



**AUSTRALASIAN BOTTLED WATER
INSTITUTE INC**

MODEL CODE

November 2005

Australasian Bottled Water Institute

Model Code

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1. INTRODUCTION

The ABWI Model Code has been developed as a Standard of Excellence for the production of bottled waters for the protection of consumers, bottlers and other participants of the industry.

The Model Code has been adopted by the bottler members of ABWI. Bottlers members must participate in the Plant Inspection Program to maintain their membership of the ABWI and they must be audited annually by a third party, independent auditor.

The Model Code is based on quality systems combined with Good Manufacturing Practices (GMP). The Model Code requires that members have a HACCP (hazard analysis, critical control point) system to be in place for plant inspections commencing from the 1st January 2007.

The water that is sourced and used for bottled waters may come from a variety of sources. Typically many waters are sourced from an underground aquifer to produce a still or sparkling, spring or mineral water. Bottlers may also bottle treated water obtained from a municipal water authority. However there is a range of other types of waters available. Provided such waters are selected, collected, transported, filled and sealed in a safe and sanitary manner, and are treated to ensure that they remain in the same quality as when first bottled; for the length of their shelf-life; consumers can enjoy all waters with confidence.

Bottled waters may be produced and labelled as follows:-

- drinking water,
- glacier water,
- mineral water,
- mineralised water,
- packaged water,

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- purified water,
- rain water,
- spring water,
- table water,
- or other appropriately designated water, consistent with the Australia New Zealand Food Standards Code and/or ACCC or NZ TPA.

Intent

The intent of the ABWI Model Code and the accompanying Plant Inspection Program is to assist bottler and source owner members' in their endeavours to produce a quality product, providing information and direction with technical procedures and quality systems and standards. As a result, the requirements of the Model Code exceeds those of mandatory food law as set out in the Australia New Zealand Food Standards Code.

Regardless of where the water may be sourced, sanitary procedures, fully documented with all check results recorded and in conjunction with quality systems, are essential components of a quality system.

The ABWI Model Code requires members to undertake a rigorous and onerous testing regime. This includes obligatory daily, weekly and annual testing. ABWI considers this test regime to be essential.

Plant Inspection Program

The Australasian Bottled Water Institute's Plant Inspection Program has been developed to assist members to achieve a standard whereby they will be considered “*bottlers of excellence*”.

This program is supported by the use of a registered logo that is only available for use by Certified Bottlers.

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Rules and Regulations

- Bottler members of ABWI are required to comply with the Plant Inspection Program.
- The Program is based on the ABWI Model Code.
- Bottlers must submit to an annual audit conducted by an ABWI approved service provider.
- Gap and Certification Audits may only be conducted by QSA registered food safety or quality auditors.
- The scope of the audit is the ABWI Model Code.
- Bottlers are expected to have completed and passed the audit prior to the anniversary date of their initial audit.
- The Model Code is designed around a series of compliance points that a bottler **"MUST"** comply with, supported by processes and procedures that are **"REQUIRED"** or **"recommended"**.
- To attain a pass, bottlers need to comply with all **"MUST"** points and achieve a score of 70% or higher (the score is calculated on the basis of the total possible score that each plant might achieve) for the supporting requirements that a bottler is **"REQUIRED"** or *"recommended"* to comply with.
- Where a bottler does NOT comply with all **"MUST"** requirements, they have 30 days to complete corrective actions and have these approved by the auditor. Where the non-compliance relates to the annual water testing for organic and volatiles then the bottler will be allowed a maximum of 60 days to have the test results returned.
- However, bottlers may apply to ABWI for a concession of a given period of time, where it is not possible for the non-compliance to be closed within the time period stated above. This concession will be given at the discretion of the Executive Director.
- Where a bottler does not achieve a score of 70% or higher, but has complied with all **"MUST"** requirements, they have 60 days to attend to the necessary points, identified by the auditor, and to have their plant or documentation re-evaluated to achieve a score of 70% or higher.

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- ABWI accredited auditors are required to provide the bottler with a copy of the completed audit checklist, along with any corrective action reports (CARs) that are issued on the day of audit. The 30 / 60 days permitted will commence from that day.
- Consultants to the bottlers may not be present on the day of certification audits but may provide information prior or subsequent to the audit. Consultants may be present at gap audits. An exemption may be sought from ABWI for circumstances such as where there may be problems of communication for the bottler, eg: English is their second language.
- Bottlers will obtain and maintain "Certified Bottlers" status passing their annual audit.
- The use of the ABWI logo is only permitted by Certified Bottlers. For the requirements dealing with the use of the logo please see the ABWI contract for the use of the logo.
- Source owners may seek separate Source Certification. In this event they **MUST** meet the compliance points for an approved source - Clause 10 (a) to (f). Certified sources **MUST** also carry out the annual testing regime.
- The ABWI Executive Director has the discretion to extend the period of certification upon request by the bottler

Administration

- The ABWI Secretariat will send all members a reminder 3 months prior to their anniversary or nominated date.
- A follow -up reminder will be sent if ABWI has not been advised of the date booked for the audit within 30 days of the original reminder being sent.
- Bottlers are required to have had their audit conducted and passed prior to their anniversary date each year and to advise the ABWI office of their passing score, each year.
- The ABWI Secretariat will provide Certified Bottlers with a copy of the contract that is to be signed by the bottler, to enable them to use the ABWI Certified Bottler logo.

Standard of Excellence

Whilst all Certified Bottlers are required to achieve a pass mark of 70% or higher, recognition is given to bottlers who achieve higher scores.

- Bottlers achieving a score of 90% or higher will be classed and advertised as achieving an Order of Merit.
- Bottlers achieving a score of 95% or higher will be classed and advertised as having achieved the highest Standard of Excellence.

2. DEFINITIONS AND ACRONYMS

DEFINITIONS

ABWI Members are **REQUIRED** comply with the definitions described below:-

Adequate - is that which accomplishes the intended purpose in keeping with good health practices.

Approved Method - means a methodology approved by the state or department or certified by the National Accreditation Testing Association (NATA) or certified (accredited) by a third-party organisation acceptable to ABWI.

Approved Source - when used in reference to a bottled water plant's product water means a source for which approval has been obtained and maintained in accordance with Section 10, Clauses (a) through (f). The bottler **MUST** maintain in the plant a current license or certificate of approval of the source where issued (by state or department).

Bottled Water - means water that is intended for human consumption and that is sealed in bottles or other containers with no added ingredients except that it may optionally contain safe and suitable antimicrobial agents. Firms may manufacture non-standardised bottled water products with ingredients such as minerals for flavour. The common or usual name of the resultant product will reflect these additions.

Bulk Water - means water intended for potable uses which is transported via tanker truck or equivalent means from one area to another for the purpose of treatment, packaging and human consumption.

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Demineralised Water - means bottled water which is produced by distillation, deionisation, reverse osmosis, or other suitable process.

Drinking Water - means water that is intended for human consumption and that is sealed in bottles or other containers with no added ingredients except that it may optionally contain safe and suitable antimicrobial agents. Firms may manufacture non-standardised drinking water products with ingredients such as minerals for flavour. The common or usual name of the resultant product will reflect these additions.

Food-contact surfaces - are those surfaces that contact human food and those surfaces from which drainage onto the food or onto surfaces that contact the food ordinarily occurs during the normal course of operations. "Food-contact surfaces" include utensils and food-contact surface of equipment.

Ground Water - means water from a subsurface saturated zone that is under a pressure equal to or greater than atmospheric pressure. Ground water **MUST** not be under the direct influence of surface water.

Lot - means a collection of primary containers or unit packages of the same size, type and style produced under conditions as nearly uniform as possible and designated by a common container code or marking

Microorganisms - means yeast, molds, bacteria and viruses and includes, but is not limited to, species having public health significance. The term "undesirable microorganisms" includes those microorganisms that are of public health significance, that subject food to decomposition, that indicate that food is contaminated with filth, or that otherwise may cause food to be adulterated. Occasionally in these regulations, the adjective "microbial" is used instead of an adjectival phrase containing the word microorganism.

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Mineral Water - means ground water obtained from a subterranean water-bearing strata that, in its natural state, contains soluble matter. It is a **REQUIREMENT** that mineral water have a level of total dissolved solids of greater than 250 ppm. No minerals may be added to such water.

Multi-service containers - means containers intended for use more than one time

MUST - is used to state mandatory requirements.

Natural Water - means bottled spring, mineral or well water which is derived from an underground formation or water from surface water that only requires minimal processing, is not derived from a municipal system or public water supply, and is unmodified except for limited treatment (e.g., filtration, ozonation or other proven disinfection processes).

Nontoxic materials - means materials for product water contact surfaces utilised in the transporting, processing storing and packaging of bottled water, which are free of substances which may render the water injurious to health or which may adversely affect the flavour, colour, odour, or bacteriological quality of the water.

Operations water - means water that is delivered under pressure to a plant for container washing, hand washing, plant and equipment, cleanup and for other sanitary purposes.

Pest - refers to any objectionable animals or insects including, but not limited to, birds, rodents, flies and larvae

Plant Operator - means any person who owns or operates a bottled water plant, and who meets the requirements of Clause 4 (p) herein.

Primary container - means the immediate container in which the product water is packaged.

Product water - means processed water used by a plant for bottled water.

Purified Water - means bottled water produced by distillation, deionisation, reverse osmosis.

Sanitize - means to adequately treat food-contact surfaces by a process that is effective in destroying vegetative cells of microorganisms of public health significance, and in substantially reducing numbers of other undesirable microorganisms, but without adversely affecting the product or its safety for the consumer.

Recommended - is used to state recommended or advisory procedures to identify conditions that should be met.

REQUIRED / REQUIREMENT - is used to state a required process or procedure.

Shipping case - means a container in which one or more primary containers of the product are held

Single-service container - means a container intended for one time usage only.

Source - when used in reference to a bottled water plant's product water, means the original source of the water, prior to any transportation, processing or treatment.

Spring Water - means ground water obtained from a subterranean water-bearing strata that, in its natural state, contains soluble matter. No minerals may be added to such water.

Unit package - means a standard commercial package of bottled water, which may consist of one or more containers.

Water Dealer - means any person who imports bottled water or causes bulk water to be transported for bottling for human consumption or other consumer uses.

Well Water - means water from a hole bored, drilled, or otherwise constructed in the ground which taps the water of an aquifer.

ACRONYMS

ABWI Australasian Bottled Water Institute Inc

CCP Critical Control Point

CP Control Point

FSANZ Food Standards Australia New Zealand

GMP Good Manufacturing Processes

HACCP Hazard Analysis and Critical Control Point

QCP Quality Control Point

3. PRODUCT QUALITY

Objectives: To ensure that the water produced in an ABWI plant, is of a high quality and safety and such that bottlers offer a high quality, safe product for sale to their customers.

Rationale: Bottlers aim to supply consumers, at all times, with finished products that comply with safety requirements and quality specifications.

All bottled water **MUST** be from an Approved Source, defined in Clause 10 (a) to (i) and **MUST** meet the Standard of Quality for source testing, as prescribed in Appendix A and to limits specified therein.

An important element in ensuring the production of quality, bottled water is the development and implementation of a Hazard Analysis Critical Control Point (HACCP) system. Details on the development of a HACCP program are given below. Bottlers **MUST** implement a HACCP program in their plants as of the 1st January 2007.

Food Safety Plans will be implemented where required by the Australian or New Zealand jurisdiction in which the plant is located.

HAZARD ANALYSIS AND CRITICAL CONTROL POINT (HACCP) SYSTEM

1. BACKGROUND

Overview of Rationale for Adopting HACCP

HACCP is a systematic approach to the identification and control of hazards associated with production that is widely recognised by scientific authorities; such as the NAS and the NACMCF and international organisations, such as the Codex Alimentarius Commission, and the International Commission on Microbiological Specification for Foods (ICSF), and used in the food industry to produce product in compliance with health and safety requirements. HACCP provides assurances and documentation that processes used in bottling water are in control and producing safe, wholesome, unadulterated product.

This is proposed because a system of preventive controls with documentation and verification of successful operation is the most effect approach available for producing safe food.

HACCP is a conceptually simple system by which industry can identify and evaluate the hazards that could affect the safety of their products, institute controls necessary to keep these hazards from occurring, monitor the performance of these controls, and maintain records of this monitoring as a matter of routine. The HACCP systems mandated in these proposed regulation will be limited to attributes affecting product safety, as opposed to economic adulteration and quality parameters.

2. THE PRINCIPAL HAZARDS ADDRESSED BY HACCP

Bottled waters may present physical, chemical or biological (including microbiological) hazards to consumers, although the risk is low.

HACCP Principles

Principle No. 1 Conduct a hazard analysis

Prepare a list of steps in the process where significant hazards occur and describe the preventive measures.

The first step in establishing a HACCP system for a food production process is the identification of the hazards associated with the product. This will include biological, chemical, physical or microbiological hazards that may cause a bottled water to be unsafe for consumption. For inclusion in the list, the hazard **MUST** be of such a nature that its prevention, elimination or reduction to acceptable levels is essential to the production of a safe food. Hazards that involve low risk and severity and that are not likely to occur need not be considered for purposes of HACCP. Examples of several questions to be considered in a hazard analysis include:

- (1) Does the water contain any sensitive ingredients?
- (2) Does the water permit survival or multiplication of pathogens or toxin formation during processing?
- (3) Does the process include a controllable processing step that destroys pathogens?
- (4) Is it likely that the water will contain pathogens and are they likely to increase during the normal time and conditions under which the water is stored prior to consumption?
- (5) What product safety devices are used to enhance consumer safety (e.g. metal detectors, filters, thermometers, etc.)?
- (6) Does the method of packaging affect the multiplication of pathogenic microorganisms and/or the formation of toxins? And

(7) Is the product epidemiologically linked to a foodborne disease?

Principle No. 2: Identify the CCP's in the process

A critical control point (CCP) is defined as a point, step or procedure at which control can be applied and a food safety hazard can be prevented, eliminated or reduced to an acceptable level. All significant hazards identified during the hazard analysis **MUST** be addressed.

