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## **GRT** UNDERSTANDING HOW PRPS ARE IMPLEMENTED AT INDIAN ORGANIZATIONS THAT ARE CERTIFIED AGAINST ANY FOOD SAFETY STANDARD

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**Abstract:**-Food safety is one of the burning issues across the globe. To ensure food safety is attained to its maximum level, various food safety management systems exist. Many countries have even legalized the concept of food safety management systems. The customers are also pressing unaltered attention on food safety and demand from their suppliers to get FSMS certification from a reputed independent certifying body. The certification from an independent organization builds the trust of both customers and consumers that their product is safe for human consumption. For a successful implementation of any FSMS, a strong program has to be designed both for the following two aspects – i) Facility and ii) Process or product. HACCP is a process or product based system that looks after process based hazards. A good HACCP is built on a sound Pre Requisite Program (PRP) which is a facility based system ensuring that the environment and operating conditions are safe for the production and storage of food. Both the programs are inter connected and work together to reduce the risk of food borne illnesses. PRPs are the stepping stones for a strong HACCP. If the PRPs in any organization are poor, the HACCP will undoubtedly fall apart. This research paper intends to throw light on how PRPs in food manufacturing units are understood, implemented and verified. For this purpose, manufacturers of food packaging in Delhi NCR region, India were identified who already have an FSMS like FSSC 22000:2011, ISO 22000:2005 etc. certification. The research was conducted in the form of open and closed end questionnaire to ascertain the views of company employees on PRPs. The results highlighted that the knowledge at the grass root is very weak and there is a lot of scope for improvement. The concept of PRPs, why and how are these being implemented have to be imparted to all the employees in the organization in order to implement food safety standards successfully.

**Keywords:** Food Safety Management Systems, HACCP, PRP

### **HIGHLIGHTS:**

The Concept of implementing FSMS was explained.  
How HACCP contributes in controlling food safety hazards was explained.  
The concept of PRP and how it plays a vital role in successful HACCP implementation was explained  
A questionnaire on PRPs was submitted to employees of few different organizations and their answers were analyzed to find out how well the PRPs are understood.

### **INTRODUCTION**

World Health Organization states that “almost one third of the population dies due to food borne illnesses”. To control the contamination of food from potential physical, chemical or biological hazard it is very important to establish firm food safety systems in place. It is essential to strengthen the application of food safety management systems in the organizations in order to reduce the outbreak of food borne illnesses.

