Technews

National Dairy Development Board

For Efficient Dairy Plant Operation

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CODEX GUIDELINES ON FOOD HYGIENE - I

This bulletin includes technical and latest development on products, systems, techniques etc. reported in journals, companies' leaflets and books and based on studies and experience. The technical information on different issues is on different areas of plant operation. It is hoped that the information contained herein will be useful to readers.

The theme of information in this issue is **Codex Guidelines on Food Hygiene-I**. It may be understood that the information given here is by no means complete.

WE WISH A VERY HAPPY NEW YEAR TO THE READERS OF THE TECHNEWS

In this issue …

INTRODUCTION

Concerns about food being safe for consumption have been increasing globally with the increasing knowledge of ill-effects of food pathogens and chemical contaminants, already known and emerging. Incidents of food safety hazards have been recurring leading consumers, consumer and other organizations to demand that all out efforts be made to produce safe food.

With the liberalization of global market under the World Trade Organization (WTO) regime, food supply can bring pathogens and other contaminants, which were once geographically isolated, into our own homes.

Therefore, over the years, Codex standards (recognized as international standards for global trade by the WTO) have become more exact with a view to minimize the risk of food-borne health hazards to the consumer. It is not considered adequate that finished products conform to stipulated standards, it is now advocated by Codex that the raw milk be produced and processed in a way which minimizes bacterial count, growth and contamination, and contamination with chemical contaminants.

Codex has developed guidelines 'Recommended International Code of Practice: General Principles of Food Hygiene' which suggest measures to be taken during the entire food chain, from producer-to-consumer, to ensure that milk is safe for human consumption. To achieve this, Codex recommends the application of the Principles of Hazard Analysis and Critical Control Point (HACCP) system. Although, it recognizes that the application of HACCP at primary production level is difficult, it nevertheless recommends that HACCP principles be applied as far as possible. The emphasis is on the prevention of defects in the first place rather than trying to measure the defects after the product has been manufactured and to then correct it.

The issues related to producing safe food were discussed in our earlier issues of Technews: Quality of Raw Milk, Issue 24, January-February 2000; International Standards for Food Contaminants, Issue 25, March-April 2000; Indian Dairy Industry: Necessity for Improvement, Issue 30, January-February 2001. This and the next two issues present the relevant portions of the Codex guidelines referred above, in three parts for the convenience of dairy management and personnel. Since the government is considering harmonization of Codex standards and codes with national standards and codes, it becomes all the more important for the dairy industry to be knowledgeable about the important Codex standards and codes. In presenting this code, necessary editing has been carried out, however, without altering the substance.

PRIMARY PRODUCTION

Primary production should be managed in a way that ensures that food is safe and suitable for its intended use. The endeavour should be to reduce the likelihood of introducing a hazard which may adversely affect the safety of food, or its suitability for consumption, at later stages of the food chain.

1. ENVIRONMENTAL HYGIENE

* Potential sources of contamination from environment should be considered.

* Primary food production should not be carried on in areas where the presence of potentially harmful substances would lead to an unacceptable level of such substances in food.

2. HYGIENIC PRODUCTION OF FOOD SOURCES

* The potential effects of primary production activities on the safety and suitability of food should be considered at all the

time. In particular, this includes identifying any specific points in such activities where a high probability of contamination may exist and taking specific measures to minimize that probability. The HACCP- based approach may assist in the taking of such measures.

* Producers should as far as practicable implement measures to:

  - control contamination from air, soil, water, feedstuffs, fertilizers (including natural
  - fertilizers), pesticides, veterinary drugs or any other agent used in primary production;
  - control plant and animal health so that it does not pose a threat to human health through food consumption, or adversely affect the suitability of the product; and
  - protect food sources from faecal and other contamination.

* Care should be taken to manage wastes, and store harmful substances appropriately.

* On-farm measures which achieve specific food safety goals are becoming an important part of primary production and should be encouraged.

3. HANDLING, STORAGE AND TRANSPORT

* Procedures should be in place to:

  - sort food and food ingredients to segregate material which is evidently unfit for human consumption;
  - dispose of any rejected material in a hygienic manner; and
  - Protect food and food ingredients from contamination by pests, or by chemical, physical or microbiological contaminants or other objectionable substances during handling, storage and transport.

* Care should be taken to prevent, so far as reasonably practicable, deterioration and spoilage through appropriate measures which may include controlling temperature, humidity, and/or other controls.

