

FEDERATED STATES OF MICRONESIA
DEPARTMENT OF HEALTH SERVICES
REGULATIONS (CODE) OF PRACTICE
FOR
GENERAL PRINCIPLES OF FOOD HYGIENE
DHS REGULATIONS NO. 2-1993

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Section I - General Provision

- 1.1 Authority - These Regulations have been promulgated and issued by the Secretary of the Department of Health Services pursuant to the authority granted to the Secretary under sections 25 of the National Food Safety Act, Public Law 7-116. These Regulations apply to the growing and harvesting, preparation, processing, packaging, storage, transport, distribution and sale of food intended for export or interstate commerce.

The Federated States of Micronesia is a Member State of the Codex Alimentarius Commission (CAC) which was established to implement the Joint Food and Agriculture Organization/World Health Organization Food Standards Program. As a member State of the CAC the FSM hereby adopts the Codex Alimentarius Recommended International Code of Practice No. 1 (Rev. 2 - 1985).

- 1.2 These Regulations are further intended to provide a basis for establishing standards of practice for individual commodities which have specific requirements relating to food hygiene, in compliance to CAC Code of Ethics for International Trade in Food, Article 5 (5.1) Food Standards and (5.2) Food Hygiene (CAC/RCP20-1979 Rev.1 (1985))

Section II - Definitions

2. For the purpose of these Regulations the following expressions have the meaning stated:
- 2.1 ADEQUATE - sufficient to accomplish the intended purpose of the Regulation
- 2.2 CLEANING - the removal of soil, food residues, dirt, grease or other objectionable matter.
- 2.3 CONTAMINATION - the occurrence of any objectionable matter in the product.
- 2.4 DISINFECTION - the reduction, without adversely affecting the food, by means of hygienically satisfactory chemical agents and/or physical methods, of the number of micro-organisms to a level that will not lead to harmful contamination of food.

- 2.5 ESTABLISHMENT - any building(s) or area(s) in which food is handled after harvesting and the surroundings under the control of the same management.
- 2.6 FOOD HANDLING - any operation in the growing and harvesting, preparation, processing, packaging, storage, transport, distribution and sale of food.
- 2.7 FOOD HYGIENE - all measures necessary to ensure the safety, soundness and wholesomeness of food at all stages from its growth, production or manufacture until its final consumption.
- 2.8 PACKAGING MATERIAL - any containers such as cans, bottles, cartons, boxes, cases and sacks, or wrapping and covering material such as foil, film, metal, paper, wax-paper and cloth.
- 2.9 PESTS - any animals capable of directly or indirectly contaminating food.

Section III - Hygiene requirements in production/harvesting area

3.1 ENVIRONMENTAL HYGIENE IN AREAS FROM WHICH RAW MATERIALS ARE DERIVED

3.1.1 Unsuitable growing or harvesting areas

Food shall not be grown or harvested where the presence of potentially harmful substances would lead to an unacceptable level of such substances in the food.

3.1.2 Protection from contamination by wastes

3.1.2.1 Raw food materials shall be protected from contamination by human, animal, domestic, industrial and agricultural wastes which may be present at levels likely to be a hazard to health. Adequate precautions shall be taken to ensure that these wastes are not used and are not disposed of in a manner which may constitute a hazard to health through the food.

3.2.2.2 Arrangements for the disposal of domestic and industrial wastes in areas from which raw materials are derived shall be acceptable to the Secretary of the Department of Health Services.

3.1.3 Irrigation control

Food shall not be grown or produced in areas where the water used for irrigation might constitute a health hazard to the consumer through the food.

3.1.4 Pest and disease control

Control measures involving treatment with chemical, physical or biological agents shall only be undertaken by or under the direct supervision of personnel who have through understanding of the potential hazards to health, particularly those hazards which may arise from residues in the food. Such measures shall only be carried out in accordance with the instruction of the Secretary of the Department of Health Services.

3.2 HARVESTING AND PRODUCTION

3.2.1 Techniques

Methods and procedures associated with harvesting and production shall be hygienic and such as not to constitute a potential hazard to health or result in contamination of the product.

3.2.2 Equipment and containers

Equipment and containers used for harvesting and production shall be so constructed and maintained as not to constitute a hazard to health. Containers which are re-used shall be of such material and construction as will permit easy and thorough cleaning. They shall be cleaned and maintained clean and, where necessary, disinfected. Containers previously used for toxic materials shall not subsequently be used for holding foods or food ingredients.

3.2.3 Removal of obviously unfit raw materials

Raw materials which are obviously unfit for human consumption shall be segregated during harvesting and production. Those which cannot be made fit by further processing should be disposed of in such a place and in such a manner as to avoid contamination of the food and/or water supplies or other food materials.

3.2.4 Protection against contamination and damage

Suitable precautions shall be taken to protect the raw materials from being contaminated by pests or by chemical, physical or microbiological contaminants or other objectionable substances. Precautions shall be taken to avoid damage.

3.3 STORAGE AT THE PLACE OF PRODUCTION/HARVESTING

Raw materials shall be stored under conditions which provide protection against contamination and minimize damage and deterioration.

3.4 TRANSPORTATION

3.4.1 Conveyances

Conveyances for transporting the harvested crop or raw materials from the production area or place of storage shall be adequate for the purpose intended and shall be of such material and construction as will permit easy and thorough cleaning. They shall be cleaned and maintained clean, and where necessary disinfected and disinfested.