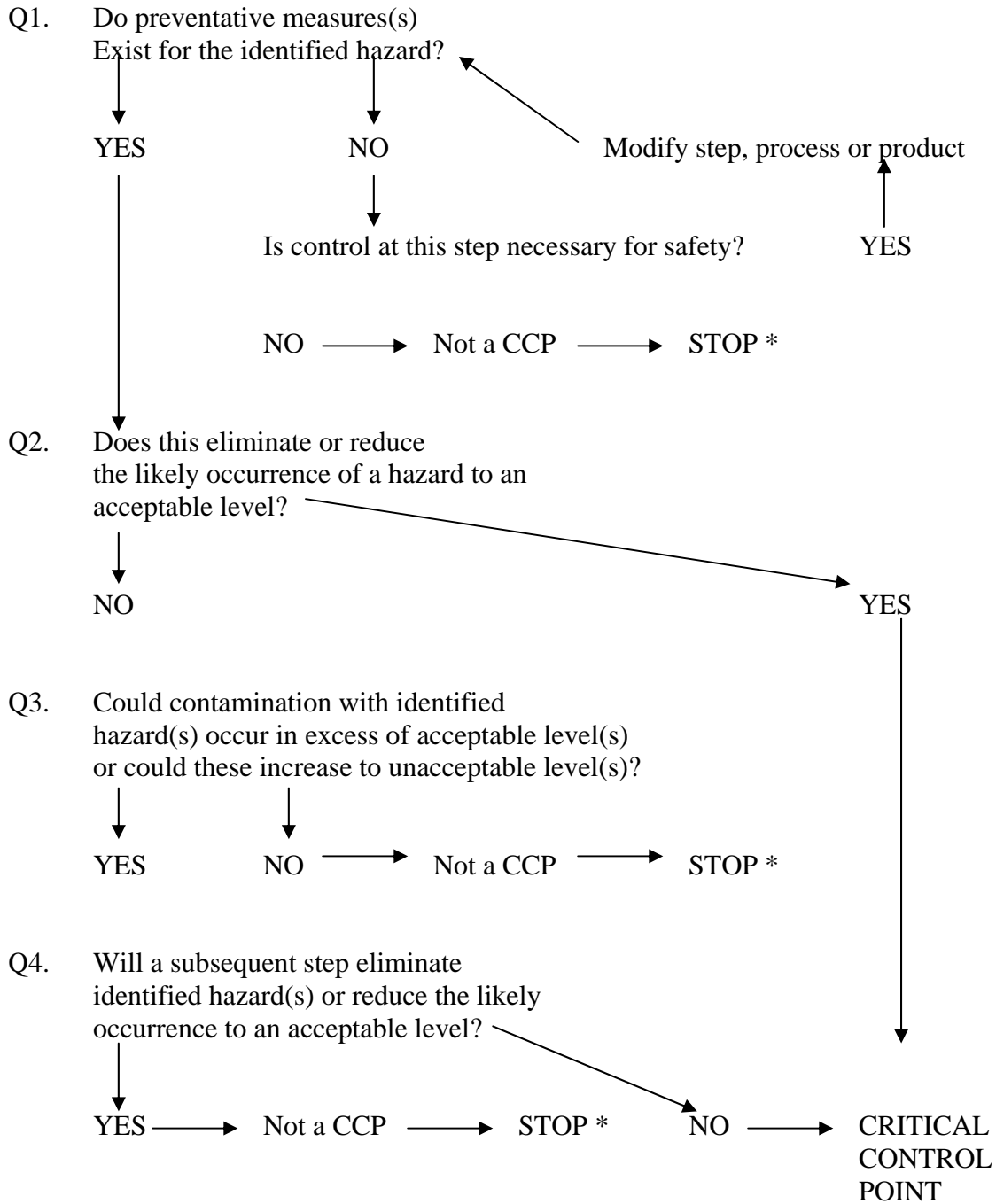
It is **recommended** that the information developed during the hazard analysis enable the establishment to identify which steps in their processes are CCP's. To facilitate this process, a CCP decision tree has been developed that can be applied to an identified hazard at each step of the process (see Figure 1, next page). The decision tree asks a series of "yes" or "no" questions to assist in determining whether a particular step is a CCP.

Examples of CCP'S may include, but are not limited to: cooking, chilling, specific sanitation procedures, product formulation controls, prevention of cross contamination and certain aspects of employee and environmental hygiene. It is a **REQUIREMENT** that all CCP'S be carefully developed and documented.

CCP's need to be identified for food safety hazards in a HACCP plan. All three types of hazards (physical, chemical and biological, including microbiological) **MUST** be addressed and controlled.

It is believed that implementation of mandatory HACCP will result in less risk of foodborne illness being associated these products. Therefore, identification of CCP'S throughout the production process for controlling microbial hazards is particularly important.

Figure 1 CCP Decision Tree



* Proceed to next step in the described process.

Principle No.3: Establish critical limits for preventive measures associated with each identified CCP

A critical limit is defined as a criterion that **MUST** be met for each preventive measure associated with a CCP. Another way of considering critical limits is that they serve as boundaries of safety for each CCP.

Critical limits are most often based on process parameters, such as temperature, time, physical dimensions, water activity, pH, titratable acidity, salt concentration, available chlorine, viscosity, preservatives or sensory information, such as texture, aroma or visual appearance in relation to the growth or survival of target pathogens or chemical or physical hazards. It is **recommended** that the established critical limits be justifiable in relation to knowledge available.

Fillers need to identify critical limits in their HACCP plans that **MUST** be met at each CCP to be certain that the hazard is controlled. Critical limits **MUST** reflect relevant regulations. Bottling establishments are encouraged to establish critical limits more stringent than those now in the ABWI Model Code to ensure regulatory requirements are routinely met even when deviations occur. If critical limits more stringent than regulatory limits or requirements are set, then the establishment is **REQUIRED** to meet those more stringent limits.

Principle No. 4: Establish CCP monitoring requirements

Establish procedures for using the results of monitoring to adjust the process and maintain control.

Monitoring is observations or measurements taken to assess whether a CCP is under control. Monitoring is used to determine when a deviation occurs at a CCP; therefore, monitoring procedures are **REQUIRED** to be effective. There are many ways to monitor CCP critical limits on a continuous per batch basis: however, continuous monitoring is always preferred.

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When continuous monitoring is not feasible, frequencies **MUST** be sufficient to ensure that the CCP is under control. Statistically designed data collection or sampling plans need to be developed in such instances.

Assignment of the responsibility for monitoring is an important consideration for each CCP. It is **REQUIRED** that personnel assigned to monitoring activities be properly trained to report all results, including any unusual occurrences, so that adjustments can be made and any processes or products that do not meet critical limits are identified so that immediate corrective actions may be taken.

Monitoring activities are necessary to assure that the process is in fact under control at each critical control point. Some monitoring procedures could be accomplished by automatic instruments and devices such as time/temperature recording devices. Some monitoring procedures could consist of checks performed with outcomes recorded. Other monitoring procedures might involve rapid testing technologies that provide feedback within appropriate time frames.

HACCP requires establishments to systematically monitor, control and where necessary, adjust their production processes to meet a specified standard. Process monitoring may necessitate materials or devices to measure, test or otherwise evaluate the process at critical control points. Examples would be such items as thermometers and test kits.

Bottlers will need to have procedures for monitoring such that each CCP is identified in the HACCP plan. These monitoring procedures will assure that the monitoring systems are capable of detecting process deviations, including product segregation and holding procedures, effects of deviations on product safety, indicators for modification of the HACCP plan, and the establishment employee responsible for monitoring activities.

Principle No. 5: Establish corrective action to be taken when monitoring indicates that there is a deviation from an established critical limit

A HACCP system is designed to identify potential health hazards and to establish strategies to prevent their occurrence. However, ideal circumstances will not always prevail in a processing operation and deviations will occur. In such instances, corrective action plans **MUST** be in place to (1) determine the disposition of the non-compliant product and (2) identify and correct the cause of the deviation to regain control of the CCP. Individuals who have a thorough understanding of the process, product and the HACCP plan may be identified and assigned responsibility for making decisions.

Bottlers will need to describe in their HACCP plans the corrective actions that will be taken if a critical limit is not met. Corrective actions **MUST** be specified in sufficient detail to ensure that no public health hazard exists after these actions have been taken. Although the process of developing a HACCP plan emphasizes organised and preventive thinking about what is occurring as the meat and poultry product is being manufactured, the existence of a HACCP plan does not guarantee that problems will not arise. For this reason, the identification of a planned set of activities to address deviations is an important part of a HACCP plan.

Principle No.6: Establish effective record keeping procedures that document the HACCP system

It is a **REQUIREMENT** that a bottlers HACCP plan and all associated records be maintained on file at the establishment and provides several examples of records that could be maintained, such as those relating to incoming ingredients, product safety, processing, packaging, storage and distribution, deviations and corrective actions and employee training.

A HACCP system will not work unless records are generated during the operation of the plan, and those records are maintained and available for review. One of the principal benefits of a

HACCP process control system to both industry and regulatory officials is the availability of objective, relevant data. Thus, a HACCP plan is **REQUIRED** to provide for a record keeping system that will document the establishment's CCP monitoring, verification activities and deviation records. Record keeping systems are much more effective when include the actual values obtained, as opposed to terms such as "satisfactory" or "unsatisfactory", which reflect a judgment about the values and do not permit trend analysis.

Principle No.7: Establish procedures to verify that the HACCP system is working correctly

HACCP plans will need verification of the methods, procedures or tests in addition to those used for monitoring to determine if the HACCP system is in compliance with HACCP plan and/or whether the HACCP plan needs modification and revalidation. Four processes are identified as steps in the establishment's verification of its HACCP system.

The first process is the scientific and technical process to verify that all critical limits at CCP's are adequate and sufficient to control hazards that are likely to occur in their specific process(es). This is commonly referred to as "validating" the process.

The second process is to ensure that the HACCP plan functions properly. It is **recommended** that establishments rely on frequent reviews of their HACCP plan, verification that the HACCP plan is being correctly followed, review of CCP records and determinations that appropriate management decisions and product dispositions are made when deviations occur.

The third process consists of documented periodic reviews to ensure the accuracy of the HACCP plan. **It is recommended** that such reviews include an on-site review and verification of all flow diagrams. CCPs, critical limits, monitoring procedures, corrective actions, and records maintained.

The fourth and final verification process deals with the regulatory agency's responsibility and actions to ensure that the establishment's HACCP system is functioning satisfactorily. This verification can be viewed as an overall process validation and can consist of any and all of the verification activities mentioned above, plus final product testing to demonstrate compliance with regulatory as well as other desired performance standards.

It is **REQUIRED** that the HACCP system includes a set of verification tasks to be performed by establishment personnel. However, an important benefit of HACCP is for establishments to take full responsibility for producing a safe product. Thus, it is envisioned that establishments, as well as the regulatory agency, will undertake final product testing as one of several verification activities. Verification tasks provide an opportunity to demonstrate that a well-functioning HACCP system is in fact controlling a process so that safe product is being produced under conditions that minimise preventable risks.

The verification principle also links HACCP with public health-oriented targets, guidelines, or standards which establishments meet to engage in commerce. Without some objective measure of what constitutes an acceptable level of food safety performance with respect to pathogenic microorganisms, it would be impossible to determine whether an establishment's HACCP plan is acceptable and functioning effectively.

4. GOOD MANUFACTURING PRACTICES

Objectives: GMP is an integral part of the ABWI Model Code. GMP assists bottlers in producing water of the required standard of safety and suitability for consumption through design, implementation, monitoring and review of effective control systems.

Rationale: Attention to GMP ensures that the best practices are implemented, to reduce risk by adopting preventative measures to avoid unnecessary and costly practices.

BOTTLED WATER

When a bottled water plant is utilising a treatment technology in order to reduce the level of any constituent in its source water below the ABWI Standard of Quality, or to prevent a contaminant from entering the product water in amounts that exceed the ABWI Standard of Quality, said treatment is to be operated in accordance with the Good Manufacturing Practices set out in this Section.

It is recommended that bottled water be produced in an enclosed filling room/chamber that is under positive pressure of filtered air and using facilities and good manufacturing practices that comply with the requirements of GMP and be properly maintained with supporting records.

Bottled water production, including transporting, processing, packaging, and storage, is to be conducted under such conditions and controls as are necessary to minimise the potential for microbiological contamination of the finished product.

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Bottled water is to be produced under one of the following conditions:-

- (A) Bottled water **MUST** be subject to adequate filtration (to a minimum rating of at least 1 micron or lower) and effective germicidal treatment by ozonation, carbonation at a minimum of three volumes of carbon dioxide, or other proven disinfection regimes.

OR

- (B) Bottled water **MUST** be subject to adequate filtration (to a minimum rating of at least 1 micron or lower) and be produced in an enclosed fillroom/chamber that is under positive pressure, HEPA filtered air; and using facilities and good manufacturing practices that comply with the requirements for GMP, set out in this Section.

Bottled water **MUST NOT** be transported or stored in bulk tanks, or processed or bottled through equipment or lines used for any non-food product.

BULK WATER

(1) It is **REQUIRED** that bulk water be from an approved source and maintained for sanitary quality at all times. It is a **REQUIREMENT** that bulk water be loaded, transported and unloaded in a sanitary manner to ensure the overall safety and quality of the finished bottled water product.

(2) It is a **REQUIREMENT** that bulk water tankers, storage tanks, hoses, pumps and connections used for loading, transporting and unloading of bulk water be constructed of materials that are approved food-grade, smooth, non-absorbent and easily cleanable such as stainless steel (300 series).

(3) It is **recommended** that tankers used for the hauling of bulk water bottling purposes be solely dedicated for that purpose. If the tanker is used for transporting other foods, it is a **REQUIREMENT** that the tanker be properly cleaned and sanitised in accordance with the GMP regulations immediately before the loading of a bulk shipment of potable water intended for human consumption. It is a **REQUIREMENT** that tankers be cleaned, sanitised and inspected internally for tank integrity on a routine basis.

(4) Tankers that have been previously used to haul non-food commodities such as toxic materials, petroleum products, or other harmful substances **MUST NOT** be used to haul bottled water for human consumption. It is a **REQUIREMENT** that tankers used for the transporting of potable water be properly secured with manhole cover gaskets and safety seals.

