiency is a major challenge in the leather sector. Electricity and thermal energy are the basic sources for heating water and drying in tanneries, while (public) slaughterhouses have not yet mechanized and thus electrified the slaughtering of animals. The high cost of energy makes it mandatory for the entire leather value chain to invest in energy-efficient machinery, to harness renewable energy sources and to develop energy-saving processes.

Good housekeeping can contribute to reducing energy consumption. As the reduction of energy consumption is a major requirement by the Leather Working Group, all measures presented below are considered relevant for achieving this standard.

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional long floats in old soaking and tanning drums require more water,</td>
<td>Modify existing equipment or use modern tannery machines for short floats.</td>
<td>Thanks to the shorter process and less process water heating, energy is</td>
<td>BAT LWG</td>
</tr>
<tr>
<td>more chemicals and more energy.</td>
<td>- Short floats use less amounts of process water in relation to the amount of</td>
<td>reduced.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>hides and skins.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Avoid paddles and pits wherever possible.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- The rotation of process vessels containing a limited amount of water requires more robust geared drives because the mass being rotated is uneven.
- Short floats cannot be applied to the processing of calfskins.

| Energy is lost from process fluids. | Install heat pumps with recovery systems and use waste heat from: | Energy is reduced. | BAT
|-----------------------------------|---------------------------------------------------------------|------------------|-----
| - Gaseous emissions from wet processing and effluent treatment | - Waste process water | | LGW
| - Particulate matter from dry-finishing | - Condensate from vacuum dryers | | LGW
| - Evaporated water from high-frequency drying | - Exhaust air from drying | | LGW

| High moisture content is in the air. | Avoid high moisture content in the air. | Less energy will be consumed in drying. | BAT
|-------------------------------------|----------------------------------------|--------------------------------------|-----
| | | | LGW

| Boilers are dispersed on site. | A large central boiler may be more efficient. | Energy is saved. | BAT
|-------------------------------|-----------------------------------------------|------------------|-----
| | | | LGW

| Drying may account for up to 45% of the total energy consumption. | Low temperature drying and vacuum drying systems improve the area yield of the leathers. | Energy is saved. | BAT
|---------------------------------------------------------------|-----------------------------------------------------------------|------------------|-----
| | Control temperature and humidity during drying. | Energy costs are reduced. | LGW
| | Optimize mechanical dewatering processes prior to drying. | | LGW
| | Operate drying installations continuously to avoid energy losses for reheating. | | LGW

| Pipes are not insulated. | Insulate the pipes. | Energy is saved. | LGW
|-------------------------|---------------------|-----------------|-----
| | | | LGW

| Chemical input is not accurately measured and other parameters cannot be adequately controlled due to inadequate equipment. | Use improved measurement and control equipment for temperature control, chemical addition, retention time or moisture in dryers. | Chemical input is optimized. | LGW
|---------------------------------------------------------------|-----------------------------------------------------------------|------------------|-----
| | | Energy is saved. | LGW

| Production processes are inadequately organized. | Optimize process flows in production. | Energy consumption is reduced. | LGW
|---------------------------------------------------------------|-----------------------------------------------------------------|------------------|-----
| | | | LGW

| Exhaust air from machinery is not used. | Install exhaust air heat recovery systems. | Heat losses are prevented or reduced. Energy consumption is reduced. | LGW
|---------------------------------------------------------------|-----------------------------------------------------------------|------------------|-----
| | | | LGW

### 4.12 AIR EMISSIONS

The main releases to air are:

- Gaseous emissions from wet processing and effluent treatment
- Particulate matter from dry-finishing
Due to their volatility, organic solvents are mainly released to air. They may also occur in wastewater effluents. Solid waste containing organic solvents are classified as hazardous waste.

Manufacturing industries, such as tanneries and leather footwear factories, are recommended to create an air emission inventory for all facilities, providing information on the type of emissions and the emission sources. On the basis of this assessment, control devices can be installed. More information on common non-compliances and adequate corrective actions are outlined below:

<table>
<thead>
<tr>
<th>Non-compliances</th>
<th>Corrective Actions</th>
<th>Benefit</th>
<th>Relevant for</th>
</tr>
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</table>
| Organic solvents are used in the leather production process, emitting VOC to the air. | Shift to water-based systems. If organic solvent cannot be substituted by aqueous systems, use organic solvents with the lowest impact on human health and the environment.  
- Ensure effective abatement techniques (e.g. wet scrubbing, adsorption, bio-filter, incineration) | VOC emissions are reduced. | BAT  
LWG |
| Organic solvents containing halogenated organic compounds are used. Halogenizers ensure that materials exhibit good bonding abilities. | Avoid solvents containing halogenated organic compounds:  
- Use water-based systems instead.  
Alternatives for halogenizer pre-treatment:  
- Use plasma technology pre-treatment. Ozone and nitrogen oxides are produced during the treatment and have to be treated.  
- Use UV treatment. About 65-70% of the solvents used during the halogenizing process can be eliminated. | Halogenated ozone-depleting substances are reduced or eliminated. Volatile organic compounds (VOC) are not emitted to air. | BAT  
LWG |
| Ammonia and hydrogen sulfide causes odor nuisance. | Apply abatement techniques such as wet scrubbing for higher concentrations and biofilters for lower concentrations of these substances. | Odor nuisance is reduced. | BAT |
| Particulate matter arising from mechanical operations (e.g. milling, buffing, staking) or during the use of powder process chemicals are released to the air. | Control dust and prevent fugitive emissions by:  
- controlling the dust at source (e.g. soluble packaging)  
- grouping operations and machines producing dust in the same area  
- installing adequate dust collection systems (e.g. workplace safety is ensured. Particulate matter emissions to the air are reduced. | Workplace safety is ensured. Particulate matter emissions to the air are reduced. | BAT |
Volatile halogenated hydrocarbons (e.g. Tetrachloroethene, chlorobenzene, hexachlorobenzene) are used in degreasing sheepskins.

Use non-halogenated solvents, such as linear alkyl polyglycol ethers, carboxylates, alkyl ether sulphates and alkyl sulphate.

- Store, handle and transport solvents carefully to avoid contamination through spillage.
- Establish preventive measures, such as closed cycle degreasing machines, solvent recycling, emission abatement (e.g. activated carbon filters), and soil protection.

Change to an aqueous degreasing system with non-ionic surfactants.

Ensure proper ventilation of the workplace for safety reasons.

| Wet scrubbers, bag filters, cyclones | Use non-halogenated solvents, such as linear alkyl polyglycol ethers, carboxylates, alkyl ether sulphates and alkyl sulphate. | VOC emissions to the air are reduced. | BAT LWG |


5 CONCLUDING REMARKS

The provisions of this handbook constitute minimum social and labor standards and good environmental practices drawing on best available techniques (BAT). Companies are recommended to aim for solutions exceeding these minimum standards, particularly as BAT are subject to change. However, the Bangladeshi context may set limits to improving, for instance, environmental performance levels by adopting latest technology. Hence, abatement techniques are highly recommended to protect human health and reduce the impact on the environment. Companies applying this handbook are expected to comply with national laws and regulations and, wherever legislations falls below international standards, to apply that provision which provides highest protection. Effective regulatory measures are necessary to ensure all factories abide by national and internationally agreed standards. Buyers and suppliers have a responsibility to continuously communicate about changing requirements and potential conflicts with national legislation.
6 REFERENCES


Federal Environment Agency (Germany) 2011: Checklist based on best available techniques in the leather industry. Dessau-Roßlau.


ANNEX

7.1 LABOR STANDARDS

7.1.1 GUIDELINES ON LICENSES

7.1.1.1 PROCEDURE FOR GETTING FIRE LICENSE

The following steps provide guidance on how to apply for a fire license:

- Collect application form from Dhaka head office of Fire Service and Civil Defense.
- Fill up the form
- Add supporting documents to application
  o Attached copy of certificate of incorporation with memorandum and articles of association.
  o Layout/plan of building
  o Valuation Certificate from Municipality/City Corporation/Union Porishad
  o Deed of agreement if the property is rented
- Submit application with supporting documents
- Inspection by the Fire Service and Civil Defense Inspector
- After the inspection, a demand note is issued that states that fees need to be paid. Points of violation are flagged and time is given to the applicant to address these issues.
- Sites will be revisited to check whether the flagged violations have been addressed and fire-fighting equipment has been put in place.
- Fire license is issued

7.1.1.2 PROCEDURE FOR GETTING TRADE LICENSE

The process is managed by the local government authority, i.e. either City Corporation or the Union Parishad of the business. The license is issued in the name of the license holder and such license is not transferable. A fee for the trade license has to be deposited at any bank as indicated on the Trade License form.

Required documents for trade license:

- Attested copy of rental agreement
- Copy of the holding tax payment receipt
- Copy of fire license
- Declaration on non-judicial stamp of Tk. 150/- to abide by the rules and regulations of the authority
- One copy of passport size photograph
- Memorandum of Article and Certificate of In-Corporation (in case of a limited company)

7.1.1.3 PROCEDURE FOR APPROVAL OF FACTORY LAYOUT PLAN AND EXTENSION LAYOUT PLAN
- Before use, change or expansion of any houses, building or premises as factory, approval in writing of the inspector general or any officer empowered by him shall be taken. Provided, however, that the inspector general or any officer empowered by him shall not sanction any approval without any inspection on the spot.

