



Employment Promotion Programme (EPP)

Manufacturing Industries at a Glance: **Plastic & Rubber, and Chemicals & Cosmetics**

As a federally owned enterprise, GIZ supports the German government in achieving its objectives in the field of international cooperation for sustainable development.

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Manufacturing Industries at a Glance:
Plastic & Rubber, and Chemicals & Cosmetics

Acknowledgement

The **Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH - Employment Promotion Programme (EPP)** has cooperated with the Ministry of Labour's (MoL) Occupational Safety and Health (OSH) Directorate to design and introduce a Risk Management and Assessment Framework that is available on application to companies in Jordan's private sector. This cooperation predicts a possible impact that will be seen in a reduced number of injuries and an improved working environment in the private sector.

The development of a Risk Management and Assessment Framework required a baseline data on the status of OSH in the private sector in Jordan. Thus, this paper presents a study that was conducted to assess current occupational safety and health practices, and the number of work injuries and accidents in the plastic & rubber, chemicals & cosmetics sectors. It also outlines the reasons and factors behind work injuries and work accident, in addition to the impact on business costs and operation in the two mentioned sectors. The study also presents an assessment on employers' existing policies and strategies on risk assessment and health protection that resulted in expanding the understanding of the

gaps and opportunities in the implementation of risk management.

On this premise, GIZ-EPP would like to offer sincere thanks to MoL-OSH directorate team members: Eng. Najah Abu Tafesh, Head of OSH Directorate; Eng. Eman Al Ja'fari, Head of OSH Inspection Department; Eng. Eman Alabdallat, Head of Work-related Incidents and Injuries Department, who have actively provided their professional input and direction into the assessment design and analysis of the results. We would also like to extend our appreciation to the Amman Chamber of Industry for supporting this study. Further, this assessment could not have been done without the involvement of the private sector companies, and thus we appreciate their cooperation in taking up the survey, that helped us to understand the risks they face, and the best practices they follow to mitigate them.

Finally, the management of GIZ Employment Promotion Programme (EPP) appreciates and acknowledges the extensive effort of Talal Abu Ghazaleh & Co. Consulting (TAG-Consult) in conducting the study, analysing the data, and offering their consultation in the domain of OSH.

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About GIZ & Employment Promotion Programme (EPP)


About GIZ

GIZ provides services in the field of international cooperation for sustainable development and international education work, we are dedicated to shaping a future worth living around the world. We have over 50 years of experience in a wide variety of areas, including economic development and employment promotion, energy and the environment, and peace and security. The diverse expertise of our federal enterprise is in demand around the globe – from the German Government, European Union institutions, the United Nations, the private sector, and governments of other countries. We work with businesses, civil society actors and research institutions, fostering successful interaction between development policy and other policy fields and areas of activity. Our main commissioning party is the German Federal Ministry for Economic Cooperation and Development (BMZ). GIZ has been working in Jordan for over 40 years and opened its office in the capital of Amman in 1979.

About Employment Promotion Programme (EPP)

The EPP is part of a special initiative that is designed to promote development in the Middle East and North Africa and run by Germany's Federal Ministry for Economic Cooperation and Development (BMZ). BMZ is helping to create economic and social prospects for people in the region through the projects that make up this special initiative. The thematic focus, within this context, is on youth and women, as well as on employment promotion, economic stabilisation, democracy, and stabilizing neighbouring countries in crisis situations.

The project focuses on building capacities and strengthening the structures of our political partners and stakeholders at local, regional, and national level to create more and better jobs. It supports the expansion of labour market policy measures, such as state and private job placement services, and offers help to those starting self-employment. In addition, selected sectors in the target governorates of Irbid, Balqa, Karak and Ma'an are being supported in utilizing existing potentials for job creation and in getting jobseekers into employment. The project advises the Jordanian Ministry of Labour on improving its quality



assurance system and the Government of Jordan on integrating women into the labour market. Local stakeholders will be brought together through employment initiatives in the four target regions so that more jobs can be created in the future. The legal framework and qualification opportunities will be improved, particularly in occupations that offer a strong potential for promoting the employment of women. These include, for example, Home Based Day Care, health services, and the ICT sectors.

Many employers have difficulties finding and retaining employees for technical professions, as these are traditionally considered unattractive. The project therefore promotes the development and implementation of innovative personnel management measures with the aim of increasing employee loyalty and reducing fluctuation.

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Introduction

1. Introduction

According to the Social Security Corporation (SSC) there were 16,020 on-the-job injuries since the beginning of 2021 to end of September 2021. The cost of the 2021 work-related injuries amounted to about JD2 million, which included daily allowances for the insured people, lump sum compensation payments, and medical care expenses. The manufacturing sector saw the highest rate, at 4,200 injuries, ranging from minor to severe. The number of workplace injuries in 2020 reached 18,000, with a JD5 million spending bill, as some sectors considered Covid-19 infection a workplace injury, while the injuries count in 2019 nearly stood at 12,000¹.

This report provides an overview on occupational safety and health conditions in two areas within Jordan's manufacturing sector, namely plastic & rubber and chemicals & cosmetics, which were chosen following a purposive approach in addressing the risks in these two sectors. The report is based on the findings of a survey of 34 plastic and rubber facilities and 15 chemicals and cosmetics facilities, and insights Focus Group Discussions (FGD) with employees at the facilities being studied. The report explores workers' perceptions of the nature and underlying causes of work injuries and occupational diseases and presents an overall assessment of the risks facing employees within the facilities with respect to each sector's reported risks. The report also details the perceptions of the management of the facilities in the study on the classification and occurrence of different types of risks, and the extent to which they have adopted occupational safety and health measures in the workplace.

2. Project Methodology

This section provides an overview of the quantitative (literature review, surveys) and qualitative (hosted Focus Group Discussion (FGD) sessions) methodologies that were adopted to collect data.

2.1 Literature Review

It was referred to a number of documents to obtain a clear understanding of the Occupational Safety and Health situation in Jordanian facilities, including the following:

- Safety in the use of chemicals at work, International Labor Office, Geneva, 1993.
- Guidelines on occupational safety and health management systems, International Labor Office Geneva, 2001.
- The Jordanian Labor Law 1996 and its amendments.
- The assessment of turnover in Jordan's industrial sector, GIZ and the Amman Chamber of Industry, September 2018.
- Jordanian Action for the Development of Enterprises Report.
- Impact of the COVID-19 pandemic on enterprises in Jordan, ILO & UNDP Report.

The historical data from SSC from 2015 to 2019 revealed the following:

- **Distribution of injuries aggregated by age groups:** The highest average injury rate by age group in the two sectors under study between 2015 and 2019 was for employees aged between the ages of 20 and 24, with an average of 20.52% for the plastic & rubber sector, and 25.77% for the chemicals & cosmetics sector.
- **Distribution of injuries by nationality:** The largest share of injuries in the 2 analyzed sectors in Amman occurred to Jordanians. During 2019, 38.3% of injuries within the plastic & rubber facilities in Amman involved non-Jordanians, whereas 61.7% involved Jordanian employees. In the chemicals & cosmetics sector, less than 20% of injured employees were non-Jordanian and over 80% were Jordanians.
- **Distribution of injuries by cause:** The causes behind incidents were distributed as follows, according to the SSC statistics:
 - **Plastic and rubber:** The most common injuries in this sector were those associated with operating machinery, followed by employees falling and falling objects.
 - **Chemicals & Cosmetics:** The three main causes of injuries in this sector were employees falling, followed by falling objects and staff walking over or bumping into objects.

¹ Source: [Jordan sees 16k workplace injuries since beginning of 2021-SSC \(petra.gov.jo\)](https://petra.gov.jo)

The Total Number of Injuries for both targeted sectors are shown below

Table 1: Total work injuries distribution per sector (2015-2019)

Year	2015	2016	2017	2018	2019
Total Injuries in the Two Targeted Sectors (Plastic & Rubber and Chemicals & Cosmetics)	1,517	1,419	2,027	1,631	1,842
Change		-98	+608	-396	+211
Change Rate %	-	-6.46%	+42.85%	-19.54%	+12.94%
Injuries reported per sub-sector					
Plastic and Rubber Sector	1,333	1,203	1,823	1,476	1,706
Change	-	-130	+620	-347	+230
Change Rate %	-	-9.75%	+51.54%	-19.03%	+15.58%
% of Plastic and rubber injuries across the two sectors	87.87%	84.78%	89.94%	90.50%	92.62%
Chemicals & Cosmetics Sector Injuries	184	216	204	155	136
Change	-	32	-12	-49	-19
Change Rate %	-	17.39%	-5.56%	-24.02%	-12.26%
% of chemicals and cosmetics injuries across the two sectors	12.13%	15.22%	10.06%	9.50%	7.38%

Figure 1: Distribution of total work injuries in the plastic and rubber sector (2015-2019)