3.4.2 Handling procedures

All handling procedures shall be such as will prevent raw materials from being contaminated. Care shall be taken to prevent spoilage, to protect against contamination and to minimize damage. Special equipment - such as refrigeration equipment - shall be used if the nature of the product or distances involved so indicate. If ice is used in contact with the product, it shall be of the quality required in Section 4.4.1.2 of this Regulation.

Section IV - Establishment: design and facilities

4.1 LOCATION

Establishments shall be located in areas which are free from objectionable odors, smoke, dust or other contaminants and are not subject to flooding.

4.2 ROADWAYS AND AREAS USED BY WHEELED TRAFFIC

Such roadways and areas serving the establishment which are within its boundaries or in its immediate vicinity shall have a hard paved surface suitable for wheeled traffic. There shall be adequate drainage and provision shall be made to allow for cleaning.

3. BUILDINGS AND FACILITIES

4.3.1 Buildings and facilities shall be of sound construction and maintained in good repair.

4.3.2 Adequate working space shall be provided to allow for satisfactory performance of all operations.

4.3.3 The design shall be such as to permit easy and adequate cleaning and to facilitate proper supervision of food hygiene.

- 4.3.4 The buildings and facilities shall be designed to prevent the entrance and harbouring of pests and the entry of environmental contaminants such as smoke, dust, etc.
- 4.3.5 Buildings and facilities shall be designed to provide separation, by partition, location or other effective means, between those operations which may cause cross-contamination.
- 4.3.6 Buildings and facilities shall be designed to facilitate hygienic operations by means of regulated flow in the process from the arrival of the raw material at the premises to the finished product, and shall provide for appropriate temperature conditions for the process and the product.
- 4.3.7 In food handling areas:

Floors, where appropriate, shall be of water-proof, non-absorbent, washable, non-slip and non-toxic materials, without crevices, and shall be easy to clean and disinfect. Where appropriate, floors shall slope sufficiently for liquids to drain to trapped outlets.

Walls, where appropriate, shall be of water-proof, non-absorbent, washable and non-toxic materials and shall be light-colored. Up to a height appropriate for the operation, they should be smooth and without crevices, and shall be easy to clean and disinfect. Where appropriate, angles between walls, between wall and floors and between walls and ceilings shall be sealed and cover to facilitate cleaning.

Ceilings shall be so designed, constructed and finished as to prevent the accumulation of dirt and minimize condensation, mould development and flaking and shall be easy to clean.

Windows and other openings shall be so constructed as to avoid accumulation of dirt and those which open shall be fitted with screens. Screens should be easily movable for cleaning and kept in good repair. Internal window sills, if present, shall be sloped to prevent use as shelves.

Doors shall have smooth, non-absorbent surfaces and, where appropriate, be self-closing and close fitting.

Stairs, lift cages and auxiliary structures such as platforms, ladders, chutes, shall be so situated and constructed as not to cause contamination to food. Chutes shall be constructed with inspection and cleaning hatches.

- 4.3.8 In food-handling areas, all overhead structures and fittings shall be installed in such a manner as to avoid contamination directly or indirectly of food and raw materials by condensation and drip, and shall not hamper cleaning operations. They shall be insulated where appropriate and be so designed and finished as to prevent the accumulation of dirt and to minimize condensation, would development and flaking. They shall be easy to clean.
- 4.3.9 Living quarters, toilets and areas where animals are kept shall be completely separated from and shall not open directly on to food handling areas.
- 4.3.10 Where appropriate, establishments shall be so designed that access can be controlled.
- 4.3.11 The use of material which cannot be adequately cleaned and disinfected, such as wood, shall be avoided unless its use would clearly not be a source of contamination.

4.4 SANITARY FACILITIES

4.4.1 Water supply

4.4.1.1 An ample supply of water, in compliance with Section 7.3 of this regulation adequate pressure and of suitable temperature shall be available with adequate facilities for its storage, where necessary, and distribution, and with adequate protection against contamination.

4.4.1.2 Ice shall be made from water, in compliance with Section 7.3 of this regulation, and shall be manufactured, handled and stored so as to protect it from contamination.

4.4.1.3 Steam used in direct contact with food or food contact surfaces shall contain no substances which may be hazardous to health or may contaminate the food.

4.4.1.4 Non-potable water used for steam production, refrigeration, fire control and other similar purposes not connected with food shall be carried in completely separate lines, identifiable preferably by colour, and with no cross-connection with or back-siphonage into the system carrying potable water (see also Section 7.3.2).

4.4.2 Effluent and waste disposal

Establishments shall have an efficient effluent and waste disposal system which shall at all times be maintained in good order and repair. All effluent lines (including sewer systems) shall be large enough to carry peak loads and shall be so constructed as to avoid contamination of potable water supplies.

4.4.3 Changing facilities and toilets

Adequate, suitable and conveniently located changing facilities and toilets shall be provided in all establishments. Toilets shall be so designed as to ensure hygienic removal of waste matter. These areas shall be well lit, ventilated and shall not open directly on to food handling areas. Hand-washing facilities with warm or hot and cold water, a suitable hand-cleaning preparation, and with suitable hygienic means of drying hands, shall be provided adjacent to toilets and in such a position that the employee must pass them when returning to the processing area. Where hot and cold water are available, mixing taps shall be provided. Where paper towels are used, a sufficient number of dispensers and receptacles should be provided near each washing facility. Taps of a non-hand operable type are required. Notices shall be posted directing personnel to wash their hands after using the toilet.