- For taking approval under the by-law (1), all applications have to be submitted as per Form-76 which shall be accompanied by the following documents, namely:
  - A list of brief statement along with different production flow chart.
  - Two sets of layout plan in ammonia or blue print which shall include the followings, namely:
    - Factory’s location and the site plan along with entry and drains;
    - Elevation and necessary sectional elevation of different buildings, provision of normal lighting, ventilation, placement of machinery, location of dining room, toilet etc. and exit and entrance plan during fire incident;
  - Layout plan of the factory building as approved by the local or due authority; and
  - Relevant other information as per requisition of the inspector general.

- If the Inspector General is satisfied, then he will send back a copy of the submitted layout plan to the applicant as per sub-rule (2) and if he imposes any other conditions, then subject to said condition(s), he will approve the factory’s layout plan in cases or will expand, change or amend the layout plan or will seek other details for approval of the lay-out plan.

- Without written permission of the inspector general, no change in any approved layout plan may be brought.

- In case the factory building being brick-built or being a building with more than one storey, then the application shall be accompanied by structural design of the building as certified by a government specified authority, soil test and certificate for construction of building by any recognized engineering establishment.

### 7.1.2 GUIDELINES ON PREVENTING FORCED LABOR

The following steps provide practical guidance on how to prevent forced labor:

- The company needs to define a policy and procedures prohibiting forced labor and prison labor (see sample policy below).
- The company needs to define a recruitment policy and establish strong recruitment procedures (see sample policy below).
- The company needs to assign responsible personnel to monitor, document, update, and control that policies and procedures are properly implemented.
- The company needs to ensure the policy is effectively communicated in trainings and internal meetings and published in local language.

A sample policy and procedures on the prohibition of forced labor can look like as follows:

**Policy**

- The company does not use involuntary or forced labor indentured, bonded or otherwise nor does it support the use of forced or compulsory labor in any form including bonded, forced, and/or compulsory prison labor.
The company prohibits all relevant individuals from coercing employees in any way or unnecessarily limiting employees’ freedom of movement.

The company does not require employees to submit original of documents at the time of employment or during the period of his employment with the company.

**Procedure**

**General**

- Maintains employment application and service contract, to include statement applicants are seeking employment voluntarily and are not under threat or any penalty and to be signed by each applicant.
- Provides compensation directly to worker as mentioned in their contract, company makes sure that the correct payment is paid to the workers as agreed.
- Job description of Security staff has been defined, limiting security tasks to normal security matters such as the protection of property or personnel.
- If necessary, original documents are only taken from the employees for the verification and after verification the original documents are returned to the employees.
- During the time of employee’s interview, the potential candidate is briefed about the fact that he/she is under no compulsion to join the company and similarly he/she is free to disassociate with company as per his/her own free will at any given time but under compliance with the rules as agreed in the appointment letter.
- Manager, Administration and Compliance, ensure that workers who are doing overtimes are under no pressure or threat from their Departmental Head for compulsory OT.
- In case where any company’s employee decides to leave the company, Compliance and Personnel ask about the reason (s) of leaving in order to make sure that he/she is not leaving under unlawful compulsion or threat.
- Manager, Administration and Compliance trains all departmental heads on the company’s policies and procedures prohibiting involuntary or forced labor.
- A suggestion box is placed in the facility, if any employee wants to report any incident he/she can use the suggestion box without mentioning his/her identity, the matter will be investigated and resolved by the Company.
- Manager, Administration and Compliance ensure continuous communication between workers and management through designated members of different committees. Compliance and Personnel directly monitor regarding the issues related to the workers are communicated to the management for effective corrective and preventive measures.

**Responsibility and authority**

- Manager, Administration and Compliance is responsible for implementation of the policy.

**Responsibilities**

- Proper communication of company’s prohibition of forced labor policy to the respective supervisors and workers.
- Organizing meetings and training programs to ensure that the policy is properly communicated and understood by the employees.

**Communication & Training**
Where required, Managing Director will notify that to the top management and will take required step about that and Manager, Administration and Compliance is responsible to train the designated persons to ensure the compliance of updated laws.

Training records are maintained according to training document.

The following guidelines serve for defining policy and procedures on recruitment:

**Objective**
- The factory’s Recruitment Policy aims to enriching its talent pool by acquiring skills and functional expertise that strengthen its goal to become a Leader in the sector.

**Scope**
- The objective of the Recruitment Policy is to source the best talent from Internal and External resources to achieve the Business Objectives and Goals of the Company.

**Internal recruitments**

**Scope**
- New vacancy
- Replacement

**Responsibility**
- Requirement requisition: HR head/Departmental Head
- New vacancy approval: Executive Director/HR head

**Key policy**
- Internal vacancies shall be posted on the Notice Board.
- Eligible employees may apply for any vacancy.
- All applications shall be sent through e-mail or by hand to HR department
- Databank of potential candidates profiles shall be hand over to the concerned HR/HODs
- In case of non-availability of suitable internal candidate(s), external sources shall be approached.
- The process of selection shall include (i) Panel interview (ii) competency matching and (iii) a skill test shall be administered.
- The decision of the panel shall be binding and final.

**External recruitments**

**Responsibility**
- Requirement requisition: HR head/Departmental Head
- New vacancy approval: Executive Director/ HR head

**Key policy**
- In case of non-availability of suitable internal candidate(s) with requisite talent /expertise for the vacant post(s), external sources shall be approached.
- Referred candidates through existing Employees may be considered

**Hiring for employment**

- The factory AAA will comply with the Bangladesh Labor Law / relevant national laws applicable in case of employment and other related activities. The factory implements the following policies while hiring or recruiting employees. The Company shall employ adult workers only, 18 Years old & above as defined by the law of the land. The Company shall not use forced labor and shall not extract work from any person under any intimidation or for which the worker has not offered voluntarily.

**Responsibility**

- We are an equal opportunity employee and shall follow a non-discriminatory behavior for employing and related activities.
- We hire employees through an employment committee headed by a representative from the HR/HODs as management representative. The committee is neither influenced nor biased by any influence from inside or outside.
- Employment will be provided based on education, experience, demonstrated skills and abilities (mandatory testing during hiring), supported proof of age certification, sound physical and mental health.
- The Company shall actively pursue to hire the best human resources available in the country for employment.

**Documentation**

- The advertisement for the employment will be placed in a populous area or newspaper or in front of the factory as deemed proper by the management. The advertisement will specify the position and required experience and qualification of job.
- General employees and Supervisors are encouraged to bring reference for prospective employees.
- For highly skilled and senior management level staffs the management puts advertisement in the newspapers and internet as well.
- Appropriate verbal or written or practical tests will be taken to select the eligibility of the candidate.
- The following document must be provided by the candidate at the time of employment:
  - Bio Data with 3 copies of passport size photographs.
  - Nationality Certificate from City Corporation/ municipality or Union Parishad Chairman as applicable.
  - Age verification certificate indicating 18 or above on the date of application. Persons below the age of 18 will be automatically disqualified. Though Bangladesh Labor Law allows employment below 18 years with working hours and types restrictions, but here at the factory management strictly maintains the age requirement to be above 18 years that is good for employment without any restriction. The perspective candidate will undergo a physical and mental health check by a qualified practitioner and job assurance will be subjected to positive results from the tests. (An age estimation form must be completed)
  - Certificates of education and experience where relevant.
- Upon satisfying the criteria for the job, a prospective employee will be given an appointment letter.

7.1.3 GUIDELINES ON ENSURING FREEDOM OF ASSOCIATION

- The company needs to define and have a policy of freedom of association in place (see example below).
- The company needs to assign responsible personnel to monitor, document, update, and control that the policy is properly implemented.
- The company needs to conduct an education program for management and workers on workers’ rights.
- The company needs to make sure that the employees’ representatives are elected by the employees.
- Union representatives should work unbiased and effectively represent the interests of their members and non-unionized workers. A union allows employees to join for bargain collectively.
- The company needs to display grievance handling minutes of the meeting (employee list with affiliations and representatives).

The following sample policy and procedures provide guidance on ensuring freedom of association and collective bargaining:

Policy
- The company recognizes and respects the rights of employees to exercise their lawful rights of freedom of association and collective bargaining.
- The company does not discriminate against employees who form or participate in lawful associations and/or collective bargaining. Forms of discrimination include, but are not limited to:
  - Wage penalties
  - Suspension
  - Termination
- The company does not discriminate against applicants who have previously exercised their lawful rights of freedom of association and/or collective bargaining.

Procedures
General
- The company allows freedom of movement during employee breaks unless such movement interferes with the work of other employees.
- The company allows the employees to leave the company ground for reasons other than normal security reasons.
- The company acknowledges the right of every employee to from free association or not to do so for collective bargaining.
- The company has a Worker Participation committee (WPC) with the participation of both Management and workers’ side.
- The management selects the management representative; the workers select their representative.
- Pictures of members of the WPC are posted at strategic locations in the factory.
- WPC meetings will be held on once in every two month-basis.
- Minutes of WPC meetings are maintained and displayed at a Notice Board.
- In addition, suggestion boxes are placed in the facility; if any employee wants to make complaints any incident, he/she can use the suggestion boxes without mentioning his/her identity.

**Responsibility and authority**
- The Manager Compliance is responsible for Implementation & Communication of the above-mentioned policy and procedures.