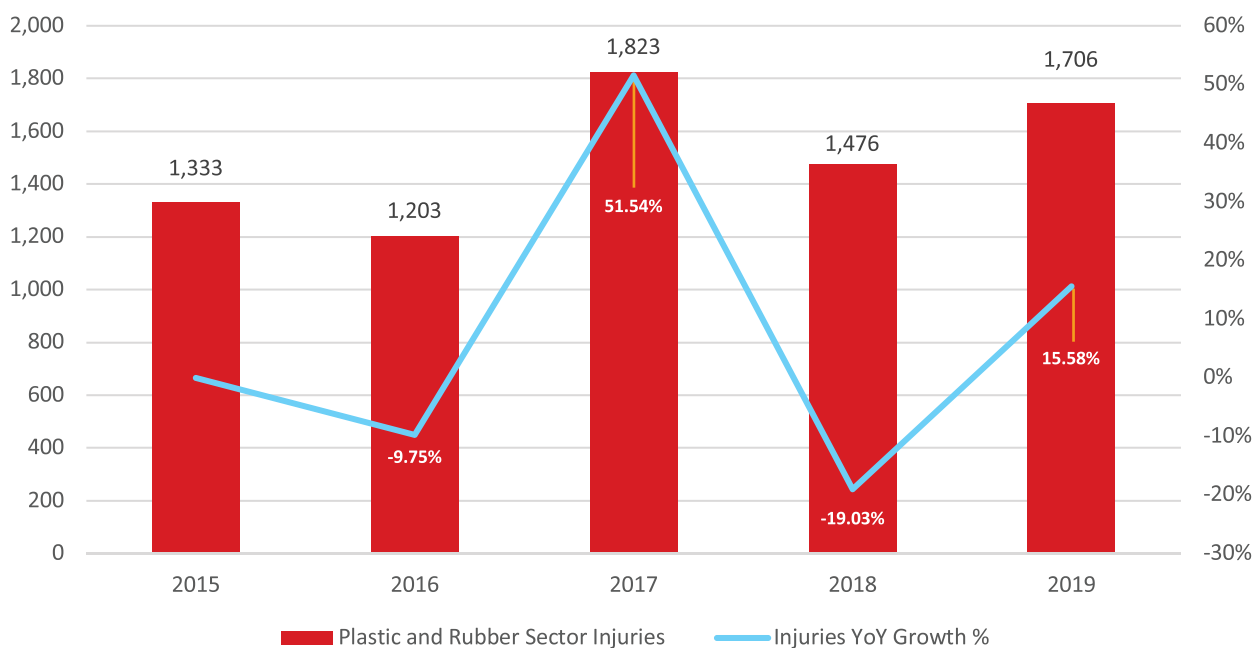
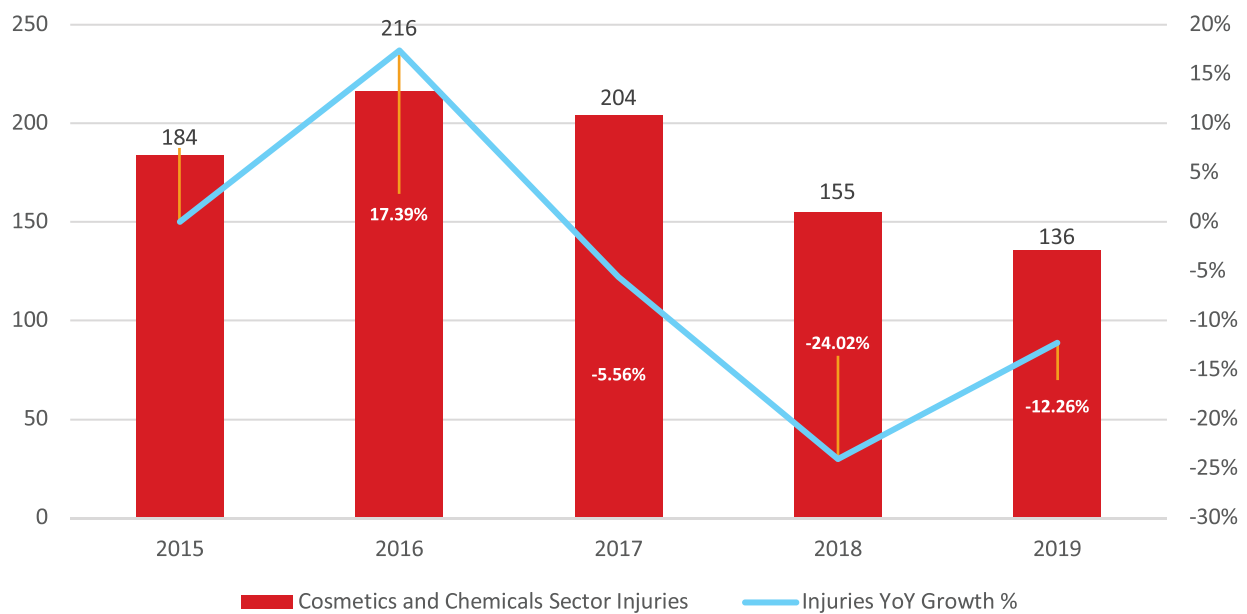


Figure 2: Distribution of total work injuries in the chemicals and cosmetics sector (2015-2019)



2.2 Questionnaire Design and Survey Implementation

Selected facilities within the plastic & rubber and chemicals and cosmetics sectors were surveyed to determine their size, physical location, annual sales, number of employees, and percentages of male and female staff.

1. Based upon the data gathered and the project's expert judgement, a questionnaire was designed to collect both quantitative and qualitative data on the following topics:

- Facility Demographics, including capital, location, year established, annual sales, number of employees, gender distribution of work force, and number and types of injuries.
 - A range selection was used for some of the demographic questions, especially those related to size, capital, and number of employees, to make it easier for respondents to complete the data collection process.
 - The ranges for the number of employees, which were ultimately used to classify the size of the targeted facilities, were:
 - **Micro Facilities** - less than 5 employees
 - **Small Facilities** - 5 to 19 employees
 - **Medium Facilities** - 20 to 99 employees
 - **Large Facilities** - 100 or more employees
- Implementation and documentation of Safety Policies and Procedures.

- The cost of work-related injuries.
 - How injuries are dealt with, which includes mitigation and safety measures, occurrence rates, the main causes of injuries, specific data on injuries to female workers, and occupational safety and health training courses.
2. 49 facilities within the Amman Governorate were then surveyed, distributed as follows:
- 34 Facilities in the Plastics and Rubber Manufacturing Sector
 - 15 Facilities in the Chemicals and Cosmetics Manufacturing Sector
- The questionnaire was distributed to managerial level employees in the surveyed facilities, including:
- Owners/general managers
 - Safety management representatives (safety officers)
 - Unit heads
 - Human resources department managers
3. An average was calculated for responses associated with facilities where more than one respondent was interviewed to make the calculation easier.

2.3 Focus Group Discussion Methodology

A team of consultants moderated 2 Focus Group Discussion (FGDs) sessions for the employees working at the industrial facilities in the study to gather further information about occupational safety and health at the facilities and validate the data collected from the management team.

The FDGs tackled the following topics:

- Demographics, i.e., the attendees' name (optional), age, gender, overall work experience, years of experience within the current facility, occupation, educational level, nationality, and the sector they worked in.
- Work environment, in terms of official working hours, occupational safety and health measures adopted, OSH training courses and awareness raising, and health insurance status.
- Type and cause of injuries or occupational diseases witnessed.
- The preventive procedures in place for limiting injuries and their impact, such as the availability and adequacy of safety gear, first aid kits, maintenance of machinery and tools within the facility, and occupational safety and health training.
- Satisfaction levels on the facility's adoption of safety measures.
- The risks associated with the workers, which vary according to gender, and sector.

2.4 Data Analysis

Data for the Quantitative Data Analysis in both sectors was collected in an Excel spreadsheet and exported to a specially designed SPSS-compatible input program.

The report presents an analysis of the mechanisms and strategies for the risk elimination and replacement, training, and safety measures that Jordanian industrial facilities have adopted, and how they report this data to the authorized entities. The report calculates the injury rate for each sector. This is an important indicator for assessing work injuries based on injuries reported during the first half of 2020, with respect to the average size of facilities as per their number of employees.

For the Qualitative Data, the focus group discussions were transcribed and analyzed following a thematic approach to obtain the relevant data.

3. Study Limitations

The table below lists the main risks and limitations faced the execution of the project, and the solution(s) adopted for each subsequent stage of the project.

Table 2: Limitations faced the study

Risks	Solution(s) Adopted
Market research	
Absence of updated figures concerning work injuries (latest available for 2016)	<ul style="list-style-type: none"> The information source was contacted, and raw data obtained for the past 5 years.
Source data received was for the whole Kingdom rather than solely Amman	<ul style="list-style-type: none"> Amman governorate injuries were requested by re-contacting the source.
The published reports were lacking the sub-sector distribution	The raw statistics were obtained, correlated, and devised into a report tackling each sub-sector separately.
Survey	
Issues concerning some of the survey questions	<ul style="list-style-type: none"> A piloting phase was conducted to test the questionnaire and responses for a selected sample size. A few questions were rephrased and the selection of "I prefer not to answer" was added to some questions, such as the facility's annual sales and capital values.
Responses were based on interviewees' perceptions and observations	<ul style="list-style-type: none"> Conducting the survey with more than 1 member of the management. Including the perceptions of workers within the facility to raise the accuracy level of the collected data.
Lack of participation in the survey by the facility management	<ul style="list-style-type: none"> The project's purpose and the questionnaire nature were declared to respondents at the beginning of each survey. Facilitation letters were provided to the facility management, as requested by many facilities.
Limitations in contacting the targeted facilities	<ul style="list-style-type: none"> A list of Amman-based industrial facilities was obtained from the Jordan Industrial Estate Company and the Amman Chamber of Industry. Large numbers of facilities had to be contacted, only 1 in every 6 of the facilities that the team spoke to agreed to take part in the survey.
COVID-19 curfews affecting certain areas	Surveyors who reported living within the banned areas have contacted the facilities over the phone and arranged to conduct the surveys in person once the ban is lifted ² .

(moh.gov.jo) العضايلة: عزل مدينة سحاب عن باقي مناطق المملكة اعتباراً من ظهر يوم غد 2

Focus Group Discussion	
Senior management resistance towards their workers attending the FGD sessions	<ul style="list-style-type: none"> • Obtained senior management approval and involvement by asking them to recommend which employees should attend the focus group discussion sessions. • Ensured that the personal information of the interviewee and the facility will remain confidential.
Employees' resistance toward attending the FGD	<ul style="list-style-type: none"> • The sessions were held at a neutral location to obtain sincere responses from attendees. • Respondents were informed of the following: <ul style="list-style-type: none"> -The data collected would not be shared with facility management and that the findings of each session would be reflected in the synthesis report -The data they shared, and their names would remain confidential. -Their personal opinions would be treated confidentially and would not be shared with their facilities' managements.
Logistical challenges due to COVID-19	<ul style="list-style-type: none"> • The sessions were held in meeting rooms with a sufficient capacity to ensure that social distancing was maintained between attendees. • Face masks and gloves were distributed amongst attendees.





Section
One

Survey Findings
Plastic & Rubber Sector

This section details the major indicators associated with injuries reported amongst the 34 plastic and rubber facilities interviewed. It lists the demographics of the facilities interviewed, injuries rate, severity, causes, and out of service days reported, along with the procedures associated with the occupational safety and health practices, and highlights the major risks that female workers are exposed to in the analyzed facilities.

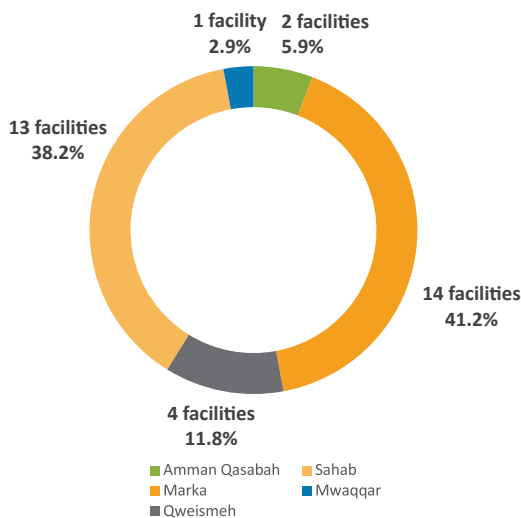
In addition, this section details the major findings collected during the hosted Focus Group Discussion sessions and the analysis obtained from the relationship between the OSH practices and measures adopted.

1. Facilities Demographics

1.1 Distribution by geographical location

As shown in the figure below, 14 (41%) of the 34 surveyed facilities operating in the plastic and rubber sector were based in Marka, 13 (38%) in Sahab, and 4 (12%) in Qweismeh.