4.4.4 Hand-washing facilities in processing areas

Adequate and conveniently located facilities for hand washing and drying shall be provided wherever the process demands. Where appropriate, facilities for hand disinfection shall also be provided. Warm or hot and cold water and suitable hand-cleaning preparation shall be provided. Where hot and cold water are available, mixing taps shall be provided. There shall be suitable hygienic means of drying hands. Where paper towels are used, a sufficient number of dispensers and receptacles shall be provided adjacent to each washing facility. Taps of a non-hand operable type are required. The facilities shall be furnished with properly trapped waste pipes leading to drains.

4.4.5 Disinfection facilities

Where appropriate, adequate facilities for cleaning and disinfection of working implements and equipment shall be provided. These facilities shall be constructed of corrosion-resistant materials, capable of being easily cleaned, and shall be fitted with suitable means of supplying hot and cold water in sufficient quantities.

4.4.6 Lighting

Adequate natural or artificial lighting shall be provided throughout the establishment. Where appropriate, the lighting shall not alter colours and the intensity shall not be less than: 540 lux (50-foot [15-m] candles) at all inspection points 220 lux (20-foot [6-m] candles) in work rooms

110 lux (10-foot [3-m] candles) in other areas.

Lights bulbs and fixtures suspended over food materials in any stage of production shall be of a safety type and protected to prevent contamination of food in case of breakage.

4.4.7 Ventilation

Adequate ventilation shall be provided to prevent excessive heat, steam condensation and dust and to remove contaminated air. The direction of the air flow shall never be from a dirty area to a clean area. Ventilation openings shall be provided with a screen or other protecting enclosure of non-corrodible material. Screens shall be easily removable for cleaning.

4.4.8 Facilities for storage of waste and inedible material

Facilities shall be provided for the storage of waste and inedible material prior to removal from the establishment. These facilities shall be designed to prevent access to waste or inedible material by pests and to avoid contamination of food, potable water, equipment, buildings or roadways on the premises.

4.5 EQUIPMENT AND UTENSILS

4.5.1 Materials

All equipment and utensils used in food handling areas and which may contact food shall be made of material which does not transmit toxic substances, odour or taste, is non-absorbent, is resistant to corrosion and is capable of withstanding repeated cleaning and disinfection. Surfaces shall be smooth and free from pits and crevices. The use of wood and other materials which cannot be adequately cleaned and disinfected shall be avoided except when their use would clearly not be a source of contamination. The use of different materials in such a way that contact corrosion can occur shall be avoided.

4.5.2 Sanitary design, construction and installation

4.5.2.1 All equipment and utensils shall be so designed and constructed as to prevent hygienic hazards and permit easy and thorough cleaning and disinfection and, where practicable, be visible for inspection. Stationary equipment shall be installed in such a manner as to permit easy access and thorough cleaning.

4.5.2.2 Containers for inedible materials and waste shall be leak-proof, constructed of metal or other suitable impervious material which shall be easy to clean or disposable and able to enclosed securely.

4.5.2.3 All refrigerated spaces shall be equipped with temperature measurement or recording devices.

4.5.3 Equipment identification

Equipment and utensils used for inedible materials or waste shall be so identified and shall not be used for edible products.

Section V - Establishment: hygiene requirements

5.1 MAINTENANCE

The buildings, equipment, utensils and all other physical facilities of the establishment, including drains, shall be maintained in good repair and in an orderly condition. As far as practicable, rooms shall be kept free from steam, vapor and surplus water.

5.2 CLEANING AND DISINFECTION

5.2.1 Cleaning and disinfection shall meet the requirements of this regulation. For further information on cleaning and disinfection procedures, see Appendix 1 of this Regulation.

5.2.2 To prevent contamination of food, all equipment and utensils shall be cleaned as frequently as necessary and disinfected whenever circumstances demand.

5.2.3 Adequate precautions shall be taken to prevent food from being contaminated during cleaning or disinfection of rooms, equipment or utensils by water and detergents or by disinfectants and their solutions. Detergents and disinfectants shall be suitable for the purpose intended and shall be acceptable to the Secretary, Department of Health Services. Any residues of these agents on a surface which may come in contact with food shall be removed by thorough rinsing with water, in compliance with Section 7.3 of this regulation before the area or equipment is again used for handling food.

5.2.4 Either immediately after cessation of work for the or at such other times as may be appropriate, floors, including drains, auxiliary structures and walls of food-handling areas shall be thoroughly cleaned.

5.2.5 Changing facilities and toilets shall be kept clean at all times.

5.2.6 Roadways and yards in the immediate vicinity of and serving the premises shall be kept clean.

5.3 HYGIENE CONTROL PROGRAMME

A permanent cleaning and disinfection schedule shall be drawn up for each establishment to ensure that all areas are appropriately cleaned and that critical areas, equipment and material are designated for special attention. A single individual, who shall preferably be a permanent member of the staff of the establishment and whose duties shall be independent of production, shall be appointed to be responsible for the cleanliness of the establishment. He shall have a thorough understanding of the significance of contamination and the hazards involved. All cleaning personnel shall be well-trained in cleaning techniques.

