

Management System for Safety, Health and Environmental Risks at Jasa Contratistas S.A.C.

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ABSTRACT

The investigation focused on establishing a comprehensive regulatory framework for Safety, Health and Environment at JASA Contratistas S.A.C., based on Peruvian legislation, including Law No. 29783 and Supreme Decree No. 023-2021-MINAM. The methodology covered the initial characterization, the definition of environmental policy objectives and the evaluation of occupational risks through IPERC matrices. 122 regulatory items were identified, with 56% meeting the criteria of the Occupational Health and Safety Management System (SGSST). In the environmental field, a 3.38% reduction in deforestation was evident, a 7% increase in solid waste recycling and a 5% improvement in environmental management. After the implementation of the SGSST, occupational risks decreased from 25% to 10.71%, while in the environmental aspect, deforestation reached 2.10%, solid waste treatment increased to 17.5%, and the pro-environmental attitude of employees improved by 20.8%. This system not only improved risk control and reduced accidents, but also increased productivity, ensured regulatory compliance, strengthened competitiveness and encouraged improved environmental behavior among staff.

1. Introduction

This study will be carried out in Morropón, located in the Alto Piura region. The town is located at 140 meters above sea level. and is distinguished by a sub-tropical savannah climate. Its geographical coordinates are: -5.18667 in latitude and -79.9694 in longitude, which are also expressed as 5° 11' 12" South and 79° 58' 10" West. Morropón occupies an area of 17,100 hectares, equivalent to 171 km², and is home to 162,027 inhabitants. To the north it borders Ayabaca (province), to the south Lambayeque (department), to the east with Huancabamba (province) and has an approximate travel time of 1 hour and 15 minutes from its capital to the company ENOSA S.A.C. Internationally, a pattern of occupational accidents has been recognized; for example, data from the Ministry of Labor and Employment Promotion indicate an average of 18,032 mishaps in the period January-June 2019. According to the ILO, around 2 million deaths are registered annually due to occupational accidents or work-related diseases, with almost 300 million occupational accidents and 200 million cases of occupational ailments per year, which is equivalent to one accident every 15 seconds. These events are highly prevalent in developing nations, with significant costs in terms of human lives and injuries. In Peru, the same source indicates a similar number of accidents for the year 2019. Environmentally, waste caused by energy consumption and light pollution is harmful to communities. At the level of Peruvian electricity companies, from 2001 to 2013, 2,452 electrocution accidents were recorded that affected both their own employees and contractors and third parties, with many serious injuries, including amputations and deaths. This represents an annual average of 189 electrocution accidents, equivalent to one every two days, mostly happening to third parties due to ignorance of the dangers associated with the electrical networks and employees due to lack of effective prevention measures.

The central focus of this research is the deficiency of an OH&S Management and Environmental Protection System. The examination of adverse events in Peru and the world with great potential for harm between 2011 and 2019, reveals that the activities where they occurred lacked prior identification and registration, as well as the relevant control measures. This generates interest in JASA CONTRATISTAS Y SERVICIOS GENERALES S.A.C. to develop a Management System in accordance with Peruvian regulations that contributes to mitigating and effectively carrying out the risks involved. In view of the above, the following research question has been established: To what extent will the implementation of a Safety, Health and Environment system optimize risk management in the Company JASA CONTRATISTAS Y SERVICIOS GENERALES S.A.C.?

The analysis of the problem in terms of its justification was essential to protect the well-being and physical integrity of the human capital of the JASA company, which carried out significantly dangerous work. Efforts were focused on establishing occupational safety protocols and control strategies for the prevention of unwanted events, as well as on elucidating the roots of occupational accidents and incidents within the organization. The main goal of this task was to design and apply effective strategies that reduce the risks inherent to the technical operations of JASA CONTRATISTAS Y SERVICIOS GENERALES S.A.C. On the other hand, the repercussions that these activities may have on the ecological environment were not taken into account. The study promised to be a contribution of great value in the electricity sector, since it was urgent to raise awareness about this problem that can trigger human tragedies, health conditions and adverse effects on the ecosystem. Consequently, it promoted mitigation and controlled risk management, avoiding occupational diseases in employees and damage to the environment. The use of control instruments within the framework of the SGSS and Environment optimized the risks resulting from the operations. The aim was to significantly reduce the risks and threats faced by workers in terms of their safety and health, while mitigating the negative consequences on the environment.