4. CLEANING, MAINTENANCE AND PERSONNEL HYGIENE AT PRIMARY PRODUCTION

* Appropriate facilities and procedures should be in place to ensure that:

  – any necessary cleaning and maintenance is carried out effectively; and
  – an appropriate degree of personal hygiene is maintained.

ESTABLISHMENT : DESIGN AND FACILITIES

Depending on the nature of the operations, and the risks associated with them, premises, equipment and facilities should be located, designed and constructed to ensure that:

– contamination is minimized;
– design and layout permit appropriate maintenance, cleaning and disinfections and minimise air-borne contamination;
– surfaces and materials, in particular those in contact with food, are non-toxic in intended use and, where necessary, suitably durable, and easy to maintain and clean;
– where appropriate, suitable facilities are available for temperature, humidity and other controls; and
– there is effective protection against pest access and harbourage.

Attention to good hygienic design and construction, appropriate location, and the provision of adequate facilities, is necessary to enable hazards to be effectively controlled.

1. LOCATION

A. Establishments

* Potential sources of contamination need to be considered when deciding where to locate food establishments, as well as the effectiveness of any reasonable measures that might be taken to protect food.

* Establishments should not be located anywhere where, after considering protective measures, it is clear that there will remain a threat to food safety or suitability.

* Establishments should normally be located away from:
  - environmentally polluted areas and industrial activities which pose a serious threat of contaminating food;
  - areas subject to flooding unless sufficient safeguards are provided;
  - areas prone to infestations of pests;
  - areas where wastes, either solid or liquid, cannot be removed effectively.

B. Equipment

* Equipment should be located so that it:
  - permits adequate maintenance and cleaning;
  - functions in accordance with its intended use; and
  - facilitates good hygiene practices, including monitoring.

2. PREMISES AND ROOMS

A. Design and layout

* Where appropriate/applicable, the internal design and layout of food establishments should permit good food hygiene

practices, including protection against cross-contamination between and during operations by foodstuffs.

B. Internal structures and fittings

* Structures within food establishments should be soundly built of durable materials and be easy to maintain, clean and where appropriate, able to be disinfected. In particular the following specific conditions should be satisfied where necessary to protect the safety and suitability of food:
  - the surfaces of walls, partitions and floors should be made of impervious materials with no toxic effect in intended use;
  - walls and partitions should have a smooth surface up to a height appropriate to the operation;
  - floors should be constructed to allow adequate drainage and cleaning;
  - ceilings and overhead fixtures should be constructed and finished to minimise the build up of dirt and condensation, and the shedding of particles;
  - windows should be easy to clean, be constructed to minimise the build up of dirt and where necessary, be fitted with removable and cleanable insect-proof screens. Where necessary, windows should be fixed;
  - doors should have smooth, non-absorbent surfaces, and be easy to clean and, where necessary, disinfect;
  - working surfaces that come into direct contact with food should be in sound condition, durable and easy to clean, maintain and disinfect. They should be made of smooth, non-absorbent materials, and inert to the food, to detergents and disinfectants under normal operating conditions.

C. Temporary/mobile premises and vending machines

* Premises and structures covered here include market stalls,

mobile sales and street vending vehicles, temporary premises in which food is handled such as tents and marquees.

* Such premises and structures should be sited, designed and constructed to avoid, as far as reasonably practicable, contaminating food and harbouring pests.

* In applying these specific conditions and requirements, any food hygiene hazards associated with such facilities should be adequately controlled to ensure the safety and suitability of food.

3. EQUIPMENT

A. General

* Equipment and containers (other than once-only use containers and packaging) coming into contact with food, should be designed and constructed to ensure that, where necessary, they can be adequately cleaned, disinfected and maintained to avoid the contamination of food.

* Equipment and containers should be made of materials with no toxic effect in intended use.

* Where necessary, equipment should be durable and movable or capable of being disassembled to allow for maintenance, cleaning, disinfection, monitoring and, for example, to facilitate inspection for pests.

B. Food control and monitoring equipment

* In addition to the general requirements mentioned above, equipment used to cook, heat treat, cool, store or freeze food should be designed to achieve the required food temperatures as rapidly as necessary in the interests of food safety and

suitability, and maintain them effectively.

* Such equipment should also be designed to allow temperatures to be monitored and controlled.

* Where necessary, such equipment should have effective means of controlling and monitoring humidity, air-flow and any other characteristic likely to have a detrimental effect on the safety or suitability of food.