5.4 BY-PRODUCTS

By products shall be stored in such a manner as to avoid contamination of food. They shall be removed from the working areas as often as necessary and at least daily.

5.5 STORAGE AND DISPOSAL OF WASTE

Waste material shall be handled in such a manner as to avoid contamination of food or potable water. Care shall be taken to prevent access to waste by pests. Waste shall be removed from the food-handling and other working areas as often as necessary and at least daily.

Immediately after disposal of the waste, receptacles used for storage and any equipment which has come into contact with the waste shall be cleaned and disinfected. The waste storage area shall also be cleaned and disinfected.

5.6 EXCLUSION OF DOMESTIC ANIMALS

Animals that are uncontrolled or that could be a hazard to health shall be excluded from establishments.

5.7 PEST CONTROL

5.7.1 There shall be an effective and continuous programme for the control of pests. Establishments and surrounding areas shall be regularly examined for evidence of infestation.

5.7.2 Should pests gain entrance to the establishment, eradication measures shall be instituted. Control measures involving treatment with chemical, physical or biological agents shall only be undertaken by or under the direct supervision of personnel who have thorough understanding of the potential hazards to health resulting from the use of these agents, including those hazards which may arise from residues retained in the product. Such measures shall only be carried out in accordance with the recommendations of the official agency having jurisdiction.

5.7.3 Pesticides shall only be used if other precautionary measures cannot be used effectively. Before pesticides are applied, care shall be taken to safeguard all food, equipment and utensils from contamination. After application, contaminated equipment and utensils shall be thoroughly cleaned to remove residues prior to being used again.

5.8 STORAGE OF HAZARDOUS SUBSTANCES

5.8.1 Pesticides or other substances which may represent a hazard to health shall be suitably labelled with warning about their toxicity and use. They shall be stored in locked rooms or cabinets used only for that purpose and dispensed and handled only by authorized and properly trained personnel or by persons under the strict supervision of trained personnel. Extreme care shall be taken to avoid contaminating food.

5.8.2 Except when necessary for hygienic or processing purposes, no substance which could contaminate food shall be used or stored in food-handling areas.

5.9 PERSONAL EFFECTS AND CLOTHING

Personal effects and clothing shall not be deposited in food-handling areas.

Section VI - Personnel hygiene and health requirements

6.1 HYGIENE TRAINING

Managers of establishments shall arrange for adequate and continuing training of all food handlers in hygienic handling of food and in personal hygiene so that they understand the precautions necessary to prevent contamination of food. Instruction shall include relevant parts of this regulation.

6.2 MEDICAL EXAMINATION

Persons who come in contact with food in the course of their work shall have a medical examination prior to their employment if the Secretary acting on medical advice, considers that this is necessary, whether because of epidemiological considerations, the nature of the food prepared in a particular establishment or the medical history of the prospective food handler. Medical examination of food handler shall be carried out at other times when clinically or epidemiologically indicated.

6.3 COMMUNICABLE DISEASES

The management shall take care to ensure that no person, while known or suspected to be suffering from, or to be a carrier of a disease likely to be transmitted through food or while afflicted with infected wounds, skin infections, sores or with diarrhoea, is permitted to work in any food-handling area in any capacity in which there is any likelihood of such a person directly or indirectly contaminating food with pathogenic micro-organisms. Any person so affected shall immediately report to the management that he or she is ill.

6.4 INJURIES

Any person who has a cut or wound should not continue to handle food or food contact surfaces until the injury is completely protected by waterproof covering which is firmly secured, and which is conspicuous in colour. Adequate first-aid facilities shall be provided for this purpose.

6.5 WASHING OF HANDS

Every person, while on duty in a food-handling area, shall wash his hands frequently and thoroughly with a suitable hand-cleaning preparation under running warm water in compliance with Section 7.3 of this Regulation. Hands shall always be washed before commencing work, immediately after using the toilet, after handling contaminated material and whenever else necessary.

After handling any material which might be capable of transmitting disease, hands shall be washed and disinfected immediately. Notices requiring hand-washing shall be displayed. There shall be adequate supervision to ensure compliance with this requirement.

6.6 PERSONAL CLEANLINESS

Every person engaged in a food-handling area shall maintain a high degree of personal cleanliness while on duty, and shall at all times while so engaged wear suitable protective clothing including head covering and footwear, all of which articles shall be cleanable, unless designed to be disposed of, and shall be maintained in a clean condition consistent with the nature of the work in which the person is engaged. Aprons and similar items shall not be washed on the floor. During periods where food is manipulated by hand, any jewelry that cannot adequately disinfected shall be removed from the hands. Personnel shall not wear any insecure jewelry when engaged in food handling.

6.7 PERSONAL BEHAVIOR

Any behavior which could result in contamination of food, such as eating, use of tobacco, chewing (e.g., gum, sticks, beetle nuts, etc.) or unhygienic practices, such as spitting, shall be prohibited in food-handling areas.

6.8 GLOVES

Gloves, if used in the handling of products, shall be maintained in a sound, clean and sanitary condition. The wearing of gloves does not exempt the operator from having thoroughly washed hands.