**Responsibilities**
- The policy is properly communicated to and understood by the employees.

**Communication and training**
- Compliance and Personnel will train the designated persons to ensure the compliance of updated laws.
- Training records are maintained according to training document.

### 7.1.4 GUIDELINES ON INITIATING A COLLECTIVE BARGAINING PROCESS

- **Preparation:** Choose a negotiation team and representatives of both union and employer. Both parties should be skilled in negotiation and labor laws.
- **Discussion:** Both parties meet to set ground rules for the collective bargaining negotiation process.
- **Proposal:** Both representatives make opening statements, outlining options and possible solutions to the issue at hand.
- **Bargaining:** Following proposals, the parties discuss potential compromises, bargaining to create an agreement that is acceptable to both parties. This becomes a “draft” agreement, which is not legally binding, but a stepping stone to coming to a final collective bargaining agreement.
- **Final Agreement:** Once an agreement is made between the parties, it must be put in writing, signed by the parties, and put into effect.

Further steps to improve the process of collective bargaining:
- Begin the process of negotiations with proposals, not demands.
- Avoid taking public positions for or against certain proposals in advance of negotiations.
- Give negotiators proper authority to bargain.
- Avoid unnecessary delays in beginning negotiations and in conducting them.
- Insist on offering facts and arguments.
- Make plenty of proposals to enhance the opportunities to find compromises.
- Be prepared to compromise.
- Be prepared to get results gradually.
- Preserve good manners and keep discussions focus on relevant issues.
7.1.5 GUIDELINES ON EQUAL REMUNERATION

Train supervisors and managers to avoid wage discrimination
- Employers need to make sure that all supervisors and managers receive proper training on how to avoid wage discrimination and make employment decisions based on legitimate and nondiscriminatory reasons.

Make decisions based on skill and performance
- Employers, supervisors and human resource managers need to make sure that all employment decisions regarding promotions, raises, bonuses, etc., are based on legitimate and nondiscriminatory factors such as skill, merit and performance, rather than an employee's membership in a protected class. Employers should avoid wage differentials based on sex, race, national origin or any other protected class unless they can be justified by legitimate and nondiscriminatory reasons.

Provide timely and effective performance evaluations
- Employers should aim to provide employees with yearly or biannual performance evaluations. In doing so, employers should clearly set out the employer's expectations and show the employees how they are meeting them or not meeting them.

7.1.6 GUIDELINES ON DISCRIMINATION AT THE WORKPLACE

- Develop a set of qualifications and prerequisites before you start hiring for a job. Judge the candidates based on these professional parameters. If you fear a colleague is discriminating in their choices, ask for a third party to judge the candidates without seeing their names or faces.
- Set non-negotiable equal pay for new hires (based on their degrees). This stops discrimination regarding salary offers and accounts for the fact that women are on average more hesitant to negotiate their salaries.
- Develop a clear harassment and discrimination policy at work. Post it in a common location and add it to your employee handbook. Place a human resources manager in charge of complaints.
- Take complaints very seriously. No one should be told to "stop being so sensitive" if they are being mistreated at the office.
- Provide staff training on discrimination or harassment. Make it clear that there is a zero tolerance policy when it comes to discrimination. Announce how complaints and disciplinary action will be handled.
- Trainings should include topics of gender, race, disability, religion, and age.

Other steps to be considered:
- The labor inspectorate has proved largely ineffective. Pressure the Government to improve the monitoring of factory working conditions. Third-party monitoring by programs such as “Better Work”/“Better Factories” can establish useful mechanisms for establishing non-discriminatory working conditions.
- Be more receptive to learning and request more knowledge transfer from audits.
  o Audits should combine finding violations with informally counseling the factory on how to improve conditions based on their own experience in the audit field.
  o Do not coach or threaten your own workers ahead of factory visits by auditors. Effective refusal to allow entry will be reported to the corresponding authority.
  o Accept unannounced inspections and be willing to learn.
- Liaise with a local civil society organization (CSO) to create a direct mechanism to report labor rights violations to the third-party organization.
  - Make factory reports available to workers individually and unions, so they can verify whether the reports accurately portray the working conditions in the given factory.
  - Create a database for brands that periodically updates information on the process of improvement in factories.

7.1.7 GUIDELINES ON MINIMUM AGE

Review national laws regarding child labor
- Obtain information from the website of the Ministry of Labor on the national law regulating employment of children, regarding the minimum age for employment and a hazardous child labor list.
- Obtain information on national policies and programs about child labor from the Ministry of Labor and from local government authorities.
- Consult your national employers’ organization or your trade association for information about specific buyers’ requirements regarding child labor.
- Obtain information from ILO experts on child labor at your country’s ILO office or on the ILO’s website.

Meet your buyers’ requirements
- Comply with industry codes, local law or international standards – whichever provides the higher protection for children.
- Ensure adolescents are employed in decent conditions (e.g. decent pay, job contract, working hours, etc.).

Check the age of your employees by applying the following methods:
- Medical examination prior to employment;
- Multiple written documents and affidavits;
- Culturally sensitive interviews with employees and applicants who appear to be too young;
- End of compulsory schooling certificate for those above minimum age;
- School enrolment certificate for those in light work.

Identify hazardous work
- Obtain the list of hazardous work. If you are unclear how the law applies to your company, you can consult national employers’ organizations and labor inspectors.
- If a list of hazardous activities is not available, you can consult the ILO website, medical personnel or safety and health experts. Guidance can be found in ILO’s Recommendation 190 supplementing the Worst Forms of Child Labor Convention, 1999 (No. 182).
- Consult with your workforce to understand what hazardous work is in your workplace.
- Consider pursuing a workplace safety and health risk assessment to determine hazards at the workplace.
Carry out workplace risk assessment
- Identify the hazards by walking around the workplace, asking workers for their opinion.
- Identify who might be harmed and how (e.g. all workers in the factory risk lung diseases with machine operators at higher risk of exposure, and dust can cause cancer).
- Evaluate risks by identifying them and deciding on safety and health risk control measures. List what is already in place and focus on practical, achievable measures (e.g. sweep up dust regularly; install washing and shower facilities; provide disposable dust masks; organize training).
- Record the name of the person responsible for putting each control measure into action and the date when it should be completed. Prioritize actions.
- Record findings, monitor and review the risk assessment. Update it when necessary.

Remove children from hazardous work.
Reduce the hours for children under the minimum age.

7.1.8 GUIDELINES ON COMPLIANCE WITH REGULAR EMPLOYMENT
To comply with industry codes, local law or international standards, make sure the following documents are available:
- Provide original copy of working contract to the employee and keep the photo copy in the personal file.
- Provide Photo ID card to all workers.
- Maintain personal file for all workers.
- Maintain service book for all workers.
- Update employment history i.e. promotion record, wage increment, leave status, disciplinary action (if any) to the service book on a regular basis.

7.1.9 GUIDELINES ON WORKING HOURS
The basic documents to comply with the regulations on working hours are as follows:
- Policy and procedures on working hours and overtime (a sample policy is outlined below)
- In and out-time record/time card
- Piece rate record
- Wage record
- Pay slip
- Production record

Below is a sample policy and procedures on working hours:
Policy
- The company informs all prospective employees, at the time of hiring, the policies and procedures and legal limitations on the maximum number of hours of work per day, week, and months, both regular and overtime, and the maximum number of consecutive days they can legally be required to work.
- The company ensures the hours worked each day and the days worked each week; do not exceed the legal maximum.
- The company provides one day off after every six consecutive days
- The company implements a regular workday of 08 hours.
- The company has an organized (punch) system of record keeping.
- The company defines the regular overtime requirements, as maximum-2 hours/day.
- Under no circumstances the company allows work over 6 days in a week and 2 (two) hours of overtime.
- The company allows employees legally required or contractually agreed rest breaks and identifies whether they are compensated.
- The company defines the normal workweek as 06 days from Saturday to Thursday and designates days off for rest as Friday.
- The company designates days off for legal holidays as per as per Bangladesh Labor Law and government gazette notification.

Procedures
- Normal Working Hours
  o The company maintains the following working hours:
  o Saturday to Thursday: 08:00 am - 07:00 pm. (including 2 hours overtime)
  o One hour break for lunch and prayers. (1.00 pm to 2.00 pm)
  o The Manager Compliance and Personnel is responsible for ensuring all prospective employees are made aware at the time of hiring of legal limitations and the company expectations pertaining to hours of work and days of rest.
  o Compliance and Personnel / Departmental Heads ensure that under normal circumstances, no worker spends more than 8 hours at work per day or 48 hours per week.
  o Every employee, when enters into factory premises, he/she use time card is maintained by timekeeper, which signed by each worker.

- Overtime Hours
  o Saturday - Thursday: 5 pm - 7pm (2 hours maximum)

- Overtime working:
  o Whenever a Department Head feels the need to go for overtime production in order to meet the production/shipment targets, he/she fills the overtime sheet by identifying the persons for overtime, duration of overtime and activity to be done during overtime and send to Managing Director for approval.
  o Manager, Administration and Compliance verify the time of each worker identified on the time cards.

- Compensation of overtime working:
  o Compliance and Personnel make sure that overtime payments are made at double rate with the monthly basic salary of the employee.

- Willful Overtime by workers.
The Compliance and the Personnel strictly monitor the willingness of all those employees who usually do the overtime activity.

Responsibility and authority
- The Managing Director, Manager, Administration, Compliance and HR are responsible for implementation of this policy.