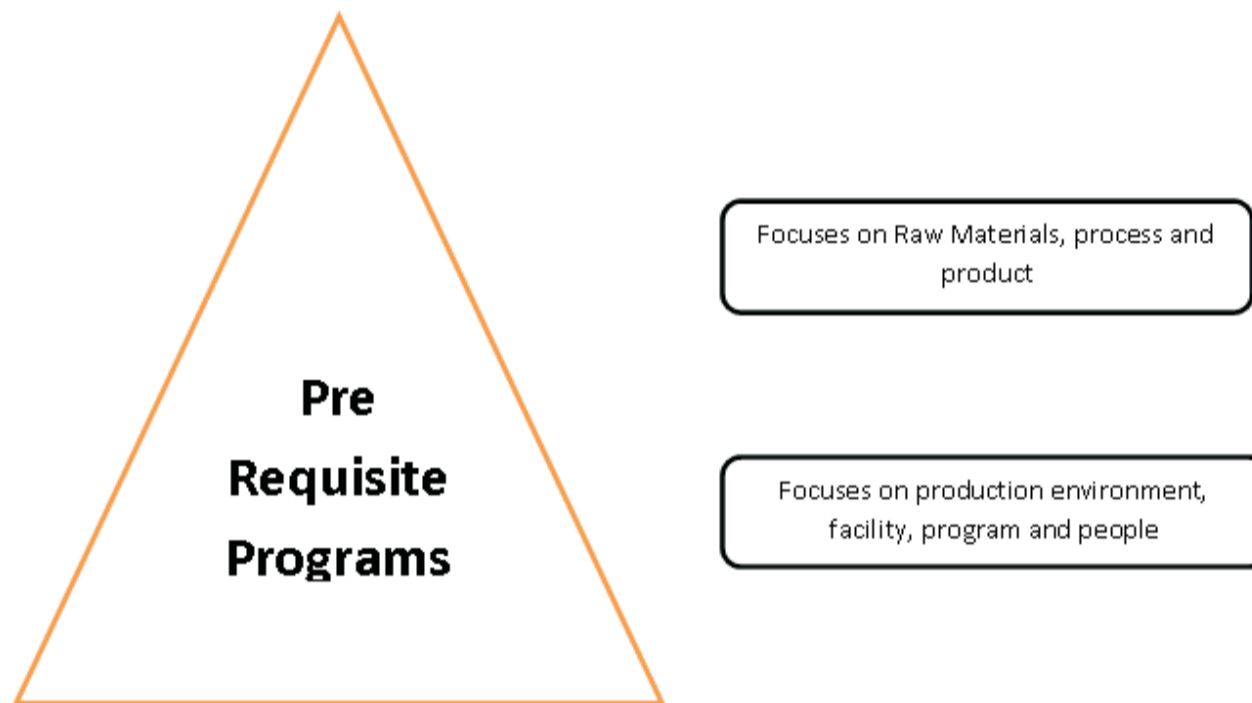
In India where the concept of food safety system has still not reached the grass root level, it is very difficult to control the outbreak. In metropolitan cities, the population has started getting aware about food safety and expects the food that is consumed to be safe for consumption. Keeping this in mind, the organizations have started getting food safety standard certifications like ISO 22000: 2005, FSSC 22000:2011 etc.

FSMS has multiple factors which are interrelated to each other. These factors in combination work together in producing safe food. These factors broadly fall into the following categories:

1. Procedures
2. Policies
3. Management Responsibility
4. Documentation
5. Training

The above factors can be broadly classified into 3 main elements which lead to a successful implementation of the system.

1. HACCP
2. PRP
3. Others including Management, Documentation etc.



**Research hypothesis:** Understanding how PRPs are implemented in any FSMS in an Indian Organization.

PRPs form the foundation which determines how strong the HACCP and consequently the implementation of FSMS is within an organization. Therefore, the PRPs designed and implemented should be effective and capable of delivering a safe and healthy environment throughout the food chain. This research paper is an attempt to get insight about PRPs, their understanding, implementation and verification within organizations certified against any food safety standard.

#### **Implementing Food Safety Management Systems**

The Food Safety Management system is a preventive approach where in it helps in identifying, preventing and reducing the hazards associated with food – borne illnesses. The role of FSMS is to help manufacturers produce safe food for human consumption and minimizing the risk of food poisoning. Designing a FSMS system for any company is not an easy task. A well-crafted and designed FSMS helps the business to establish strong grounds about food safety, hygiene, complying with legal regulations and thus imbuing the concept amongst the staff that the product manufactured in the company which is for sale has to be safe for human consumption.

As mentioned above, the 3 main elements of any FSMS are

1. HACCP
2. PRP

### 3. Others including Management Input, Documentation etc.

**1. HACCP** –The acronym of HACCP is Hazard Analysis and Critical Control Point. It was developed in 1960's by NASA to assure that the food which is taken into space by the astronauts is safe for their consumption. HACCP is a systematic system where in it aims in preventing a hazard and not detecting the hazard. It helps in systematically identifying the potential hazard and putting critical control points in place to reduce or eliminate the likelihood occurrence of the potential hazard.

#### **HACCP has 7 principles**

Analyzing the hazard – Identify the hazard at every process step and then evaluating the severity and likelihood of the occurrence of that particular hazard. It should be kept in mind that whenever a hazard has been identified during the process step, it has to be food safety hazard and not a quality related hazard.

Determining critical control points (CCP) –A process step at which control can be applied and is essential to eliminate or reduce the risk to an acceptable level associated with the potential hazard.

Establishing Critical limits for critical control points – A minimum and maximum value for any hazard to be controlled at CCP so that the risk associated with it is reduced to an acceptable level.