6.9 VISITORS

Precautions shall be taken to prevent visitors to food-handling areas from contaminating food. These may include the use of protective clothing. Visitors shall observe the provisions recommended in Sections 5.9, 6.3, 6.4 and 6.7 of this Regulation.

6.10 SUPERVISION

Responsibility for ensuring compliance by all personnel with all requirements of Section 6.1 to 6.9, inclusive, shall be specifically allocated to competent supervisory personnel.

Section VII - Establishment: hygienic processing requirements

7.1 RAW MATERIAL REQUIREMENTS

7.1.1 No raw material or ingredient shall be accepted by the establishment if known to contain parasites, micro-organisms or toxic, decomposed or extraneous substances which will not be deduced to acceptable levels by normal plant procedures of sorting and/or preparation or processing.

7.1.2 Raw materials or ingredients shall be inspected and sorted prior to being moved into the processing line and, where necessary, laboratory tests shall be made. Only clean, sound, raw materials or ingredients shall be used in further processing.

7.1.3 Raw materials and ingredients stored on the premises of the establishment shall be maintained under conditions that will prevent spoilage, protect against contamination and minimize damage. Stock of raw materials and ingredients shall be properly rotated.

7.2 PREVENTION OF CROSS-CONTAMINATION

- 7.2.1 Effective measures shall be taken to prevent contamination of food material by direct or indirect contact with material at an earlier stage of the process.
- 7.2.2 Persons handling raw materials or semi-processed products capable of contaminating the end-product shall not come into contact with any end-product unless and until they discard all protective clothing worn by them during handling of raw materials or semi-processed products which have come into direct contact with or have been soiled by raw material or semi-processed products and they have changed into clean protective clothing.
- 7.2.3 If there is a likelihood of contamination, hands shall be washed thoroughly between handling products at different stages of processing.
- 7.2.4 All equipment which has been in contact with raw materials or contaminated material shall be thoroughly cleaned and disinfected prior to being used for contact with end-products.

7.3 USE OF WATER

- 7.3.1 As a general principle, only potable water, as defined in the latest edition of International Standards of Drinking Water (WHO), shall be used for food handling.
- 7.3.2 Non-potable water may be used with the acceptance of the Secretary for steam production, refrigeration, fire control and other similar purposes not connected with food. However, non-potable water may, with specific acceptance by the Secretary be used in certain food-handling areas provided this does not constitute a hazard to health.
- 7.3.3 Water recirculated for re-use within an establishment shall be treated and maintained in a condition so that no health hazard can result from its use. The treatment process shall be kept under constant surveillance. Alternatively, recirculated water which has received no further treatment may be used in conditions where its use would not constitute a health hazard and will not contaminate either the raw material or the end-product. Recirculated water shall have a separate distribution system which can be readily identified. The acceptance of the Secretary shall be required for any treatment process and for the use of recirculated water in any food process.

7.4 PROCESSING

- 7.4.1 Processing shall be supervised by technically competent personnel.

- 7.4.2 All steps in the production process, including packaging, shall be performed without unnecessary delay and under conditions which will prevent the possibility of contamination, deterioration, or the development of pathogenic and spoilage micro-organisms.
- 7.4.3 Rough treatment of containers shall be avoided to prevent the possibility of contamination of the processed product.
- 7.4.4 Methods of preservation and necessary controls shall be such as to protect against contamination or development of a public health hazard and against deterioration within the limits of good commercial practice.

7.5 PACKAGING

- 7.5.1 All packaging material shall be stored in a clean and sanitary manner. The material shall be appropriate for the product to be packed and for the expected conditions of storage and shall not transmit to the product objectionable substances beyond the limits acceptable to the Secretary. The packaging material shall be sound and shall provide appropriate protection from contamination.
- 7.5.2 Product containers shall not have been used for any purpose which may lead to contamination of the product. Where practicable, containers shall be inspected immediately before use to ensure that they are in a satisfactory condition and, where necessary, cleaned and/or disinfected; when washed, they shall be well-drained before filling. Only packaging material required for immediate use shall be kept in the packing or filling area.
- 7.5.3 Packing shall be done under conditions that preclude the introduction of contamination into the product.
- 7.5.4 Lot identification

Each container shall be permanently marked in code or in clear to identify the producing factory and the lot. A lot is a quality of food produced under identical conditions, all packages of which shall bear a lot number that identifies the production during a particular time interval, and usually from a particular "line" or other critical processing unit.

- 7.5.5 Permanent, legible and dated records of pertinent processing and production details shall be kept concerning each lot. These records shall be retained for a period that exceeds the shelf-life of the product, but unless a specific need exists they need not be kept for more than two years. Records shall also be kept of the initial distribution by lot.

7.6 STORAGE AND TRANSPORT OF THE END-PRODUCT

The end product shall be stored and transported under such conditions as will preclude the contamination with and/or proliferation of micro-organisms and protect against deterioration of the product or damage to the container. During storage, periodic inspection of the end-product shall take place to ensure that only food which is fit for human consumption is dispatched and that end-product specifications are complied with when they exist. The product shall be dispatched in the sequence of the numbers.