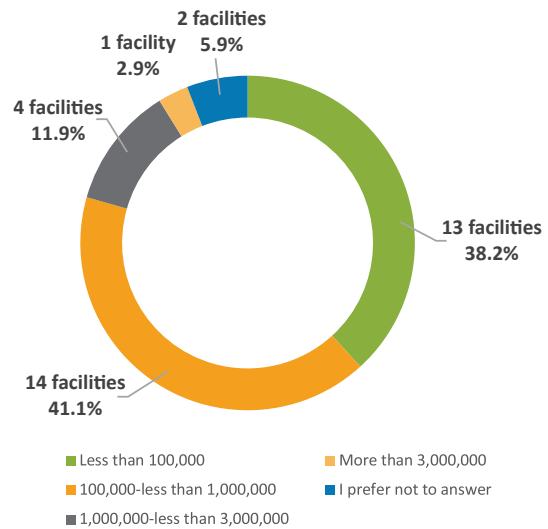
Figure 1: Distribution by geographical location



1.2 Distribution by capital

The graph below details the distribution of the 34 facilities operating in the plastic and rubber sector according to their capital in JOD. While 14 facilities (41%) had a capital ranging between JOD 100,000 and JOD 1 million, only 1 (3%) reported a capital exceeding JOD 3 million.

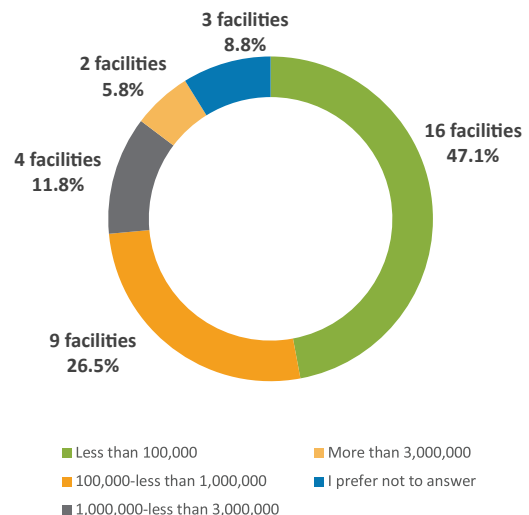
Figure 2: Distribution of the sample size per the facilities' paid-in capital in the plastic and rubber sector (in JOD)



1.3 Distribution by annual sales

16 of the plastic and rubber facilities (47%) reported annual sales of less than JOD 100,000. It is worth noting that 3 facilities (9%) did not disclose their annual sales.

Figure 3: Distribution by annual sales (in JOD)



1.4 Distribution by size of the facility

20 of the facilities operating in the plastic and rubber sector (59%) were medium size, while 7 facilities (21%) were classified as large. For the survey and the purpose of this report, only 1 of the 34 facilities (3%) was micro-sized.

Figure 4: Distribution of the sample size by number of employees

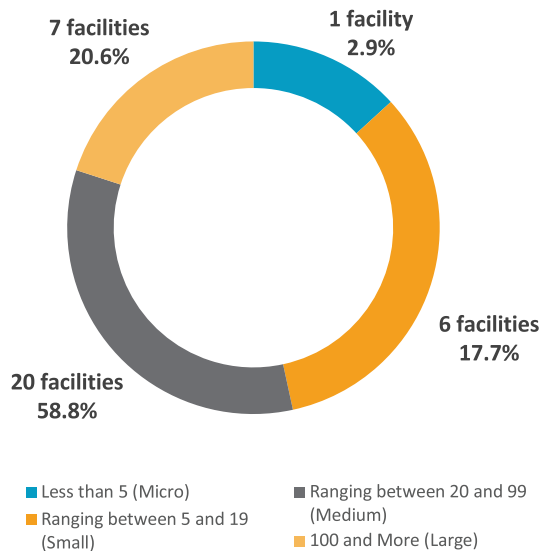
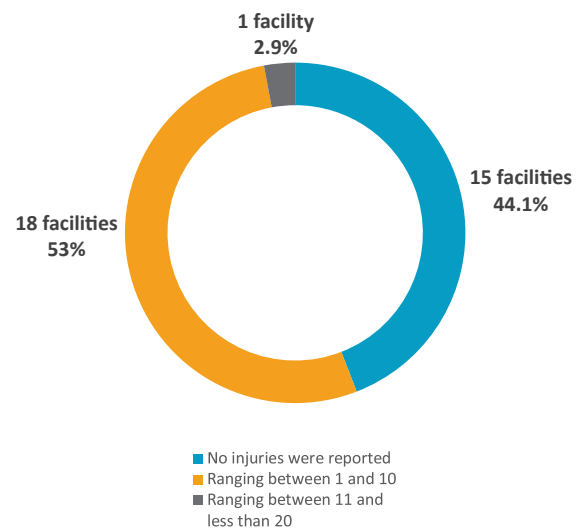


Figure 5: Distribution of number of injuries



2.2 Estimated rate of injuries during the first 6 Months of 2020

The estimated rate of injuries is 59 reported per 1000 employees in the plastics and rubber sector during the first six months of 2020. Please refer to Annex 1 for a description of the calculation method.

2. Occupational Injuries' Rate & Causes

This section will provide details about the main causes of workplace injuries in this sector.

2.1 Distribution of number of Injuries in the first 6 months of 2020

1 of the facilities (3%) operating in the plastic and rubber sector reported having between 11 and 20 injuries in the first six months of 2020, while 18 facilities (53%) reported between 1 and 10 injuries during the same period and 15 facilities (44%) reported having no injuries during the same period.

2.3 Risk Classifications and Main Causes of Injuries

The risks associated with injuries in the facilities were clustered into ten key areas:

- **Mechanical risks:** are all types of risks which result from an object hitting the human body, whether the body, the object, or both are in motion.
- **Physical risks:** are the risks due to exposure to natural substances, rather than the result of a chemical reaction.
- **Electrical risks:** are the risks which occur due to contact with particles carrying electric current which results in the completion of an electrical circuit.
- **Chemical risks:** are the risks resulting from unsafe exposure to chemical substances that exceeds the recommended safety limits. This could be through inhaling, swallowing, or touching chemical substances in the form of vapor, toxic gases, dirt, smoke, etc.

- **Fire and explosives risks:** are the risks due to the burning of flammable particles under chemical reaction conditions, which occurs due to oxidation, resulting in a fire with full or partial destruction, along with injuring an individual, or a group of individuals, or resulting in death.
- **Ergonomic risks:** are the risks associated with the compatibility of the human body and the production lines, handheld tools, and furniture within the facility.
- **Transportation and handling risks:** are the risks associated with the absence or inadequacy of safe storage mechanisms, along with the risks associated with transportation, handling, and loading, which impacts the safety of workers, along with the safety of raw materials and spare parts, and ensuring a safe environment that is free from pollution.
- **Lack of Commitment Towards Personal Protective Equipment**
- **Human behavior:** refers to any risk caused by human practices and actions within the working facility which does not fit under the other classifications.
- **Administrative risks:** are the risks associated with administrative decisions including work shifts, rewards and punishment policies, and production pressure coupled with incentives ³.

The table below lists the risks classification types, the causes and major contributory factors associated with each risk type.

³ (The above definitions are introduced by TAG-Consult experts).



Table 1: Classifications, causes and contributory factors of the types of injury











Classification of Risks	Causes and contributory factors
	Mechanical
	Machinery and equipment
	Direct contact with a machine's rotational parts
	Lack of machinery and equipment maintenance
	Incompatible production lines
	Handheld tools
	Walking over or bumping into objects
Being trapped/jammed by instruments and machinery	
	Physical
	Work environment
	Exposure to extreme hot or cold substances
Absence of ventilation	
	Electrical
Electric contact	
	Chemical
	Chemical substances
	Dealing with chemical leftovers
	Absence of safety labels
	Chemical poisoning
	Impurity of raw materials
Faulty instructions on chemical substances	
	Fire and explosives
Fire and explosives	
	Ergonomics
	Incompatibility of tools and equipment
Inadequacy of personal protective equipment	
	Transportation and handling
	Forklifts and transportation tools
	Road accidents
	Falling objects
	Lifting heavy weights
Bad storing conditions	
	Lack of Commitment Towards Using Personal Protective Equipment (PPE)
	PPE for the hands, eyes, and ears
	PPE for feet and the clothes
	PPE for the respiratory system
PPE for the face	
	Human behavior
	Sudden moves or extensive pressure
PPE not being cleaned, maintained, or sanitized correctly	
	Administrative
	Night shifts policies
Production pressure coupled with incentives	

Figure 6 lists the major causes of injuries throughout the facilities' operational lifetime, as reported by individuals within the analyzed facilities in the plastic and rubber sector.

This part of the survey was conducted by taking feedback from the facilities on the top 5 causes of injuries, as per the table and graph shown below. It is worth noting that, the total responses were collected from a sample size of 21 facilities and 55 respondents, with an average of 3 responses per facility.

Figure 6: Causes of injuries as reported by respondents⁴



⁴ The groupings of the causes were obtained from the SSC: تقرير اصابات العمل ٢٠١٦ (ssc.gov.jo).

The table below provides a classification of the causes of risk as reported by the 34 analyzed facilities by type of risk, and clusters the occurrences of the causes (number of responses) by risk classification within risk evaluation assessment practices.

Table 2: Classification of risk casues as per the facilities reponses

Classification of Risks	Causes	Number of Responses
Mechanical	<ul style="list-style-type: none"> • Machinery and equipment • Handheld tools • Walking over or bumping into objects • Being trapped/ jammed by instruments and machinery 	42
Transportation and handling	<ul style="list-style-type: none"> • Forklifts and transportation tools • Road accidents • Falling objects • Lifting heavy weights 	13
Physical	<ul style="list-style-type: none"> • Work environment • Exposure to extreme hot or cold substances 	11
Human behavior	Sudden moves or extensive pressure	3
Electrical	Electric contact	1
Chemical	Chemical substances	1

3. Severity of Occupational Injuries

19 facilities (55.9%) reported their injuries to be minor, resulting in no disabilities, and the remaining 15 facilities (44.1%) reported having no injuries of any kind. It is worth noting that the severity criteria which distinguishes minor from major injuries is dependent on the injuries' disability and curability indicators (minor injuries are curable, and do not lead to permanent disability).

4. Occupational Injury Occurrence by Risk Classification Type

This section details the frequency of injuries at the 34 plastic and rubber facilities in the survey, with the various types of risk clustered into the following 10 key risk classifications:

1. Mechanical Risks
2. Physical Risks
3. Electrical Risks
4. Chemical Risks
5. Fire and Explosion Risks
6. Ergonomics Risks
7. Transportation and Handling Risks
8. Lack of Commitment Towards Using Personal Protective Equipment (PPE)
9. Human Behaviors
10. Administrative Risks

4.1 Occurrence of Injuries Due to Mechanical Risks

- 6 facilities reported that injuries from direct contact with a machine's rotational parts occurred once a year.
- 3 facilities reported injuries from a lack of machinery and equipment maintenance occurring once a year.

4.2 Occurrence of Injuries Due to Physical Risks

- 3 facilities reported that not offering a proper work environment in terms of facility temperature, noise levels, humidity, and lighting intensity caused injuries once a year.
- 1 facility reported that an absence of ventilation led to one injury per year.