Establishing monitoring procedures for critical control points – A planned system of observations or measurements that helps in assuring that critical control points are under control. A record system has to be produced when monitoring in order to use those records for verification purpose.

Establishing Corrective Actions – Whenever a critical control point falls outside the critical limit, a deviation occurs and hence corrective actions have to be taken. These actions could be putting hold on the product, discarding the product, re-processing it etc.

Establishing Verification Activities – Apart from Monitoring, these activities help in validating the plan and verifying the system is operating as per proposed plan.

Record Keeping – Documents related to HACCP are HACCP plan and related documentation used in formation of HACCP plan, Critical Control Points Monitoring, Corrective action records if CCP has fallen outside the critical limits and Verification activities record like calibration results, microbiological test etc.

**2. PRP** –The acronym of PRP is Pre Requisite Program. Unlike other subjects where, one or two definitions define the subject, PRP is one of those which have been given different definitions by different organizations.

According to ISO 22000, Pre Requisite Programs can be defined as specified procedure(s) or instruction(s), specific to the nature and size of the operation, that enhance and/or maintain operational conditions to enable more effective control of food safety hazards, and/or that control the likelihood of introducing food safety hazards to and their contamination or proliferation in the products(s) and product processing environment.

World Health Organization defines Pre Requisite Programs as “practices and conditions needed prior to and during the implementation of HACCP and which are essential for food safety”.

The US National Advisory Committee on Microbiological Criteria for Foods defines as “procedures including good manufacturing practices that address operational conditions providing the foundation for the HACCP system”.

PRP goes alongside HACCP system. Like HACCP which is a process based system, PRP covers all the basic requirements of the production facility. It is a supporting hand of HACCP and covers all the facility in the production ensuring that the hygienic conditions of the environment are maintained. To summarize, PRPs are programs and practices that are implemented in any food manufacturing unit to ensure that the environment is clean, healthy, and unhygienic and is apt for safe food production..

The basic Pre Requirement Programs include like

- a) Cleaning and Sanitization
- b) Plant Layout
- c) Food Defense
- d) Cross – Contamination Management
- e) Recall and Withdrawal
- f) Pest Control
- g) Equipment Cleaning and maintenance
- h) Personal hygiene and employee facilities
- i) Waste Disposal
- j) Warehousing
- k) Management of Purchased Material

The above list provides just a few examples of PRP. There can be further additions to the list as per the business requirement.

### Steps of Implementing Pre Requisite Program

- I. Choosing a food safety standard that suits the organization
- II. Conduct a gap analysis to ascertain the practices being followed in the company and compare them against the requirement of the standard.
- III. Start documenting pre requisite programs as per the needs and address any gaps found during the gap analysis.
- IV. Annotate responsibilities for pre requisite programs implementation.
- V. Plan for verification and validation of the programs implemented.

**3. Other - Management Commitment:** Every standard emphasizes on management commitment to ensure that the food safety management system is effective and is being continually improved. The management should ensure that all the relevant resources like money, time, training etc. are provided on time so that desired outcomes can be achieved.

**Documentation:** Record keeping helps in verifying all the activities being conducted in an organization. It provides evidence of the work done and it also helps in identifying trends, any missing information, etc. It is therefore very important to keep the documentation up to date and review them on timely basis to continually improve the food safety management system.

#### Research Methodology

The aim of the research is to study how well the PRPs are understood, implemented and verified in organizations certified against any food safety standard. For the purpose of this research, Delhi NCR region in India was picked as it has a lot of food manufacturers supplying to various MNC's, retail giants or local brands. The research was conducted with organizations that are in food packing and supplying to a beverage MNC. Due to the confidentiality, the name of food packing manufacturers and the beverage MNC cannot be disclosed. The companies supply solely to the beverage MNC and are FSSC 22000:2011 and ISO 9001:2008 certified. All these companies got their certification in last 1-2 years' time.

The following questionnaire was circulated by email to 50 employees of different organization. Out of 50, 7 had left the business, 20 replied and no response came from the rest 23.