7.7 SAMPLING AND LABORATORY CONTROL PROCEDURES

- 7.7.1 It is desirable that each establishment shall have access to laboratory control of the products processed. The amount and type of such control will vary with the food product as well as the needs of management. Such control shall reject all food that is unfit for human consumption.
- 7.7.2 Where appropriate, representative samples of the production shall be taken to assess the safety and quality of the product.
- 7.7.3 Laboratory procedures used shall preferably follow recognized or standard methods in order that the results may be readily interpreted.
- 7.7.4 Laboratories checking for pathogenic micro-organisms shall be well-separated from food-processing areas.

Section VIII - End-product specifications

- 8. Specifications such as microbiological, chemical or physical may be required, depending on the nature of the food. Such specifications shall include sampling procedures, analytical methodology and limits for acceptance.

APPENDIX I

CLEANING AND DISINFECTION

1. General Principles

- 1.1 Good hygiene demands effective and regular cleaning of establishments, equipment and vehicles to remove food residues and dirt which may contain food-poisoning and spoilage micro-organisms and act as a source of food contamination. This cleaning process may, where necessary, be followed by, or associated with, disinfection to reduce the number of any micro-organisms remaining after cleaning to a level which will not cause harmful contamination of food. Sometimes the cleaning and disinfection stages are combined by the use of a detergent-disinfectant mixture, although it is generally considered that this is less efficient than a two-stage cleaning and disinfection process.
- 1.2 The methods of cleaning and disinfection shall be considered satisfactory by the Secretary.
- 1.3 Cleaning disinfection procedures shall be properly established by a hygiene specialist after consultation with production management, plant engineers and detergent and disinfectant manufacturers. The cleaning and disinfection procedures shall be designed to meet the particular needs of the process and product concerned, and shall be set down in written schedules which shall be made available for the guidance of employees and management. Procedures shall be established not only for cleaning and disinfection of the equipment which is itself used for cleaning, e.g., mops, swabs, buckets, etc. There must be adequate supervision by management to ensure that the procedures set down are carried out in an effective manner at the specified intervals of time.
- 1.4 A single individual, who shall preferably be a permanent member of the staff of the establishment and whose duties preferably shall be independent of production, shall be appointed to be responsible for cleaning and disinfection procedures and for supervision.
- 1.5 Industrial detergents and disinfectants require careful handling. Alkaline and acidic products must not be mixed. Hypochlorite solutions must not be mixed with acidic products as chlorine gas will be released. Operator handling strongly alkaline or acid products must wear protective clothing and goggles and must be thoroughly instructed handling techniques.

Containers in which such substances are kept shall be clearly marked and stored separately from food and packaging materials. Manufacturers' instructions shall be carefully observed.

2. Cleaning

2.1 CLEANING PROCEDURES

2.1.1 Cleaning procedures will require:

2.1.1.1 The removal of gross debris from surfaces by brushing, vacuuming and scraping of deposits or other methods where necessary followed by the application of water in compliance with Section 7.3 of the Regulations for General Principles of Food Hygiene. The temperature of the water used will depend upon the type of soil to be removed.

2.1.1.2 The application of detergent solution to loosen soil and bacterial film and holding them in solution or suspension.

2.1.1.3 Rinsing with water in compliance with Section 7.3 of the General Principles of Food Hygiene to remove loosened soil and residues of detergent.

2.1.1.4 Care shall be taken that the use of abrasive material does not alter the character of the food contact surface and that fragments from brushes, scrapers and other cleaning materials do not contaminate the food.

2.1.2 When these requirements have been met, they may be followed by a disinfection process (see Section 3: Disinfection).

2.2 CLEANING METHODS

2.2.1 Cleaning is carried out by the separate or combined use of physical methods, e.g., scrubbing in turbulent flow, and chemical methods, e.g., the use of detergent, alkalis or acids. Heat is an important adjunct to the use of physical and chemical methods. Care must be employed in the selection of the temperatures, depending on the detergents and the nature of the soil and working surfaces. Some synthetic organic materials can absorb constituents of food, such as milk fat, and the amount absorbed rises with the temperature.

2.2.2 One or more of the following methods is used according to the circumstances:

2.2.2.1 Manual: involving removal of soil by scrubbing in the presence of a detergent solution. For removable parts of machinery and for small items of equipment, soaking in a detergent solution in a separate receptacle may be necessary to loosen the soil prior to the scrubbing process.

- 2.2.2 In-place cleaning: the cleaning of equipment including pipe runs, with water and detergent solution, without dismantling the equipment or pipe runs. The equipment must be properly designed for this cleaning method. A minimum fluid velocity of 1.5 metres per second (5 feet per second) with turbulent flow is required for effective cleaning of pipe runs. As far as possible, parts of equipment which cannot be satisfactorily cleaned by this method should be identified and eliminated. If this cannot be done satisfactorily, the parts shall be dismantled for cleaning to prevent build-up of contamination (General Principles of Food Hygiene, Section 4.5.2)
- 2.2.2.3 Low-pressure high-volume spray: the application of water or detergent solution in large volumes at pressures up to approximately 6.8 bar (100 psi).
- 2.2.2.4 High pressure low-volume spray: the application of water or detergent solution in low volume at a high pressure, i.e. up to 68 bar (1 000 psi).
- 2.2.2.5 Foam cleaning: the application of a detergent in the form of a foam which is allowed to remain for 15-20 minutes and is rinsed off with a water spray.
- 2.2.2.6 Washing machines: some containers and equipment used of food processing can be washed by machines. These machines carry out the cleaning procedures set out above with the addition of disinfection by hot-water rinse at the completion of the cleaning cycle. Good results can be obtained with such machines provided the effectiveness and efficiency of the machine are maintained by adequate and regular servicing.