* These requirements are intended to ensure that:
  - harmful or undesirable micro-organisms or their toxins are eliminated or reduced to safe levels or their survival and growth are effectively controlled.
  - where appropriate, critical limits established in HACCP-based plans can be monitored; and
  - temperatures and other conditions necessary to food safety and suitability can be rapidly achieved and maintained.

C. Containers for waste and inedible substances

* Containers for waste, by-products and inedible or dangerous substances, should be specifically identifiable, suitably constructed and, where appropriate, made of impervious material.

* Containers used to hold dangerous substances should be identified and, where appropriate, lockable to prevent malicious or accidental contamination of food.

4. FACILITIES

A. Water supply

* An adequate supply of potable water with appropriate facilities for its storage, distribution and temperature control,

should be available whenever necessary to ensure the safety and suitability of food.

* Potable water should be as specified in the latest edition of WHO Guidelines for Drinking Water Quality, or water of a higher standard. Non-potable water (for use in, for example, fire control, steam production, refrigeration and other similar purposes where it would not contaminate food), shall have a separate system.

* Non-potable water systems shall be identified and shall not connect with, or allow reflux into, potable water systems.

B. Drainage and waste disposal

* Adequate drainage and waste disposal systems and facilities should be provided. They should be designed and constructed so that the risk of contaminating food or the potable water supply is avoided.

C. Cleaning

* Adequate facilities, suitably designated, should be provided for cleaning food, utensils and equipment.

* Such facilities should have an adequate supply of hot and cold potable water where appropriate.

D. Personnel hygiene facilities and toilets

* Personnel hygiene facilities should be available to ensure that an appropriate degree of personal hygiene can be maintained and to avoid contaminating food. Where appropriate, facilities should include:
  - adequate means of hygienically washing and drying hands, including wash basins and a supply of hot and cold (or

suitably temperature controlled) water;
- lavatories of appropriate hygienic design; and
- adequate changing facilities for personnel.

* Such facilities should be suitably located and designed.

E. Temperature control

* Depending on the nature of the food operations undertaken, adequate facilities should be available for heating, cooling, cooking, refrigerating and freezing food, for storing refrigerated or frozen foods, monitoring food temperatures, and when necessary, controlling ambient temperatures to ensure the safety and suitability of food.

F. Air quality and ventilation

* Adequate means of natural or mechanical ventilation should be provided, in particular to:
  - minimise air-borne contamination of food, for example, from aerosols and condensation droplets;
  - control ambient temperatures;
  - control odours which might affect the suitability of food; and
  - control humidity, where necessary, to ensure the safety and suitability of food.

* Ventilation systems should be designed and constructed so that air does not flow from contaminated areas to clean areas and, where necessary, they can be adequately maintained and cleaned.

G. Lighting

* Adequate natural or artificial lighting should be provided to enable the undertaking to operate in a hygienic manner.

* Lighting should not be such that the resulting colour is misleading.

* The intensity should be adequate to the nature of the operation.

* Lighting fixtures should, where appropriate, be protected to ensure that food is not contaminated by breakages.

H. Storage

* Adequate facilities for the storage of food, ingredients and non-food chemicals (e.g., cleaning materials, lubricants, fuels) should be provided.

* Where appropriate, food storage facilities should be designed and constructed to:
  - permit adequate maintenance and cleaning;
  - void pest access and harbourage;
  - enable food to be effectively protected from contamination during storage; and
  - where necessary, provide an environment which minimises the deterioration of food (e.g. by temperature and humidity control).

* The type of storage facilities required will depend on the nature of the food. Where necessary, separate, secure storage facilities for cleaning materials and hazardous substances should be provided.

Next Issue : Codex Guidelines on Food Hygiene - II

Issues of Technews during 2001

Issue	Month	Theme
30	**Jan-Feb**	**Indian Dairy Industry : Necessity for Improvement**
31	**Mar-Apr**	**Pathogens in Milk & Milk Products I**
32	**May-Jun**	**Pathogens in Milk & Milk Products II**
33	**Jul-Aug**	**Codex Standards for Dairy Industry**
34	**Sep-Oct**	**Control of Aflatoxin in Milk**
35	**Nov-Dec**	**Codex Guidelines on Food Hygiene - I**

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Only entertaining ☐ Boring ☐

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I would like information in any subsequent issue on _____

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