4.3 Occurrence of Injuries Due to Electrical Risks

- 2 facilities reported that electrical contact caused injuries on a yearly basis.

4.4 Occurrence of Injuries Due to Chemical Risks

- 1 facility reported that dealing with chemical leftovers caused injuries on a bi-yearly basis, while 1 facility reported it causing one injury once a year.
- 2 facilities reported that the absence of safety labels and chemical poisoning had each caused injuries, on a yearly basis.

- 1 facility reported that issues related to the impurity of raw materials and faulty instructions on chemical substances each resulted in one injury per year.

4.5 Occurrence of Injuries Due to Fire and Explosion Risks

- 1 facility reported one injury occurring due to fires and explosive materials on a yearly basis.

4.6 Occurrence of Injuries Due to Ergonomics Risks

- 2 facilities reported a lack of tools and equipment compatibility causing injury once a year.
- 1 facility reported that inadequate personal protective equipment caused injuries twice a year, 3 facilities reported such injuries occurring only once a year.

4.7 Occurrence of Injuries Due to Transportation and Handling Risks

- 1 facility operating reported bad storing conditions causing one injury once a year.

4.8 Occurrence of Injuries Due to a Lack of Commitment Towards Using Personal Protective Equipment Risks

- 1 facility reported that staff not wearing personal protective equipment for the hands, eyes, and ears caused injuries monthly, while 3 facilities reported that this caused one injury once a year.
- 2 facilities reported that not wearing PPE for feet and clothes caused injuries twice a year.
- 1 facility reported one injury per year, due to lack of commitment in wearing PPEs associated with clothes and feet
- 1 facility reported that injuries occurred twice a year due to staff not wearing protective equipment for the respiratory system, while 3 facilities reported this causing injuries once a year.
- Not wearing protective equipment associated with the face was reported to cause injuries twice a year by 1 facility and once a year by 1 facility.

4.9 Occurrence of Injuries Due to Administrative Risks

- 1 facility reported injuries associated

with tiredness while working night shifts occurring 4 times a year, while 2 facilities reported the occurrence of such injuries twice a year and 5 facilities once a year.

- 2 facilities reported working extra shifts as causing injuries once a year.
- 2 facilities reported production pressure coupled with incentives as causing injuries twice a year, and 1 facility reported it causing injuries once a year.

4.10 Occurrence of Injuries Due to Human Behaviors

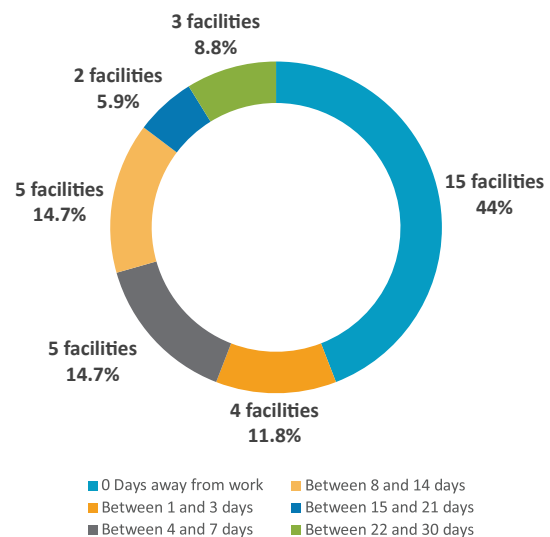
- 2 facilities reported that the absence of cleansing, maintenance and sanitizing of PPE caused injuries once a year.

5. Average Out of Service Days Due to Injuries

Out of service days are defined as working days lost through work injuries and illnesses, represented by days away from work. 15 of the facilities surveyed (44.1%) reported that the injuries reported by their employees did not necessitate their absence from work.

However, 5 facilities reported average out of service days ranging between 4 & 7 days and 8 & 14 days. Only 2 facilities reported an average ranging between 15 and 21 out of service days for their injured employees, while 3 facilities reported staff being absent from work for the highest range, between 22 and 30 days.

Figure 7: Distribution of responses by number of out of service days (days away from work)



6. Occupational Safety and Health Procedures According to the Best Practices and the Compliance with the Jordanian Bylaws and Regulations

6.1 Occupational Safety and Health Best Practices

The main best practices adopted by the facilities from the plastic and rubber sector that were interviewed, and the extent to which they have been adopted, are listed below:

- **Usage of supportive software for OSH:** 11 facilities (32.3%) reported fully adopting OSH supporting programs and software.
- **Technological meters associated with safety measures:** 14 facilities (41.1%) reported fully adopting technological meters which provide readings on measures such as temperature, pressure, and humidity.
- **Technological programs associated with risk evaluation:** 6 facilities (17.6%) reported adopting technological risk evaluation programs to help in assessing the risks associated with working in the plastic and rubber sector.
- **Electronic recording systems dedicated to work injuries, instead of paper-based systems:** 8 facilities (23.5%) reported fully adopting electronic recording systems for work injuries.
- **Local and International standards amongst facilities:** 14 facilities (41.2%) reported an excellent adoption of local or international standards dedicated to the safety in the work environment.
- **Risk assessment strategies, including replacement, mitigation, and elimination:**
 - 21 facilities (61.7%) reported replacing hazardous activities with less riskier activities.
 - 20 facilities (58.8%) reported adopting a mechanism dedicated to mitigating risk.
 - 20 facilities (58.8%) reported eliminating high-risk activities.
- **Evaluation of staff's performance based on their commitment towards OSH measures:** 24 facilities (70.5%) reported fully adopting incentive and punishment policies to motivate their employees to adopt OSH measures.

- **Suitability of amenities to needs of people with disabilities:** 15 facilities (44.1%) reported being fully compatible with the needs of people with physical challenges or disabilities, whether they were employees or visitors.

- **Work Policies Information Dissemination Channels:**
 - 22 facilities (64.7%) reported documenting their procedures associated with work policies within their facilities.
 - 3 facilities (8.8%) reported conducting training sessions dedicated to spreading awareness amongst their employees on the work policies they had adopted.

- **Risk Awareness Information Dissemination Channels:**
 - 17 facilities (50.0%) reported adopting documented procedures and policies concerning risks and hazards awareness.
 - 5 facilities (14.7%) reported offering trainings for their employees to spread awareness over the hazards associated with work.

- **Hosting risks trainings prior to hiring new employees:** 62.0% of the surveyed facilities expressed their full satisfaction with the risk trainings delivered to new recruits by the safety officer.

6.2 Compliance of Occupational Safety and Health with Jordan's bylaws and regulations

This section lists the level of adoption of occupational safety and health regulations amongst the 34 facilities analyzed.

- **Hosting regular testing for detecting occupational diseases:** 15 facilities (44.1%) reported being fully committed to adopting regular testing for detecting occupational diseases.
- **Running primary tests for new employees' joining the facility:** 13 facilities (38.2%) reported fully adopting the running of primary tests for new employees joining the facility.
- **Reporting the results of the hosted tests to the authorized entities:** 13 facilities (38.2%) reported fully adopting reporting the results of the hosted tests to the authorized entities.

- **Availability of amenities, such as food courts and changing rooms within the facilities:** 14 facilities (41.1%) had fully adopted a number of amenities including washing rooms, changing rooms, or dry-cleaning facilities.
- **Trainings under the supervision of the safety officer:** 13 facilities (38.2%) expressed their full commitment to trainings supervised by the safety officer, whereas 5 facilities (14.7%) evaluated their safety officer's trainings as fair, meaning that there is still room to enhance the quality of such trainings in the remaining facilities.

7. Impact of OSH Conditions on the Safety of Females in the Workplace

Female employees work environments are subject to risks associated with their safety and health. Female employees may also be subject to gender-based discrimination, harassment in the workplace, and strict working hours.

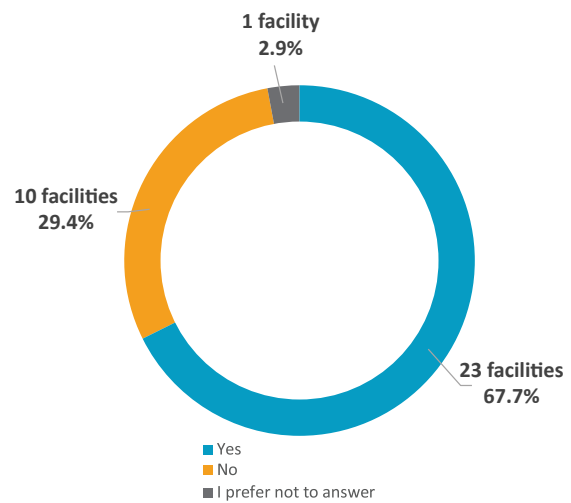
The hazards associated with female employees are attributed to a number of factors, which can be summarized as follows:

- It was deduced from the Focus Group Discussions that the Personal Protective Equipment (PPE) and Personal Protective Clothes (PPC) in use were originally designed to be compatible with average sized male employees, which lowers the functionality of protective equipment such as boots, gloves, respirators, etc. when they are used by women.
- The bodily shape and physical strength of potential female employees are not taken into consideration when the tools and machinery in the facilities were designed.
- Sexual harassment is one of the most frequent problems faced by women at work and is partly caused by a lack of gender equality in the workplace⁵.

7.1 Females' Participation in the Workplace

23 facilities confirmed that they have females as part of their workforce, while 10 facilities stated that they had no females working for them.

Figure 8: Facilities distribution as per female participation



7.2 Safety Concerns for the Female Workforce

The graph below indicates the safety challenges faced by females at the 23 facilities which reported employing female workers.

Figure 9: Safety concerns for female workers



From the above graph, the following can be concluded:

⁵ Supporting article : Harassment of women increased in workplace – study | Jordan Times

1. There are 2 main safety concerns regarding females:

- **Limits on Lifting Weights:** The weight limits for female workers are 7 kilograms for continuous lifting and 11 kilograms for non-continuous (occasional) lifting. Although 73.8% of the facilities reported a strong compliance with these limits (52.1% excellent and 21.7% very good), work practices at 17.3% of the facilities surveyed were poor in this respect.
- **Work Conditions for Pregnant and Breastfeeding Women:** the issues with work conditions associated with pregnant female workers include the length of working hours, shifts, and employment contracts, along with the availability of on-site childcare facilities and physically challenging work conditions.
- Only 56.4% (34.7% excellent and 21.7% very good) of the facilities surveyed responded that they offered a work environment that met the needs of pregnant women. 34.7% of the facilities (13.0% poor and 21.7% fair) do not provide a comfortable work environment for pregnant and breastfeeding female workers.