(5) It is **REQUIREMENT** that connections, hoses and pumps used for the loading and unloading of bulk water be properly maintained and stored to prevent contamination. When not in use, pumps, hoses, connections and fittings are **REQUIRED** to be properly capped, securely stored and protected from possible contamination.

(6) Representative samples **MUST** be taken from shipments of bulk water for the analyses of coliform bacteria and Heterotrophic Plate Count (HPC). It is a **REQUIREMENT** that the minimum frequency of sampling is one sample from each tanker on a weekly basis or from each delivery if the delivery frequency is less than weekly. This data will be collected and used to identify a gradual or sudden increase in HPC, indicating some form of contamination is taking place to allow the bottler to investigate.

(7) Records are **REQUIRED** to be maintained as specified in Section 12 that include but are not limited to:

- (a) Name of the transporter and/or driver
- (b) Tanker number
- (c) Date of shipment

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- (d) Vendor and location of the source water
 - (e) Name of the receiver and the location to which the water was shipped
 - (f) Date of delivery
 - (g) Date of tanker cleaning and sanitisation (includes name of operator)
 - (h) The concentration of the disinfectant residual (if used) at the time of loading and unloading
 - (i) Results of all microbiological testing as specified.
- (8) It is **REQUIRED** that, in order to minimise the potential for microbiological contamination of the finished product, bottled water NOT be transported, stored, processed, or bottled in or through lines or equipment through which has passed milk, fruit juice, or other food products likely to contribute nutrients for microbial growth, unless said lines, equipment, or holding tanks have been cleaned in accordance with subpart (d) of this Section.
- (9) Bottled water may be processed through lines or equipment used also for other food products under the following conditions:
- (a) It is **REQUIRED** that process lines, including storage tanks and associated equipment, be used exclusively for the production of bottled water, except for filling equipment, which may be used also for filling, other food products.
 - (b) Before being used for the bottling of water, it is a **REQUIREMENT** that filling equipment which is designed to be cleaned in-place and which is used for filling other food products be thoroughly cleansed and sanitised in-place in accordance with the manufacturer's specifications and in compliance with GMP and the supplementary procedures that follow in paragraph (d) to (f), of this Section.
 - (c) Immediately following completion of filling operations for any other food product other than water, it is **REQUIRED** that the filler be thoroughly rinsed internally and externally with potable water (NB. Chlorinated water, at 1-3 ppm, is NOT potable).

- (d) It is a **REQUIREMENT** that in accordance with filler manufacturer's instructions, any parts that are not designed to be cleaned in-place be disassembled and removed. All of these parts **MUST** be cleansed and sanitised prior to reassembly using appropriate cleaning and sanitizing procedures, as specified below.

Sanitising operations, including those performed by chemical means or by any other means such as circulation of live steam or hot water, **MUST** be adequate to effect sanitisation of the intended product water-contact surfaces and any other critical area. **It is recommended that** the plant maintain a record of the intensity of the sanitising agent and the time duration that the agent was in contact with the surface being sanitized. It is **REQUIRED** that the following times and intensities be considered a minimum.

- (i) Steam in enclosed system:
At least 76.6° C for at least 15 minutes or at least 93.3° C for at least 5 minutes
- (ii) Hot water in enclosed system:
At least 76.6° C for at least 15 minutes or at least 93.3° C for at least 5 minutes
- (iii) Chemical sanitizers are **REQUIRED** to be equivalent in bacterial action to a minute exposure of 50 parts per million of available chlorine at 13.9° C when used as an immersion or circulation solution. Chemical sanitizers applied as a spray or fog **MUST** have as minimum 100 parts per million of available chlorine at 13.9° C or its equivalent in bactericidal action.

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- (iv) 0.1 part per million ozone water solution in an enclosed system for least 5 minutes with consideration being given to the organic load and temperature of the water.
- (e) It is **REQUIRED** that all surfaces of the filler that do not contact food products be cleaned manually so as to render all surfaces clean and free of any residues.
- (f) It is a **REQUIREMENT** that the filler be prepared and all appropriate connections made in accordance with the filler manufacturer's instructions to place the filler in the clean-in-place mode. The following procedures will be followed:
 - (i) If using an alkaline cleaning solution, the appropriate strength **MUST** be re-circulated through the filler to provide effective cleaning of all product contact surfaces, with a minimum re-circulation time of 20 minutes at a temperature between 60 and 75 degrees Centigrade. Alternatively a proven acid cleaning solution with an appropriate method as recommended by the supplier, may be used.
 - (ii) The cleaning solution **MUST** be drained and followed with a potable water rinse-to-drain; or otherwise removed from the system; for the removal of all residual cleaner alkalinity. This step may be supplemented by the application of an acidified rinse prior to the potable water rinse in order to neutralise any residual alkalinity on product contact surfaces.
- (10) Following reassembly of all parts to place the filler into the product mode and just prior to bottling water, the filler **MUST** be sanitised in-place in accordance with procedures (g) (vi).

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- (11) Alternate cleaning, rinsing, or sanitising operations or processes not described in this Section **MUST** be consistent with Australian or New Zealand regulatory requirements.
- (12) Bottled water that originates from a source that is not protected from surface contamination **MUST** be subjected to ozonation, filtration rated at one micron, or another effective process which removes or destroys the cysts of the parasite Giardia Lamblia and Cryptosporidium.
- (13) Daily in-house total coliform monitoring on finished product **MUST** be done on each product type.
- (14) It is **recommended** that quarterly rinse/swab tests be performed in-house or by a laboratory using an approved methodology, on containers (incoming as well as those immediately from the washer) and closures.
- (15) Each bottled water plant is **REQUIRED** to develop and maintain procedures for the notification of the Government Authorities, consumer notification, and product recall, and the water plant manager **MUST** implement any said procedure as necessary with respect to any product for which the operator or the Government Authorities knows or has reason to believe circumstances exist that may adversely affect its safety for the consumer. In order to facilitate product identification or recall, each bottled water product **MUST** contain a code that is designed to remain affixed to the container during use and which contains either the date of manufacture, or a lot or batch number.
- (16) A bottled water supplier who knows that the Standard of Quality has been exceeded or has reason to believe that circumstances exist which may adversely affect the safety of bottled water, including but not limited to source contamination, spills, accidents, natural disasters, or breakdowns in treatment, **MUST** notify the Government authorities promptly.

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(17) Where it is determined, based upon representative samples, risk analysis, information provided by the bottled water supplier, and other information available that the circumstances present an imminent hazard to the public health and that a form of consumer notice or product recall can effectively avoid or significantly minimise the threat to public health, the bottler **MUST** initiate a product recall. Product recalls will be conducted in accordance with the ABWI Product Recall Procedures.

(18) It is a **REQUIREMENT** that where applicable, ABWI members do NOT operate a bottled water plant or bottle water for the purpose of sale or distribution without passing the ABWI Plant Inspection Program within 12 months of joining ABWI.

(19) A bottled water plant **MUST** not be operated except under the supervision of a competent person qualified by experience, education, and training to operate and maintain the plant's facilities. Said person **MUST** hold a certificate demonstrating that he or she has successfully completed the ABWI Certified Plant Operator course. This requirement is to be implemented as of the 1st January 2006. The person supervising a plant will be that person responsible for the development and maintenance of processes and procedures.

This course may be conducted by ABWI or by a third party organisation that is acceptable to ABWI. This course covers periodic instruction and testing in plant, source and product sanitation, operation and maintenance of water treatment technology, and the maintenance and monitoring of source and product water quality in accordance with these bottled water standards.

5 PLANT CONSTRUCTION AND DESIGN

Objectives: To ensure that the production facilities meets the GMP and HACCP requirements for bottling water.

Rationale: To assist bottlers in designing their plant so as to meet their requirements for production, occupational safety and resource management.

1. PLANT AND GROUNDS

(a) Grounds

The grounds about a food plant under the control of the operator are **REQUIRED** to be kept in a condition that will protect against the contamination of food. The methods for adequate maintenance of grounds include, but are not limited to:

- (i) Properly storing equipment, removing litter and waste, and cutting weeds or grass within the immediate vicinity of the plant buildings or structures that may constitute an attractant, breeding place or harborage for pests.
- (ii) Maintaining roads, yards and parking lots so that they do not constitute a source of contamination in areas where food is exposed.
- (iii) Adequately draining areas that may contribute contamination to food by seepage, foot-borne filth, or providing a breeding place for pests.
- (iv) Operational systems for waste treatment and disposal in an adequate manner so that they do not constitute a source of contamination in areas where food is exposed.

If the plant grounds are bordered by grounds not under the operator's control and not maintained in the manner described in paragraph (a) (i) through (iii) of this Section, care is **REQUIRED** to be exercised in the plant by inspection, extermination, or other means to exclude, dirt and filth that may be a source of food contamination.

(b) Plant Construction and Design

Plant buildings and structures are **REQUIRED** to be suitable in size, construction and design to facilitate maintenance and sanitary operations for food-manufacturing purposes. The plant and facilities are **REQUIRED** to be:

- (i) Provide sufficient space for such placement of equipment and storage of materials as is necessary for the maintenance of sanitary operations and the production of safe food.
- (ii) Permit the taking of proper precautions to reduce the potential for contamination of food, food-contact surface, or food-packaging materials with microorganisms, chemicals, filth or other extraneous material. The potential for contamination may be reduced by adequate food safety controls and operating practices or effective design, including the separation of operations in which contamination is likely to occur, by one or more of the following means: location, time, partition, air flow, enclosed systems or other effective means.
- (iii) Permit the taking of proper precautions to protect food in outdoor bulk storage vessels by any effective means, including:
 - (1) Using protective coverings.
 - (2) Controlling areas over and around the vessels to eliminate harborage for pests.
 - (3) Checking on a regular basis for pests and pest infestation.

- (4) Be constructed in such a manner that floors, walls and ceilings may be adequately cleaned and kept clean and kept in good repair; that drip or condensate from fixtures, ducts and pipes does not contaminate food, food-contact surfaces, or food-packaging materials; and that aisles or working spaces are provided between equipment and walls and are adequately unobstructed and of adequate width to permit employees to perform their duties and to protect against contaminating food or food-contact surfaces with clothing or personal contact.
- (iii) Provide adequate lighting in hand-washing areas, dressing and locker rooms and toilet rooms and in all areas where food is examined, processed or stored and where equipment or utensils are cleaned; and provide safety-type light bulbs, fixtures, sky-lights or other glass suspended over exposed food in any step of preparation or otherwise protect against food contamination in case of glass breakage.
- (iv) Provide adequate ventilation or control equipment to minimise odours and vapours (including steam and noxious fumes) in areas where they may contaminate food; and locate and operate fans and other air-blowing equipment in a manner that minimise the potential for contaminating food, food-packing materials, and food-contact surfaces.
- (v) Provide, where necessary, adequate screening or other protection against pests.

(c) General Maintenance

It is **REQUIRED** that buildings, fixtures and other physical facilities of the plant be maintained in a sanitary condition and it is **REQUIRED** that they be kept in repair sufficient to prevent food from becoming adulterated.

Cleaning and sanitizing of utensils and equipment **MUST** be conducted in a manner that protects against contamination of food, food-contact surfaces or food-packaging materials.

(d) Pest Control

Pests **MUST NOT** be allowed in any area of a food plant. Guard or guide dogs may be allowed in some areas of a plant if the presence of the dogs is unlikely to result in contamination of food, food-contact surfaces or food-packaging materials. Effective measures are **REQUIRED** to be taken to exclude pests from the processing areas and to protect against the contamination of food on the premises by pests. The use of insecticides or rodenticides is permitted only under precautions and restrictions that will protect against the contamination of food, food-contact surfaces and food-packaging materials

2. DESIGN

- (a) It is **recommended** that the bottling room separated from other plant operations or storage areas by tight walls, ceilings and self-closing doors to protect against contamination. It is **REQUIRED** that conveyor openings NOT exceed the size required to permit passage of containers.
- (b) If processing operations are conducted in other than a sealed system under pressure, adequate protection is **REQUIRED** to be provided to preclude contamination of the water and the system.
- (c) Adequate ventilation is **REQUIRED** to minimise condensation in processing rooms, bottling rooms and in container washing and sanitising areas.
- (d) It is **recommended** that the washing and sanitising of containers for bottled water be performed in an enclosed room. It is **REQUIRED** that the washing and sanitising operations be positioned within the room so as to minimise any possible post-sanitising contamination of the containers before they enter the bottling room.

- (e) Rooms in which product water is handled, processed or held or in which containers, utensils or equipment are washed or held **MUST NOT** open directly into any room used for domestic household purposes.

3. PRODUCT WATER AND OPERATIONS WATER

(a) Product Water.

It is a **REQUIRED** that the product water supply for each plant be from an approved source properly located, protected and operated and is **REQUIRED** to be easily accessible, adequate and of a safe, sanitary quality which is **REQUIRED** to be in conformance at all times with the applicable laws and regulations of the government agency or agencies having jurisdiction.

(b) Operations Water.

If different from the product water supply, the operations water supply **MUST** be obtained from an approved source properly located, protected, and operated and **MUST** be easily accessible, adequate, and of a safe, sanitary quality which **MUST** be in conformance at all times with the applicable laws and regulations of the government agency or agencies having jurisdiction.

6. SANITARY OPERATIONS

Objectives: Cleaning and sanitation are important activities in a bottled water plant, involving all areas of production.

Effective cleaning and sanitising will prevent contamination of products and maintain a clean and hygienic plant.

Rationale: Effective and efficient cleaning and sanitising procedures ensures that process equipment and factory environments are clean and free of contaminants to ensure products meet the required standards.