### PRP Questionnaire

**1. Are you a food safety Management Certified company?**

- A. Yes
- B. No

**2. Against which food safety standard is your company certified?**  
-----

**3. When did you have the certification?**

- A. Last Year
- B. Between one year and three years
- C. Over three years

**4. Did you have the knowledge of HACCP or other food safety standards prior to certification?**

- A. Yes, please go to question 7.
- B. No, Please go to question 5.

**5. If No, are you given training to enhance your understanding on the subject?**

- A. Yes
- B. No

**6. What is the frequency of the training provided?**

- A. Quarterly
- B. Half Yearly
- C. Annually

**7. Have you heard of PRPs?**

- A. Yes, please go to question 8
- B. No

**8. What according to you is a PRP?**

- A. Work Instruction
- B. Procedure to improve food safety
- C. Facility Management

D. If any other please specify.....

**9. How many PRPs do you have in your company?**

- A. Less than 10
- B. Between 10 – 30
- C. More than 30

**10. Do you know in which clause of your standard PRP comes in?**

- A. Yes, If yes please specify the clause No. -----
- B. No

**11. When implementing a PRP, which is the single most important factor that you think drives it's structure?**

- A. The person in-charge to look after its effectiveness
- B. It should encompass a particular department's responsibility
- C. It should highlight job responsibilities of a person
- D. Hygiene and Environmental conditions

**12. How do you verify these PRPs implementation?**

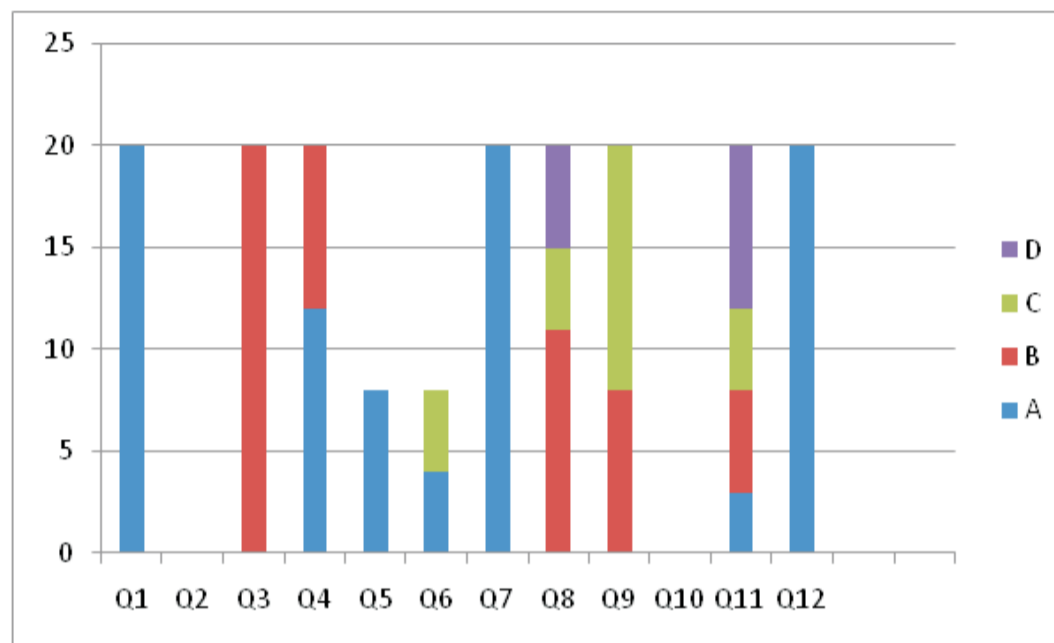
- A. Check sheets
- B. Microbiological Test
- C. If any other, please specify.....

**RESULTS**

The following table shows options that the respondents selected in the questionnaire.