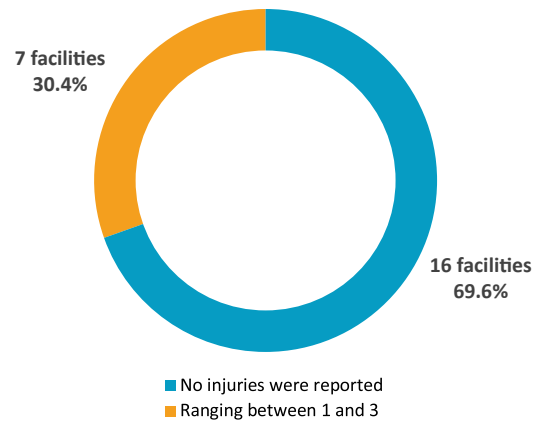
2. The other 2 main safety concerns related to safety practices were:

- **Compatibility of PPE with Females:** There are issues with the fit and suitability of the PPE provided to cover the needs of the female workforce, with only 47.8% of the facilities responding that they offer excellent PPE that is compatible with the needs of female workers, and 17.4% of the surveyed facilities offering very good compatibility.
- **Commitment to Adopting Safety Measures:** Women seem more highly committed to adopting safety measures than men, with the take up of safety measures by women reported as excellent in 65.2% of the facilities and poor in 13%.

7.3 Injuries Reported to Female Workforce

16 of the 23 facilities with female workforce reported no injuries amongst their female workforce, while the remaining 7 reported between 1 and 3 injuries.

Figure 10: Facilities Distribution based on females injurers

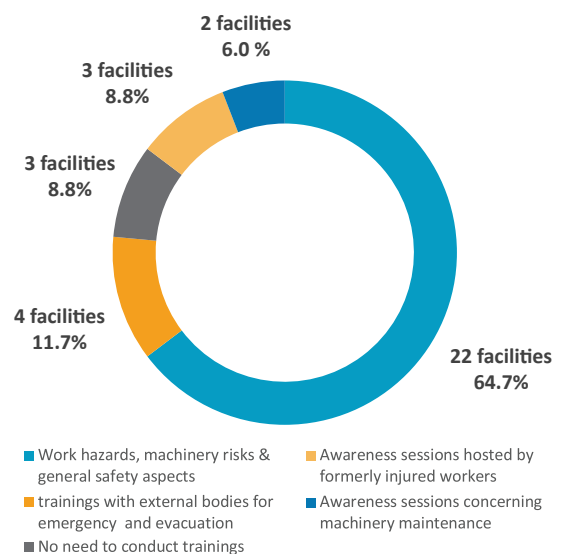


8. Occupational Safety and Health Training

The chart below provides a breakdown of the trainings requested by the 34 facilities surveyed:

- 22 facilities requested trainings associated with work hazards, machinery risks, and general aspects concerning occupational safety and health.
- 4 facilities requested trainings with external bodies for emergency cases and evacuations.
- 3 facilities reported the need for formerly injured workers to host awareness sessions.
- 2 facilities requested awareness sessions concerning the maintenance of machinery.
- 3 facilities perceived having no need to conduct trainings of any kind.

Figure 11: Distribution of facilities with respect to their training requirements & needs



9. Costs Associated with Injuries and OSH

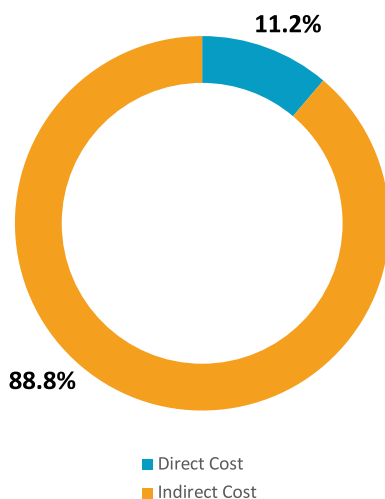
There are 2 types of costs associated with injuries and OSH, namely:

- A. **Direct Costs:** these are the costs that can be directly traced to the result of an injury, including the cost of medical procedures, hospitals, pharmacies, physicians, therapy, disability compensation and death benefits.
- B. **Indirect Costs:** these are the costs that cannot be directly traced to the result of an injury and consists of a number of indicators including administrative costs, the cost of recruiting alternatives, OSH fines and penalties, the maintenance and amendment of production lines, and the cost of additional personal protective equipment.

The table below lists the costs associated with injuries during 2019, as reported by the 34 facilities interviewed. Indirect annual costs constituted over 88.8% of the total cost associated with injuries, and direct costs only 11.2%.

Annual Cost in JOD	Type of Cost Associated with Work Injuries
13,083	Direct Cost
103,773	Indirect Cost

Figure 12: Distribution of costs associated with workplace injuries within the facilities interviewed



10. Relationship Between Injuries and Occupational Safety and Health Procedures

This section explores the relationship between the adoption levels of occupational safety and health measures and their impact on the injury records (number of injuries reported by each facility). It is worth mentioning that the OSH measures were inclusive of both best practices and measures requested by Jordan's bylaws and regulations. The section shows a relationship between adopting OSH measures and the effect on minimizing the number of injuries reported.

10.1 Relationship Between Injury Occurrence and the Role of the Safety Officers

A. Spreading awareness about work risks and hazards

- 17 facilities reported their full satisfaction in the officers' role in spreading awareness about work risks and hazards, and 5 of these facilities reported zero injuries.

B. Hosting and documenting OSH committee meetings

- 16 facilities reported a full adoption of the safety officer's role in hosting and documenting the outcomes of the OSH committee meetings, and 4 of these facilities reported zero injuries during the first half of 2020.
- It is worth noting that 1 facility which reported a weakness in the fulfilment of the safety officer's role in hosting and documenting the outcomes of OSH committee meetings had an injury occurrence rate between 1 and 10 injuries.

C. Investigation of injuries and incidents

- 20 facilities reported fully adopting the safety officer's role in investigating the occurrence of injuries and incidents, and 7 of these facilities reported zero injuries amongst their employees by the end of June 2020.

D. Internal reporting mechanisms for injuries

- Of the total 26 facilities which reported the full adoption of the safety officer's commitment to the internal reporting of injuries, 9 reported zero injuries amongst their employees.

10.2 Relationship Between Injury Occurrence and the Recording of Injuries at the Facilities

- 8 facilities reported the full adoption of an electronic system to record work injuries, and 2 of these facilities reported zero injuries.
- 3 facilities reported the absence of using an electronic system to record work injuries, and 1 of these facilities reported that their injury rate ranged between 1 and 10.
- 20 facilities reported the complete availability of an injuries record, 7 of which reported zero injuries.







Section
Two

**Survey Findings
for Chemicals & Cosmetics Sector**

This section details the major indicators associated with injuries reported amongst the 15 facilities that were interviewed. The demographics of the facilities are listed, along with injury rate, severity, cause, out of service days reported, and the procedures associated with occupational safety and health practices. The major risks that female workers are exposed to in the facilities analyzed within this sector are also highlighted.

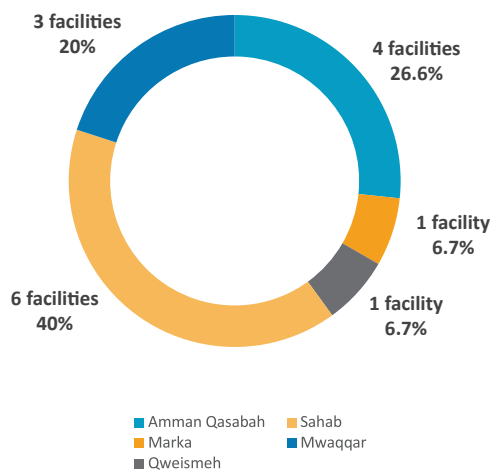
In addition, this section details the major findings collected during the hosted Focus Group Discussion sessions and the analysis obtained from the relationship between the OSH practices and measures adopted and their impact on the number of injuries.

1. Facilities Demographics

1.1 Distribution by geographical location

A total of 15 facilities in the chemicals and cosmetics sector were analyzed, 6 of which (40%) were located in Sahab, 4 (26.6%) in Amman Qasabah, and 3 (20%) in Mwaqqar. The chart below details the distribution of the surveyed facilities by their location within the Amman governorate.

Figure 1: Distribution of surveyed chemicals & cosmetics facilities by geographical location

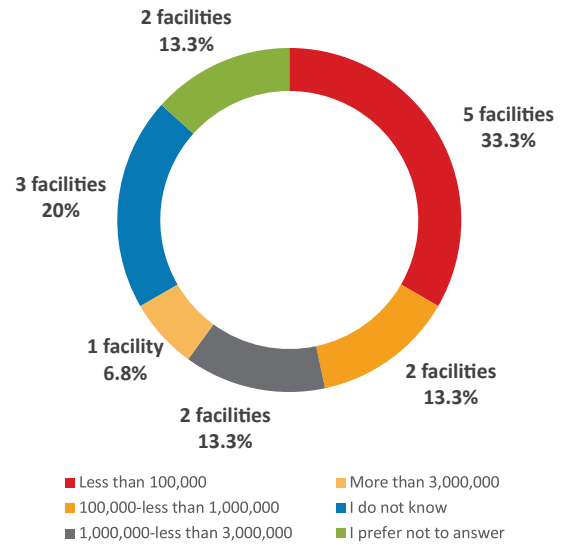


1.2 Distribution by paid-in capital

The chart below details the distribution of the analyzed facilities by each facility's capital in JOD. 5 facilities (33.3%) reported their paid-in capital to be below JOD 100,000, 3 facilities

(20%) reported not being aware of their facilities paid-in capital, and only 2 facilities (13.3%) preferred not to disclose this figure.

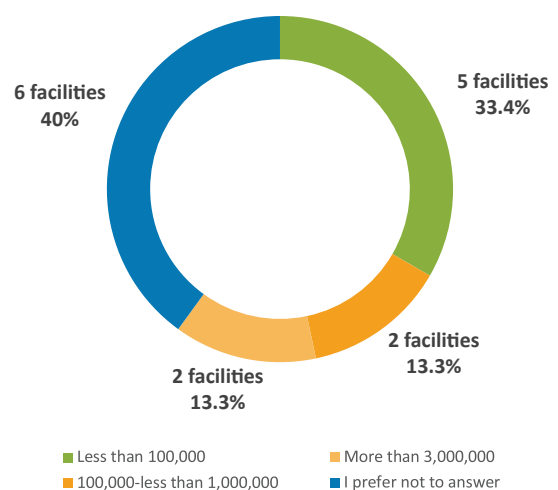
Figure 2: Distribution by paid-in capital (in JOD)



1.3 Distribution by annual sales

5 facilities (33.4%) reported having annual sales less than JOD 100,000. It is worth noting that 6 facilities (40%) did not disclose their annual sales.

Figure 3: Distribution by annual sales (in JOD)



1.4 Distribution by size of the facility

5 facilities (33.4%) reported their size as ranging between 5 and 19 employees, while only 2 facilities were classified as micro (less than 5 employees). 5 facilities had between 20 and 99 employees, and 3 were classified as large with 100 or more employees.