1. SUBSTANCES USED IN CLEANING AND SANITISING, STORAGE OF TOXIC MATERIALS

(a) Cleaning compounds and sanitizing agents used in cleaning and sanitizing procedures **MUST** be free from undesirable microorganisms and **MUST** be safe and adequate under the conditions of use. Compliance with this requirements may be verified by any effective means including purchase of these substances under a supplier's guarantee or certification, or examination of these substances for contamination. Only the following toxic materials may be used or stored in a plant where food is processed or exposed:

- (i) Those required to maintain clean sanitary conditions;
- (ii) Those necessary for use in laboratory testing procedures;

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- (iii) Those necessary for plant and equipment maintenance and operation; and
 - (iv) Those necessary for use in the plant operations.
- (b) Toxic cleaning compounds, sanitizing agents, and pesticide chemicals **MUST** be identified, held and stored in a manner that protects against contamination of food, food-contact surfaces or food-packaging materials. It is **recommended** that all relevant regulations promulgated by other Federal State, and local government agencies for the application, use or holding of these products be followed.
- (c) All food-contact surfaces including utensils and food-contact surfaces of equipment **MUST** be cleaned as frequently as necessary to protect against contamination of food.
- (d) When the surfaces are wet-cleaned, it is a **REQUIREMENT** that, when necessary, they be sanitized and thoroughly dried before subsequent use.
- (e) In wet processing, when cleaning is necessary to protect against the introduction of microorganisms into food, it is **REQUIRED** that all food-contact surfaces be cleaned and sanitized before use and after any interruption during which the food-contact surfaces may have become contaminated. Where equipment and utensils are used in a continuous production operation, the utensils and food-contact surfaces of the equipment **MUST** be cleaned and sanitized as necessary.
- (f) It is **recommended** that non-food contact surfaces of equipment used in the operation of food plants be cleaned as frequently as necessary to protect against contamination of food.
- (g) It is **recommended** that single-service articles (such as utensils intended for one-time use, paper cups and paper towel(s) be stored in appropriate containers and it is **REQUIRED** that they be handled, dispensed, used and disposed of in a manner that protects against contamination of food or food-contact surfaces.

(h) It is a **REQUIREMENT** that sanitising agents be adequate and safe under conditions of use. Any facility, procedure or machine is acceptable for cleaning and sanitizing equipment and utensils if it is established that the facility, procedure or machine will routinely render equipment and utensils clean and provide adequate cleaning and sanitising treatment.

2. AIR UNDER PRESSURE

Whenever air under pressure is directed at product water or a product water-contact surface, it is a **REQUIREMENT** that it be free of oil, dust, rust, excessive moisture and extraneous materials; it is **REQUIRED** that it **NOT** affect the bacteriological quality of the water and it is **recommended** that it **NOT** adversely affect the flavour, colour or odour of the water.

3. LOCKER AND LUNCHROOMS

When employee locker and lunchrooms are provided, they are **REQUIRED** to be separate from plant operations and storage areas and it is a **REQUIREMENT** that they be equipped with self-closing doors. It is a **REQUIREMENT** that the rooms be maintained in a clean and sanitary condition and it is **recommended** that refuse containers be provided.

It is a **REQUIREMENT** that packaging or wrapping material or other processing supplies **NOT** be stored in locker or lunchrooms.

4. SANITARY EQUIPMENT

(a) The product water-contact surfaces of all multi-service containers, utensils, pipes and equipment used in the transportation, processing, handling and storage of product water **MUST** be clean and adequately sanitised.

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All product water-contact surfaces **MUST** be inspected by plant personnel as often as necessary to maintain the sanitary condition of such surfaces and to assure they are kept free of scale, evidence of oxidation and other residue. It is a **REQUIREMENT** that the presence of any unsanitary condition, scale, residue or oxidation be immediately remedied by adequate cleaning and sanitising of that product water-contact surface prior to use.

(b) It is **REQUIRED** that after cleaning, all multi-service containers, utensils and disassembled piping and equipment be transported and stored in such a manner as to assure drainage and it is **REQUIRED** that they be protected from contamination.

(c) It is **REQUIRED** that single-service containers and caps are to be purchased and stored in sanitary closures and kept clean therein in a clean, dry place until used. Prior to use they **ARE REQUIRED** to be examined and as necessary, washed, rinsed and sanitized and **MUST** be handled in a sanitary manner.

(d) Filling, capping, closing, sealing and packaging of containers **MUST** be done in a sanitary manner so as to preclude contamination of the bottled water.

7. HYGIENIC DESIGN

Objectives: To ensure that the cleaning and sanitising is sufficient to prevent contamination and provide a suitable sanitary plant for the production of bottled water.

Rationale: Ineffective cleaning and sanitising may adversely affect the quality and/or safety of finished product.

1. FACILITIES

Each plant is **REQUIRED** to be equipped with adequate sanitary facilities and accommodations including, but not limited to:

(a) The water supply is **REQUIRED** to be sufficient for the operations intended and is **REQUIRED** to be derived from an adequate source. Any water that contacts food or food-contact surfaces **MUST** be safe and of adequate sanitary quality. It is a **REQUIREMENT** that running water at a suitable temperature, and under pressure as needed, is to be provided in all areas where needed for the processing of food, for the cleaning of equipment, utensils and food-packaging materials, or for employee sanitary facilities.

(b) It is **REQUIRED** that plumbing be of adequate size and design and adequately installed and maintained to:

- (i) Carry sufficient quantities of water to required locations throughout the plant.
- (ii) Properly convey sewage and liquid disposable waste from the plant.

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- (iii) Avoid constituting a source of contamination to food, water supplies, equipment or utensils or creating an unsanitary condition.
 - (iv) Provide adequate floor drainage in all areas where floors are subject to flooding-type cleaning or where normal operations release or discharge water or other liquid waste on the floor.
 - (v) Provide that there is not backflow from, or cross-connection between, piping systems that discharge waste water or sewage and piping systems that carry water for food, food manufacturing or CIP systems.
- (c) Sewage disposal **MUST** be made into an adequate sewerage system or disposed of through other adequate means.
- (d) Each plant is **REQUIRED** to provide its employees with adequate, readily accessible toilet facilities. Compliance with this requirement may be accomplished by:
- (i) Maintaining the facilities in a sanitary condition
 - (ii) Keeping the facilities in good repair at all times
 - (iii) Providing self-closing doors
 - (iv) Providing doors that do not open into areas where food is exposed to airborne contamination, except where alternate means have been taken to protect against such contamination (such as double doors or positive air-flow systems).
- (e) Hand-washing facilities are **REQUIRED** to be adequate and convenient and be furnished with running water at a suitable temperature. Compliance with this requirement may be accomplished by providing;
- (i) Hand-washing and, where appropriate, hand-sanitizing facilities at each location in the plant where good sanitary practices require employees to wash and/or sanitize their hands.
 - (ii) Effective hand-cleaning and sanitizing preparations.

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- (iii) Sanitary towel service or suitable drying devices.
 - (iv) Devices or fixtures, such as water control valves, so designed and constructed to protect against recontamination of clean, sanitized hands.
 - (v) Readily understandable signs directing employees handling unprotected food, unprotected food-packaging materials, of food-contact surface to wash and, where appropriate, sanitize their hands before they start work, after each absence from post of duty or when their hands may have become soiled or contaminated. These signs may be posted in the processing room(s) and in all other areas where employees may handle such food, materials or surfaces.
 - (vi) Refuse receptacles that are constructed and maintained in a manner that protects against contamination of food.
- (f) It is a **REQUIREMENT** that rubbish be so conveyed, stored and disposed of as to minimise the development of odour, minimise the potential for the waste becoming an attractant and harborage or breeding place for pests, and protect against contamination of food, food-contact surfaces, water supplies and ground surfaces.

2. EQUIPMENT AND PROCEDURES

- (a) Suitability:-
 - (i) It is **REQUIRED** that all plant equipment and utensils be suitable for their intended use. This includes all collection and storage tanks, piping, fittings, connections. Bottle washers, fillers, cappers and other equipment which may be used to store, handle, process, package or transport product water.
 - (ii) All product water contact surfaces **MUST** be constructed of nontoxic and nonabsorbent material which can be adequately cleaned and sanitized.

- (iii) Instruments and controls used for measuring, regulating or recording temperatures, pH, acidity, water activity, or other conditions that control or prevent the growth of undesirable microorganisms in food are **REQUIRED** to be accurate and adequately maintained, and adequate in number for their designated uses.

(b) Design:-

Storage tanks are **REQUIRED** to be of the type that can be closed to exclude all foreign matter and are **REQUIRED** to be adequately vented. It is **recommended** that HEPA filtration be installed but care is essential to ensure sufficient capacity of the filter to prevent tanks from being sucked in during discharge. Safety devices, designed to prevent tanks from sucking in, may be used.

3. PROCESSES AND CONTROLS

(a) Treatment of product water

It is a **REQUIREMENT** that all treatment of product water by ozonation, distillation, ion-exchanging, filtration, ultra-violet treatment, reverse osmosis, carbonation, mineral addition, or any other process is done in a manner so as to be effective in accomplishing its intended purpose. All such processes **MUST** be performed in and by equipment and with substances that will not adulterate the bottled product. It is **REQUIRED** that a record of the type and date of physical inspections of such equipment, conditions found and the performance and effectiveness of such equipment be maintained by the plant. Product water samples **MUST** be taken after processing and prior to bottling by the plant and analysed as often as is necessary to assure uniformity and effectiveness of the processes performed by the plant. It is a **REQUIREMENT** that the methods of analysis be those approved by the government agency or agencies having jurisdiction.

(b) Containers

- (i) Multi-service primary containers **MUST** be adequately cleaned, sanitized and inspected just prior to being filled, capped and sealed. Containers found to be unsanitary or defective by the inspection **MUST** be reprocessed or discarded. All multi-service primary containers **MUST** be washed, rinsed and sanitised by mechanical washers or by any other method giving adequate sanitary results. Mechanical washers are **REQUIRED** to be inspected as often as is necessary to assure adequate performance. It is **REQUIRED** that records of physical maintenance, inspections and conditions found, and performance of the mechanical washer be maintained by the plant.
- (ii) Multi-service shipping cases **MUST** be maintained in such condition as to assure they will not contaminate the primary container or the product water. Adequate dry or wet cleaning procedures are **REQUIRED** to be performed as often as necessary to maintain the cases in satisfactory condition.

(c) Cleaning and sanitising solutions.

It is **REQUIRED** that cleaning and sanitising solutions utilized by the plant be sampled and tested by the plant as often as is necessary to assure adequate performance in the cleaning and sanitizing operations. It is **REQUIRED** that records of these tests be maintained by the plant.

(d) Filling, capping or sealing.

During the process of filling, capping or sealing either single-service or multi-service containers, it is a **REQUIREMENT** that the performance of the filler, capper or sealer be monitored and the filled containers visually or electronically inspected to assure they are sound, properly capped or sealed, and coded and labeled. Containers that are not satisfactory **MUST** be reprocessed or rejected.

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Bottlers **MUST** only use nontoxic containers and closures. All containers and closures **MUST** be inspected to ascertain that they are free from contamination. At least once each 3 months, it is **recommended** that a bacteriological swab and/or rinse count be made from at least four containers and closures selected just prior to filling and sealing. No more than one of the four samples may exceed more than one bacteria per millilitre of capacity or one colony per square centimetre of surface area.

All samples **MUST** be free of coliform organisms. The procedure and apparatus for these bacteriological tests are **REQUIRED** to be in conformance with those recognized by the government agency or agencies having jurisdiction. It is a **REQUIREMENT** that tests be performed either by trained plant personnel or by a laboratory using approved methodologies.

It is a **REQUIREMENT** that all operations in the receiving, inspecting, transporting, segregating, preparing, manufacturing, packaging and storing of food be conducted in accordance with adequate sanitation principles. It is a **REQUIREMENT** that overall sanitation of the plant be under the supervision of one or more competent individuals assigned responsibility for this function. It is a **REQUIREMENT** that all reasonable precautions be taken to ensure that production procedures do not contribute contamination from any source. It is a **REQUIREMENT** that chemical, microbial, or extraneous-material testing procedures be used where necessary to identify sanitation failures or possible food contamination. All food that has become contaminated to the extent that it is adulterated **MUST** be rejected, or if permissible, treated or processed to eliminate the contamination.

- (e) Raw materials and other ingredients.
 - (i) It is a **REQUIREMENT** that raw materials and other ingredients be inspected and segregated or otherwise handled as necessary to ascertain that they are clean and suitable for processing into food and it is a **REQUIREMENT** that they be stored under conditions that will protect against contamination and minimize deterioration.

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It is a **REQUIREMENT** that raw materials be washed or cleaned as necessary to remove soil or other contamination. Water used for washing, rinsing, or conveying food is **REQUIRED** to be of a safe and of adequate sanitary quality. It is **recommended** that containers and carriers of raw materials be inspected on receipt, to ensure that their condition has not contributed to the contamination or deterioration of food.

- (ii) It is a **REQUIREMENT** that raw materials and other ingredients either not contain levels of microorganisms that may produce food poisoning or other disease in humans, or it is **REQUIRED** that they be adequately treated during manufacturing operations, by washing, sanitising and rinsing according to the instructions of the manufacturers of the chemicals used, so that they no longer contain levels that would cause the product to be adulterated. Compliance with this requirement may be verified by any effective means, including purchasing raw materials and other ingredients under a supplier's guarantee or certification.
- (iii) Raw materials, other ingredients, and rework susceptible to contamination with pests, undesirable microorganisms, or extraneous material **MUST** comply with applicable FSANZ Food Code Regulations, guidelines and defect action levels for natural or unavoidable defects if a manufacturer wishes to use the materials in manufacturing food. Compliance with this requirement may be verified by any effective means, including purchasing the materials under a supplier's guarantee or certification, or examination of these materials for contamination.
- (iv) It is a **REQUIREMENT** that raw materials, other ingredients, and rework be held in bulk, or in containers designed and constructed so as to protect against contamination and it is a **REQUIREMENT** that they be held at such temperature and relative humidity and in such a manner as to prevent the food from becoming adulterated. Material scheduled for rework **MUST** be identified as such.