It should be recognized that the general objective was the following: To implement a Safety, Health and Environment Management System, to optimize risk management in the Company JASA CONTRATISTAS Y SERVICIOS GENERALES S.A.C. Meanwhile, the specific objectives were drafted as follows: 1) To carry out the Baseline diagnosis of the Safety, Health and Environment Management System in the Company JASA CONTRATISTAS Y SERVICIOS GENERALES S.A.C.; 2) Implement the Safety, Health and Environment Management System in the Company JASA CONTRATISTAS Y SERVICIOS GENERALES S.A.C.; 3) To carry out audits to improve the Safety, Health and Environment Management System in the Company JASA CONTRATISTAS Y SERVICIOS GENERALES S.A.C.

2. Methodology

Research Type and Design

The research consisted of applied and descriptive, focused on strengthening the management of OSH and environmental risks in the technical activities of JASA Contratistas y Servicios Generales S.A.C. It was classified as applied when studying a concrete and descriptive reality when addressing problems in the company, proposing an OH&S and Environment to control identified risks. The descriptive methodology was followed, outlining problems and proposing solutions, as indicated by Hernández et al. (2018). The descriptive study sought to specify important properties of the phenomena analyzed, to delimit facts and to associate variables. The research adopted a quasi-experimental design by deliberately not manipulating variables, observing phenomena in their natural context for later analysis. This comprehensive approach sought to contribute to the optimization of risks in the company's technical actions.

Study variables

It should be recognized that the study variables analyzed were the following: Safety, health and environmental management system, in complement with the risk reduction management of the entity under study.

Population and sample

The population has been made up of a total of 60 workers, among which electrical technicians, administrative personnel, warehousemen, supervisors and others related to the subject of study have been considered, which have been selected to represent the sample size.

Data collection techniques

The research focused on collecting detailed information on the electricity distribution activities at JASA Contratistas S.A.C. through planned observation by a multidisciplinary team. A real mapping of

the operations was created, identifying hazards, risks and execution conditions. A baseline study of safety and environment, standards, and continuous IPERC was developed, assessing risks and proposing controls. Two techniques were used: Non-Participant Observation and Collective Observation, and documentary review to examine compliance with the OH&S Management System. The documentary review was carried out to contrast compliance with the SGAAT and Environment according to Law 29783 and D.S. 023-2021-MINAM. Instruments such as baseline diagnosis were used according to R.M 050-2013-TR and Supreme Decree 023-2021-MINAM. The review of documents was based on a category matrix and primary, secondary and tertiary sources were consulted to obtain information on the OH&S Management and Environmental Systems.

Analysis and processing of information

Initial OSH assessment, as detailed in the aforementioned Annex.

Detailed exploration of the material. This mechanism provided the ability to thoroughly examine and record relevant data obtained from regulations, academic texts, periodicals, online resources and other consulted media.

Assessment of the essential purposes set out in the National Environmental Policy

3. Result and Discussion

Presentation of results

Board 1. Scale of compliance with the OH&S Management Guidelines according to R.M. 050-2013

Guideline	Made	Total	Compliance
I. Commitment and Involvement	9	10	90%
II Occupational Health and Safety Policy	9	12	75%
III Planning and implementation	13	17	76%
IV Implementation and operation	14	23	61%
V Normative Evaluation	13	17	76%
VI. Verification	5	16	31%
VII Control of Information and Documents	4	18	22%
VIII Management Review	0	6	0%
Total	67	119	56%

Note: It was found that, of 119 requirements initially detected, only 56% of these were achieved. Plans and procedures were also recorded, but their implementation was not demonstrable. In addition, it was found that the appointment of the OSH Supervisor did not correspond to a formal selection process and lacked an initial baseline analysis that would allow the system to be assessed in accordance with current legislation.



