



Design of a safety and health management system at work for the company Mendomet S.A. based on the ISO 45001:2018 standard.

Diseño de un sistema de gestión de seguridad y salud en el trabajo para la empresa Mendomet S.A. basado en la norma ISO 45001:2018.

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Abstract

The present investigation is carried out in the company Mendomet S.A. with the purpose of proposing an Occupational Health and Safety (OSH) management system since it is facing a series of problems by not having and not knowing the ISO 45001: 2018 standard. Therefore, a theoretical review is generated highlighting the importance of organizational management, physical health and others. To achieve the object of study, a mixed approach is used with a type of descriptive, explanatory and documentary research that identifies the internal critical factors. It was obtained as a result that the absence of this regulation has incurred an increase in dangers, decrease in profitability and productivity. In addition, an IPER matrix is applied where a high risk is established in the operational area of the industry center, for which an action plan is established to improve and protect the physical integrity of its collaborators.

Keywords: Organizational management, SST, management system, IPER matrix, ISO standard.

Resumen

La presente investigación se ejecuta en la empresa Mendomet S.A. con el propósito de plantear un sistema de gestión en Seguridad y Salud del Trabajo (SST) ya que se encuentra enfrentando una serie de problemáticas al no contar y desconocer de la normativa ISO 45001:2018. Por ello, se genera una revisión teórica destacando la importancia de la gestión organizacional, salud física y demás. Para alcanzar el objeto de estudio se emplea un enfoque mixto con un tipo de investigación descriptiva, explicativa y documental que identifiquen los factores críticos internos. Se obtuvo como resultado que la ausencia de esta normativa ha incurrido en un aumento de peligros, disminución en la rentabilidad y productividad. Además, se aplica una matriz IPER donde se establece un alto riesgo en el área operativa del centro industrial por lo que se establece un plan de acción para mejorar y proteger la integridad física de sus colaboradores.

Palabras clave: Gestión organizacional, SST, sistema de gestión, matriz IPER, norma ISO.

1. Introduction

Positive attitudes towards safety can help improve the workplace culture and generate a better understanding of risk within the team of employees. Thus, business owners have the moral responsibility to keep their people safe with an effective health and safety management system that helps minimize risk and protect against accidents in the job they perform.

Given the importance of this, it is unacceptable for someone to be injured or fatally injured in their workplace, so implementing a health and safety management system can help reduce accidents and increase morale within the company. Based on the above, the company Mendomet S.A. is identified, which has around 20 workers, all of whom are exposed to risk situations due to the absence of a risk management system for health and safety that they can adhere to in the event of an unforeseen event within their jobs where their physical integrity is compromised [1].

Therefore, given the situation of insecurity that employees are exposed to, the need expressed by operational personnel to reform internal policies, improve worker performance by extending a better work environment, among other aspects, is highlighted.

As a small company, you may not need such a simplified framework, but a well-structured one to manage the health and safety risks of your business. However, as it grows, it will be important to establish a formalized comprehensive safety management system. Safety management systems are continuously maintained and improved through monitoring and review. For the purposes of the study, it is expected to contribute an excellent tool to optimize the economic resources of the entity, improve the performance of employees by being exposed to a safer work environment, among other aspects.

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To conclude, being aware of the constant updating of internal and external safety systems at the national and international levels, a regulatory framework backed by the principles of ISO Standard 45001:2018 is included, thereby motivating the company to perform a new management system for the sustainable development of the establishment, providing greater security to employees and customers who frequent the economic dependency.

1.1. Problem statement

People who work at least 55 hours a week have an increased risk of stroke and dying from ischemic heart disease, according to a new study published by the World Health Organization (WHO) and the International Labor Organization (ILO).

According to a WHO report on an ILO study, in 2016 around 1.9 million people worldwide died from occupational illness and injury, among which the most common are 398,000 people who died from stroke, 450,000 from lung disease, 360,000 from work-related trauma, 750,000 from exposure to long working hours, 350,000 from heart disease, among others. That is an increase of 19% and 42% of people who died from stroke and heart disease, respectively, since 2000. The study was based on data from more than 23,000 surveys in 154 countries from 1970 to 2018 [2].

Given this situation, the Ecuadorian territory has taken the legal reins regarding occupational safety and health in order to prevent any type of accident or illness that directly affects the physical integrity of workers as a result of work activities within jobs.

According to Toro, Comas and Castro, among the public institutions that have promulgated occupational safety are the Ministry of Labor, the Ministry of Public Health (MSP) and the Ecuadorian Social Security Institute (IESS), through the enactment of regulations that directly protect the worker from any situation of physical risk through the extension of executive decrees, ministerial agreements or resolutions that regulate non-compliance with the labor rights of Ecuadorians.

In this scenario, the present investigation is carried out within the company Mendomet S.A. which is located in the city of Guayaquil in Cdla. Olmedo Arroba Espinoza Mz.3 Sl. 3-6 Esq (Bastión Popular Km. 12.5 Via Daule). This company is dedicated to the marketing of construction materials, construction of metal roofs and structures for offices with more than 17 years operating in the Ecuadorian construction market [3].