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- (v) Measures such as sterilizing, irradiating, pasteurising, freezing, refrigerating, controlling pH or controlling A_w that are taken to destroy or prevent the growth of undesirable microorganisms, particularly those of public health significance, **MUST** be adequate under the conditions of manufacture, handling, and distribution to prevent food from being adulterated.
- (vi) Work-in-process **MUST** be handled in a manner that protects against contamination.
- (vii) It is a **REQUIREMENT** that effective measures be taken to protect finished food from contamination by raw materials, other ingredients, or refuse. When raw materials, other ingredients, or refuse are unprotected, they **MUST NOT** be handled simultaneously in a receiving, loading or shipping area if that handling could result in contamination. It is a **REQUIREMENT** that food transported by conveyor be protected against contamination as necessary.
- (viii) It is a **REQUIREMENT** that equipment, containers and utensils used to convey, hold or store raw materials, work-in-process, rework or food be constructed, handled and maintained during manufacturing or storage in a manner that protects against contamination.
- (ix) It is a **REQUIREMENT** that effective measures be taken to protect against the inclusion of metal or other extraneous material in food. Compliance with this requirement may be accomplished by using sleeves, traps, magnets, electronic metal detectors, or other suitable effective means.
- (x) Food, raw materials, and other ingredients that are adulterated are **REQUIRED** to be disposed of in a manner that protects against the contamination of other food. If the adulterated food is capable of being reconditioned, it is **REQUIRED** to be reconditioned using a method that has been proven to be effective or,

it is a **REQUIREMENT** that it be re-examined and found not to be adulterated before being incorporated into other food.

- (xi) It is a **REQUIREMENT** that mechanical manufacturing steps such as washing and filling be performed so as to protect food against contamination. Compliance with this requirement may be accomplished by providing adequate physical protection of food from contaminants that may drip, drain or be drawn into the food. Protection may be provided by adequate cleaning and sanitizing of all food-contact surfaces, and by using time and temperature controls at and between each manufacturing step.
- (xii) Filling, assembling, packaging and other operations **MUST** be performed in such a way that the food is protected against contamination. Compliance with this requirement may be accomplished by any effective means, including:
 - (1) Use of a quality control operation in which the critical control points are identified and controlled during manufacturing.
 - (2) Adequate cleaning and sanitizing of all food-contact surfaces and food containers.
 - (3) Using materials for food containers and food-packaging materials that are safe and suitable.
 - (4) Providing physical protection from contamination, particularly airborne contamination.
 - (5) Using sanitary handling procedures.

4. WAREHOUSING AND DISTRIBUTION

It is a **REQUIREMENT** that storage and transportation of finished food be under conditions that will protect food against physical, chemical and microbial contamination as well as against deterioration of the food and the container.

8. PERSONNEL HYGIENE

Objectives: To guarantee that all personnel in production areas are adequately trained and carry out the required procedures, to ensure the production of safe, uncontaminated bottled water.

Rationale: Personnel make an important contribution to the control of product and safety, and to the costs and reliability of the final product.

It is a **REQUIREMENT** that all persons working in direct contact with food, food-contact surfaces and food-packaging materials conform to hygienic practices while on duty to the extent necessary to protect against contamination of food. The methods for maintaining cleanliness include, but are not limited to:

- (a) Wearing outer garments suitable to the operation in a manner that protects against the contamination of food, food-contact surfaces, or food-packaging materials.
- (b) Maintaining adequate personal cleanliness.
- (c) Washing hands thoroughly (and sanitizing if necessary to protect against contamination with undesirable microorganisms) in an adequate hand-washing facility before starting work, after each absence from the work station, and at any other time when the hands may have become soiled or contaminated.
- (d) Limiting jewellery to a minimum stated, such as a plain wedding band and one sleeper earring per ear, only. No other piercings may have jewellery inserted when working in food production areas.

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- (e) Maintaining gloves, if they are used in food handling, in an intact, clean and sanitary condition. **It is recommended** that gloves be of an impermeable material.
- (f) Wearing, where appropriate, in an effective manner, hairnets, headbands, caps, beard covers, or other effective hair restraints.
- (g) Storing clothing or other personal belongings in areas other than where food is exposed or where equipment or utensils are washed.
- (h) Confining the following to areas other than where food may be exposed or where equipment or utensils are washed; eating food, chewing gum, drinking beverages or using tobacco.
- (i) Wearing brightly coloured bandaids, when necessary, that are easily seen if dislodged.

Taking any other necessary precautions to protect against contamination of food, food-contact surfaces or food packaging materials with microorganisms or foreign substances including but not limited to, perspiration, hair, cosmetics, tobacco, chemicals and medicines applied to the skin.

9. SOURCE WATER MONITORING

Objectives: To ensure that the source water meets the standard of quality.

Rationale: To minimise risk from contamination, by biological, chemical or physical contaminants, of the finished product.

(a) If any source does not comply with the Standard of Quality for the production of bottled water, the bottler **MUST** show by analysis, that this treatment reduces the contaminant(s) below the Standard of Quality in the finished product. See Section 10 (a). Approval of the source water product derived from a source other than a public water supply **MUST** be based upon a field inspection of the source and a review of information prepared by a professionally qualified hydrogeologist that **MUST** demonstrate the integrity of the source and safety of the catchment operations, and that **MUST** include:

- (i) An evaluation of the chemical, physical, microbiological, and radiological characteristics of the source.
- (ii) A report on the regional geology surrounding the site and the specific site geology. A description of the vertical and horizontal extent of the source aquifer using existing data. The information will be used to define the recharge area of the aquifer, or in the case of regional aquifers, the zone of influence of the subject source.

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- (iii) A report detailing the development of the source; the method of construction including spring design, well installation, surface catchment, and intake structures; and transmission facilities as appropriate.
 - (iv) A watershed survey of the recharge area or zone of influence of subject source that identifies and evaluates actual and potential sources of contamination, including any reported discharge that may affect the source.
 - (v) Based on the findings in item (iv), a plan for special monitoring of any significant contaminant source and for taking restrictive preventive or corrective measures as appropriate to protect the source water.
- (b) It is a **REQUIREMENT** that a landuse assessment be conducted every 4 years by an appropriately trained person, to assess changes in local landuse that may impact on an underground source, where the water is sourced from an underground source.
- (c) It is a **REQUIREMENT** that the plant operator be responsible for sampling and analysis of all approved sources for the contaminants specified in the Standard of Quality. Such monitoring is **REQUIRED** to be at the frequencies specified.
- (d) In lieu of source monitoring required by this Section, a plant operator using a public water system as its water supply is **REQUIRED** to obtain and display a certificate from said system demonstrating that the public water system conducts the monitoring required.
- (e) Where a bottled water plant operator, water dealer, or regulatory agency knows or has reason to believe that a contaminant not otherwise monitored is present in the source water because of a spill, release of a hazardous substance, or otherwise, and its presence would create a potential health hazard to consumers, the plant operator or water dealer upon receipt of such information **MUST** monitor the source water for said contaminant.

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(f) Detection of contaminant(s) in source monitoring required pursuant to Section 10 **MUST** be followed immediately by a program of periodic monitoring to confirm the presence in the source water of said contaminant(s). If such listed unregulated contaminant(s) is confirmed to be present in the source water at a concentration that exceeds FSANZ requirements for bottled water, the plant operator or water dealer **MUST** employ appropriate treatment techniques to remove or to reduce said contaminant in the product water below said concentration, and **MUST** employ a program of periodic monitoring for said contaminant in the source water until such time as said contaminant is not detectable in the source water.

(g) To assure that bottled water complies with Section 3, the following monitoring, using representative samples derived from the source, **MUST** be performed:

- (i) For total coliform, analyse weekly by a laboratory using an approved methodology, a representative sample from the source, or a representative source sample with each delivery if the delivery frequency is less than weekly.

Alternatively, bottlers may meet this requirement for source water, by conducting daily in-house tests, in conjunction with monthly testing by an external laboratory. Refer to Section 10 (i).

- (ii) For chemical and physical contaminants, analyse annually, by a laboratory using an approved methodology, a representative sample of finished product.
- (iii) For radiological contaminants analyse, by a laboratory using an approved methodology, a representative sample of finished product. This test is to be carried out every 4 years.

(h) For compliance purposes bottlers are **REQUIRED** to maintain documentation confirming the location of the source.

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- (i) Bottlers who have established a history of compliance with the requirements for testing and meeting the limits set for organics and volatile organics (listed in Appendix A Standard of Quality) of a representative sample of finished product water, over 2 consecutive years, may then carry out tests for organics and volatile organics every 4 years.

When a non-compliance results (including where a test is not conducted) for any one of the analytes, the bottler **MUST** conduct annual tests to re-establish a history of 2 consecutive years with no non-compliances before returning to testing every 4 years, for that analyte/s.

10. FINISHED PRODUCT MONITORING

Objectives: To ensure that the finished product meets the standard of quality and is safe for sale to the consumer.

Rationale: To minimise risk from contamination, by biological, chemical or physical contaminants, of the finished product.

To assure that bottled water complies with Section 3, it is **REQUIRED** that the following product monitoring, using representative samples derived from the bottled product, be performed:

(a) For total coliform, analyse daily a representative sample from a batch or segment of a continuous production for each type of bottled water produced by the plant. This **MUST** be conducted at least once each 24 hour day. Such analysis **MUST** be performed daily by trained personnel and monthly by a laboratory using an approved methodology, provided a "not detected" result is achieved. When an external analysis show the presence of coliform then the bottler **MUST** revert to weekly external testing until 4 consecutive absence results are achieved. Bottlers **MUST** continue conducting daily in-house coliforms tests.

(b) For chemical and physical contaminants analyse annually, by a laboratory using an approved methodology, a representative sample from a batch or segment of continuous production run for each type of bottled water produced by the plant. A bottler will meet these requirements by conducting these tests on a representative sample of finished product.

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(c) For radiological contaminants analyse, by a laboratory using an approved methodology, a representative sample from a batch or segment of continuous production run for each type of bottled water produced by the plant. This test is to be carried out every 4 years. A bottler will meet these requirements by conducting these tests on a representative sample of finished product.

It is recommended that bottlers conduct in-house yeast and mould tests at least once per week on a sample of each type of finished product.

It is recommended that bottlers conduct in-house *Pseudomonas aeruginosa* tests at least once per week on a sample of each type of finished product.

11. COOLER CLEANING

Objectives: To ensure that the coolers used for the delivery of bottled water do not contaminate the finished product.

Rationale: ABWI members are subject to rigorous requirements for the production of bottled water. It is important that the coolers used for the delivery of finished product not be a source of contamination.

Bottled water manufacturers who clean and/or refurbish coolers for re-sale or re-hire **MUST** have a cleaning and sanitising procedure in place.

It is **REQUIRED** that this procedure include the following:-

- isolate returned coolers from new or sanitised coolers
- clean and sanitise away from process areas where there can be no contamination of raw materials, process lines or finished product
- check, clean and sanitise the coolers
- repair as required
- when completed the coolers will be bagged or boxed in a manner that will minimise the risk of recontamination
- store in an appropriate manner

12. RECORD KEEPING

Objectives: To maintain sufficient records to comply with requirements and to ensure that records are on hand to respond to authorities, when required.

Rationale: Legal requirements vary from jurisdiction to jurisdiction. Often waters are sold in various jurisdictions.

It is a **REQUIREMENT** that all records be retained at the plant for not less than 7 years.

Various regulations exist across Australia and New Zealand. Hence ABWI is recommending that all records be maintained for a minimum of 7 years.

This includes records for:-

- HACCP verification, monitoring and validation
- process controls
- production
- cleaning and sanitising
- training
- customer complaints
- other.

13. LABORATORY MAINTENANCE

Objectives: To guarantee the validity of the results obtained from tests conducted in-house.

Rationale: Many bottled water companies conduct in-house testing, including micro-biological tests. It is important that in-house laboratories are maintained in a clean, sanitary manner, so that no contamination is introduced into water samples from the laboratory environment.

In-house laboratories are **REQUIRED** to be maintained in a clean and appropriate manner for the activities to be conducted without causing contamination by handling or an unsuitable environment.

Laboratory maintenance will include:-

- The construction, space, lighting and ventilation to be designed to conduct the required activities.
- All laboratory equipment is adequately sanitised and maintained in proper working order.
- Appropriate sanitisation of the laboratory will be maintained.
- Quality control monitoring will be conducted to ensure the reliability and efficacy of tests, test results and laboratory personnel.
- Calibration of equipment will be carried out as required for each piece of equipment.
- Access will be restricted to authorised personnel.
- Staff may only enter wearing clean outer clothing.
- Rubbish will be kept covered and removed daily.

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- Procedures are documented and document control established for all laboratory operations and records.

All contaminated materials are **REQUIRED** to be sterilised prior to disposal.

14. LABELLING REQUIREMENTS

Objectives: To ensure compliance with the requirements of the Australia New Zealand Food Standards Code.

Rationale: To ensure bottlers are not in breach of the Food Standards Code.

- (a) Bottled water product labelling **MUST** comply with all applicable provisions under FSANZ Food Standards Code and Appendices. The Joint Australia New Zealand Food Standards Code (FSC) is administered by FSANZ and sets down mandatory labelling requirements.
- (b) Bottled water product labelling **MUST** comply with the provisions of the FSANZ Code of Practice on Nutrient Claims in Food Labels and in Advertisements.

For information on the current requirements of the FSC or the Code of Practice, bottlers may contact FSANZ at:

Food Standards Australia New Zealand (FSANZ)

55 Blackall Street

Barton ACT 2600

Canberra MC ACT 2610

Ph. 02 6271 2222

Fax 02 6271 2278

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This Model Code for Bottled Water has been prepared by the Australasian Bottled Water Institute, its membership, Board of Directors and Committees. It is to be used as model "regulation".

For questions about the Model Code contact: Australasian Bottled Water Institute, Level 1, 6 - 8 Crewe Place, Rosebery NSW 2018, or info@bottledwater.org.au

APPENDIX A

STANDARD OF QUALITY

PHYSICAL PROPERTIES

These parameters are for aesthetic values and the limits are provided for guidance only.

Color <5 units

Turbidity <0.5 NTU

pH 3.5 - 8.5

Odour 3 T.O.N.

TDS a minimum of 250 ppm for mineral water

RADIONUCLIDES

*Gross Alpha 15 pCi/L

**Gross Beta 50 pCi/L

* If Gross Alpha is greater than 5, analyze for Radium 226 and Radium 228. Their total should not exceed 5 pCi/L.

** If Gross Beta is greater than 8 pCi/L, analyze for Strontium 90. If Gross Beta is greater than 50 pCi/L, analyze for Tritium and other man-made nuclides.