Figure 4: Distribution by number of employees

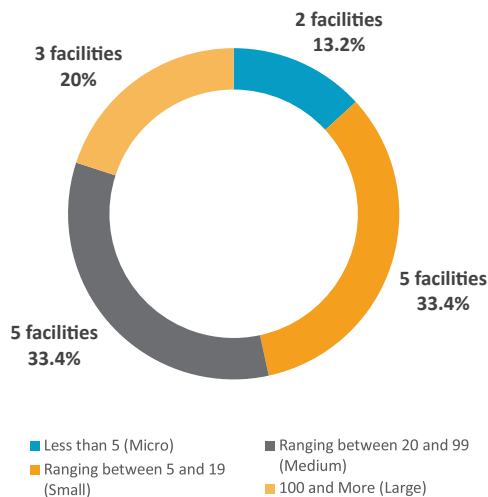
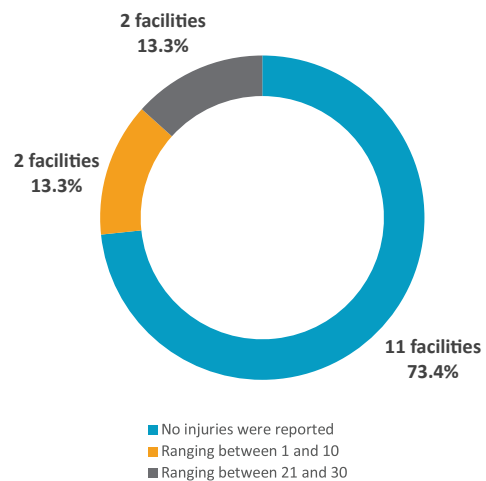


Figure 5: Distribution of number of injuries



2.2 Estimated Injury Rate during the first 6 Months of 2020

The estimated injury rate for the chemicals and cosmetics sector during the first 6 months of 2020 stands at 93 injuries per 1000 employees. Please refer to Annex 1 for a description of the calculation method.

2. Occupational Injuries' Rate & Causes

Based upon the project team's research activities, this section will provide details about the main causes of workplace injuries in this sector.

2.1 Distribution of number of Injuries in the first 6 months of 2020

Only 4 of the 15 facilities operating in the chemicals and cosmetics sector reported injuries taking place during the first 6 months of 2020. 2 of these reported between 21 and 30 injuries in that period, and 2 between 1 and 10.

2.3 Risks Classifications and Main Causes of Injuries

The classifications of risk types and their definitions are listed below:











- **Mechanical risks:** are all types of risks which result from a collision between a solid substance and the human body, whether the body, the object, or both are in motion.
- **Physical risks:** are the risks due to exposure to natural substances, rather than the result of a chemical reaction.
- **Electrical risks:** are the risks which occur due to contact with particles carrying electric current which results in the completion of an electrical circuit.
- **Chemical risks:** are the risks resulting from exposure to chemical substances that exceeds the recommended safety limits. This could be through inhaling, swallowing, or touching chemical substances in the form of vapor, toxic gases, dirt, smoke, etc.

- **Fire and explosives risks:** are the risks due to the burning of flammable particles under chemical reaction conditions, which occurs due to oxidation, resulting in a fire with full or partial destruction, along with injuring an individual, or a group of individuals, or resulting in death.
- **Ergonomics risks:** are the risks associated with the compatibility of the human body and the production lines, handheld tools, and the furniture within the facility.
- **Transportation and handling risks:** are risks associated with the absence or inadequacy of safe storage in the warehouse, along with the risks associated with transportation, handling, and loading, which impacts the safety of workers, along with the safety of raw material and spare parts, and ensuring a safe environment that is free of pollution.
- **Lack of Commitment Towards Personal Protective Equipment.**
- **Human behavior:** refers to any risk relevant to human practices and actions within the working facility which does not fit under the other classifications.
- **Administrative risks:** are the risks associated with administrative decisions including work shifts, rewards and punishment policies, and production pressure coupled with incentives⁶.

The table below lists the risk classification types and the causes and major factors associated with each risk type in the chemicals and cosmetics sector. It is worth mentioning that the groupings of the causes were obtained from the SSC.

⁶ (The above definitions are introduced by TAG-Consul experts)

Table 1: Classifications, causes and contributory factors of the types of injury

Classification of Risks	Causes and contributory factors
	Mechanical
	Machinery and equipment
	Direct contact with a machine's rotational parts
	Lack of machinery and equipment maintenance
	Incompatible production lines
	Handheld tools
	Walking over or bumping into objects Being trapped/jammed by instruments and machinery
	Physical
	Work environment
	Exposure to extreme hot or cold substances Absence of ventilation
	Electrical
Electric contact	
	Chemical
	Chemical substances
	Dealing with chemical leftovers
	Absence of safety labels
	Chemical poisoning
	Impurity of raw materials Faulty instructions on chemical substances
	Fire and explosives
Fire and explosives	
	Ergonomics
	Incompatibility of tools and equipment Inadequacy of personal protective equipment
	Transportation and handling
	Forklifts and transportation tools
	Road accidents
	Falling objects
	Lifting heavy weights Bad storing conditions
	Lack of Commitment Towards Using Personal Protective Equipment (PPE)
	PPE for the hands, eyes, and ears
	PPE for feet and the clothes
	PPE for the respiratory system PPE for the face
	Human behavior
	Sudden moves or extensive pressure PPE not being cleaned, maintained, or sanitized correctly
	Administrative
	Night shifts policies Production pressure coupled with incentives

This section summarizes the major causes of injuries throughout the facilities' operational lifetime in the chemicals and cosmetics sector.

This part of the survey was conducted by taking feedback from the facilities on the top 5 causes of injuries, as per the table and graph shown below. It is worth noting that the total responses were collected from a sample size of 5 facilities and 9 respondents, with an average of 2 responses per facility.

Figure 6: Causes of injuries as reported by respondents⁷



⁷ The groupings of the causes were obtained from the SSC: تقرير اصابات العمل r-17 (ssc.gov.jo).

The table below provides a classification of the causes of risks reported by the 15 analyzed facilities according to type of risks, and clusters the occurrences of the causes (number of responses) by risk classification within risk evaluation assessment practices.

Table 2: Classification of risk casues as per the facilities reponses

Classification of Risks	Causes	Number of Responses
Transportation and handling	<ul style="list-style-type: none"> • Road accidents • Lifting heavy weights • Falling objects 	7
Mechanical	<ul style="list-style-type: none"> • Machinery and equipment • Handheld tools 	5
Chemical	Chemical substances	5
Physical	Work environment	2
Human behavior	<ul style="list-style-type: none"> • Sudden moves or extensive pressure • Falling from high locations 	2

3. Severity of Occupational Injuries

11 (73.3%) of the 15 chemicals and cosmetics facilities in the survey reported having no injuries during the first half of 2020, while the remaining 4 reported their injuries to be minor.

4. Occupational Injury Occurrence by Risk Classification Type

This section details the frequency of injuries at the 15 chemicals and cosmetics facilities in the survey, with the various types of risk clustered into the following 10 key risk classifications:

1. Mechanical Risks
2. Physical Risks
3. Electrical Risks
4. Chemical Risks
5. Fire and Explosion Risks
6. Ergonomics Risks
7. Transportation and Handling Risks

8. Lack of Commitment Towards Using Personal Protective Equipment (PPE)
9. Human Behaviors
10. Administrative Risks

4.1 Occurrence of Injuries Due to Mechanical Risks

- 4 facilities reported that direct contact with rotational mechanical parts caused injuries once a year.
- 1 facility reported that the lack of hosting maintenance on machinery caused injuries on a bi-yearly basis, and 1 facility that this risk caused one injury once a year.
- 1 facility stated that a lack of compatibility of production lines and their machines caused injuries twice a year.

4.2 Occurrence of Injuries Due to Physical Risks

- 1 facility reported that not offering a proper work environment in terms of facility temperature, noise levels, humidity and lighting intensity can be considered the most frequent cause of injury amongst the physical risks, with injuries occurring 4 times a year, while another facility reported injuries occurring due to this reason once a year.
- One facility reported that the absence of ventilation caused injuries every 6 months.

4.3 Occurrence of Injuries Due to Electrical Risks

- 1 facility (6.6%) reported that injuries were caused by electric contacts on a quarterly basis.

4.4 Occurrence of Injuries Due to Chemical Risks

- Chemical risk due to dealing with chemical leftovers, was reported as causing injuries once a year by 2 facilities.
- 1 facility reported impurity of raw materials, chemical poisoning, chemical reactions, and the absence of the safety labels causing injuries on a yearly basis.

4.5 Occurrence of Injuries Due to Fire and Explosion Risks

- One facility (6.6%) reported that injuries due to fires and explosions occurred on a yearly basis.

4.6 Occurrence of Injuries Due to Ergonomics Risks

- Incompatibility between object and equipment design and the human body, were reported to cause one injury once a year by one facility.
- One facility reported the inadequacy of PPE worn by workers causing injuries on a quarterly basis.

4.7 Occurrence of Injuries Due to Transportation and Handling Risks

- 2 facilities reported bad storage conditions causing injuries on a yearly basis.

4.8 Occurrence of Injuries Due to a Lack of Commitment Towards Using Personal Protective Equipment (PPE) Risks

- 1 facility reported that staff not wearing personal protective equipment for the hands, eyes, and ears caused injuries on a quarterly basis, while 2 facilities reported that this caused injuries twice a year. Conversely, 4 facilities reported it causing injuries on a yearly basis.
- 1 facility reported that staff not wearing PPE for feet and clothes caused injuries on a bi-yearly basis, while 2 facilities reported these causing injuries on a yearly basis.
- 1 facility reported injuries occurring twice a year due to staff not wearing protective face equipment, while 2 facilities reported it causing injuries on a yearly basis.
- Not wearing protective respiratory equipment was reported as causing injuries once a year by 5 facilities.

4.9 Occurrence of Injuries Due to Administrative Risks

- 4 facilities reported injuries due to production pressure coupled with incentive policies occurring on a yearly basis.
- 3 facilities reported working extra shifts causing injuries once a year.

- 1 facility reported that one injury caused by tiredness while working night shifts occurred once a year.

4.10 Occurrence of Injuries Due to Human Behaviors

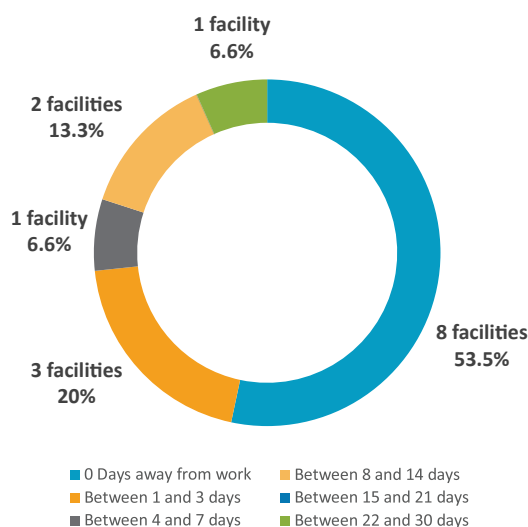
- 3 facilities reported that falling from high locations causes injuries on a quarterly basis, while one facility reported this risk causing injuries on a bi-yearly basis. Meanwhile, 2 facilities reported it causing injuries once a year.

