

HACCP application in a SALT PACKAGING PLANT in INDIA

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Abstract

Hazard Analysis and Critical Control Points (HACCP) is a preventive approach to food safety and pharmaceutical safety that addresses physical, chemical and biological hazards as a means of prevention rather than finished product inspection. HACCP is used in the industry to identify potential food safety hazards, so that key actions, known as Critical Control Points (CCP) can be taken to reduce / eliminate the risk of the hazards likely to happen. The system is used at all stages of production and preparation processes including packaging, distribution, etc.

Principles of HACCP

HACCP comprises of seven principles:

- Hazard analysis - Potential hazards associated with food and the measures required to control those hazards are identified. These include biological, chemical and physical contaminants.
- Identify critical control points (CCP) - These are points in food production at which potential hazards can be controlled or eliminated.
- Establish preventive measures with critical limits for each control point. (Minimum standards for safe preparation).
- Establish procedures to monitor the critical control points which determine how and by whom standards are to be monitored.
- Establish corrective actions to be taken when monitoring has shown that a critical limit has not been met. Therefore, either reprocess or dispose off foods if minimum processing standards have not been met.
- Establish procedures to verify that the system is working properly for testing and calibrating equipment to ensure their proper functioning which is one typical requirement.
- Establish effective record keeping in order to document the HACCP system. This would include records of hazards and their control methods, monitoring of safety requirements and corrective actions taken to either prevent problems or how non-conformance is to be prevented from reoccurring.

All seven principles are based on proven scientific research in the appropriate field in which the food processing operation is involved. For the food industry in India, adoption of HACCP is becoming imperative to reach global standards.



THE CASE

A well known Indian branded packaged salt maker was out sourcing re packaging of salt in retail sizes. The re-packing stations were located in Eastern India (5 stations), Western India (8 stations), North India (6 stations) and South India (8 stations) This company wanted all the packaging stations to be converted into HACCP standards to enter the lucrative export markets. It was required to study the existing practices and working conditions at each packaging station since no two sites were alike, and then suggest minimum modifications to meet the HACCP requirements within the allotted budget.

OBSERVATIONS

Working conditions of all the 27 re-packing stations were studied. The observations were noted by a group to ensure "no omission". The observations were then tabulated and discussed with the client. Some of the notable observations were:

- Existing packaging machines were either 1000 pack/ hr or 2000 pack/hr capacity with hot sealing device
- The packing machines were connected with feed units having auger type metering arrangements
- There was no proper storage of bulk and packaged salt
- The operational area was unhygienic and operators were moving in all directions
- The packaging materials were also not stored properly
- The operators were also not trained about the importance of maintaining hygienic standards
- The documentations were not as per standard
- Though the pattern of packaging and style of working was similar in all stations, the structural rectifications required were vastly different
- The grasping level of the operators was different

- The design of enclosure and air conditioning needs were different at different stations.

DESIGN / FEATURES IMPLEMENTED

The basic needs were to restore hygiene at all levels and create an ambience conducive to work effectively. Hence, in addition to redesigning the layout for the flow of salt, the packing machines were put inside an insulated enclosure with controlled environment. Important features implemented were:

- ◇ Entry of all personnel restricted – mandatory through the washroom and change room
- ◇ Apron , head cap and hand gloves made mandatory
- ◇ Workmen can leave through designated exit with permission but must enter through washroom
- ◇ Wearing jewelry or bindi by female staff prohibited
- ◇ Any workmen having cut or bandaged fingers not allowed
- ◇ All entry points fitted with air curtain and fly catcher
- ◇ All ventilators fitted with wire mesh
- ◇ Glass covers (daylight windows / FTL) replaced with acrylic
- ◇ Storage of bulk bags or finished packs only on plastic crates (not directly on floor)
- ◇ Crack / crevice - free floor with proper slope and surface finish.

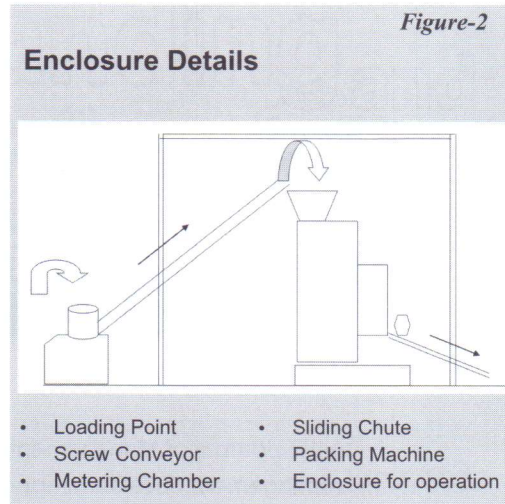
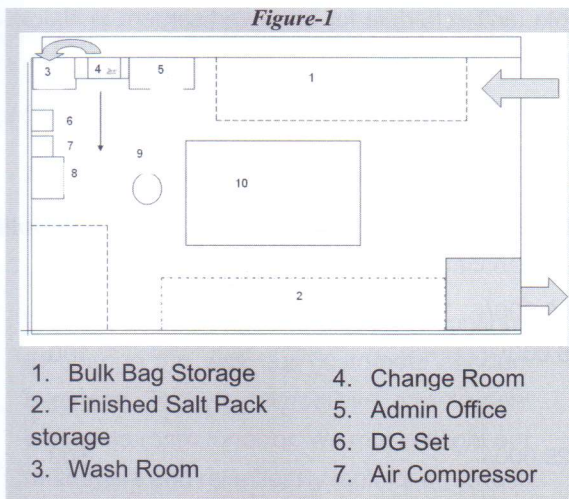
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IMPORTANT DATA

Temperature of $25 \pm 5^\circ\text{C}$ and RH of $55 \pm 5\%$ was maintained inside enclosure made of PUF insulated prefab panels with weatherproof surface. The entry door for the enclosure was fitted with auto closure. An automatic vibratory screen with metal detector was installed at the feeding point of the packaging machine. All product contact parts are converted into food grade stainless steel. Air curtains at all entrances of the building together with electric fly catchers at strategic locations were installed. Daily record keeping was introduced with mandatory verification by authorized signatory. The project layout and the enclosure details are shown in Fig-1 and Fig-2 respectively.



CONCLUSION

All operators were trained and strict discipline was ensured. Thereafter, sufficient trials were taken before calling the agency to inspect and certify for HACCP. Since the result was satisfactory, the accreditation agency – Food Cert-Holland, granted HACCP certificate without any major NCS (non-conformances).

The output from the packaging station went up by 22% resulting in possibilities of recovery of investment in 3 years' time (each value: Rs 45L). It may be concluded that with grit, will and determination, the principles of HACCP can be effectively implemented in all types of plants.

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