Unfortunately, the entity is facing a series of problems because they do not have a structured security system that allows them to ensure the health of workers and

management is unaware of the regulations or legal obligations that must be met. The aforementioned can be identified through direct observation, so aspects on which the importance of using the study is based can be rescued, among these aspects are:

- The lack of a risk prevention system.
- There are no protocols that allow them to act effectively in medical emergencies.
- The operational areas are exposed to little organization and lack of internal communication.
- Insufficient personal protective equipment and tools (helmets, gloves, safety harnesses, etc.).
- Poor staff training on occupational hazards and how to prevent them.
- Lack of management commitment to safety and health [4].

2. Research techniques and instruments

For the effective execution and determination of the validity of the developed project, the following research techniques are used:

- **Interview:** "Interviews, as tools to collect qualitative data, are used when the problem under study cannot be observed or is very difficult to do so for ethical or complexity reasons" [5]. An interview, as a technique in the present study, involves collecting information through a set of direct questions to the operations manager and general management of Mendomet S.A., with the mission of clarifying to the target audience what actions are taken to address the identified problem that fits the absence of an OHS management system and once the answers are taken they are processed in a matrix for later analysis.
- **Análisis documental:** "Se define como la Documentary analysis: "It is defined as the research carried out through the use of official documents or personal documents as a source of information". Through the documentary review, various scientific articles, undergraduate and graduate university theses, physical or online books are covered, as well as the documents and annexes that the Mendomet S.A. administration can provide for the academic purposes of the project [6].
- **Observation and checklist:** "It involves delving deeply into social situations and maintaining an active role, as well as permanent reflection" [5]. The observation is based on a form with dimensions to be evaluated firsthand by the author of the project regarding ISO Standard 45001:2018 and its components, in order to be able to weigh the critical



means in force in the entity that complicate a good development of OHS management in the entity.

3. Results

3.1 Conclusion of results

The interview with the Manager and Head of Operations of Mendomet S.A. allowed to know how a company works internally and that being small the entity there are still risks that can affect all its personnel, regardless of the area in which they work because it must be taken into account that people circulate through areas adjacent to the operations area which is where goods are produced and where there is a greater risk of an incident or accident at work occurring.

The questions served the company to realize that they have a lot of work ahead and that the best option is the implementation of ISO standard 45001-2018 which mainly contributes to the entity reducing the risk of accidents, as well as protecting its personnel and therefore the society that is affected with each accident that occurs within a company because behind each worker there is a family [7].

These results allowed to strengthen the knowledge of the degree in Quality Systems and Entrepreneurship and at the same time corroborate that if there is a standard that guides the organization, the right thing is to adopt it.

Table 1 Compliance with the standard within the company

Compliance with the requirements of the Occupational Health and Safety Management System			
Section	Description	Yes %	No %
1	Organization context	0	100%
2	Leadership and worker participation	40%	60%
3	Planning	0	100%
4	Support	0	100%
5	Operations	0	100%
7	Performance evaluation	0	100%
8	Improvement	0	100%

- Source: Verification form.
- Prepared by: The author.

Table 2 Risky exposures for workers

Exposure	Frequency of exposure	Characterization of the risk to which it is exposed
1	Constantly	Wet floor due to winter season
2	Constantly	Toilets, urinals and sinks get clogged frequently.
3	Constantly	Staff leaves workstations dirty
4	Constantly	Insufficiency in the air conditioning and ventilation system during peak hours.

5	Constantly	Entrances and stairways completely collapsed during high traffic hours.
6	Constantly	Leaks in operations sectors
7	Constantly	Stress in high pressure scenarios and fatigue
8	Constantly	Unawareness of emergency plan and ISO standards

Source: [8].

Prepared by: The author.

Annex 1. Application of observation sheet

Date: 20/02/22

Company Name: Mendomet S.A.

Topic: Work performance of administrative and operational staff

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ASPECTS		RATING			
1.	Customer service	Very good	Good	Terrible	Bad
1.1	Communication between the client and the company's staff.				
1.2	Listens to customer needs and provides solutions.				
1.3	How they present the different services.				
1.4	The company employee is friendly and courteous to the client.				
1.5	Delivery of scheduled products complies with what was stipulated and explained to the user.				
1.6	Links of reliability are created by the client towards the company.				

ASPECTS		RATING			
2.	Business infrastructure	Very good	Good	Terrible	Bad
2	Internal facilities and care provided				
2	External facilities and order execution				
2	Painting and lighting of the facade and interiors of the company				



2	Business identification sign				
2	Organizational environment and fulfillment of staff duties.				
2	Vehicles with various load capacities				
2	Scheduling models are exposed to the client				
2	Display of permits and commercial ties with renowned entities.				

3	Administrative staff clothing				
3	Operational staff clothing				
3	Biosafety standards in the case of load operators				
3	Display of ISO standard compliance for customer, product and employee safety.				