Respondents	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
1	A	FSSC	B	A	-	-	A	B	C	7.5	C	A
2	A	FSSC	B	A	-	-	A	B	B	7.5	B	A
3	A	FSSC	B	A	-	-	A	B	B	7.5	B	A
4	A	FSSC	B	A	-	-	A	B	C	7.5	C	A
5	A	22000	B	A	-	-	A	B	C	7.5	C	A
6	A	FSSC	B	A	-	-	A	B	C	7.2	A	A
7	A	FSSC	B	A	-	-	A	B	C	7.2	B	A
8	A	FSSC	B	A	-	-	A	D	C	7.2	A	A
9	A	FSSC	B	B	A	A	A	D	C	7.2	D	A
10	A	FSSC	B	B	A	C	A	C	B	7.2	D	A
11	A	FSSC	B	A	-	-	A	B	C	7.2	A	A
12	A	FSSC	B	B	A	A	A	D	C	7.2	D	A
13	A	FSSC	B	A	-	-	A	B	B	7.5	B	A
14	A	FSSC	B	B	A	C	A	C	B	7.2	D	A
15	A	FSSC	B	A	-	-	A	B	B	8.2	B	A
16	A	FSSC	B	B	A	A	A	D	C	7.2	D	A
17	A	FSSC	B	B	A	C	A	C	B	7.2	D	A
18	A	FSSC	B	A	-	-	A	B	C	7.2	C	A
19	A	FSSC	B	B	A	C	A	C	B	7.2	D	A
20	A	FSSC	B	B	A	A	A	D	C	7.2	D	A

The graph below shows the pattern of the data obtained from the above



#### DISCUSSION ON RESULTS OBTAINED

1. 100% of the organizations got their certification in last 1- 3 years only.
2. 60% of the employees already had the knowledge of HACCP and 40% were ignorant of HACCP before the certification.
3. 40% of the employees who were ignorant of HACCP were imparted training to develop their skills about the subject. Of these employees 50% received the training quarterly and 50% received it on an annual basis.
4. 55% of the employees believe that PRPs are a medium to improve food safety. 20% believe that it is used for facility management. 25% believe that there are others reasons also for imparting PRPs in an organization.
5. 60% have 10-30 PRPs implementing in their organization. 40% of the organizations have more than 30 PRPs implemented.
6. 35% of the respondents mentioned wrong clause of PRP as per their certified standard. The right clause of PRP as per FSSC 22000: 2013 is 7.2.
7. 11% believe that the person in-charge to look after its effectiveness contributes the most to the PRP structure. 25% believe that a PRP should highlight the responsibilities of every department in an organization; to be most effective. 20% believe that a PRP will be well structured when it gives every individual's job responsibility.
8. 100% of the respondents use only checksheet to verify their PRPs in the organization.

#### CONCLUSION

35% of the respondents answered wrong clause of PRP as per FSSC 22000:2013. 45% of the respondents believe that PRP should highlight departments or individual's responsibilities and they consider this as the most important factor which drove the PRP's structure. In reality, PRP doesn't focus on identifying or specifying the individual/departments job and responsibilities. It aims at controlling the environment of the organization by controlling the cause of any hazard but only 40% of the respondents think that PRPs should focus on hygiene and environment conditions to have the most impact and be successful. 100% believe that they only verify their PRPs through check sheets. However, microbiological test, calibration etc. are also a medium to verify PRPs.

The above mentioned data clearly implies that though organizations are getting certified against a particular food safety standard but the knowledge about the subject is still very weak at the grass root level. As mentioned before, PRPs form the base for HACCP. If the base is not strong enough, it is impossible to have a strong HACCP. It will definitely fail at all entry points. The concept of PRPs has always been a part of every food standard as it aims at controlling the facility of the organization by controlling the unhygienic conditions and growth of any hazards. When the environment is not controlled, hazards in the food production chain will increase.

The above mentioned figures are evident enough to conclude that the implementation of PRPs at Indian organizations (even though FSMS certified) is very poor. A lot of work has to be done to improve both the concept and knowledge about it. One of the methods of achieving it is by imparting proper education through training to the employees. The effectiveness of the training can be measured by a formal or informal assessment. The outcome of the assessment will at least indicate the level of knowledge of the employee and the progress he has made through training.



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