

ARTÍCULO CIENTÍFICO

“IMPLEMENTACIÓN DE UN PLAN DE PREVENCIÓN DE RIESGOS MECÁNICOS EN LA EMPRESA
“INDUMEI” DE LA CIUDAD DE IBARRA”

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Abstract.

This project is implemented in the Enterprise "INDUMEI" which is focused on the industrial sector, characterized by manufacture machinery for the sectors of construction, agribusiness, food and industrial, to make these products workers are exposed to risk factors in the workplace; for this reason we seek to prevent, control and mitigate accidents.

The current situation of the company in occupational safety and health is diagnosed, taking into account mechanical risks and those risks are identified through direct observation in the workplace, the most obvious risks are analyzed, then the operative workplaces are inspected to keep track of processes, activities and performed tasks, and finally we made interviews to the operational workers.

Subsequently mechanical risks are assessed through the Matrix of the Ministry of Labor and Social Affairs of Spain.

Finally it designs and implements a Prevention Plan of Mechanical Risks in the company which it plans to prevent and control the risks for each workplace, acting on the source, transmission medium, worker and complement, then it makes an adequacy of infrastructure, personal protective equipment provided to the workers; the employees are trained on safety and occupational health, and finally the whole company is signaled with obligation signs, warning, prohibition and emergency.

Finally the Prevention Plan of Mechanical Risks of the Company was evaluated by monitoring, to support the success of the new prevention plan.

Keywords

Security and Occupational Health, Occupational Hazards, Prevention Measures.

1. Introduction

Security and Occupational Health seek to ensure that development activities at work are the best for both the employee and the employer and their environment.

The role of the Enterprise "INDUMEI" is to guarantee and support the performed operations by workers, controlling risks in the operational area in order to protect each of them, improving the quality of life, obtaining a compromise of staff, and saving money by preventing a professional accident.

It just acts on mechanical risks because it is the most obvious risk in the company INDUMEI since it has a direct work with machinery, manual or automatic tools, raw materials like metals; so the use of these materials may undoubtedly result in occupational accidents in the employee as: cuts, bruises, falling objects, or between objects entrapment, injury, mutilation, etc. For this reason that it proposes a preventive management to the mechanical risk prevention and control of risks included in the plan of prevention.

The importance of implementing a plan to prevent mechanical hazards in the company IDUMEI sustains the following:

- Comply with Law
- Human Reason
- Economic Reason
- Reason of Prestige or Image Company

In a company is essential to comply with the law which dictates national agencies such as: Constitution of Ecuador, Ministry of Labor Relations, Ecuadorian Institute of Social Security, to obey the Labor Code the

Ministry of Labor and Employment, to respect the Safety Regulation Workers Health and Improvement of the Environment, Andean Instrument on Safety and Health at Work, Order CD No 390, among others, and thus to avoid penalties and fines, which involve breaching the law.

Similarly human reason leads to awareness by the employer and employee that the prevention of accidents at work is the responsibility of all who make up the company, it means from the general manager to the operator.

The economic reason is the savings that it will get the company to prevent an accident with the worker, which can incurs direct costs as compensation, medical expenses, etc, and indirect costs such as property damage, damage to equipment and tools, interruptions and delays, employing new staff and train replacements, investigations, etc. And it also includes a percentage of increasing in the productivity of the company.

Finally, the reason for prestige or image of the company in security and occupational health, it is given by the importance it gives the company, to take care and protect workers from occupational accidents, improving their quality of life, and publicizing rates statistical stipulated in Resolution No. CD 390 of the Ecuadorian Institute of Social Security.

2. Materials and Methods

2.1. Description of Jobs

First, we made a description of the jobs in the company through inspections and a survey of workers in the operating area, who are the most knowledgeable about their workplace and those who are exposed at a higher risk mechanical, in order to identify and assess the risks to which they are exposed.

		"INDUMEI" INDUSTRIAS METÁLICAS IBARRA	
INFORMATION OF THE POSITION OF WORK			
AREA:		Date:	
POSITION OF WORK:			
PROCESS:			
DESCRIPTION OF THE ACTIVITIES:			
TOOLS AND EQUIPMENT:			
PPE. USED:			
NUMBER OF EMPLOYEES IN THE POSITIONS:			
DAILY HOURS OF WORK:			
FLOW CHART			

Table 1: Description of Workplace Cutter.

Prepared by: Paola Maldonado.

2.2. Identification of Mechanical Risks

Once it obtains the information we proceeded to the identification of mechanical hazards in which the worker is exposed in the jobs, using as reference the matrix of the Ministry of Labor and Social Affairs (Spain).

2.3. Mechanical Risk Assessment Matrix with the Ministry of Labor and Social Affairs

The different factors of mechanical hazards in which workers are exposed in their daily activities, applying the matrix of the Ministry of Labor and Social Affairs (Spain) were evaluated.

Mechanical risk factors have been identified based on the specific characteristics of each job.

#	Identifier danger	Probability			Consequence			Risk Estimation						
		B	M	A	LD	D	ED	T	TO	M	I	IN		
1	Fall of people at different levels													
2	Fall of people at the same level													
3	Falling objects by collapse or collapse													
4	Falling objects in handling													
5	Fall of detached objects													
6	Tread on objects													
7	Striking against stationary objects													
8	Striking against moving objects													
9	Beats / cuts objects tools													
10	Projection of fragments or particles													
11	Entrapment by or between objects													
12	Entrapment machines or vehicles overturning													
13	Abuse or death by vehicle													

Table 2: Matrix of the Ministry of Labor and Social Affairs (Spain).

Source: Ministry of Labor and Social Affairs (Spain)

2.4. Analysis of Results

After obtaining the analyzed and quantified results , we proceeded to classify them in order to establish a priority order, giving greater importance to intolerable risks, then the important, after the moderate and finally to trivial to discuss improvements to be implemented in the company.