2.3 DETERGENTS

Detergents must have a good wetting capacity and the ability to remove soil from surfaces and to hold the soil in suspension. They must also have good rinsing properties so that residues of soil and detergent can be easily removed from properties so that residues of soil and detergent can be easily removed from equipment. There are many types of detergent and advice shall be sought to ensure that the detergent used in any particular circumstances is suitable to remove the type of soil resulting from a particular food process and is used at the correct concentration and temperature. The detergent used shall be non-corrosive and compatible with other materials including disinfectants used in the sanitation programme. While cold solutions of detergent may be effective in some circumstances, removal of residues of fat requires the use of heat.

The deposition of mineral salts on equipment may form a hard scale ("stone"), especially in the presence of fats or proteins; the use of an acid or alkaline detergent or both sequentially may be necessary to remove such deposits. The "stone" can be a major source of bacterial contamination. It can be easily detected by its fluorescence under ultraviolet light which will detect deposits usually missed by ordinary visual inspection.

2.4 DRYING AFTER CLEANING

- 2.4.1 If equipment is left wet after cleaning, micro-organisms may grow in the water film. It is important to ensure that equipment is left dry as soon as possible after cleaning and, where possible, to allow equipment to air-dry naturally. Single-use tissue or absorbent materials may be used for drying but they shall be used once and discarded.
- 2.4.2 Adequate drainage points shall be provided in equipment that cannot be dismantled and drying racks provided for small pieces of equipment that are dismantled for the purpose of cleaning.
- 2.4.3 Any equipment that unavoidably remains wet for a period during which significant microbial growth might occur shall be disinfected immediately before use.

3. Disinfection

3.1 GENERAL CONSIDERATIONS

While disinfection results in the reduction of numbers of living micro-organisms, it does not usually kill bacterial spores. Effective disinfection does not unnecessarily kill all micro-organisms present but reduces their numbers to a level at which they can be reasonably assumed to present no risk to health. No disinfection procedure can exert its full effect unless its use is preceded by thorough cleaning. Disinfectants shall be chosen according to the micro-organisms to be killed, the type of food being processed and material making up the food contact surfaces and, where appropriate, the criteria mentioned in Section 3.4. Selection is also affected by the character of the water available and the method of cleaning used. The continued use of certain chemical disinfectants may lead to the selection of resistant micro-organisms. Chemical disinfectants shall be used where use of heat would not be practicable. The methods used for cleaning under Section 2.2 could also be used for the application of disinfectants.

3.2 DISINFECTION BY HEAT

3.2.1 The application of moist heat to raise the surface temperature to at least 70 degrees C (160 degrees F) is one of the commonest and most useful forms of disinfection. High temperatures, however, will denature protein residues and bake them on the surface of food equipment. It is, therefore, essential that all material such as residual food be removed by thorough cleaning before the application of heat for disinfection.

3.2.1.1 Hot-water

This is the method of choice and is commonly used throughout the food industry. Removable parts of machinery and smaller items of equipment can be submerged in a sink or tank containing water at disinfection temperature for a suitable time e.g., at 80 degrees C (176 degrees F) for two minutes. The disinfectant rinse in mechanical washing machines should reach this disinfection temperature and the period of immersion shall be sufficient to allow the equipment surfaces to reach this temperature. Water at disinfection temperature will scald bare hands so basket racks or some other type of receptacle will have to be used where the process is manual.

3.2.1.2 Steam disinfection

Where steam is used, the surface to be disinfected must be raised to a disinfecting temperature for a suitable time. It may not be practicable to have steam available for disinfection throughout the premises. Lances producing steam jets are useful to disinfect surfaces of machinery and other surfaces which are difficult to reach or which must be disinfected in situ on the factory floor. The heating of surfaces during the application of high-temperature steam promotes their subsequent drying. The use of steam can present problems by creating condensation on other equipment and other parts of the structure. High-pressure steam can strip paint from painted surfaces and lubricants from the working parts of machinery. Moreover, some types of materials, such as plastics, are unsuitable for treatment with live steam. Steam jets shall only be used by trained personnel as they can be dangerous in unskilled hands.

3.3 CHEMICAL DISINFECTION

3.3.1 The following factors affect the performance of chemical disinfectants:

3.3.1.1 Inactivation by dirty conditions

The effectiveness of all chemical disinfectants is reduced by the presence of dirt and other soiling matter. Disinfectants will not act at all where there is gross soiling. Disinfection with chemicals must, therefore, always follow or be combined with a cleaning process.

3.3.1.2 Temperature of solution

In general, the higher the temperature, the more effective will be the disinfection. A warm or hot solution is, therefore, preferable to a cold solution of disinfectant. There are, however, limitations to the temperature that may be used, and the manufacturer's guidance shall be followed. Iodophors release iodine at temperatures above 43 degrees C (110 degrees F) which can result in staining of materials. The corrosive action of chlorine is increased when hot hypochlorite solutions are used.