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MAXIMUM CONTAMINANTS LEVELS

INORGANIC COMPOUNDS

Maximum Contaminant Level (mg/L)

ANALYTE	ABWI LIMIT **	FSANZ LIMIT
Antimony	0.006	0.15
Arsenic	0.05	0.05
Barium	1.0	1.0
Beryllium	0.004	N/A
Borate	30 (calculated as H ₃ BO ₃)	30 (calculated as H ₃ BO ₃)
Bromate	0.02	N/A
Cadmium	0.005	0.01
Chloramine		
Chloride *	250.0	
Chlorine (free)	<0.1	
Chlorite		
Chromium	0.05	0.05
Copper *	1.0	1.0
Cyanide	0.1	0.1
Fluoride	1.5	2.0 (calculated as F ⁻)
Iron *	0.3	
Lead	0.005	0.05
Manganese *	0.05	2.0

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Mercury	0.001	0.001
Molybdenum		
Nickel	0.1	
Nitrate (as N)	10.0	45 (as NO ₃ ⁻)
Nitrite (as N)	1.0	0.005 (as NO ₂ ⁻)
Organic matter	3.0 (KMnO ₃ digested as O ₂)	3.0 (KMnO ₃ digested as O ₂)
Selenium	0.01	0.01
Silver	0.025	
Sulphate *	250.0	
Sulphide	0.05 (calculated as H ₂ S)	0.05 (calculated as H ₂ S)
Thallium	0.002	
Zinc *	5.0	5.0

Notes: * These compounds are classified as aesthetic, non-health related.
 **The ABWI limit listed is the lowest limit of either the ABWI and FSANZ regulations.

ORGANIC COMPOUNDS

Maximum Contaminant Level (mg/L)

ANALYTE	ABWI LIMIT
Di(2-ethylhexyl)adipate	0.4
Alachlor	0.002
Atrazine	0.003
Benzo(a)pyrene	0.0002
Carbofuran	0.04
Chlordane	0.002
Dalapon	0.2

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Dibromochloropropane	0.0002
Dinoseb	0.007
2,3,7,8-tetrachlorodibenzo- o-dioxin (dioxin)	3×10^{-8}
Diquat	0.02
Endothall	0.1
Endrin	0.0002
Glyphosate	0.7
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Lindane	0.0002
Methoxychlor	0.04
Oxamyl (vydate)	0.2
Pentachlorophenol	0.001
Di(ethylhexyl)phthalate	0.006
Picloram	0.5
Simazine	0.004
Toxaphene	0.003
2,4-D (dichlorophenoxy acetic acid)	0.07
Ethylene dibromide	0.00005
Heptachlor	0.0004
Heptachlor epoxide	0.0002
(PCB) polychlorinated biphenyls	0.0005
2,4,5-TP (silvex)	0.01
Phenolics	0.001

VOLATILE ORGANIC COMPOUNDS

Maximum Contaminant Level (mg/L)

ANALYTE	ABWI LIMIT
Trichloroethylene	0.005
Carbon tetrachloride	0.005
Vinyl Chloride	0.002
1,2-Dichloroethane	0.005
Benzene	0.005
1,1,-Dichloroethylene	0.007
1,1,1,-Trichloroethane	0.200
1,2,4-Trichlorobenzene	0.07
1,1,2-Trichloroethane	0.005
o-Dichlorobenzene	0.600
p-Dichlorobenzene	0.075
Cis-1,2-Dichloroethylene	0.070
trans-1,2-Dichloroethylene	0.100
1,2-Dichloropropane	0.005
Ethylbenzene	0.700
Dichloromethane (methylene chloride)	0.005
Monochlorobenzene	0.100
Styrene	0.100
Tetrachloroethylene	0.005
Trihalomethane	0.010
Toluene	1.000
Xylene	10.000

The following compounds are also detected as part of the screening test for Volatile Organic Compound analysis.

Bromobenzene	Dichloropropene,1,1-
Bromochloromethane	Dichloropropene,cis-1,3-
Bromodichloromethane	Dichloropropene,trans-1,3-
Bromoform	Fluorotrichloromethane
Bromomethane	Hexachlorobutadiene
Butylbenzene,n-	Isopropyltoluene,p-
Butylbenzene,sec-	Methyl-Ethyl-Ketone
Butylbenzene,tert-	Naphthalene
Chlorodibromomethane	Propylbenzene,iso-
Chloroethane	Propylbenzene,n-
Chloromethane	Tetrachloroethane,1,1,1,2-
Chlorotoluene,o-	Tetrachloroethane,1,1,2,2-
Chlorotoluene,p-	Trichlorobenzene,1,2,3-
Dibromomethane	Dichlorobenzene,m-
Dichlorodifluoromethane	Trichloropropane,1,2,3-
Dichloroethane,1,1-	Trichlorotrifluoroethane
Dichloropropane,1,3-	Trimethylbenzene,1,2,4-
Dichloropropane,2,2-	Trimethylbenzene,1,3,5-

APPENDIX B

SUMMARY OF TESTING

Originating Source

Coliforms weekly, external, or with each load taken, if taken less often than weekly

OR, monthly, external, IN CONJUNCTION WITH daily, in-house

Inorganics & physical annual, external

Radiological every 4 years, external

Organics &, volatile organics

Tests for organics and volatile organics need only be done every 4 years once a history of 2 years compliance has been established

Tanker

TPC weekly in-house, or with each delivery if delivers are less often than weekly

Coliforms weekly in-house, or with each delivery if delivers are less often than weekly

Finished Product

Coliforms daily, in-house, IN CONJUNCTION WITH monthly, external,

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NOTE when a positive external result is received then the tests must be done weekly until 4 consecutive negative results are achieved

Chemical & physical annual, external

Radiological every 4 years, external

Organics & volatile organics

Tests for organics and volatile organics need only be done every 4 years once a history of 2 years compliance has been established

Yeasts & moulds weekly, in-house Recommendation

P. aeruginosa weekly, in-house Recommendation

Containers & Closures

Coliforms & TPC In-house, quarterly tests are recommended

4 samples are to be taken of each, containers (in-coming and post-rinser) and closures

Laboratory

TPC As appropriate, in-house,
use sterile blanks to test media, cleaning efficacy, personnel procedures, etc.
at least quarterly would meet this requirement

Australasian Bottled Water Institute

Model Code Check List

The following check points have been extracted from the body of the Model Code.

Further detail on each point may be obtained from the relevant Section of the Code.

Bottlers should note:-

- The Code now requires compliance with a number of **MUST** and **REQUIRED** points.
- Each of these compliance points have been graded according to the necessity to comply fully, or whether it has been determined that some tolerance is appropriate.
- The requirements have been graded as follows:
 - **MUST** Bottlers **MUST** demonstrate **full** compliance
 - **REQUIRED** Some tolerance is considered appropriate. Bottlers need to demonstrate a minimum of 90% compliance

Model Code Check List

1. INTRODUCTION

Source owners may seek separate Source Certification. In this event they **MUST** meet the requirements for an approved source - Section 10, Clauses (a) to (f).

Certified sources **MUST** also carry out the annual testing regime.

Model Code Check List

2. DEFINITIONS AND ACRONYMS

ABWI Members are **REQUIRED** comply with the definitions described.

The bottler **MUST** maintain in the plant a current license or certificate of approval of the source where issued (by state or department).

Groundwater **MUST** not be under the direct influence of surface water.

It is a **REQUIREMENT** that mineral water have a level of total dissolved solids of greater than 250 ppm.

Model Code Check List

3. PRODUCT QUALITY

All bottled water **MUST** be from an Approved Source, defined in Clause 10 (a) to (i) and **MUST** meet the Standard of Quality for source testing, as prescribed in Appendix A and to limits specified therein.

Bottlers **MUST** implement a HACCP program in their plants as of the 1st January 2007.

For inclusion in the list, the hazard **MUST** be of such a nature that its prevention, elimination or reduction to acceptable levels is essential to the production of a safe food.

All significant hazards identified during the hazard analysis **MUST** be addressed.

It is **recommended** that the information developed during the hazard analysis enable the establishment to identify which steps in their processes are CCP's.

It is a **REQUIREMENT** that all CCP'S be carefully developed and documented.

All three types of hazards (physical, chemical and biological, including microbiological) **MUST** be addressed and controlled.

A critical limit is defined as a criterion that **MUST** be met for each preventive measure associated with a CCP.

It is **recommended** that the established critical limits be justifiable in relation to knowledge available.

Fillers need to identify critical limits in their HACCP plans that **MUST** be met at each CCP to be certain that the hazard is controlled.

Critical limits **MUST** reflect relevant regulations.

If critical limits more stringent than regulatory limits or requirements are set, then the establishment is **REQUIRED** to meet those more stringent limits.

Monitoring is used to determine when a deviation occurs at a CCP; therefore, monitoring procedures are **REQUIRED** to be effective.

When continuous monitoring is not feasible, frequencies **MUST** be sufficient to ensure that the CCP is under control.

It is **REQUIRED** that personnel assigned to monitoring activities be properly trained to report all results, including any unusual occurrences, so that adjustments can be made and any processes or products that do not meet critical limits are identified so that immediate corrective actions may be taken.

In such instances, corrective action plans **MUST** be in place to (1) determine the disposition of the non-compliant product and (2) identify and correct the cause of the deviation to regain control of the CCP.

Corrective actions **MUST** be specified in sufficient detail to ensure that no public health hazard exists after these actions have been taken.

It is a **REQUIREMENT** that a bottlers HACCP plan and all associated records be maintained on file at the establishment and provides several examples of records that could be maintained, such as those relating to incoming ingredients, product safety, processing, packaging, storage and distribution, deviations and corrective actions and employee training.

Thus, a HACCP plan is **REQUIRED** to provide for a record keeping system that will document the establishment's CCP monitoring, verification activities and deviation records.

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It is **recommended** that establishments rely on frequent reviews of their HACCP plan, verification that the HACCP plan is being correctly followed, review of CCP records and determinations that appropriate management decisions and product dispositions are made when deviations occur.

It is recommended that such reviews include an on-site review and verification of all flow diagrams.

It is **REQUIRED** that the HACCP system includes a set of verification tasks to be performed by establishment personnel.

Model Code Check List

4. GOOD MANUFACTURING PRACTICES

It is recommended that bottled water be produced in an enclosed filling room/chamber that is under positive pressure of filtered air and using facilities and good manufacturing practices that comply with the requirements of GMP and be properly maintained with supporting records.

Bottled water **MUST** be subject to adequate filtration (to a minimum rating of at least 1 micron or lower) and effective germicidal treatment by ozonation, carbonation at a minimum of three volumes of carbon dioxide, or other proven disinfection regimes.

OR

Bottled water **MUST** be subject to adequate filtration (to a minimum rating of at least 1 micron or lower) and be produced in an enclosed fillroom/chamber that is under positive pressure, HEPA filtered air; and using facilities and good manufacturing practices that comply with the requirements for GMP, set out in this Section.

Bottled water **MUST NOT** be transported or stored in bulk tanks, or processed or bottled through equipment or lines used for any non-food product.

It is **REQUIRED** that bulk water be from an approved source and maintained for sanitary quality at all times.

It is a **REQUIREMENT** that bulk water be loaded, transported and unloaded in a sanitary manner to ensure the overall safety and quality of the finished bottled water product.

It is a **REQUIREMENT** that bulk water tankers, storage tanks, hoses, pumps and connections used for loading, transporting and unloading of bulk water be constructed of materials that are approved food-grade, smooth, non-absorbent and easily cleanable such as stainless steel (300 series).

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It is **recommended** that tankers used for the hauling of bulk water bottling purposes be solely dedicated for that purpose.

If the tanker is used for transporting other foods, it is a **REQUIREMENT** that the tanker be properly cleaned and sanitised in accordance with the GMP regulations immediately before the loading of a bulk shipment of potable water intended for human consumption.

It is a **REQUIREMENT** that tankers be cleaned, sanitised and inspected internally for tank integrity on a routine basis.

Tankers that have been previously used to haul non-food commodities such as toxic materials, petroleum products, or other harmful substances **MUST NOT** be used to haul bottled water for human consumption.

It is a **REQUIREMENT** that tankers used for the transporting of potable water be properly secured with manhole cover gaskets and safety seals.

It is **REQUIREMENT** that connections, hoses and pumps used for the loading and unloading of bulk water be properly maintained and stored to prevent contamination.

When not in use, pumps, hoses, connections and fittings are **REQUIRED** to be properly capped, securely stored and protected from possible contamination.

Representative samples **MUST** be taken from shipments of bulk water for the analyses of coliform bacteria and Heterotrophic Plate Count (HPC).

It is a **REQUIREMENT** that the minimum frequency of sampling is one sample from each tanker on a weekly basis or from each delivery if the delivery frequency is less than weekly.

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Records are **REQUIRED** to be maintained as specified in Section 12 that include but are not limited to:

- (a) Name of the transporter and/or driver
- (b) Tanker number
- (c) Date of shipment
- (d) Vendor and location of the source water
- (e) Name of the receiver and the location to which the water was shipped
- (f) Date of delivery
- (g) Date of tanker cleaning and sanitisation (includes name of operator)
- (h) The concentration of the disinfectant residual (if used) at the time of loading and unloading
- (i) Results of all microbiological testing as specified.

It is **REQUIRED** that, in order to minimise the potential for microbiological contamination of the finished product, bottled water NOT be transported, stored, processed, or bottled in or through lines or equipment through which has passed milk, fruit juice, or other food products likely to contribute nutrients for microbial growth, unless said lines, equipment, or holding tanks have been cleaned in accordance with subpart (d) of this Section.

It is **REQUIRED** that process lines, including storage tanks and associated equipment, be used exclusively for the production of bottled water, except for filling equipment, which may be used also for filling, other food products.

Before being used for the bottling of water, it is a **REQUIREMENT** that filling equipment which is designed to be cleaned in-place and which is used for filling other food products be thoroughly cleansed and sanitised in-place in accordance with the manufacturer's specifications and in compliance with GMP and the supplementary procedures that follow in paragraph (d) to (f), of this Section.

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Immediately following completion of filling operations for any other food product other than water, it is **REQUIRED** that the filler be thoroughly rinsed internally and externally with potable water (NB. Chlorinated water, at 1-3 ppm, is NOT potable).