5. Average Annual Out of Service Days Due to Injuries

This section details the distribution of the 15 chemicals and cosmetics facilities analyzed by out of service days due to injuries.

- 8 facilities (53%) stated that the injuries reported by their employees did not require them being absent from work.
- 3 facilities reported between 1 and 3 out of service days.
- 1 facility reported that average out of service days ranged between 4 and 7 days, and 2 between 8 and 14 days.
- 1 facility reported that out of service days ranged between 22 and 30 days.

Figure 7: Distribution of responses by number of out of service days (days away from work) as reported by interviewed facilities in the chemicals and cosmetics sector



6. Occupational Safety and Health Procedures According to Best Practices and Compliance with the Bylaws and Regulations

6.1 Occupational Safety and Health Best Practices

The main best practices adopted by the facilities operating in the chemicals and cosmetics sector that were interviewed, along with the level that each practice has been adopted, are listed below:

- **The usage of supportive software for Occupational Safety and Health (OSH):** 7 facilities (46.6%) reported that they had fully adopted OSH software.
- **Technological meters associated with safety measures:** More than half of the facilities in the survey reported a high level of adopting the use of technological meters, and nearly 27% reported fully adopting them.
- **Replacing paper-based systems for recording work injuries with electronic ones:** Only 3 of the facilities (20.0%) reported fully adopting an electronic system for recording injuries, while 1 facility (6.6%) reported not adopting a computerized recording system at all.
- **Local and International standards amongst facilities:** 7 facilities (46.6%) reported the full adoption of local and international standards dedicated to safety at the work environments.
- **Risk assessment strategies, including replacement, mitigation, and elimination:**
 - 3 facilities (20.0%) reported replacing hazardous activities with less risky alternatives.
 - 7 facilities (46.6%) reported adopting a mechanism dedicated to risks mitigation.
- **Evaluation of staff's performance based on their commitment towards OSH measures:** 33.3% of the surveyed facilities reported excellent commitment from their employees towards adopting both safety measures and punishment and incentives policies. This is in line with the findings of the focus group discussion, in which the workers in the sector reported that their management had adopted the punishment system in the cases where OSH measures had not been adopted.
- **Suitability of amenities to the needs of people with disabilities:** 33.3% of the facilities reported the full compatibility of their facilities with the

needs of people with disabilities or physical challenges, whether they were employees or visitors.

- **Work Policies Information Dissemination Channels:**
 - 7 facilities (46.6%) reported documenting their procedures associated with work policies.
 - 7 facilities (46.6%) reported circulating their work policies verbally.
 - 1 facility (6.6%) reported offering trainings for its employees to exchange information about the company policies.
- **Risk Awareness Information Dissemination Channels:**
 - 3 facilities (20.0%) reported adopting documented risks and hazards awareness procedures and policies that can be shared with all employees.
 - 9 facilities (60.0%) reported giving instructions concerning risk awareness verbally, whether through management or work colleagues.
 - 3 facilities (20.0%) operating in the chemicals and cosmetics sector reported conducting training sessions dedicated to spreading risk awareness amongst their employees, including work injuries and safety measures.

6.2 Compliance of Occupational Safety and Health with the bylaws and regulations

This section lists the level of adoption of occupational safety and health regulations amongst the 15 chemicals and cosmetics s facilities analyzed.

- **Hosting regular testing sessions to detect occupational diseases:** 9 facilities (60.0%) reported a full commitment towards adopting regular testing for detecting occupational diseases, while 3 facilities (20%) reported their commitment as good.
- **Running primary tests for new employees joining the facility:** 7 facilities (46.6%) reported the full adoption of running primary tests for new employees joining their facility.
- **Reporting the results of the hosted tests to the authorized entities:** 7 facilities (46.6%) reported the full adoption of reporting the results of the hosted tests to the authorized entities.
- **Availability of amenities, such as food courts and changing rooms within the facilities:** 4 facilities

(26.7%) reported the availability of these amenities.

- **Presence of a doctor or a medical committee:** Only 2 facilities (13.3%) reported excellent satisfaction with their facilities' offering of a dedicated doctor or medical committee.
- **Trainings under the supervision of the safety officer:** 5 facilities (33.3%) expressed their full satisfaction with the trainings supervised by their safety officer.

7. Impact of OSH Conditions on the Safety of Females in the Workplace

Female employees work environments are subject to risks associated with their safety and health. Female employees may also be subject to gender-based discrimination, harassment in the workplace, and strict working hours.

The hazards associated with female employees are attributed to a number of factors, which can be summarized as follows:

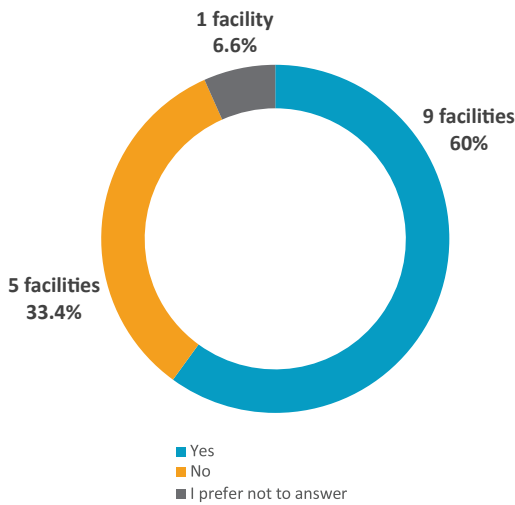
- It was deduced from the Focus Group Discussions that the Personal Protective Equipment (PPE) and Personal Protective Clothes (PPC) in use were originally designed to be compatible with average sized male employees, which lowers the functionality of protective equipment such as boots, gloves, respirators, etc. when they are used by women.
- The bodily shape and physical strength of potential female employees are not taken into consideration when the tools and machinery in the facilities were designed.
- Sexual harassment is one of the most frequent problems faced by women at work and is partly caused by a lack of gender equality in the workplace⁸.

7.1 Females' Participation in the Workplace

9 facilities confirmed that they have females as part of their workforce, while 5 facilities stated that they had no females workforce. 1 facility chose not to provide an answer.

⁸ Supporting article : Harassment of women increased in workplace – study | Jordan Times

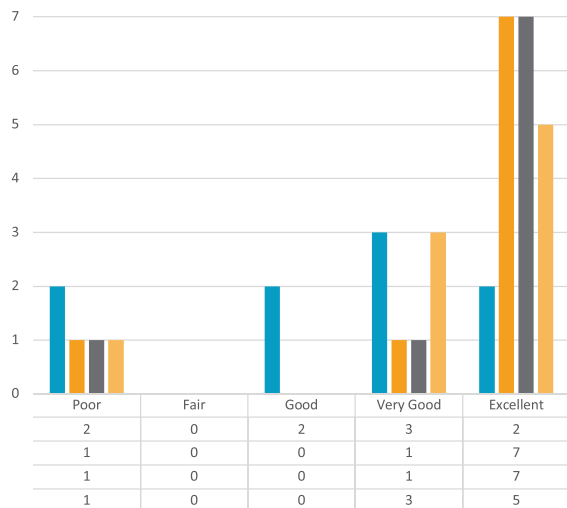
Figure 8: Facilities distribution as per female participation



7.2 Safety Concerns for the Female Workforce

The following graph indicates the safety challenges faced by women at the 9 facilities that reported having female employees.

Figure 9: Safety concerns for female workers



■ Work condition for pregnant women and breastfeeding female workers
 ■ Compatibility of PPE with female workers
 ■ Commitment in adopting safety measures
 ■ Limits on weights lifted by female workers

The following can be concluded from the above graph:

- The main safety concern facing females operating in the chemicals and cosmetics sector is work

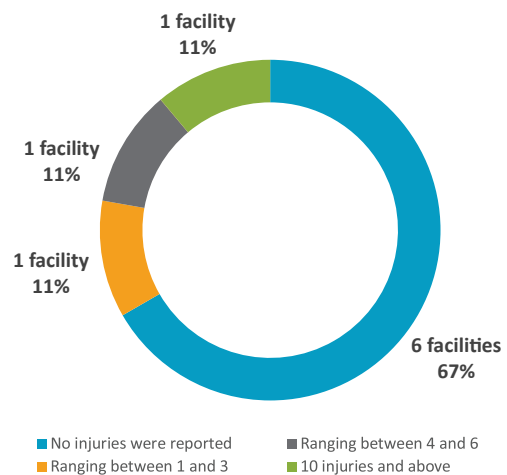
conditions for pregnant and breastfeeding female employees. These include long working hours, shifts, and employment contracts, the lack of on-site care facilities for children, and physically challenging work conditions. Only 2 facilities which employed women (22.2%) reported full compliance in terms of offering work environments that were compatible with the needs of pregnant female employees.

- The other main safety concern amongst facilities which employed women was related to limits on the weights that female employees could lift, with:
 - 5 facilities (55.6%) reporting excellent adoption in implementing this measure.
 - 3 facilities reporting a very good adoption for this measure.
 - Only 1 facility reported not adopting limits on the weight that female employees could lift.

7.3 Injuries Reported to Female Workforce

6 facilities reported no injuries amongst their female workforce, 1 medium sized facility reported injuries between 1 and 3 injuries, 1 large facility reported an injury rate between 4 and 6, and 1, which was classified as a large facility, reported more than 10 injuries (13 in fact).

Figure 10: Facilities distribution based on females injurers

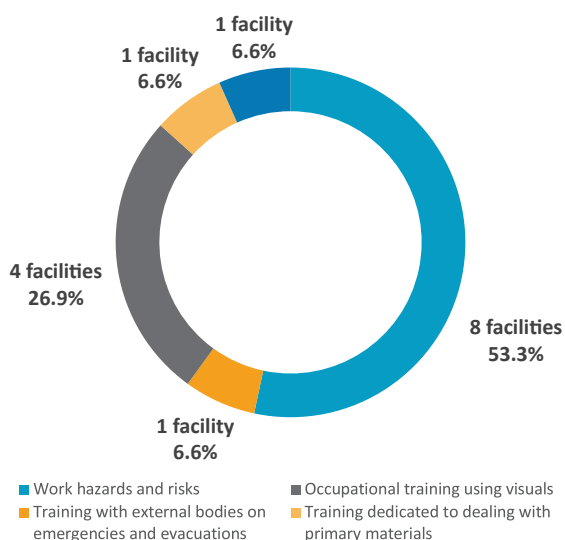


8. Occupational Safety and Health Training

The chart below provides a breakdown of the trainings requested by the 15 facilities in this sector that were surveyed:

- 8 facilities requested trainings associated with work hazards , machinery risks, along with general aspects concerning safety.
- 4 facilities asked for occupational training using visual material.
- 1 facility requested trainings with external bodies for emergency cases and evacuations.
- 1 facility requested awareness sessions dedicated to dealing with primary materials.
- 1 facility perceived having no need to conduct trainings of any kind.