Responsibilities
- The Personnel and the Compliance along with all relevant individuals, including all individual responsible for the hiring process, on the company's requirement to ensure all prospective employees are made aware at the time of hiring of legal limitations and the company’s expectations pertaining to the maximum number of hours of work per day, week and month, and the maximum number of consecutive days the employees will be expected to work.
- The Compliance and the Personnel are responsible for posting the legal maximum regular and overtime hours and days of rest information in the native language (s) of the company’s workers and management personnel.
- The Compliance and the Personnel are responsible for communicating, deploying and monitoring the Practice of ensuring all work is performed in the factory and employees do not work more than regular or overtime hours per day, week or month.

Communication and training
- The Compliance and the Personnel will train the designated persons to ensure the compliance of updated laws.
- Training records are maintained according to training document.

7.1.10 GUIDELINES ON WAGES AND BENEFITS

The following steps are to be taken to meet legal regulations on wages and benefits:
- Develop a policy on wages and benefits (see sample policy below).
- Minimum wage, overtime premiums and social benefits must be displayed and understood.
- Determine a responsible person to monitor this system.
- Prepare and keep payroll records for at least 1 year.
- Issue wage slips including all calculations in the local language.
- Identify the kinds of wage payments (cash or cheque) and the basis (monthly, hourly, piece rate).

Make sure the following documents are available:
- Policy and procedures on wages and benefits
- Payroll record
- Pay slip in local language
- Piece rate wage records
- Other benefit records (group insurance, provident fund) if any
- Leave records
A sample policy on wages and benefits can be found below:

**Policy**
- The company pays at least the total minimum compensation required by local laws, including all mandated wages, allowances and benefits to its workers and staff.
- The company does not pay less than the minimum wage prescribed by the local law to unskilled workers. To other category of workers, wages paid will be in line with those prevailing in the industry.
- The company publishes legal minimum wage rates, overtime rates, benefit policies, and additional payment information in the native language.

**Procedures**

**General**
- Under supervision of Personnel, Compliance and Accounts section ensure the compliance against this policy.
- The company makes sure that salaries of employees are not deducted as a matter of punishment imposed from any superior to subordinate.

**Salary**
- Company makes sure that all the salaries of permanent employees are in accordance with the labor law and disbursed through an adequate procedure on given schedule.

**Paydays**
- Salary will be paid within the 7th working day of the month. Each salary will include earnings for all work performed through the end of the previous payroll period.
- Overtime will be paid on the same day when salary is paid.
- In the event that a regularly scheduled payday falls on a day off such as a holiday, employees will be paid on the first day of work following the regularly scheduled payday in working time.
- Salary of the workers includes all allowances as admissible under the law.

**Overtime**
- OT work will be ensured and payment calculation for OT work will be double the rate of the wage.

**Responsibility and authority**
- Manager, Admin & Compliance, Accounts Manager, are responsible for implementation of this policy.

**Responsibilities**
- Communicate policy on minimum wages, overtime compensation rates, legally mandated benefits and additional payments to all employees.
- Organize meetings and training programs to ensure that the policy is properly communicated and understood.

**Communication & Training**
- Manager Compliance and Personnel will train the designated persons to ensure the compliance of updated laws wherever required.
- Training records are maintained according to training document.
7.2 OCCUPATIONAL SAFETY AND HEALTH (OSH)

7.2.1 GUIDELINES ON HEALTH AND SAFETY COMMITTEES

Steps to be taken to form a safety committee:
- The representatives of the safety committee should have equal representation from the owner/management and from the workers.
- The safety committee is comprised by:
  - One President
  - One Vice President
  - One Member Secretary and
  - Other members of the committee.
- All members unanimously select a Member Secretary in the first meeting of the committee.
- The committee will distribute the responsibility of different departments/sections related to occupational health and safety upon its members.
- The committee shall nominate its President. The owner or Managing Director of the industry shall nominate their representative(s) for the committee. The Vice President and the representative(s) on behalf of the workers shall be nominated through joint bargaining of Collective Bargaining Agent (CBA) or by the workers’ representatives of the “Participation Committee”.
- The Representative for joint bargaining shall nominate a Workers’ Representative from the workers working in each section, department, floor, storehouse and unit separately. Then, the nominated/elected Representative shall be included in the Safety Committee.
- If there is no Representative for joint bargaining in any institute/factory, the Representatives included in the committee on behalf of the workers shall nominate the Workers’ Representative(s) of the “Participation Committee” for the Safety Committee, from the workers who are employed in various sections, departments, floor, storehouse and units.
- Within 7 days of the nomination of Workers’ Representative, the Owner shall nominate his/her representative. Within 15 days of this type of nomination, the President shall call the first meeting of the Safety Committee, having discussion with the Vice-President and other members.
- The President shall inform the Inspector General about the formation of the Safety Committee through written form within 10 days of holding the first meeting.
- If there are at least one-third of female workers in any institute, at least one third of the Workers’ Representative must be nominated from female.

Vacancy of the posts in Safety Committee and filling up the vacancy:
- After the formation of the committee, if there is an announcement of vacancy in the Member posts due to resignation, retirement, termination of jobs, death of a Member, the vacancies can be filled up, having support from minimum two-thirds of the Members of the Safety Committee;
provided that the Workers’ Representative shall be nominated from the workers and the Owner’s Representative shall be nominated by the Owner.

- The Inspector General or the Inspector authorized by him/her must be informed if any change occurs in the posts of Safety Committee.

**Term of Safety Committee**

The term of the Safety Committee shall last for 2 years after holding the first meeting.

**Special rule**

Factories, industry units or group of institutes with less than 50 employees work, can follow this code in order to ensure occupational safety and health.

---

### 7.2.2 GUIDELINES ON EMERGENCY AND EVACUATION PLANS

The following steps are to be taken to implement emergency and evacuation plans:

**Prepare policies and procedures**

1. Objectives and goals of the emergency response plan
   - **Objectives**
     - Minimize incidents through preventive measures.
     - Provide effective means to limiting the size and consequences incidents through effective emergency equipment and procedures.
     - Utilize insurance to safeguard against large, unforeseen incidents/accidents.
   - **Goals**
     - Primary goal – people: Protection from fatal injuries and prevention of loss of lives.
     - Secondary goal – property: Prevention of property damage.
     - Tertiary goal – operations: Protection of business operations.
2. Comply with statutory legal fire safety requirements.
3. Continuous monitoring and reviewing the emergency response system to ensure effectiveness.
4. Setting targets for continuous and continual improvements.

**Carry out risk assessments**

Risk assessments are one of most important aspect to develop an effective emergency response plan. There are certain steps to be followed to conduct the risk assessments.

- Types of potential emergency situations that could occur in the factory, for example
  - Fire
  - Flood or water logging
  - Earthquake
o Large chemical spillage
o Explosion in boiler
o Leakage in gas pipe lines, etc.
- Identify the hazards that could cause the emergency situation
  o Potential sources of hazards (except for earthquake and flood)
  o Identify the potential risks to the people.
  o Special consideration must be given to people with physical disability, young workers, pregnant women, children (in the crèche)
- Evaluate, remove and mitigation measures of the potential hazards:
  o Evaluate the potential hazards and chances of occurring any emergency.
  o Based on the evaluation analyze the potential severity of the incidents.
  o Based on severity prioritize the preventive measures to reduce the hazards.
  o Provide warning systems to reduce the casualties.

Prepare an emergency response plan
The objective of an emergency response plan is to deal with any emergency situation and to ensure the employees know how to act and they are evacuated safely. Emergency plans should be developed based on the outcome of risk assessments.
An effective emergency response plan should include the following:
- Assign specific duties and responsibilities to be performed in case of an emergency situation.
- How to warn people if there is an emergency situation.
- What the production management/staff (i.e. supervisors, line chiefs) should do in case of an emergency situation.
- How the evacuation process is to be carried out.
- Where people should assemble after the evacuation process is complete and procedures for checking whether the premises have been fully evacuated or not.
- Identification of key escape routes and how people can gain easy access to the escape routes and evacuate safely.
- Contingency plan for evacuation in case one or more escape route cannot be used.
- Phased evacuation plans (where some areas are needed to be evacuated while other areas are alerted but not required to evacuate until later).
- Plans to deal with people once they evacuated the premises.

Carry out well-planned drills
A well planned and executed drill will help:
- Identify and recognize the weaknesses and gaps in evacuation strategies.
- Review and adapt the evacuation procedure.
- Assign responsible persons to act during an emergency situation.
- Identify the types of training required for both the workers and the emergency response team.
- Familiarize new employees with the evacuation procedures.
Evacuation drills should not be focused on fire only, but address other emergency situations, too.