2.5. Prevention and Control Measures for Labor since

Then it proceeded to implement measures to prevent occupational accidents for job, policy and objectives for Occupational Safety and Health in order to avoid or reduce the mechanical work-related risks, which are designed to protect the health of workers against those working conditions that generate damage resulting, linked

or occurring in the discharge of duties, measures whose implementation is an obligation and duty of employers.

2.6. Implemented procedures in the Enterprise

Finally after implementing the Preventive Measures of Workplace proceeded to the description of the procedures to be followed by the company in compliance with the prevention plan, which are:

- Initial Induction of Labor Risks.
- Occupational Hazard Communication.
- Delivery and Selection of Personal Protective Equipment.
- Housekeeping.
- Signage.
- Inspection Workplace.
- Evaluation of Occupational Hazards.
- Maintenance.
- Basic in an Accident at Work..

3. Results

3.1. Diagnosis Business Before and After Implementation

DETAIL	BEFORE	NOW
General Management	Not provided due importance to the safety and health of workers at the company.	There is great support in terms of health and safety of both workers and the company.
Workers	They used insecure methods when working.	Workers have caution when performing their activities.
Workers	They did not have any knowledge of the existent dangers in Their workplace can cause accidents professional.	Workers are trained in safety and preventive measures in their jobs.
Workers	They did not have any knowledge of the use, care and maintenance of the Teams of Personal Protection.	Workers are trained and committed to having a proper use, care and maintenance of Personal Protective Equipment.
Workers	They have not been trained in their jobs for welding, cutting, turning, milling and painting.	Workers have been trained in each workplace in the operational area.
Order	A complete disorder Existed in the operative area of the Company.	There is a procedure of order, cleanliness in the organization which performs regularly with the collaboration of all both the owner and employees.
Teams of Personal Protection.	Deteriorated, in not well state, unfit to perform the activities of the Company	Personal protective equipment are new and meet performance standards and use.
Teams of Personal Protection.	It was not notified the Company of deterioration of personal protective equipment so were not replaced.	In case of deterioration of personal protective equipment will be Notified to the Company the immediate substitution.
Signaling	Company did not possess signaling.	The company is properly marked indicating the obligation to use personal protective equipment, hazard warning, prohibition of objects, emergency exits, fire extinguishers signaling.
Infrastructure	The company had a shelf, which was not suitable for the weight placed on it; the floor had holes which could cause falling at the same level.	The company has two bookcases assured to the wall to avoid some detachment, one for the iron material and another for the tools. It was corrected the holes of the floor.
Machinery	Maintenance of the machines is performed over an extended period of time.	There is a maintenance plan and periodic inspections to the machinery and teams.
Working Conditions	Working conditions were not suitable for the activities performed in the Company.	Implemented training procedures and training for workers, improved infrastructure, has acquired personal protective equipment operators, has signaled to the company.
Procedures for Occupational Safety and Health	There was no procedure for carrying out the activities.	The following Procedures exist: <ul style="list-style-type: none"> • Initial Induction of Labor Risks. • Communication of Labor Risks. Delivery and Selection of Personal Protective Equipment. <ul style="list-style-type: none"> • Order and Cleaning. . • Signaling. • Inspection Workplace. • Evaluation of Labor Risks. • Maintenance. • Basic in an Accident in the Work.

3.2. Benefits of Implementation

The benefits that the implementation will be, first, that the company "INDUMEI" comply with the Ecuadorian legislation on security and occupational health furthermore it should complements this research, the study and decrease other risks: physical, chemical, biological, and ergonomic.

Similarly there will be an awareness on the part of the employer and employee, the importance of preventing disease and accidents at work, it is the responsibility of all who make up the company, it means the employer is obliged to provide optimal conditions the operator in the work environment, implementing programs to prevent risks in the business, investigate and analyze incidents, accidents and illnesses in order to identify the causes of these accidents and implement corrective and preventive actions, and employee, work in safe manner as it has been trained and trained him, to have a proper use, to care and to maintenance of personal protective equipment, materials and machinery.

The company "INDUMEI" gets a financial savings prevent a disease or accident at work, which may incurs direct costs as compensation, medical expenses, etc; and indirect costs such as property damage, damage to equipment and tools, interruptions and delays, employing new staff and train replacements, investigations, etc. And it also includes a percentage increase in the productivity of the company, since it has been proven that the worker has a higher performance of his activities, in optimal conditions of the work environment.

The company "INDUMEI" gets prestige for the importance that provides security and occupational health, caring and protecting workers from occupational diseases and accidents, improving their quality of life, and publicizing the statistical indices reagents such as: Frequency Index , Severity Index, rate Risk, under

Resolution No. CD 390 of the Ecuadorian Institute of Social Security.

4. Conclusions

At present, there are still companies that ignore the importance of implementing prevention plans Occupational Hazards Working at their centers, so most of those affected are mostly workers.

Policies, objectives and preventive measures in a job, are the mechanisms and needed actions to raise awareness of good working conditions in which people must work to improve their quality of life.

In any job there are risks of various kinds, to which workers are exposed, so it must generates a management system to prevent them.

Identifying and evaluating occupational risks in a company, it must makes initial shape and periodically to plan preventive actions by surveillance systems.

Gratitude

At the Technical University of the North, the Faculty of Engineering in Applied Science and Industrial Engineering, for allowing me to reach a goal in my professional life.

To my thesis director Engineer Marcelo Puente, who has been my guide from the beginning to the end of this research, with his knowledge and suggestions, and Engineer Mayra Maya for her support I hearty thank you very much to both.

Finally to "Metal Industries Ibarra" for allowing me to perform this work of Degree in the company, thank you very much.

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