Figure 1. OSH and AM compliance. In original language Spanish

Note: It has been determined that senior management has not adequately carried out the verification and evaluation corresponding to the OH&S Management regulations, including their relevance. Similarly, imperative aspects such as occupational monitoring and auditing have not been incorporated into practice. Therefore, there is no established procedure for the management of information control, covering as many documents as records, nor has there been a defined mechanism to ensure participation and consultation.

Board 2. Action plan according to the percentage of final report

FINAL REPORT	STATUS	ACTION PLAN
≤ TO 60%	DISAPPROVED / SERIOUS SANCTION	Rearm your system. Consolidate procedures and records
61 - 70%	DISAPPROVED / LOW SANCTION	Optimize evidence
71 - 80%	APPROVED/IMPROVE STANDARDS	Update and disseminate
81 - 100%	APPROVED	OSH Standard

Note: The evaluation revealed that only 56% of the guidelines stipulated for Occupational Safety and Health have been met, placing them below the approval threshold. Due to this situation, a comprehensive restructuring of the SGSS is recommended, as well as the strengthening and consolidation of procedures, methods and registration systems.

Board 3. Priority objectives of the National Environmental Policy

ITEM	Priority Objectives of the PNA	OP Indicators	2018	2019	2020	2021	AVERAGE
1	OP 2 Reduce levels of deforestation and ecosystem degradation	OP2. I2. Annual rate of change of forest loss.	2.5%	3.2%	3.5%	4.3%	3.38%
2	OP 4 Increase the adequate disposal of solid waste.	OP4. I3. Rate of non-municipal solid waste that is disposed of in an	5%	6%	6%	9%	7%

		adequate final disposal infrastructure.					
3	OP 9 Improve the environmental behaviour of workers.	OP9. I1. Index of environmental performance of workers.	5%	4%	5%	6%	5%

Note: It is evident that, between 2018 and 2021, the average annual rate of decrease in forest cover has been 3.38%, a figure attributable to the pruning activities carried out by technical personnel on the trees to prevent interruptions in the Medium Voltage (MV) line. In relation to the fourth priority objective of the National Environmental Policy (NAP), it is observed that the average rate of disposal of non-municipal solid waste in adequate infrastructures is 7% during the same period, which indicates the need to increase awareness regarding the management and management of waste derived by technical personnel and the community in field work. Regarding the ninth priority objective of the PNA, the average calculation of the level of environmental behavior of the population between 2018 and 2021 was 5%, which indicates an insufficient environmental commitment on the part of citizens. It is pertinent to note that the preparation of the priority objectives has been based on an analysis that extends from the PNA 2011-2021 (pre-existing) to the current update that covers from 2021 to 2030; therefore, this diagnosis has been carried out from 2017 to 2021, based on the priority goals of the updated version of the National Policy.

Implementation, Optimization, and Auditing

After the baseline diagnosis and the priority objectives of the Environment, various measures were implemented in JASA Contratistas S.A.C. These included leadership and safety culture training, job profiling, IPERC methodology, updating of risk matrices, sequencing of warnings, monitoring records and control procedures. In addition, instructions were developed for different types of work, prevention measures to address priority objectives and a Contingency Plan manual. In the optimization phase, aspects such as the updating of risk matrices, leadership training and preventive measures were reinforced. The OH&S & Environment audit was carried out to evaluate the effectiveness of the implementations. These actions seek to optimize OSH, as well as reduce environmental impacts, evidencing a comprehensive approach to risk management.

Hypothesis Testing

In determining the set of theoretical presuppositions, the qualitative evaluation of events is the only method applied. It was noted that the preliminary analysis established as the Baseline for the organization JASA CONTRATISTAS Y SERVICIOS GENERALES S.A.C. revealed a congruence with expectations by 56 per cent, which was essential to discern the crucial guidelines for the implementation and improvement of the system.