Communication and training
To implement an effective emergency response plan, workers and staff must be aware of the emergency response procedure of the organization. The emergency response procedure should be communicated through posting the important subtract of procedures and also through regular and periodical trainings. Trainings can be conducted section wise; training contents should cover at least the following:

- What is an emergency situation?
- What types of emergencies are we dealing with?
- How do we act in case of an emergency?
- What are the potential sources of an emergency?
- Who to report to in case an unexpected situation is observed?
- What are the objectives and purpose of the evacuation plans?
7.2.3 GUIDELINES ON LIGHTING

Table 8: Monthly maintenance checklist

<table>
<thead>
<tr>
<th>Checking parameters</th>
<th>Date</th>
<th>Departments/sections</th>
<th>Signature of responsible person</th>
<th>Verified by responsible person (maintenance department)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust &amp; dirt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working conditions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lumen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wiring</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loose connection</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 9: Corrective actions and follow-up on lighting maintenance

<table>
<thead>
<tr>
<th>Section</th>
<th>Date</th>
<th>Checking parameters</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
<th>Corrective Action</th>
<th>Timeframe for completion</th>
<th>Responsible</th>
<th>Status</th>
<th>Special notes (if required)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust &amp; dirt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working conditions</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Lumen</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wiring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loose connections</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signature of responsible person</th>
<th>Approved by</th>
<th>Verified by</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7.2.4 GUIDELINES ON GOOD HOUSEKEEPING

A workplace is safer when it is clean and sanitary. Housekeeping can eliminate workplace hazards.

Poor housekeeping can be a cause of accidents because of:
- Loose objects on floors, stairs and platforms
- Being hit by falling objects
- Slipping on greasy, wet or dirty surfaces
- Cutting, puncturing, or tearing the skin of hands or other parts of the body on projecting nails, wire or steel strapping

Good housekeeping is important in order to:
- Allow for a quick emergency response
- Reduce ignition hazards
- Ensure safe and rapid emergency evacuation
- Reduce the amount of flammable and combustible materials

Effective housekeeping is an ongoing daily operation; occasional clean-ups are insufficient in preventing accidents.

5S is a method to organize the workplace according to the 5 phases which are named after Japanese terms (Seiri, Seiton, Seiso, Seiketsu, Shitsuke) and can be translated into English as follows: sort, set in order, shine, standardize, and sustain. 5S introduces standard operating procedures that ensure efficient, clean and safe working.

**Figure 3: 5S and housekeeping**

### 7.2.5 GUIDELINES ON ELECTRICAL SAFETY

Electrical short circuits are one of the main reasons for fire incidents in factories. To reduce the hazards of fire incidents, periodical checking of electrical wirings and installations is very important. For an effective and systematic monitoring of electrical safety, the following steps should be followed:

- Assign duties and responsibilities to the maintenance department or certified electrician(s).
- Develop and implement section wise checklists for checking the electrical wiring and installation.
- Checking could be done weekly or biweekly, depending upon the operational activities and size of factories.
- Develop and implement corrective action procedures to ensure immediate action can be taken to resolve any hazard observed related to electrical installations.

An example of the parameters to be checked is given below.

*Table 10: Electrical maintenance checklist*

<table>
<thead>
<tr>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Date</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>Checking parameters</td>
</tr>
<tr>
<td>Electrical contacts are not freely accessible or bare?</td>
</tr>
<tr>
<td>Electrical installations are not mounted close to open blades or lie loosely on tables.</td>
</tr>
<tr>
<td>Electrical installations cannot make their surrounding electrically live?</td>
</tr>
<tr>
<td>High voltage/danger signs displayed wherever relevant, e.g. to the main power connection, or to the main fuse box.</td>
</tr>
<tr>
<td>Housings of electrical junction boxes, electric switchgear/electrical control rooms and fuse boxes made of flameproof material, lockable and available only for authorized personnel.</td>
</tr>
<tr>
<td>Electrical installations installed in a fixed and secured manner, so that they cannot fall down or that people’s bodies or limbs can be caught in them.</td>
</tr>
<tr>
<td>Power sockets, switches, lamp mounts etc. function properly and are they in good condition.</td>
</tr>
</tbody>
</table>

**Signature of responsible person**

**Approved by**

**Verified by**

### 7.2.6 GUIDELINES ON FIRE SAFETY

The following guidelines are conducive to improving the fire safety management:

1. Define specific roles and responsibilities for all levels across the organization.
2. Develop upstream measures.
3. Implement a process that holds management and supervisors accountable for being actively involved in ensuring fire safety.
4. Implement incentives for safety performance and apply disciplinary measures (in line with the law) for poor safety performance.
5. Ensure that all the members of the safety committee understand their assigned roles and responsibilities, have a defined charter, and function properly.
6. Provide multiple paths for employees to make suggestions, concerns and problems regarding fire safety.
7. Implement an investigation system to ensure that investigations are conducted on a timely basis, neutral, complete and effective.
The following checklist serves as an example to ensure fire safety:

**Table 11: General fire safety checklist**

<table>
<thead>
<tr>
<th>Section</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checking parameters</td>
<td>Yes</td>
</tr>
<tr>
<td>All escape routes are free from any obstruction.</td>
<td>☐</td>
</tr>
<tr>
<td>All escape routes are clearly marked with signs</td>
<td>☐</td>
</tr>
<tr>
<td>All emergency exits open outwards.</td>
<td>☐</td>
</tr>
<tr>
<td>Emergency staircases &amp; exits are in good conditions &amp; free from obstruction.</td>
<td>☐</td>
</tr>
<tr>
<td>Functioning fire alarm system installed, which includes smoke sensors and alarm devices.</td>
<td>☐</td>
</tr>
<tr>
<td>Visible flashing-light alarm in noisy areas where employees wear ear protection.</td>
<td>☐</td>
</tr>
<tr>
<td>Evacuation plot plan is available at the production floor in eye sight.</td>
<td>☐</td>
</tr>
<tr>
<td>All personnel in the workplace familiar with emergency evacuation procedures.</td>
<td>☐</td>
</tr>
<tr>
<td>Emergency exits are not locked or blocked</td>
<td>☐</td>
</tr>
<tr>
<td>Emergency lights are in working conditions.</td>
<td>☐</td>
</tr>
</tbody>
</table>

Signature of responsible person | Approved by | Verified by |

---

### 7.2.7 GUIDELINES ON MACHINE SAFETY

An effective machine safety management requires a continuous monitoring system that ensures all machines are guarded with appropriate safety guards and are periodically preventively maintained.

The following steps are conducive to developing and implementing a continuous monitoring system:

- Develop and implement a machine safety checklist and a periodical machine maintenance schedule (see Table 12 and Table 13).
### Table 12: General machine safety checklist

<table>
<thead>
<tr>
<th>Checking parameters</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
<th>Corrective Action</th>
<th>Timeframe for completion</th>
<th>Responsible</th>
<th>Status</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine safety ensured (electricity connections, machine guards, needles, belts, etc.)?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Emergency switch off devices installed and functional which prevent hazard in case of equipment failure.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Visibly signs at hazardous machinery instructing personnel to wear protective clothing</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Operating instructions provided with relevant machines.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Fitted with protective devices to avoid injuries (e.g. eye guards/finger guards/needle guards/drive belt safety cover/ventilator guards/hand guards) are in good conditions.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Generator &amp; boiler are protected and not in the production area/production floor (separate room).</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Visible safety rules and operating instructions for the steam boilers.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>High-pressure safety relief valves installed in every steam boiler, and tested for proper functioning.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>High-pressure steam distribution network in good condition (leakage).</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Is it ensured that employees do not work close to high-pressure safety valves, leaks or pipes, which have been insulated on a makeshift basis, or other possible sources of danger?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signature of responsible person</th>
<th>Approved by</th>
<th>Verified by</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 13: Machine maintenance schedule (annual planning)

<table>
<thead>
<tr>
<th>Machines</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
</table>
- Assign duties and responsibilities to the responsible persons of the relevant department, i.e. maintenance department.

### 7.2.8 GUIDELINES ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The following rules provide guidance for the use of PPE at the workplace:

- PPE should be used as a last resort, whenever risks to health and safety cannot be adequately controlled in other ways.
- PPE must be properly assessed before use and must be fit for purpose.
- Maintenance and proper storage of PPE is important.
- PPE should be provided with instructions and trainings on how to use it safely.
- The best possible way to assess the required PPEs is to follow the instruction given in Material Safety Data Sheet (MSDS) or Safety Data Sheet (SDS) of the chemical substances.
- The section 8 of MSDS/SDS provides information on the required PPE for that specific chemical substance.
- Chemical manufacturers, suppliers or local agent can provide the information where the required PPE can be available.
- An initial assessment of the numbers of chemicals is required to understand the requirements of PPE.
- The initial assessment should be conducted as per the following:
  - Check and update the chemical inventory.
  - List out the numbers of chemicals used in productions.
  - Check the required PPEs specifications in the MSDS/SDS.
  - List out the numbers of employees working with chemical substances.
  - Calculate the types and quality of PPE required.

The following checklist helps you assess the need for Personal Protective Equipment (PPE):

**Table 14: PPE assessment checklist**

<table>
<thead>
<tr>
<th>Section</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td></td>
</tr>
</tbody>
</table>
### Name of chemicals used

<table>
<thead>
<tr>
<th>Requirement of PPE</th>
<th>Types of PPEs and specification</th>
<th>Name of employees</th>
<th>Quantity required</th>
<th>Suppliers details</th>
<th>Status</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signature of responsible person</th>
<th>Approved by</th>
<th>Verified by</th>
</tr>
</thead>
</table>

### 7.2.9 GUIDELINES ON VENTILATION

Inadequate ventilation has an adverse impact on the employees’ health and directly affects their productivity. In the tanning and leather footwear industry, insufficient ventilation causes long-term exposure to chemical substances.

To properly assess the ventilation, it is advisable to test the indoor air quality standards. Testing can be done from any Government recognized institutions such as Bangladesh University of Engineering & Technology (BUET), Department of Environment (DOE) or any other third party testing institute (i.e., TÜV, SGS, ITS, etc.).

