

# “IMPLEMENTATION OF GOOD MANUFACTURING PRACTICES IN INDUSTRIAS PALUGI FOR IMPROVING THE QUALITY AND SAFETY OF ITS PRODUCTS”

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**Abstract.** *The implementation of Good Manufacturing Practices in “Industrias Palugi” is important, because it allows us first to guarantee safe and quality products, reduce the costs due to the reduction of product losses due to dissolution or change caused by different polluting, increase the possibilities of further positioning in the market and find new niches, enhance work areas both infrastructure and safety occupational environment, in addition to create a cleanliness and order culture throughout the company, being direct beneficiaries both internal and external consumers.*

*The application Good Manufacturing Practices contributes the insurance of safe food production for human consumption. In addition, they are essential for the implementation of the HACCP system and it facilitates the progress towards a quality management system such as ISO.*

## **Keywords**

Quality, safety, food safety, good manufacturing practices.

## **1. Introduction**

Palugi Industries has been developing its products for several years, but the lack of knowledge of rules and parameters by the workers regarding the proper handling of the product, equipment and utensils complicated and generates a risk in seeing the quality and safety required the implementation of Good Manufacturing Practices. Such risks would be present in the development of pathogenic bacteria and microorganisms that alter the conditions of the product and harm the health of our customers.

Ignorance about the Good Manufacturing Practices in the company, its application and importance, leading to

have serious quality problems which significantly reduce the chances of competing in the market.

It is noteworthy that the Ecuadorian legislation, by Executive Decree No. 662 published in Official Gazette No. 505 dated May 21, 2015 considered the food industry to develop food standards subjecting Good Manufacturing Practices, which will facilitate control throughout the production, distribution and marketing.

For these reasons Palugi Industries, it is committed to the development of this project which begins through a pre-qualification audit to determine the current situation of the company and check the percentage of compliance with Good Manufacturing Practices to ensure safety and food hygiene.

Based on the results obtained we proceed to carry out the design of a model for the implementation of Good Manufacturing Practices that develops from an improvement plan, this in order to solve the identified problems.

In subsequent process model starting to spread, socialize, train and implement the improvement plan is implemented Palugi Industries.

At the end the results obtained with the implementation of Good Manufacturing Practices and benefits acquired through a new audit is evaluated. Thus monitoring and control was also conducted to ensure the quality and safety of products.

## **2. Material and Methods**

In the first instance a diagnosis of the current situation in the company is done through the matrix and pre-

qualification audit for compliance with Good Manufacturing Practices.

The agency responsible for conducting the initial audit process is the same MIPRO makes counseling and performs the respective track to the final issuance process for obtaining operating license given by the ARCSA.

The parameters to qualify through the matrix are those which are issued in the rules of Good Manufacturing Practices Executive Decree No. 662 and correspond to:

PARAMETERS
Facilities
Equipment and utensils
Personnel
Materials and supplies
Production Operations
Packing, and labeled
Storage, distribution, transportation and marketing.
Assurance and Quality Control

**Table 1.** Parameters analysis of the regulation of Good Manufacturing Practices.

The model for the Implementation of Good Manufacturing Practices is based on four main stages:

### 2.1. Stage One: Dissemination and launch the model.

The program objectives of Good Manufacturing Practices diffuse, its importance, advantages and deployment needs.

### 2.2. Stage Two: Awareness and Basic Training.

The representatives of Industrias Palugi, awareness and training for managerial staff and operational staff on quality management systems and good manufacturing practices.

### 2.3. Stage Three: Implementation of improvement plan.

The implementation is to implement the necessary measures to cover the aspects or requirements covering the Good Manufacturing Practices according to plan improvements.

The documentary part that concerns the whole basis of the implementation and the main tool are: The Manual of Good Manufacturing Practices Industrias Palugi, Sanitation Standard Operating Process (SOP) Manuals

Operational Standards (SOP) Manuals and Operating Equipment / Techniques and Equipment sheets.

### 2.4. Stage Four: Monitoring, monitoring and control.

The operation and maintenance of Good Manufacturing Practices are made using a continuous control, for which it develops and implements internal audits, HACCP monitoring and critical control points in the production process, standardization, microbiological analysis, control programs pest, maintenance programs and calibration of equipment.

## 3. Results

The results are summarized in the following table:

PARAMETERS	BEFORE	AFTER
Facilities	67.25%	89.38%
Equipment and utensils	50%	85.18%
Personnel	51.35%	81.08%
Materials and supplies	40%	76%
Production Operations	36.84%	86.64%
Packing, and labeled	57.14%	80%
Storage, distribution, transportation and marketing.	38.88%	88.89%
Assurance and Quality Control	16.27%	75%
<b>TOTAL</b>	<b>49.04%</b>	<b>84.38%</b>

**Tabla. 2.** Comparative analysis.

The percentage of compliance with Good Manufacturing Practices baseline shows a big change and a partial fulfillment of the improvement plan, even allowing Industrias Palugi certifies without any problems.

## Conclusions

The theoretical, methodological and legal support necessary for the implementation of Good Manufacturing Practices in the food industry bases, bibliographic research were Good Practices of Hygiene and food handling, food safety, food microbiology, 5S, Total Quality and Regulation of Good Manufacturing Practices in force by the Constitution of the Republic of Ecuador.

The diagnosis of the initial situation in the company was made by applying the matrix and pre-qualification audits carried out by the MIPRO, in charge of monitoring and counseling. The initial result gives a value of 48.6% result is outside the minimum compliance parameters established in the regulations of Good Manufacturing Practices Executive Officer Registration Decree 662 and 505 set by the ARCSA to obtain certification.

It was designed and a model that consists of 4 stages was used: first stage: diffusion and release; second stage: awareness and basic training; third step: implementation and monitoring improvement plan; fourth stage: monitoring and control.

As part of the implementation of the model and considering the improvement plan; documents, records, manuals, technical data needed to validate the process, took control and monitoring programs in applying principles of HACCP implementation, application and development of the POES records was developed; trainings and monthly internal audits, pest control, implementation of plans for preventive and corrective maintenance of machinery, socialization of the Manual of Good Manufacturing Practices and key issues to consider. Implementation of these key tools allows us to constantly monitor production and its factors, to, if own system failures take corrective action immediately and act more efficiently. Similarly in relation to laboratory tests, the results are helpful, because microbial loads remains within the parameters accepted by the NTE INEN 2595, thus ensuring a totally unfit for human consumption product .

Once implemented the model becomes to conduct a new audit, this time the compliance rate was 84.38% according to the results of the final audit, why general manager is satisfied with the process and allows us to certify safely and full.

On the other hand the project also analyzed from the economic aspect and the impact this would have, on the axles using indicators that allow us to determine its viability at an acceptable rate of return of 12% and considering the inflation equivalent to 4,35%. So we got results such as equivalent to a 102% IRR, NPV positive and likewise the cost benefit is equal to 1.06; Considering these values it can be determined that the project is viable and there is conceivable gains after executed the implementation with an increase in annual sales of 4%.

Cash flow from year 2 to 5 in table growth is 40, unlike the above in Table 39, a very slow growth is observed. Which it reveals that the implementation of Good Manufacturing Practices allow us to maintain the economic stability of the company and higher long-term profitability.

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