It should be noted that in the adoption of the OH&S Management System in accordance with Law 29783 and the regulations stipulated by Supreme Decree No. 023-2021-MINAM, which ratified the National Environmental Strategy, hazard monitoring, incident elimination, compliance with legislative obligations, competitiveness intensification, deforestation reduction, and the promotion of appropriate solid waste management were achieved.

During the implementation of the OH&S and Environment Management System, it was stated in the subsequent internal scrutiny that the organization reached a level of conformity of 92% (rated as EXCELLENT), demonstrating effectiveness in relation to Law 29783 and D.S. No. 023-2021-MINAM, which granted official status to the Environmental Policy.

Discussion

The following studies are identified in the referenced studies:

To. The research by Rubiano and Pabón (2020) highlights the importance of management being committed to occupational health and safety issues in order to guarantee the effectiveness and evolution of the corresponding plan. This commitment is essential to offer certainty and the proper follow-up of the strategies implemented has a positive impact on the evolution of the organizational culture, thus promoting a safe environment and motivating employees towards the adoption of preventive behaviors.

B. Peña (2021), found that the synergy of the SGSSATs optimized drilling and offloading operations through periodic reviews. This allowed the optimization of risk management, avoiding incidents and diseases in the mining sector due to the aforementioned activities.

C. Sánchez's (2017) conclusion shows that the application of engineering methods had a positive impact, evidenced by the increase in labor and general productivity of the company. Based on these results, the importance of creating safe environments to increase productivity is suggested.

D. Sandoval (2017) points out that a preliminary evaluation of the environmental management system detected infractions that caused costly economic penalties. The effective implementation of the project managed to mitigate these infractions, thus underlining that the financing allocated to environmental management can translate into fewer penalties from regulatory entities and, at the same time, reduce the risks identified.

E. Castañeda (2019), emphasizes the importance of the proper management of natural resources to ensure environmental protection. Doing so strengthens security and promotes sustainable management of basic supplies.

Culminating these assessments, it can be deduced that the academic works highlight the need for an OH&S Management System. They establish that the minimization of occupational risk is a key pillar for business performance

4. Conclusion and future scope

Thanks

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Reference

- [1] Castañeda, L. (2019). Environmental management proposal to achieve food security in the municipality of San José del Guaviare [Postgraduate report]. Pontificia Universidad Javeriana. <https://repository.javeriana.edu.co/handle/10554/42994>
- [2] Hernández, R.; Fernández, C. & Baptista, M. (2018). Research methodology. Mc Graw Hill. <https://www.icmujeres.gob.mx/wp-content/uploads/2020/05/Sampieri.Met.Inv.pdf>
- [3] Peña M, (2021). Quality, safety and occupational health management system to optimize risk management in the rock blasting process of Volmin S.A.C. mining unit La Merced quarry in Chilca – Lima, March – December 2013 [Postgraduate report]. Universidad Nacional Mayor de San Marcos. <https://hdl.handle.net/20.500.12672/16490>
- [4] Rubiano, M., & Pabón, D. (2020). Behavior-based safety program for the prevention of occupational accidents and occupational diseases in an SME in the construction sector in the city of Bogotá D.C [Postgraduate report]. Pontificia Universidad Javeriana. <https://repository.javeriana.edu.co/handle/10554/49975>
- [5] Sánchez, J. (2017). Proposal for the design of an industrial safety and occupational health plan to improve productivity in the production area of the Northern Metalworking Company [Postgraduate report]. Universidad Católica Santo Toribio de Mogrovejo. <https://tesis.usat.edu.pe/handle/20.500.12423/1623>

- [6] Sandoval, A. (2017). Proposal for the Implementation of an Occupational Health and Safety Management System and Environmental Management at the "La Esperanza" Service Station [Postgraduate Report]. Universidad Católica Santo Toribio de Mogrovejo. <http://hdl.handle.net/20.500.12423/2005>.