Testing should be done at least once a year and should cover all the sections of the factory. Ambient air quality testing parameters are prescribed in The Environment Conservation Rules 1997 – amended in 2005, schedule 2.

**Table 15: Ambient air quality standards**

<table>
<thead>
<tr>
<th>Air quality parameters</th>
<th>Standards</th>
<th>Average time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>10 mg/m³</td>
<td>8 hours</td>
</tr>
<tr>
<td></td>
<td>40 mg/m³</td>
<td>1 hour</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>0.5 mg/m³</td>
<td>Annual average</td>
</tr>
<tr>
<td>Nitrogen Oxides (Noₓ)</td>
<td>100 mg/m³</td>
<td>Annual average</td>
</tr>
<tr>
<td>Suspended Particulate Maters (SPM)</td>
<td>200 mg/m³</td>
<td>8 hours</td>
</tr>
<tr>
<td>Sulfur Dioxide (SO₂)</td>
<td>80 mg/m³</td>
<td>Annual average</td>
</tr>
<tr>
<td></td>
<td>365 mg/m³</td>
<td>24 hours</td>
</tr>
</tbody>
</table>
Based on the outcome of the test result, the management can take appropriate and practical measures how to improve the air quality level and the ventilation system, such as:

- Eliminate the source of air pollutants: isolate the area.
- Provide additional exhaust fans to blow out the fumes and odor.
- Take administrative measures, such as opening up more windows during working hours for better air flow.
- Provide adequate and appropriate personal protective equipment.

### 7.2.10 GUIDELINES ON CHEMICAL MANAGEMENT

Consider the following areas for implementing an effective chemical management:

**Up-to-date chemical inventory list**

- Inventory must include all dyes and chemicals. For example: samples, cleaning chemicals, chemicals used in laboratory, etc.
- A comprehensive chemical inventory list should include the following information:

<table>
<thead>
<tr>
<th>1. Product name.</th>
<th>10. Function (what is function of the substance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Product number.</td>
<td>11. Confirmation of RSL/MRSL/REACH etc.</td>
</tr>
<tr>
<td>3. Manufacturer.</td>
<td>12. Confirmation reference (manufacture self-declaration letters, positive list, chemical test reports, etc.)</td>
</tr>
<tr>
<td>4. Manufacturer’s origin.</td>
<td>13. Availability of MSDS/SDS</td>
</tr>
<tr>
<td>5. Manufacturer’s contact details.</td>
<td>14. Date of MSDS.</td>
</tr>
<tr>
<td>6. Local agent/supplier name.</td>
<td>15. Comments</td>
</tr>
<tr>
<td>7. Local agent/supplier origin.</td>
<td></td>
</tr>
<tr>
<td>8. Local agent/supplier contact details.</td>
<td></td>
</tr>
</tbody>
</table>

- In order to prepare a comprehensive chemical inventory list the representatives from the following departments should be involved:
  - Top management
  - Procurement
  - Production
 Procurement of chemicals and dyes

It is always advisable to procure dyes and chemicals from trusted and reputed suppliers. Before procurement of any dyes and chemicals, the following questions must be considered:

- What are the least hazardous chemicals available on the market that can be used?
- What is the minimum quantity required?
- How should the chemicals be stored?
- Is the chemical previously used already available in the inventory?
- Is the chemical storage equipped to store the chemical?
- Is the personnel trained on handling the chemicals safely?

When procuring any dyes and chemicals, the following documents should be requested or checked:

- Suppliers’ self-declaration regarding conformance to standards (ZDHC, REACH, brand’s RSL/MRSL, etc.)
  - Restricted Substances Lists usually refer to substances that may not be legislated but have been identified as hazardous to the worker, consumer or the environment.
    - The **Manufacturing Restricted Substance List (MRSL)** defines chemicals which must not be present deliberately in formulations used in the production of goods.
    - The **Restricted Substance List (RSL)** gives the maximum limits allowed for each chemical as residue on the final product. The primary supplier must have a Due Diligence Procedure in place to ensure compliance with these limits.
    - Non-compliance with the requirements of the RSL may lead to actions, such as a fine or a return of the product to the manufacturer on the basis of a breach of contract.
  - The CADS list of restricted substances in shoes refers to substances that are prohibited or may be used in limited quantities only. CADS is an initiative of German footwear manufacturers and retailers, which aim to avoid hazardous substances in shoes and other leather products. The most recent CADS RSL is available on: [http://www.cads-shoes.com/Dokumente.html](http://www.cads-shoes.com/Dokumente.html)
  - The Nike RSL is available on: [http://www.nikeincchemistry.com/restricted-substance-list/](http://www.nikeincchemistry.com/restricted-substance-list/)
- The ZDHC MRSL is available on: http://www.roadmaptozero.com/fileadmin/pdf/MRSL_v1_1.pdf

- Positive lists of the manufacturers (if available)
- Certificate from a recognized certification body (Bluesign, etc.)
- Third party testing report (from recognized laboratory)
- Safety Data Sheet (SDS)
- Technical Data Sheet (TDS)

Storage, handling and disposal of chemicals

Basic storage guidelines:
- Storing should be done as per the guidelines provided in the SDS
- Maintain storage temperature as per SDS
- Store the chemicals away from direct sunlight and do not keep them in open space
- Segregate chemicals by incompatibility
- Store flammable chemicals and toxic chemicals separately
- Segregate dry from wet chemicals
- Check for special storage conditions (i.e. temperature, relative humidity, limited shelf life)

Basic handling guidelines:
- Identify the chemicals before using
- Review and understand the hazards before using chemicals (MSDS/label)
- Chemical substances should be dispensed to the employees by an authorized person
- Dispense of small units only
- All dispensing of chemicals should be recorded
- Chemicals at the workplace should be stored in small tanks which are visibly marked and cannot be damaged
- Only create what is needed to minimize disposal

Basic disposal guidelines:
- Chemicals should be disposed in a way so that disposed chemicals cannot contaminate the environment (e.g. soil, water etc.).

The following list (Table 16) shows the chemicals that are incompatible with each other and thus should not be stored together. Store similar chemicals together and away from other groups of chemicals that might cause reactions if mixed.
Table 16: Incompatible chemicals

<table>
<thead>
<tr>
<th>Chemical group</th>
<th>Incompatible chemicals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>Aldehyde, bases, carbonates, hydroxides, metals, oxidizers, peroxides, phosphates, xylene</td>
</tr>
<tr>
<td>Ammonia</td>
<td>Acids, aldehydes, amides, halogens, heavy metals, oxidizers, plastics, sulfur</td>
</tr>
<tr>
<td>Calcium oxide</td>
<td>Acids, ethanol, fluorine, organic materials</td>
</tr>
<tr>
<td>Carbon tetrachloride</td>
<td>Benzylic peroxide, ethylene, fluorine, metals, oxygen, plastics, silanes</td>
</tr>
<tr>
<td>Chromic acid</td>
<td>Acetone, alcohols, alkalis, ammonia, bases</td>
</tr>
<tr>
<td>Chlorine</td>
<td>Alcohols, ammonia, benzene, combustible materials, flammable compounds (hydrazine), hydrocarbons (acetylene, ethylene, etc.), hydrogen peroxide, iodine, metals, nitrogen, oxygen, sodium hydroxide</td>
</tr>
<tr>
<td>Chlorine dioxide</td>
<td>Hydrogen, mercury, organic materials, phosphorus, potassium hydroxide, sulfur</td>
</tr>
<tr>
<td>Flammable liquids</td>
<td>Ammonium nitrate, chromic acid, hydrogen peroxide, nitric acid, sodium peroxide, halogens</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>Strong oxidizing agents, caustics, strong alkalis, isocyanates, anhydrides, oxides, and inorganic acids. Formaldehyde reacts with hydrochloric acid to form the potent carcinogen, bis-chloromethyl ether. Formaldehyde reacts with nitrogen dioxide, nitromethane, perchloric acid and aniline, or peroxyformic acid to yield explosive compounds. A violent reaction occurs when formaldehyde is mixed with strong oxidizers.</td>
</tr>
<tr>
<td>Hydrogen peroxide</td>
<td>Acetaldehyde, acetic acid, acetone, alcohols, carboxylic acid, combustible materials, metals, nitric acid, organic compounds, phosphorus, sulfuric acid, sodium, aniline</td>
</tr>
<tr>
<td>Hydrogensulphide</td>
<td>Acetaldehyde, metals, oxidizers, sodium</td>
</tr>
<tr>
<td>Hypochlorites</td>
<td>Acids, activated carbon</td>
</tr>
<tr>
<td>Oxalic acid</td>
<td>Oxidizers, silver, sodium chlorite</td>
</tr>
<tr>
<td>Potassium permanganate</td>
<td>Benzaldehyde, ethylene glycol, glycerol, sulphuric acid</td>
</tr>
<tr>
<td>Sulfuric acid</td>
<td>Potassium chlorates, potassium perchlorate, potassium permanganate</td>
</tr>
</tbody>
</table>

Source: [http://www.roadmaptozero.com](http://www.roadmaptozero.com)

7.2.11 GUIDELINES ON NOISE MANAGEMENT

In order to manage the noise level, it is advisable to conduct a noise assessment test at least once a year. Depending on the test result, the factory can take proper action to control and manage the noise level. Possible ways of controlling the noise level are:

- Isolate the noise prone areas or machines (generators, boilers, etc.).
- Engineering/technical controls reduce, at source, the noise produced by a machine or a process.
- Use screens, barriers, enclosures and absorbent materials to reduce the noise.
- Re-design and lay out the workplace to create quiet workstations.
- Limit the time people spend in noisy areas.
- Providing personal protective equipment (ear plugs, ear drums etc.)