It is a **REQUIREMENT** that in accordance with filler manufacturer's instructions, any parts that are not designed to be cleaned in-place be disassembled and removed.

All of these parts **MUST** be cleaned and sanitised prior to reassembly using appropriate cleaning and sanitizing procedures, as specified below.

Sanitising operations, including those performed by chemical means or by any other means such as circulation of live steam or hot water, **MUST** be adequate to effect sanitisation of the intended product water-contact surfaces and any other critical area.

It is recommended that the plant maintain a record of the intensity of the sanitising agent and the time duration that the agent was in contact with the surface being sanitized.

It is **REQUIRED** that the following times and intensities be considered a minimum.

(i) Steam in enclosed system:

At least 76.6° C for at least 15 minutes or at least 93.3° C for at least 5 minutes

(ii) Hot water in enclosed system:

At least 76.6° C for at least 15 minutes or at least 93.3° C for at least 5 minutes

(iii) Chemical sanitizers are **REQUIRED** to be equivalent in bacterial action to a minute exposure of 50 parts per million of available chlorine at 13.9° C when used as an immersion or circulation solution.

Chemical sanitizers applied as a spray or fog **MUST** have as minimum 100 parts per million of available chlorine at 13.9° C or its equivalent in bactericidal action.

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It is **REQUIRED** that all surfaces of the filler that do not contact food products be cleaned manually so as to render all surfaces clean and free of any residues.

It is a **REQUIREMENT** that the filler be prepared and all appropriate connections made in accordance with the filler manufacturer's instructions to place the filler in the clean-in-place mode.

If using an alkaline cleaning solution, the appropriate strength **MUST** be re-circulated through the filler to provide effective cleaning of all product contact surfaces, with a minimum re-circulation time of 20 minutes at a temperature between 60 and 75 degrees Centigrade.

The cleaning solution **MUST** be drained and followed with a potable water rinse-to-drain; or otherwise removed from the system; for the removal of all residual cleaner alkalinity.

Following reassembly of all parts to place the filler into the product mode and just prior to bottling water, the filler **MUST** be sanitised in-place in accordance with procedures (g) (vi) of this Section.

Alternate cleaning, rinsing, or sanitising operations or processes not described in this Section **MUST** be consistent with Australian or New Zealand regulatory requirements.

Bottled water that originates from a source that is not protected from surface contamination **MUST** be subjected to ozonation, filtration rated at one micron, or another effective process which removes or destroys the cysts of the parasite Giardia Lamblia and Cryptosporidium.

Daily in-house total coliform monitoring on finished product **MUST** be done on each product type.

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It is **recommended** that quarterly rinse/swab tests be performed in-house or by a laboratory using an approved methodology, on containers (incoming as well as those immediately from the washer) and closures.

Each bottled water plant is **REQUIRED** to develop and maintain procedures for the notification of the Government Authorities, consumer notification, and product recall, and the water plant manager **MUST** implement any said procedure as necessary with respect to any product for which the operator or the Government Authorities knows or has reason to believe circumstances exist that may adversely affect its safety for the consumer.

In order to facilitate product identification or recall, each bottled water product **MUST** contain a code that is designed to remain affixed to the container during use and which contains either the date of manufacture, or a lot or batch number.

A bottled water supplier who knows that the Standard of Quality has been exceeded or has reason to believe that circumstances exist which may adversely affect the safety of bottled water, including but not limited to source contamination, spills, accidents, natural disasters, or breakdowns in treatment, **MUST** notify the Government authorities promptly.

Where it is determined, based upon representative samples, risk analysis, information provided by the bottled water supplier, and other information available that the circumstances present an imminent hazard to the public health and that a form of consumer notice or product recall can effectively avoid or significantly minimise the threat to public health, the bottler **MUST** initiate a product recall.

It is a **REQUIREMENT** that where applicable, ABWI members do NOT operate a bottled water plant or bottle water for the purpose of sale or distribution without passing the ABWI Plant Inspection Program within 12 months of joining ABWI.

ABWI Model Code 2005

A bottled water plant **MUST** not be operated except under the supervision of a competent person qualified by experience, education, and training to operate and maintain the plant's facilities.

Said person **MUST** hold a certificate demonstrating that he or she has successfully completed the ABWI Certified Plant Operator course.

Model Code Check List

5 PLANT CONSTRUCTION AND DESIGN

The grounds about a food plant under the control of the operator are **REQUIRED** to be kept in a condition that will protect against the contamination of food.

If the plant grounds are bordered by grounds not under the operator's control and not maintained in the manner described in paragraph (a) (i) through (iii) of this Section, care is **REQUIRED** to be exercised in the plant by inspection, extermination, or other means to exclude, dirt and filth that may be a source of food contamination.

Plant buildings and structures are **REQUIRED** to be suitable in size, construction and design to facilitate maintenance and sanitary operations for food-manufacturing purposes.

The plant and facilities are **REQUIRED** to be:

(i) Provide sufficient space for such placement of equipment and storage of materials as is necessary for the maintenance of sanitary operations and the production of safe food.

(ii) Permit the taking of proper precautions to reduce the potential for contamination of food, food-contact surface, or food-packaging materials with microorganisms, chemicals, filth or other extraneous material. The potential for contamination may be reduced by adequate food safety controls and operating practices or effective design, including the separation of operations in which contamination is likely to occur, by one or more of the following means: location, time, partition, air flow, enclosed systems or other effective means.

(iii) Permit the taking of proper precautions to protect food in outdoor bulk storage vessels by any effective means, including:

(1) Using protective coverings.

(2) Controlling areas over and around the vessels to eliminate harborage for pests.

(3) Checking on a regular basis for pests and pest infestation.

ABWI Model Code 2005

- (4) Be constructed in such a manner that floors, walls and ceilings may be adequately cleaned and kept clean and kept in good repair; that drip or condensate from fixtures, ducts and pipes does not contaminate food, food-contact surfaces, or food-packaging materials; and that aisles or working spaces are provided between equipment and walls and are adequately unobstructed and of adequate width to permit employees to perform their duties and to protect against contaminating food or food-contact surfaces with clothing or personal contact.

- (iii) Provide adequate lighting in hand-washing areas, dressing and locker rooms and toilet rooms and in all areas where food is examined, processed or stored and where equipment or utensils are cleaned; and provide safety-type light bulbs, fixtures, sky-lights or other glass suspended over exposed food in any step of preparation or otherwise protect against food contamination in case of glass breakage.
- (iv) Provide adequate ventilation or control equipment to minimise odours and vapours (including steam and noxious fumes) in areas where they may contaminate food; and locate and operate fans and other air-blowing equipment in a manner that minimise the potential for contaminating food, food-packing materials, and food-contact surfaces.
- (v) Provide, where necessary, adequate screening or other protection against pests.

It is **REQUIRED** that buildings, fixtures and other physical facilities of the plant be maintained in a sanitary condition

.... it is **REQUIRED** that they be kept in repair sufficient to prevent food from becoming adulterated.

Cleaning and sanitizing of utensils and equipment **MUST** be conducted in a manner that protects against contamination of food, food-contact surfaces or food-packaging materials.

ABWI Model Code 2005

Pests **MUST NOT** be allowed in any area of a food plant.

Effective measures are **REQUIRED** to be taken to exclude pests from the processing areas and to protect against the contamination of food on the premises by pests.

It is **recommended** that the bottling room separated from other plant operations or storage areas by tight walls, ceilings and self-closing doors to protect against contamination.

It is **REQUIRED** that conveyor openings NOT exceed the size required to permit passage of containers.

If processing operations are conducted in other than a sealed system under pressure, adequate protection is **REQUIRED** to be provided to preclude contamination of the water and the system.

Adequate ventilation is **REQUIRED** to minimise condensation in processing rooms, bottling rooms and in container washing and sanitising areas.

It is **recommended** that the washing and sanitising of containers for bottled water be performed in an enclosed room.

It is **REQUIRED** that the washing and sanitising operations be positioned within the room so as to minimise any possible post-sanitising contamination of the containers before they enter the bottling room.

Rooms in which product water is handled, processed or held or in which containers, utensils or equipment are washed or held **MUST NOT** open directly into any room used for domestic household purposes.

It is a **REQUIRED** that the product water supply for each plant be from an approved source properly located, protected

ABWI Model Code 2005

... and is **REQUIRED** to be easily accessible, adequate and of a safe, sanitary quality

... which is **REQUIRED** to be in conformance at all times with the applicable laws and regulations of the government agency or agencies having jurisdiction.

If different from the product water supply, the operations water supply **MUST** be obtained from an approved source properly located, protected, and operated

...and **MUST** be easily accessible, adequate, and of a safe, sanitary quality which **MUST** be in conformance at all times with the applicable laws and regulations of the government agency or agencies having jurisdiction.

Model Code Check List

6. SANITARY OPERATIONS

Cleaning compounds and sanitizing agents used in cleaning and sanitizing procedures **MUST** be free from undesirable microorganisms

...and **MUST** be safe and adequate under the conditions of use.

Toxic cleaning compounds, sanitizing agents, and pesticide chemicals **MUST** be identified, held and stored in a manner that protects against contamination of food, food-contact surfaces or food-packaging materials.

It is **recommended** that all relevant regulations promulgated by other Federal State, and local government agencies for the application, use or holding of these products be followed.

All food-contact surfaces including utensils and food-contact surfaces of equipment **MUST** be cleaned as frequently as necessary to protect against contamination of food.

When the surfaces are wet-cleaned, it is a **REQUIREMENT** that, when necessary, they be sanitized and thoroughly dried before subsequent use.

In wet processing, when cleaning is necessary to protect against the introduction of microorganisms into food, it is **REQUIRED** that all food-contact surfaces be cleaned and sanitized before use and after any interruption during which the food-contact surfaces may have become contaminated.

Where equipment and utensils are used in a continuous production operation, the utensils and food-contact surfaces of the equipment **MUST** be cleaned and sanitized as necessary.

ABWI Model Code 2005

It is **recommended** that non-food contact surfaces of equipment used in the operation of food plants be cleaned as frequently as necessary to protect against contamination of food.

It is **recommended** that single-service articles (such as utensils intended for one-time use, paper cups and paper towel(s) be stored in appropriate containers

.....and it is **REQUIRED** that they be handled, dispensed, used and disposed of in a manner that protects against contamination of food or food-contact surfaces.

It is a **REQUIREMENT** that sanitising agents be adequate and safe under conditions of use.

Whenever air under pressure is directed at product water or a product water-contact surface, it is a **REQUIREMENT** that it be free of oil, dust, rust, excessive moisture and extraneous materials;

.... it is **REQUIRED** that it **NOT** affect the bacteriological quality of the water

....and it is **recommended** that it **NOT** adversely affect the flavour, colour or odour of the water.

When employee locker and lunchrooms are provided, they are **REQUIRED** to be separate from plant operations and storage areas

...and it is a **REQUIREMENT** that they be equipped with self-closing doors.

It is a **REQUIREMENT** that the rooms be maintained in a clean and sanitary condition

....and it is **recommended** that refuse containers be provided.

It is a **REQUIREMENT** that packaging or wrapping material or other processing supplies **NOT** be stored in locker or lunchrooms.

ABWI Model Code 2005

The product water-contact surfaces of all multi-service containers, utensils, pipes and equipment used in the transportation, processing, handling and storage of product water **MUST** be clean and adequately sanitised.

All product water-contact surfaces **MUST** be inspected by plant personnel as often as necessary to maintain the sanitary condition of such surfaces and to assure they are kept free of scale, evidence of oxidation and other residue.

It is a **REQUIREMENT** that the presence of any unsanitary condition, scale, residue or oxidation be immediately remedied by adequate cleaning and sanitising of that product water-contact surface prior to use.

It is **REQUIRED** that after cleaning, all multi-service containers, utensils and disassembled piping and equipment be transported and stored in such a manner as to assure drainage

... it is **REQUIRED** that they be protected from contamination.

It is **REQUIRED** that single-service containers and caps are to be purchased and stored in sanitary closures and kept clean therein in a clean, dry place until used.

Prior to use they **ARE REQUIRED** to be examined and as necessary, washed, rinsed and sanitized

...and **MUST** be handled in a sanitary manner.

Filling, capping, closing, sealing and packaging of containers **MUST** be done in a sanitary manner so as to preclude contamination of the bottled water.

Model Code Check List

7. HYGIENIC DESIGN

Each plant is **REQUIRED** to be equipped with adequate sanitary facilities and accommodations

The water supply is **REQUIRED** to be sufficient for the operations intended

....and is **REQUIRED** to be derived from an adequate source.

Any water that contacts food or food-contact surfaces **MUST** be safe and of adequate sanitary quality.

It is a **REQUIREMENT** that running water at a suitable temperature, and under pressure as needed, is to be provided in all areas where needed for the processing of food, for the cleaning of equipment, utensils and food-packaging materials, or for employee sanitary facilities.

It is **REQUIRED** that plumbing be of adequate size and design and adequately installed and maintained to:

- (i) Carry sufficient quantities of water to required locations throughout the plant.
- (ii) Properly convey sewage and liquid disposable waste from the plant.
- (iii) Avoid constituting a source of contamination to food, water supplies, equipment or utensils or creating an unsanitary condition.
- (iv) Provide adequate floor drainage in all areas where floors are subject to flooding-type cleaning or where normal operations release or discharge water or other liquid waste on the floor.
- (v) Provide that there is not backflow from, or cross-connection between, piping systems that discharge waste water or sewage and piping systems that carry water for food or food manufacturing.

Sewage disposal **MUST** be made into an adequate sewerage system or disposed of through other adequate means.

Each plant is **REQUIRED** to provide its employees with adequate, readily accessible toilet facilities.

Hand-washing facilities are **REQUIRED** to be adequate and convenient and be furnished with running water at a suitable temperature.

It is a **REQUIREMENT** that rubbish be so conveyed, stored and disposed of as to minimise the development of odour, minimise the potential for the waste becoming an attractant and harborage or breeding place for pests, and protect against contamination of food, food-contact surfaces, water supplies and ground surfaces.

It is **REQUIRED** that all plant equipment and utensils be suitable for their intended use.

All product water contact surfaces **MUST** be constructed of nontoxic and nonabsorbent material which can be adequately cleaned and sanitized.