Figure 11: Distribution of facilities with respect to their training requirements & needs



9. Costs Associated with Injuries and OSH

There are 2 types of costs associated with injuries and OSH, which are:

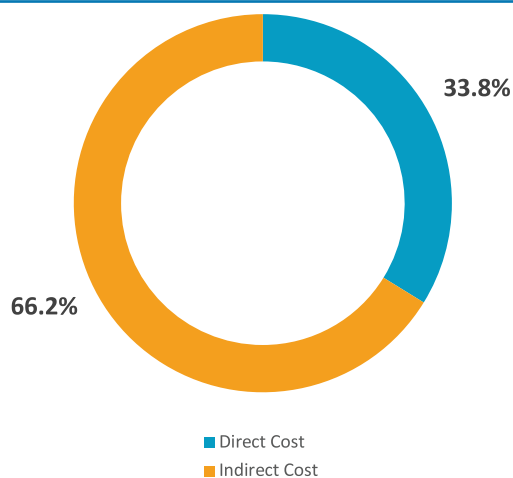
- Direct Costs:** these are the costs that can be directly traced to the result of an injury, including the cost of medical procedures, hospitals, pharmacies, physicians, therapy, disability compensation, and death benefits.
- Indirect Costs:** these are the costs that cannot

be directly traced to the result of an injury and consists of a number of indicators including administrative costs, the cost of recruiting alternatives, OSH fines and penalties, the maintenance and amendment of production lines, and the cost of additional personal protective equipment.

The table below lists the costs associated with injuries during 2019, as reported by the 15 facilities interviewed from the chemicals and cosmetics s sector. Direct annual costs constituted 33.8% of the total costs associated with injuries, and Indirect costs represented 66.2%.

Annual Cost in JOD	Type of Cost Associated with Work Injuries
7,781	Direct Cost
15,240	Indirect Cost

Figure 12: Distribution of costs associated with workplace injuries within the chemicals and cosmetics s facilities interviewed



10. Relationship Between Injuries and the Occupation Safety and Health Procedures in the Chemicals and Cosmetics Sector

This section explores the relationship between the adoption levels of occupational safety and health measures and their impact on the number of injuries recorded by the facilities. It is worth mentioning that the OSH measures were inclusive of both best practices and measures requested by the Jordanian bylaws and regulations.

10.1 Relationship Between Injuries Occurrence and the Role of the Safety Officers

A. Spreading awareness about work risks and hazards

- 6 facilities reported their full satisfaction in the officers' role in spreading awareness about work risks and hazards. 1 of these facilities reported an occurrence rate ranging between 1 and 10 injuries.
- It's worth noting that 1 facility which reported not being satisfied in the role of their safety office in terms of spreading awareness about work injuries also reported an injury rate ranging between 1 and 10 injuries.

B. Hosting and documenting OSH committee meetings

- 2 facilities reported fully adopting the safety officer's role in hosting and documenting the outcomes of OSH committee meetings, 1 of which reported zero injuries.

C. Investigation of injuries and incidents

- 2 of the facilities in the study reported being highly dissatisfied with their safety officers' role in investigating the occurrence of injuries and incidents, and 1 of these facilities reported an injury rate ranging between 1 and 10 injuries

10.2 Relationship Between Injury Occurrence and the Adoption of OSH Technologies

A. Adoption level of using supportive software for Occupational Safety and Health (OSH)

- 7 facilities fully adopted the use of OSH supportive software, 6 of which (85.7%) reported zero injuries.
- 3 facilities reported not adopting OSH software, 1 of which reported an injury rate ranging between 1 and 10 and 1 reporting an injury rate ranging between 21 and 30.

B. Adoption level of technological meters associated with safety measures:

- The 1 facility which reported not having adopted OSH related technological meters had an injury rate ranging between 1 and 10 injuries.

C. Adoption level of technological programs

associated with risk evaluation:

- 3 facilities reported not having adopted risk evaluation technological programs. 1 of these facilities reported an injury occurrence rate between 1 and 10 injuries, and 1 facility a rate of between 21 and 30 injuries.

10.3 Relationship Between Injury Occurrence Rates and the Recording of Injuries at the Facilities

- 1 facility reported not using a computerized/digitalized work injury recording system, and it reported an injury rate ranging between 1 and 10 injuries.
- 1 facility reported not having an injury record, and this facility also reported an injury rate ranging between 1 and 10 injuries.







Annexes

Annex 1: Injury Rate Calculation

A. Rate Calculation Method for the Plastic and Rubber Sector

The calculation for the injury rate for each sector was based on data obtained from the survey, using the formula below:

$$\frac{(Injuries\ Reported\ by\ The\ Surveyed\ Facilities \times 1000)}{(Total\ No.\ of\ Employees\ of\ the\ Surveyed\ Facilities)}$$

The surveyed facilities provided the number of their employees and the number of injuries that occurred during the first half (H1) of 2020 in range brackets, which were used to:

1. Facilitate the data collection process from the respondents to:
 - Provide the research team with a close estimate, especially amongst facilities which do not adopt an injury recording system.
 - Make respondents more cooperative where they may have restrictions in reporting the actual numbers of injuries.
2. Ease the facilities classification and categorization process.

The Value for Injuries Reported by the Surveyed Facilities was calculated by taking the mean value of each injury rate range bracket and multiplying it by the number of facilities that fall within each respective bracket and adding the results from the ranges together. The mean value was used instead of actual values since the survey questions focused on range brackets:

- Mean value for the 1-10 bracket = 5.5
- Mean value for the 11-20 bracket = 15.5

The Value for the Total No. of Employees of the Surveyed Facilities was calculated by taking the upper value for the lowest range, 1 to 4 employees, the lower limit for the highest range, 100 and above employees, and for the other ranges taking the mean value and multiplying it by the number of employees in that range, and then adding the results for the ranges together.

- Number of employees = 1 - 4: the upper limit used, 4
- Number of employees = 5 - 19: the mean value used, 12
- Number of employees = 20 - 99: the mean value used, 59.5
- Number of employees = equal or above 100: the lower limit was used, 100

Number of injuries reported:

- 15 Facilities reported zero (0) injuries
 - Therefore 0 injuries reported in this range
- 18 Facilities reported injuries falling in the 1 - 10 range.
 - Average injury rate is 5.5 injuries.
- Therefore 99 injuries reported in this range
 - 1 Facility reported injuries falling in the 11 - 20 range.
- Average injury rate is 15.5 injuries.
 - Therefore 15.5, rounded to 16, injuries in this range.

Total number of injuries reported = 115

The mean value was used of each range bracket to calculate the **Total No. of Employees of the Surveyed Facilities**.

Total number of employees:

- 1 Facility reported less than 5 employees
 - Number of employees is 4 (the upper limit is taken).
 - Therefore, number of employees in this range = 4
- 6 Facilities reported an average number of employees ranging between 5 – 19
 - Mean number of employees is 12.
 - Therefore, number of employees in this range = 72
- 20 Facilities reported an average number of employees ranging between 20 – 99
 - Mean number of employees is 59.5.
 - Therefore, number of employees in this range = 1,190
- 7 Facilities reported 100 or more employees
 - Number of employees is 100 (we took the lower limit).
 - Therefore, number of employees in this range = 700

Total number of employees = 1,966

The injury rate for the plastic and rubber sector is therefore:

$$\frac{(115 \text{ Injuries} \times 1000)}{(1,966 \text{ Employees})} = 58.49 \text{ or } 59 \text{ injuries reported per } 1000 \text{ employees.}$$

B. Rate Calculation Method for the Chemicals and Cosmetics Manufacturing Sector

Total number of injuries reported:

- 11 Facilities reported zero (0) injuries
 - Therefore, no injuries were reported in this range
- 2 Facilities reported average injuries ranging between 1 – 10
 - Mean injury rate is 5.5 injuries.
 - Therefore, 11 injuries were reported in this age range
- 2 Facility reported average injuries ranging between 21 – 30
 - Mean injury rate is 25.5 injuries.
 - Therefore, 51 injuries were reported in this age range

Total number of injuries reported = 62

Total number of employees

- 2 Facilities reported less than 5 employees
 - Number of employees is 4 (we took the upper limit).
 - Therefore, total employees in this range = 8
- 5 Facilities reported average employees ranging between 5 – 19
 - Mean number of employees is 12.
 - Therefore, total employees in this range = 60
- 5 Facilities reported average work employees ranging between 20 – 99
 - Mean number of employees is 59.5.
 - Therefore, total employees in this range = 297.5, rounded to 298
- 3 Facilities reported 100 or more work employees
 - Number of work employees is 100 (we took the lower limit).
 - Therefore, total employees in this range = 300

Total number of employees in this sector is therefore 666.

The injury rate for the chemicals and cosmetics sector is therefore:

$$\frac{(62 \text{ Injuries} \times 1000)}{(666 \text{ Employees})} = 93.09 \text{ or } 93 \text{ injuries reported per } 1000 \text{ employees.}$$

Annex 2 : Plastic and Rubber and Chemicals and Cosmetics Gap Analysis

Table 1: The gap analysis associated with the plastic & rubber and chemicals & cosmetics sectors

No.	Indicator	Weakness
1	Adoption mechanism of documented work and risk awareness policies within the analyzed facilities	<ul style="list-style-type: none"> • The reliance on pre-hiring trainings and verbal instructions, in which there is a possibility that the information obtained by the employees can be forgotten with time or misinterpreted. • Moreover, the effectiveness of the trainings is reliant on the qualifications of the instructor and the content of the sessions.
2	Cost	<ul style="list-style-type: none"> • Management is not aware of the hidden costs associated with injuries, or that reputational damage can have more of an impact on the facility than the visible cost, and can make the facility uncompetitive or even put it out of business.
3	Risk Assessment Strategies	<ul style="list-style-type: none"> • The facilities operating in the plastic and rubber sector which reported not having adopted risk control tools constitute a share of 38.2% for the risk substitution, and 41% each for risk elimination and risk mitigation. Although these percentages are below 50%, the figures may indicate that accidents at these facilities may be preventable if proper measures are taken. • Nearly more than 50% of responses obtained from the chemicals and cosmetics sector revealed low adoption of risk assessment strategies, whether for the mitigation, elimination, or replacement of risk. • 3 of the 15 facilities surveyed in the chemicals and cosmetic sector reported adopting a risk substitution strategy, and 4 facilities reported adopting strategies to eliminate risky activities.
4	Training	<ul style="list-style-type: none"> • Only 6 facilities operating in the plastic and rubber sector (15%) reported a full adoption of hosting trainings with external entities, including to the General Directorate of Civil Defense, which limits their ability to deal professionally with emergencies such as extinguishing fires and facility evacuation procedures. • Only 3 of the surveyed facilities (20%) expressed their full satisfaction with the trainings hosted along with external entities, while 4 facilities reported a poor adoption of conducting trainings with external entities. • Lack of Incorporation of trainings during all the phases of employment to include hazards training and pre-employment training, along with dedicated training prior to being assigned to a new position.
5	Work conditions associated with female workers	<ul style="list-style-type: none"> • Only 2 of the 9 chemicals and cosmetics facilities that employed women offered excellent work conditions that are compatible with pregnant and/or breastfeeding female workers.