For noise level standards and permissible noise exposure levels, see Table 17 and Table 18:

**Table 17: Noise level standards (ECR 1997)**

<table>
<thead>
<tr>
<th>SL No.</th>
<th>Category of Areas</th>
<th>Standards determined at (dBA) unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Day (6 am – 9 pm)</td>
</tr>
<tr>
<td>a.</td>
<td>Silent zone</td>
<td>45</td>
</tr>
<tr>
<td>b.</td>
<td>Residential area</td>
<td>50</td>
</tr>
<tr>
<td>c.</td>
<td>Mixed area (mainly residential area, and also simulta-</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>taneously used for commercial and industrial purposes)</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>Commercial area</td>
<td>70</td>
</tr>
<tr>
<td>e.</td>
<td>Industrial area</td>
<td>75</td>
</tr>
</tbody>
</table>

**Notes:**
Areas up to a radius of 100 meters around hospitals or educational institutions or special institutions/establishments identified/to be identified by the Government are designated as Silent Zones where use of horns of vehicles or other audio signals, and loudspeakers are prohibited.

Source: Noise Pollution Control Rules 2006

**Table 18: Permissible noise exposure levels (OSHA)**

<table>
<thead>
<tr>
<th>SL No.</th>
<th>Duration per day in hours</th>
<th>Maximum sound level (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>90</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>92</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>95</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>97</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>9</td>
<td>1.5</td>
<td>102</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>105</td>
</tr>
<tr>
<td>8</td>
<td>0.5</td>
<td>110</td>
</tr>
<tr>
<td>9</td>
<td>0.25</td>
<td>115</td>
</tr>
</tbody>
</table>
7.2.12 GUIDELINES ON FIRST AID

Observe the following guidelines for an effective first aid management:

- Define clear procedures for first aid management and how to handle major illness and trauma.
- Assign duties and responsibilities to certified first aiders who maintain the first aid kits.
- Develop and implement a monitoring system to ensure that sufficient and non-expired first aid contents are always available in the first aid kits.
- In addition to the certified first aiders, train more employees from each section on basic first aid management to ensure that in case one certified first aider is absent, another can immediately take over the responsibilities. Internal first aid training must be conducted by a certified doctor or a medical practitioner.
- Special training should be provided to workers working at dangerous workplaces, such as handling with chemicals. Training content should be prepared by a certified doctor and while preparing the content, first aid measures mentioned in MSDS must be taken into consideration. MSDS section 4 describes the first aid measures.
- Even though it is not necessary for every factory to have an ambulance room or health care center, it is always better to have a MoU with a nearby hospital to ensure, in case of major accidents, the injured person(s) can be taken to the hospital without delay.
- Always post emergency contact details at prominent locations, such as entry and exit gates, notice boards, security sections, so they are easily visible.

Table 19 shows the first aid content which is required by law:

Table 19: First aid content

<table>
<thead>
<tr>
<th>SL No.</th>
<th>Contents</th>
<th>10 – 50 employees</th>
<th>More than 50 employees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Quantity</td>
<td>Quantity</td>
</tr>
<tr>
<td>1</td>
<td>Small sterile bandages</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>2</td>
<td>Packets of disinfected cotton, weighing 0.5 ounce each</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>Medium sized disinfected bandages</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>Large sized sterile bandages</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>Large sized sterile bandages that are used in case of burns</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>6</td>
<td>Bottle of Hibisol or Hexasol</td>
<td>1 (2 ounces)</td>
<td>N/A</td>
</tr>
<tr>
<td>7</td>
<td>Bottle of rectified Spirit</td>
<td>1 (2 ounces)</td>
<td>1 (4 ounces)</td>
</tr>
<tr>
<td>8</td>
<td>Instruments of clogging/stopping bleeding such as Turnicate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Roll of adhesive plaster</td>
<td>1</td>
<td>N/A</td>
</tr>
<tr>
<td>10</td>
<td>Pair of scissors</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Analgesic and antacid type of tablets, ointments used for burnt parts, ointments for eyes and antiseptic solution appropriate for surgery</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 20: First aid box checklist

<table>
<thead>
<tr>
<th>SL No.</th>
<th>Required material available</th>
<th>Yes</th>
<th>No</th>
<th>If no, what action is needed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Small sterile bandages</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Packets of disinfected cotton, weighing 0.5 ounce each</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Medium sized disinfected bandages</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Large sized sterile bandages</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Large sized sterile bandages that are used in case of burns</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Bottle of Hibisol or Hexasol</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Bottle of rectified spirit</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Instruments of clogging/stopping bleeding such as turnicate</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Roll of adhesive plaster</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Pair of scissors</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Analgesic and antacid type of tablets, ointments used for burnt parts, ointments for eyes and antiseptic solution appropriate for surgery.</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Packs of edible saline</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Copy of leaflet regarding primary aid</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Roller bandages, having breadth of 4 inches</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Roller bandages, having breadth of 2 inches</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Triangular bandages</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Bottle of alcoholic solution, bearing 2% of iodine</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Packs of safety pin</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Slices of bamboo or wood, which is used in case of bone fracture</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
</tbody>
</table>

Additional Questions

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>If no, what action is needed?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Is the first aid contents in good condition?  ☐ ☐
Trainings are critical to corporate success. Meaningful training positively impacts on areas such as product quality, employee motivations and performance, efficiency and profitability, among others. To design and develop effective trainings the factory should start with conducting a Training Needs Assessment (TNA) to:

- Identify the gap between current and required levels of knowledge, skill and attitude
- Identify what the general content of the training should be
- Prepare proper training plan
- Ensure appropriate and effective training is delivered
- Achieve organization’s training goals and objectives

Training Need Assessment (TNA)

Follow the steps outlined below to conduct a training need assessment (TNA):

- Prepare a draft outline of the training needs
- Conduct a survey
- Prepare a questionnaire for your target group
- Interview the target group
- Carry out the data analysis
- Prepare training contents
- Select competent trainers

Internal trainings are conducted based on the TNA to meet the objectives and targets of the organization. In order to improve effectiveness, internal training shall be conducted through different training modules. Possible training modules are outlined below:

- Induction training for newly joined employees
- On-the-job practical training
- Training on general social compliance issues
- Specific training on Occupational Safety and Health (OSH)
- Training on the rights and responsibilities of employees
- Training on general environmental compliance issues

The modules and topics can be adjusted depending on the requirements and necessities. New training modules shall be introduced depending on relevant requirements.
7.3 ENVIRONMENT GUIDELINES

7.3.1 ENVIRONMENTAL CLEARANCE CERTIFICATE

The procedure for applying for the Environmental Clearance Certificate is defined by The Environment Conservation Rules 1997, Section 7, pp. 4-8 (Bangla version):

7. Procedure for issuing Environmental Clearance Certificate. – (1) For the purpose of issuance of Environmental Clearance Certificate, the industrial units and projects shall, in consideration of their site and impact on the environment, be classified into the following four categories:-

(a) Green;
(b) Orange – A;
(c) Orange – B; and
(d) Red.

(2) Industries and projects included in the various categories as specified in sub-rule (1) have been described in Schedule – 1.

(3) Environmental Clearance Certificate shall be issued to all existing industrial units and projects and to all proposed industrial units and projects falling in the Green Category.

(4) For industrial units and projects falling in the Orange – A, Orange – B and Red categories, firstly a Location Clearance Certificate and thereafter an Environmental Clearance Certificate shall be issued:

Provided that the Director General may, without issuing a Location Clearance Certificate at the first instance, directly issue Environmental Clearance Certificate if he, on the application of an industrial unit or project, considers it appropriate to issue such certificate to the industrial unit or project.

(5) The entrepreneur of the concerned industrial unit or project shall apply to the concerned Divisional Officer of the Department in Form-3 along with appropriate fees as specified in Schedule – 13.

(6) The following documents shall be attached with an application made under sub-rule (5):-

(a) For Green Category:
(i) general information about the industrial unit or project;
(ii) exact description of the raw materials and the manufactured product; and
(iii) no objection certificate from the local authority;

(b) For Orange – A Category:
(i) general information about the industrial unit or project;
(ii) exact description of the raw materials and the manufactured product;
(iii) no objection certificate from the local authority;
(iv) process flow diagram;
(v) Layout Plan (showing location of Effluent Treatment Plant);
(vi) effluent discharge arrangement;
(vii) outlines of the plan for relocation, rehabilitation (if applicable);
(viii) other necessary information (if applicable);
(c) For Orange – B Category:

(i) report on the feasibility of the industrial unit or project (applicable only for proposed industrial unit or project);

(ii) report on the Initial Environmental Examination of the industrial unit or project, and also the process flow diagram, Layout Plan (showing location of Effluent Treatment Plant), design of the Effluent Treatment Plant (ETP) of the unit or project (these are applicable only for a proposed industrial unit or project);

(iii) report on the Environmental Management Plan (EMP) for the industrial unit or project, and also the Process Flow Diagram, Layout Plan (showing location of Effluent Treatment Plant), design of the Effluent Treatment Plant and information about the effectiveness of the ETP of the unit or project, (these are applicable only for an existing industrial unit or project);

(iv) no objection certificate from the local authority;

(v) emergency plan relating adverse environmental impact and plan for mitigation of the effect of pollution;

(vi) outline of the relocation, rehabilitation plan (where applicable);

(vii) other necessary information (where applicable).