3.3.1.3 Time

All chemical disinfectants need a minimum contact time to be effective. This minimum contact time will vary according to the activity of the disinfectant.

3.3.1.4 Concentration

The concentration of the chemical solution which is required will vary according to the conditions of use and must be suitable for the particular purpose and environment in which it is to be used. The solutions shall, therefore, be made up strictly according to the manufacturer's instructions.

3.3.1.5 Stability

All disinfectant solutions shall be freshly made in clean utensils. Topping up existing solutions or prolonged keeping of ready-to-use dilute solutions may render the disinfectant solution ineffective or may allow it to become a reservoir of resistant organisms. Disinfectants may be inactivated if mixed with detergents or other disinfectants. The strength of disinfectants shall be checked regularly, particularly when diluted for use. Easy-to-use, inexpensive test kits are available for this purpose.

3.4 CHEMICALS SUITABLE FOR DISINFECTION IN FOOD PREMISES

3.4.1 Chemical disinfectants that are liable to taint the food such as phenolics shall not be used in food premises or vehicles. Care shall be taken that chemical disinfectants do not cause harm to personnel and, when used in places where animals are kept or transported, such as lairages and vehicles, do not cause distress to the animals. Among the disinfectants more commonly used in the food industry are those listed below.

3.4.1.1 Chlorine and chlorine-based products including hypochlorite compounds

Properly used, these substances are among the most suitable for food plant and vehicles. They can be obtained as liquid hypochlorite solutions containing 100,000 - 120,000 mg of available chlorine per litre, or they can be combined with a detergent in a chlorinated crystal form. These disinfectants act rapidly against a wide range of micro-organisms and are relatively cheap. They are the most suitable for general-purpose disinfection in food premises. These disinfectants shall be used at concentrations of 100-250 mg of available chlorine per litre. This group of disinfectants is corrosive to metals and they also have bleaching action. Surfaces disinfected with them shall, therefore, be subjected to a final rinsing as soon as possible after an adequate contact time. Chlorine disinfectants with the exception of chlorine dioxide are readily inactivated by the presence of organic soil.

3.4.1.2 Iodophors

These substances are always blended with a detergent in an acid medium and they are, therefore, particularly suitable in those circumstances where an acid cleaner is required. They have a rapid action and a wide range of antimicrobial activity. A solution of about 25-50 mg per litre of available iodine at pH < 4 is usually required for disinfection of clean surfaces. They are readily inactivated by organic matter. Iodophors give a visual indication of their effectiveness since they lose their colour when the residual iodine has dropped to ineffective levels. They are not toxic when used in normal concentrations but may add to the total dietary iodine load. They have little taste or smell, but may combine with substances in the food to cause taint. Iodophors may have a corrosive action on metals, depending on the particular formulation of the iodophor and the nature of the surface to which the iodophor is being applied. For these reasons, special care shall be taken to rinse them away after use.

3.4.1.3 Quarternary ammonium compounds

All these compounds also have good detergent characteristics. They are colourless and are relatively non-corrosive to metal and non-toxic but may have a bitter taste. They are not as effective against Gram-negative bacteria as are chlorine, chlorine-based disinfectants and iodophors. The solutions tend to adhere to surfaces and thorough rinsing is necessary. They shall be used at a concentration of approximately 200 -1,200 mg per litre. The higher concentrations are necessary when used with hard water. They are not compatible with soaps or anionic detergents.

3.4.1.4 Amphoteric surfactants

This comparatively recent type of disinfectant consists of active agents with detergent as well as bactericidal properties. They are of low toxicity, relatively non-corrosive, tasteless and odourless and are efficient disinfectants when used according to the manufacturer's recommendations. They are inactivated by organic matter.

3.4.1.5 Strong acids and alkalis

In addition to their properties, strong acids and alkalis have considerable antimicrobial activity. Particular care shall be taken that they do not contaminate food.

After an adequate contact time, all surfaces which have been disinfected shall be subjected to a final rinse with water, which complies with Section 7.3 of the General Principles of Food Hygiene referred to in Section 2.1.1.1. of this Appendix.

4. Checks on effectiveness of procedures

4.1 The effectiveness of cleaning and disinfection procedures shall be verified by microbiological monitoring of the product and food contact surfaces. Similar regular microbiological monitoring of the product at all stages of production will also give information on the effectiveness of cleaning and disinfection procedures.

4.2 When sampling for microbiological monitoring of equipment and food contact surfaces the use of a quenching (neutralizing) agent is required to eliminate any residual disinfectant.

FEDERATED STATES OF MICRONESIA
DEPARTMENT OF HEALTH SERVICES REGULATIONS
FOR
GENERAL PRINCIPLES OF FOOD HYGIENE
DHS REGULATIONS NO. 2 - 1993

Pursuant to the authority vested in me by Section 25 of the National Food Safety Act, P.L. 7-116, and having complied with the applicable provisions of Title 17 of the Code of the Federated States of Micronesia, these National Food Safety Act Regulations for General Principles of Food Hygiene are hereby adopted.

Date: _____

Dr. Eliuel Pretrick, Secretary
Department of Health Services

The provisions of these National Food Safety Act Regulations for General Principles of Food Hygiene have been reviewed by the Office of the Attorney General, and have been found to be in proper legal form.

Date: _____

Attorney General

Effective Date: The effective date of these regulations is _____, 199__.