Instruments and controls used for measuring, regulating or recording temperatures, pH, acidity, water activity, or other conditions that control or prevent the growth of undesirable microorganisms in food are **REQUIRED** to be accurate and adequately maintained, and adequate in number for their designated uses.

Storage tanks are **REQUIRED** to be of the type that can be closed to exclude all foreign matter, and are **REQUIRED** to be adequately vented.

It is **recommended** that HEPA filtration be installed but care is essential to ensure sufficient capacity of the filter to prevent tanks from being sucked in during discharge.

ABWI Model Code 2005

It is a **REQUIREMENT** that all treatment of product water by ozonation, distillation, ion-exchanging, filtration, ultra-violet treatment, reverse osmosis, carbonation, mineral addition, or any other process is done in a manner so as to be effective in accomplishing its intended purpose.

All such processes **MUST** be performed in and by equipment and with substances that will not adulterate the bottled product.

It is **REQUIRED** that a record of the type and date of physical inspections of such equipment, conditions found and the performance and effectiveness of such equipment be maintained by the plant.

Product water samples **MUST** be taken after processing and prior to bottling by the plant and analysed as often as is necessary to assure uniformity and effectiveness of the processes performed by the plant.

It is a **REQUIREMENT** that the methods of analysis be those approved by the government agency or agencies having jurisdiction.

Multi-service primary containers **MUST** be adequately cleaned, sanitized and inspected just prior to being filled, capped and sealed.

Containers found to be unsanitary or defective by the inspection **MUST** be reprocessed or discarded.

All multi-service primary containers **MUST** be washed, rinsed and sanitised by mechanical washers or by any other method giving adequate sanitary results.

Mechanical washers are **REQUIRED** to be inspected as often as is necessary to assure adequate performance.

ABWI Model Code 2005

It is **REQUIRED** that records of physical maintenance, inspections and conditions found, and performance of the mechanical washer be maintained by the plant.

Multi-service shipping cases **MUST** be maintained in such condition as to assure they will not contaminate the primary container or the product water.

Adequate dry or wet cleaning procedures are **REQUIRED** to be performed as often as necessary to maintain the cases in satisfactory condition.

It is **REQUIRED** that cleaning and sanitising solutions utilized by the plant be sampled and tested by the plant as often as is necessary to assure adequate performance in the cleaning and sanitizing operations.

It is **REQUIRED** that records of these tests be maintained by the plant.

During the process of filling, capping or sealing either single-service or multi-service containers, it is a **REQUIREMENT** that the performance of the filler, capper or sealer be monitored and the filled containers visually or electronically inspected to assure they are sound, properly capped or sealed, and coded and labeled.

Containers that are not satisfactory **MUST** be reprocessed or rejected.

Bottlers **MUST** only use nontoxic containers and closures.

All containers and closures **MUST** be inspected to ascertain that they are free from contamination.

At least once each 3 months, it is **recommended** that a bacteriological swab and/or rinse count be made from at least four containers and closures selected just prior to filling and sealing.

ABWI Model Code 2005

All samples **MUST** be free of coliform organisms.

The procedure and apparatus for these bacteriological tests are **REQUIRED** to be in conformance with those recognized by the government agency or agencies having jurisdiction.

It is a **REQUIREMENT** that tests be performed either by trained plant personnel or by a laboratory using approved methodologies.

It is a **REQUIREMENT** that all operations in the receiving, inspecting, transporting, segregating, preparing, manufacturing, packaging and storing of food be conducted in accordance with adequate sanitation principles.

It is a **REQUIREMENT** that overall sanitation of the plant be under the supervision of one or more competent individuals assigned responsibility for this function.

It is a **REQUIREMENT** that all reasonable precautions be taken to ensure that production procedures do not contribute contamination from any source.

It is a **REQUIREMENT** that chemical, microbial, or extraneous-material testing procedures be used where necessary to identify sanitation failures or possible food contamination.

All food that has become contaminated to the extent that it is adulterated **MUST** be rejected, or if permissible, treated or processed to eliminate the contamination.

It is a **REQUIREMENT** that raw materials and other ingredients be inspected and segregated or otherwise handled as necessary to ascertain that they are clean and suitable for processing into food

... and it is a **REQUIREMENT** that they be stored under conditions that will protect against contamination and minimize deterioration.

ABWI Model Code 2005

It is a **REQUIREMENT** that raw materials be washed or cleaned as necessary to remove soil or other contamination.

Water used for washing, rinsing, or conveying food is **REQUIRED** to be of a safe and of adequate sanitary quality.

It is **recommended** that containers and carriers of raw materials be inspected on receipt, to ensure that their condition has not contributed to the contamination or deterioration of food.

It is a **REQUIREMENT** that raw materials and other ingredients either not contain levels of microorganisms that may produce food poisoning or other disease in humans,

OR

it is **REQUIRED** that they be adequately treated during manufacturing operations, by washing, sanitising and rinsing according to the instructions of the manufacturers of the chemicals used, so that they no longer contain levels that would cause the product to be adulterated.

Raw materials, other ingredients, and rework susceptible to contamination with pests, undesirable microorganisms, or extraneous material **MUST** comply with applicable FSANZ Food Code Regulations, guidelines and defect action levels for natural or unavoidable defects if a manufacturer wishes to use the materials in manufacturing food.

It is a **REQUIREMENT** that raw materials, other ingredients, and rework be held in bulk, or in containers designed and constructed so as to protect against contamination

...and it is a **REQUIREMENT** that they be held at such temperature and relative humidity and in such a manner as to prevent the food from becoming adulterated.

ABWI Model Code 2005

Material scheduled for rework **MUST** be identified as such.

Measures such as sterilizing, irradiating, pasteurising, freezing, refrigerating, controlling pH or controlling A_w that are taken to destroy or prevent the growth of undesirable microorganisms, particularly those of public health significance, **MUST** be adequate under the conditions of manufacture, handling, and distribution to prevent food from being adulterated.

Work-in-process **MUST** be handled in a manner that protects against contamination.

It is a **REQUIREMENT** that effective measures be taken to protect finished food from contamination by raw materials, other ingredients, or refuse.

When raw materials, other ingredients, or refuse are unprotected, they **MUST NOT** be handled simultaneously in a receiving, loading or shipping area if that handling could result in contamination.

It is a **REQUIREMENT** that food transported by conveyor be protected against contamination as necessary.

It is a **REQUIREMENT** that equipment, containers and utensils used to convey, hold or store raw materials, work-in-process, rework or food be constructed, handled and maintained during manufacturing or storage in a manner that protects against contamination.

It is a **REQUIREMENT** that effective measures be taken to protect against the inclusion of metal or other extraneous material in food.

Food, raw materials, and other ingredients that are adulterated are **REQUIRED** to be disposed of in a manner that protects against the contamination of other food.

ABWI Model Code 2005

If the adulterated food is capable of being reconditioned, it is a **REQUIRED** to be reconditioned using a method that has been proven to be effective

OR

it is a **REQUIREMENT** that it be re-examined and found not to be adulterated before being incorporated into other food.

It is a **REQUIREMENT** that mechanical manufacturing steps such as washing and filling be performed so as to protect food against contamination.

Filling, assembling, packaging and other operations **MUST** be performed in such a way that the food is protected against contamination.

It is a **REQUIREMENT** that storage and transportation of finished food be under conditions that will protect food against physical, chemical and microbial contamination as well as against deterioration of the food and the container.

Model Code Check List

8. PERSONNEL HYGIENE

It is a **REQUIREMENT** that all persons working in direct contact with food, food-contact surfaces and food-packaging materials conform to hygienic practices while on duty to the extent necessary to protect against contamination of food.

The gloves **should** be of an impermeable material.

Model Code Check List

9. SOURCE WATER MONITORING

If any source does not comply with the Standard of Quality for the production of bottled water, the bottler **MUST** show by analysis, that this treatment reduces the contaminants(s) below the Standard of Quality in the finished product.

Approval of the source water product derived from a source other than a public water supply **MUST** be based upon a field inspection of the source and a review of information prepared by a professionally qualified hydrogeologist

...that **MUST** demonstrate the integrity of the source and safety of the catchment operations,

...and that **MUST** include:

- (i) An evaluation of the chemical, physical, microbiological, and radiological characteristics of the source.
- (ii) A report on the regional geology surrounding the site and the specific site geology. A description of the vertical and horizontal extent of the source aquifer using existing data. The information will be used to define the recharge area of the aquifer, or in the case of regional aquifers, the zone of influence of the subject source.
- (iii) A report detailing the development of the source; the method of construction including spring design, well installation, surface catchment, and intake structures; and transmission facilities as appropriate.
- (iv) A watershed survey of the recharge area or zone of influence of subject source that identifies and evaluates actual and potential sources of contamination, including any reported discharge that may affect the source.

ABWI Model Code 2005

- (v) Based on the findings in item (iv), a plan for special monitoring of any significant contaminant source and for taking restrictive preventive or corrective measures as appropriate to protect the source water.

It is a **REQUIREMENT** that a landuse assessment be conducted every 4 years by an appropriately trained person, to assess changes in local landuse that may impact on an underground source, where the water is sourced from an underground source.

It is a **REQUIREMENT** that the plant operator be responsible for sampling and analysis of all approved sources for the contaminants specified in the Standard of Quality.

Such monitoring is **REQUIRED** to be at the frequencies specified.

In lieu of source monitoring required by this Section, a plant operator using a public water system as its water supply is **REQUIRED** to obtain and display a certificate from said system demonstrating that the public water system conducts the monitoring required.

Where a bottled water plant operator, water dealer, or regulatory agency knows or has reason to believe that a contaminant not otherwise monitored is present in the source water because of a spill, release of a hazardous substance, or otherwise, and its presence would create a potential health hazard to consumers, the plant operator or water dealer upon receipt of such information **MUST** monitor the source water for said contaminant.

Detection of contaminant(s) in source monitoring required pursuant to Section 10 **MUST** be followed immediately by a program of periodic monitoring to confirm the presence in the source water of said contaminant(s).

ABWI Model Code 2005

If such listed unregulated contaminant(s) is confirmed to be present in the source water at a concentration that exceeds FSANZ requirements for bottled water, the plant operator or water dealer **MUST** employ appropriate treatment techniques to remove or to reduce said contaminant in the product water below said concentration,

...and **MUST** employ a program of periodic monitoring for said contaminant in the source water until such time as said contaminant is not detectable in the source water.

To assure that bottled water complies with Section 3, the following monitoring, using representative samples derived from the source, **MUST** be performed:

- (i) For total coliform, analyse weekly by a laboratory using an approved methodology, a representative sample from the source, or a representative source sample with each delivery if the delivery frequency is less than weekly.

Alternatively, bottlers may meet this requirement for source water, by conducting daily in-house tests, in conjunction with monthly testing by an external laboratory. Refer to Section 10 (i).

- (ii) For chemical and physical contaminants, analyse annually, by a laboratory using an approved methodology, a representative sample from a representative sample of finished product.
- (iii) For radiological contaminants analyse, by a laboratory using an approved methodology, a representative sample of finished product. This test is to be carried out every 4 years.

For compliance purposes bottlers are **REQUIRED** to maintain documentation confirming the location of the source.

ABWI Model Code 2005

When a non-compliance results (including where a test is not conducted) for any one of the analytes, the bottler **MUST** conduct annual tests to re-establish a history of 2 consecutive years with no non-compliances before returning to testing every 4 years, for that analyte/s.

Model Code Check List

10. FINISHED PRODUCT MONITORING

To assure that bottled water complies with Section 3, it is **REQUIRED** that the following product monitoring, using representative samples derived from the bottled product, be performed:

- (a) For total coliform, analyse daily a representative sample from a batch or segment of a continuous production for each type of bottled water produced by the plant.

This **MUST** be conducted at least once each 24 hour day.

Such analysis **MUST** be performed daily by trained personnel and monthly by a laboratory using an approved methodology, provided a "not detected" result is achieved.

When an external analysis show the presence of coliform then the bottler **MUST** revert to weekly external testing until 4 consecutive absence results are achieved.

Bottlers **MUST** continue conducting daily in-house coliforms tests.

It is recommended that bottlers conduct in-house yeast and mould tests at least once per week on a sample of each type of finished product.

It is recommended that bottlers conduct in-house *Pseudomonas aeruginosa* tests at least once per week on a sample of each type of finished product.

Model Code Check List

11. COOLER CLEANING

Bottled water manufacturers who clean and/or refurbish coolers for re-sale or re-hire **MUST** have a cleaning and sanitising procedure in place.

It is **REQUIRED** that this procedure include the following:-

- isolate returned coolers from new or sanitised coolers
- clean and sanitise away from process areas where there can be no contamination of raw materials, process lines or finished product
- check, clean and sanitise the coolers
- repair as required
- when completed the coolers will be bagged or boxed in a manner that will minimise the risk of recontamination
- store in an appropriate manner

Model Code Check List

12. RECORD KEEPING

It is a **REQUIREMENT** that all records be retained at the plant for not less than 7 years.

Model Code Check List

13. LABORATORY MAINTENANCE

In-house laboratories are **REQUIRED** to be maintained in a clean and appropriate manner for the activities to be conducted without causing contamination by handling or an unsuitable environment.

Laboratory maintenance will include:-

- The construction, space, lighting and ventilation to be designed to conduct the required activities.
- All laboratory equipment is adequately sanitised and maintained in proper working order.
- Appropriate sanitisation of the laboratory will be maintained.
- Quality control monitoring will be conducted to ensure the reliability and efficacy of tests, test results and laboratory personnel.
- Access will be restricted to authorised personnel.
- Staff may only enter wearing clean outer clothing.
- Rubbish will be kept covered and removed daily.
- Procedures are documented and document control established for all laboratory operations and records.

All contaminated materials are **REQUIRED** to be sterilised prior to disposal.

Model Code Check List

14. LABELLING REQUIREMENTS

Bottled water product labelling **MUST** comply with all applicable provisions under FSANZ Food Standards Code and Appendices. The Joint Australia New Zealand Food Standards Code (FSC) is administered by FSANZ and sets down mandatory labelling requirements.

Bottled water product labelling **MUST** comply with the provisions of the FSANZ Code of Practice on Nutrient Claims in Food Labels and in Advertisements.

END