(d) For Red Category:

(i) report on the feasibility of the industrial unit or project (applicable only for proposed industrial unit or project);

(ii) report on the Initial Environmental Examination (IEE) relating to the industrial unit or project, and also the terms of reference for the Environmental E.C.R. ’97 Impact Assessment of the unit or the project and its Process Flow Diagram; or Environmental Impact Assessment report prepared on the basis of terms of reference previously approved by the Department of Environment, along with the Layout Plan (showing location of Effluent Treatment Plant), Process Flow Diagram, design and time schedule of the Effluent Treatment Plant of the unit or project, (these are applicable only for a proposed industrial unit or project);

(iii) report on the Environmental Management Plan (EMP) for the industrial unit or project, and also the Process Flow Diagram, Layout Plan (showing location of Effluent Treatment Plant), design and information about the effectiveness of the Effluent Treatment Plan of the unit or project (these are applicable only for an existing industrial unit or project);

(iv) no objection certificate of the local authority:

(v) emergency plan relating adverse environmental impact and plan for mitigation of the effect of pollution;

(vi) outline of relocation, rehabilitation plan (where applicable);

(vii) other necessary information (where applicable);

(7) If an application for an Environmental Clearance Certificate for an industrial unit or project of Green Category is made under sub-rule (5) along with the relevant documents specified in sub-rule (6), then, within 15 days of the receipt of the application, the certificate shall be issued or the application shall be rejected mentioning appropriate reason for such rejection.

(8) If an application is made under sub-rule (5) along with the relevant documents specified in sub-rule (6), then in the case of an Orange- A Category industrial unit or project, within thirty days of the receipt of the application, and in the case of an Orange-B or Red Category industrial unit or project, within sixty days of the receipt of the application, a Location Clearance Certificate shall be issued or the application shall be rejected mentioning appropriate reasons for such rejection.

(9) Upon receiving Location Clearance Certificate under Sub-rule (8), the entrepreneur–

(a) may undertake activities for land development and infrastructure development;
(b) may install machinery including ETP (applicable for industrial units or projects of Orange-A and Orange-B Category only);

(c) shall apply for Environmental Clearance Certificate upon completion of the activities specified in clauses (a) and (b), and, without the Environmental Clearance Certificate, shall not have gas line connection, and shall not start trial production in the industrial unit, and in other cases shall not operate the project (applicable for Orange-A and Orange-B Category industrial units or projects only);

(d) shall submit for approval of the Department the EIA report prepared on the basis of program outlined in IEE Report along with time schedule and ETP design (applicable only for Red Category industrial units or projects);

(10) Where an application is received under clause (c) of sub-rule (9), Environmental Clearance Certificate shall, within fifteen working days in case of industrial unit or project of Orange-A Category and within 30 working days in case of industrial unit or project of Orange-B Category, be issued to the entrepreneur or the application shall be rejected mentioning appropriate reasons.

(11) Where an application is received under clause (d) of sub-rule (9) in relation to an industrial unit or project of Red Category, the EIA report along with the time schedule and ETP design shall, within sixty working days, be approved or the application shall be rejected mentioning appropriate reasons;

(12) After EIA is approved under sub-rule (11), the entrepreneur –

(a) may open L/C for importing machineries which shall include machineries relating to ETP; and

(b) shall, after installation of ETP, apply for Environmental Clearance Certificate without which he shall not have gas line connection and shall not start trial production in case of an industrial unit, and in other cases shall not start operation of the project.

(13) Where an application under clause (a) of sub-rule (12) is received in relation to an industrial unit or project of Red Category, Environmental Clearance Certificate shall be granted to the concerned entrepreneur within thirty working days, or the application shall be rejected mentioning appropriate reasons.

(14) Where an application is received under sub-rule (5) along with the documents specified in sub-rule (6), Environmental Clearance Certificate shall, within thirty working days in case of an industrial unit or project of Orange-A Category and within sixty working days in case of Orange-B and Red Category, be issued to the concerned entrepreneur or the application will be rejected mentioning appropriate reasons.

7.3.2 WASTE MANAGEMENT

The following guidelines serve as an example for a waste management policy and are expected to lead to both environmental and economic benefits:

Waste management planning

Characterize waste according to composition, source, types of waste produced, generation rates, or according to local regulatory requirements. Effective planning and implementation of waste management strategies should include:

- Review of new waste sources during planning, siting, and design activities, including during equipment modifications and process alterations, to identify expected waste generation, pollution prevention opportunities, and necessary treatment, storage, and disposal infrastructure.

- Collection of data and information about the process and waste streams in existing facilities, including characterization of waste streams by type, quantities, and potential use/disposition.

- Establishment of priorities based on a risk analysis that takes into account the potential EHS risks during the waste cycle and the availability of infrastructure to manage the waste in an environmentally sound manner.

- Definition of opportunities for source reduction, as well as reuse and recycling.

Waste prevention
Processes should be designed and operated to prevent, or minimize, the quantities of wastes generated and hazards associated with the wastes generated in accordance with the following strategy:

- Substitute raw materials or inputs with less hazardous or toxic materials, or with those where processing generates lower waste volume.
- Apply manufacturing process that convert materials efficiently, provide higher product output yields, including modification of design of the production process, operating conditions, and process controls.
- Introduce good housekeeping and operating practices, including inventory control to reduce the amount of waste resulting from materials that are out-of-date, off specification, contaminated, damaged, or excess to plant needs.
- Institute procurement measures that recognize opportunities to return usable materials such as containers and which prevents the over ordering of materials.
- Minimize hazardous waste generation by implementing stringent waste segregation to prevent the commingling of non-hazardous and hazardous waste to be managed.

Recycling and reuse

The total amount of waste may be significantly reduced through the implementation of recycling plans, which should consider to:

- Evaluate waste production processes and identify potentially recyclable materials.
- Identify and recycle products that can be reintroduced into the manufacturing process or industry activity at the site.
- Investigate external markets for recycling by other industrial processing operations located in the neighborhood or region of the facility (e.g., waste exchange).
- Establish recycling objectives and track waste generation and recycling rates.
- Provide training and incentives to employees in order to meet objectives.

Treatment and disposal

If waste materials are still generated after the implementation of feasible waste prevention (reduction, reuse, recovery and recycling measures), waste materials should be treated and disposed of, avoiding potential impacts to human health and the environment. Selected management approaches should be consistent with the characteristics of the waste and local regulations, and may include one or more of the following:

- On-site or off-site biological, chemical, or physical treatment of the waste material to render it non-hazardous prior to final disposal (i.e. urban/common effluent treatment plant).
- Treatment or disposal at permitted facilities specially designed to receive the waste. Examples include: composting operations for organic non-hazardous waste; properly designed, permitted and operated landfills or incinerators designed for the respective type of waste; or other methods known to be effective in the safe, final disposal of waste materials such as bioremediation.

Hazardous waste management

Hazardous waste should always be segregated from non-hazardous waste. If generation of hazardous waste cannot be prevented through the implementation of the above general waste management practices, its management should focus on the prevention of harm to health, safety, and the environment, according to the following additional principles:

- Understanding potential impacts and risks associated with the management of any generated hazardous waste during its complete life cycle.
- Ensuring that contractors handling, treating, and disposing of hazardous waste are reputable and legitimate enterprises, licensed by the relevant regulatory agencies and following good international industry practice for the waste being handled.

- Ensuring compliance with applicable local and international regulations.

In addition to the recommendations for treatment and disposal applicable to general waste, the following issues specific to hazardous waste should be considered:

- In the absence of qualified commercial or government-owned waste disposal operators, facilities generating waste require to:
  - Install on-site waste treatment or recycle processes.
  - Construct facilities that will provide for the environmental sound long-term storage of waste on-site or at an alternative appropriate location up until external commercial options become available.

### Waste storage

Waste is stored in a manner that prevents the mixing or contact between incompatible wastes, and allows for inspection between containers to monitor leaks or spills. Examples include sufficient space between incompatibles or physical separation such as walls or containment curbs:

- Store in closed containers away from direct sunlight, wind and rain.
- Secondary containment systems should be constructed with materials appropriate for the wastes being contained and adequate to prevent loss to the environment.
- Secondary containment is included wherever liquid wastes are stored in volumes greater than 220 liters.
- The available volume of secondary containment should be at least 110 percent of the largest storage container, or 25 percent of the total storage capacity (whichever is greater), in that specific location.
- Provide adequate ventilation where volatile wastes are stored.

Employees require specific training in handling and storage of hazardous waste:

- Provide information on chemical compatibility to employees, including labelling each container to identify its contents.
- Limit access to hazardous waste storage areas to employees who have received proper training.
- Clearly identify (label) and demarcate the area, including documentation of its location on a facility map or site plan.
- Conduct periodic inspections of waste storage areas and document the findings.
- Prepare and implement spill response and emergency plans to address their accidental release.
- Avoid underground storage tanks and underground piping of hazardous waste.