	ASPECTS	RATING			
3.	Corporate and staff image	Very good	Good	Terrible	Bad
3	Neatness status of uniforms				
3	Distinctive logo on shirts and shirts of administrative or operational staff				

Schedule and action plan

The action plan in this project acts as a document that establishes the tasks that must be completed to mitigate and/or eliminate occupational hazards. A good action plan will describe all the necessary steps to achieve the company's objective and will help assign a timeframe, start and completion date to each step of the process. Based on what was stated in table 10, an action plan is presented where each of the measures can be determined to design an effective OHS management system to mitigate and/or eliminate occupational hazards in the company [9]:

Table 3. Action plan and budget

ACTION PLAN					Period
Identified issue	Compliance	Action	Responsible	Deadline	2022 Budget
Slippery floors	NO	Placement of non-slip materials in production areas	Safety coordinator and installation service	1 week	\$250,00
Cleaning coordination programs for area	NO	Cleaning programs for each area in the company	Maintenance technician	Dialy	\$ 50,00
Maintenance of equipment and machinery	NO	Control and maintenance of machinery	Maintenance technician	1 week	\$ 500,00
Maintenance of ventilation ducts	NO	Maintenance of ventilation systems	Maintenance technician	1 week	\$ 500,00
Correct waste disposal system	NO	Improvement in the disposal system for hazardous and dangerous waste	Crew chief	1 week	\$ 500,00
Programs for the coordination of facility maintenance	NO	Facility inspection and maintenance program	Maintenance technician	2 week	\$ 1.300,00
ISO standard training programs	NO	Staff training on occupational hazards and accidents	Safety coordinator and installation service	5 days	\$ 532,00
Ergonomics training programs	NO	Ergonomic training (lifting loads)	Safety coordinator and installation service	5 days	\$ 120,00
5S training programs	NO	Training in 5S (Order and cleaning)	Safety coordinator and installation service	5 days	\$ 120,00
CPR training programs	NO	CPR training (Cardiopulmonary resuscitation)	Safety coordinator and installation service	5 days	\$ 250,00
Coordination of workshops for stress management	NO	Taller de manejo de estrés	Safety coordinator and installation service	5 days	\$ 532,00



Management of facilities and adjustments in the production area	NO	Stress management workshop	Safety coordinator and installation service	1 week	\$ 400,00
					\$ 5.054,00

Prepared by: The author.

4. Conclusions

Through the development of this research, the aim was to propose an occupational health and safety management system based on ISO Standard 45001:2018 to improve the hazardous scenarios faced by the workers of the company Mendomet.

Through the application of a survey within the operational sections of the company Mendomet, some existing limitations in the work performance of the workers when exposed to dangerous situations in the workplace could be established, among the identifications are: increased hazards, suspensions due to injuries of operational personnel, reduction of human capital, decrease in profitability and productivity rates.

After identifying the main risks to which Mendomet company workers are exposed through a hazard identification and risk assessment (HIRA) matrix, some aspects that deserve to replace and place non-slip materials in production areas, use cleaning programs for each area in the company, increased work stress, quite serious injuries in staff, among other aspects, could be reflected through the high and low risk scale.

The aim was to describe an action plan to improve and mitigate occupational hazards within the company Mendomet, this has implied that activities be stipulated with those responsible ranging from managers and technicians so that they respect the principles of ISO Standards 45:0001- 2018. In favor of this, a plan is used with various actions, such as: control and maintenance of machinery, maintenance of ventilation systems, improvement in the disposal system for hazardous and dangerous waste, staff training on occupational hazards and accidents, ergonomic training (lifting loads), training in 5S (Order and cleaning), CPR training (Cardiopulmonary resuscitation), stress management workshop; and, supervision and general control of facilities in the production area.

Finally, a framework is established with preventive measures that contribute to protecting the biosafety of Mendomet company workers. These regulations were based on ISO Standards 45:0001-2018 estimating that operational and administrative performance can be improved after expanding internal control measures to reduce the margin of incidents in the company.

4.1. Proposal

Based on what has been done so far, this section presents a proposal to design an OHS structure based on ISO standard 45001:2018 for the company Mendomet. This proposal will allow knowing the way in which the company Mendomet S.A. can implement a better system for its employees in the future. For this purpose, a hazard identification and risk assessment (HIRA) matrix is used, then an action planning and finally a framework containing preventive measures that will contribute to the biosafety of employees in the economic unit.

Therefore, through this establishment of a regulatory framework, it will be possible to contribute positively to the fulfillment of objective 9 of the Good Living Plan, which aims to "guarantee decent work in all its forms." In addition, by establishing an OHS, Mendomet will be able to:

- Comply with the minimum laws established regarding ISO regulations in Ecuador.
- Proportionally reduce occupational risk.
- Allow the work environment for workers to be safer.
- Reduce unnecessary expenses
- Improve employee performance and efficiency.

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