CANADIAN BEE INDUSTRY *SAFETY* QUALITY TRACEABILITY

PRODUCER MANUAL

- GOOD PRODUCTION PRACTICES

FOR THE SAFE PRODUCTION AND ON-FARM PROCESSING
OF HONEY -EXTRACTED RAW OR FILTERED (LIQUID, CRYSTALLIZED OR CREAMED)
AND COMB HONEY INTENDED FOR HUMAN CONSUMPTION

Version 1.0
16 July 2014

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Canadian Honey Council

with assistance from:

Agriculture and Agri-Food Canada / Agriculture et Agroalimentaire Canada

Growing Forward | Cultivons l'avenir

ACKNOWLEDGEMENTS

The Canadian Honey Council (CHC) acknowledges the efforts of all contributors, resource personnel, producers, producer-packers, and other reviewers who have participated over time in the development of the Canadian Bee Industry Safety Quality Traceability (***CBISQT***) Program. We are especially appreciative of the Canadian Food Inspection Agency`s (CFIA) Food Safety Division who administer the Food Safety Recognition Program; notably M. Rochon (review team leader, Quebec Area Coordinator), T. Mellor (Ontario Area Coordinator), and J. Sefton (National Coordinator). We also thank C. Zagrosh (CFIA Honey Program Officer-Western Area Agrifood Programs), H. Sabara (Manager, Food Safety Programs, Ontario Ministry of Agriculture, Food and Rural Affairs), P. Kumar (On-Farm Food Safety Specialist, Food Safety Policy and Extension Section, Alberta Agriculture and Rural Development) and G. Wilson (Provincial Specialist, Apiculture, Saskatchewan Agriculture) for their recent review efforts. We thank the CHC Technical Committee, most notably T. Townsend (Committee Chairman, TPLR Honey Farms Ltd.) and R. S. McDonald (Principal Consultant, *mcdonald-associates.ca*) for improvements to the program and A. Beauregard (*a.translation.shaw.ca*) for French translation services.

Partial funding for the production of the ***CBISQT*** Program was provided by Agriculture Agri-Food Canada (AAFC) through the Growing Forward and related funding programs currently administered through the efforts of R. Scarlett (Executive Director, CHC). AAFC and the CFIA are committed to working with industry partners across Canada to increase public awareness of the importance of the food safety to consumers of Canadian food products.

DISCLAIMER

While the Canadian Honey Council (CHC) has provided the Canadian Bee Industry Safety Quality Traceability (***CBISQT)*** Producer Manual in the interest of Canadian honey producers and producer-packers, it does not guarantee that it has identified all potential risks and all control measures that may be required to eliminate or manage those risks. Risk management is ultimately the responsibility of the producer. To the full extent allowed by law, the CHC excludes liability for any loss arising through the provision of services by itself, its servants and its agents (including liability for negligence) and where liability cannot be excluded, limits that liability to either, at its choice supplying the relevant services again or paying the cost of having those services supplied.

This document is intended to provide general food safety guidelines for the production and primary processing of raw honey[1] and related honey products. It is not intended to serve as, and does not constitute, recommendations or legal advice for any of the material contained herein. Because honey safety assurance plans and issues are evolving, may vary, and could involve legal implications, the reader should consult legal counsel for advice on particular legal or regulatory matters that may arise.

The information and views set out in ***CBISQT*** Producer Manual are those of the CHC and do not necessarily reflect the official opinion of federal or provincial government agencies. Furthermore, although some elements of the ***CBISQT*** Program are linked with biosecurity and quality assurance, it is not the intent of the CHC to address biosecurity, quality attributes or quality management procedures.

We recommend that new or introductory beekeepers use other sources for information related to quality components and other aspects of general beekeeping. See the CHC website (www.honeycouncil.ca) for more information related to the bee industry, including the Canadian *Honey Industry Bulk Container Standard* and refer to the CFIA website (www.inspection.gc.ca) for information related to the *National Bee Farm-Level Biosecurity Standard*.

[1] This Manual refers to the commercial/retail production and processing of honey as a liquid, crystallized, creamed (whipped) or as-comb honey. *Raw honey* is obtained by extraction, settling or straining, is unfiltered, and is minimally heated (e.g. 24° - 40°C (75°-104°F)) before packing for human consumption. Honey that is subjected to filtering is also addressed in the ***CBISQT*** Manual but it is referred to as *filtered honey* rather than as *raw honey*. The ***CBISQT*** Program does not apply to high temperature processing/pasteurizing establishments, the production/processing of flavoured honey, royal jelly, raw propolis, pollen or wax products for human consumption, or the control of allergens in flavoured honey.

REVISIONS TO THE PRODUCER MANUAL

REVISION NUMBER	DATE	CHANGES
01.1	07 March 2013	Revision – Honey TR Part 1 Screening – CFIA_ACIA-comments Nov 2012
01.2	27 March 2013	Revision – Honey TR Part 1 Screening – CFIA_ACIA-comments March 2013
01.3	24 June 2013	Revision – Honey TR Part 1 Screening – CFIA_ACIA-ANR comments June 2013
0.1.4	04 January 2014	Revision – CFIA_ACIA ANR screening comments January 2014
0.1.5	14 April 2014	Revision – CFIA_ACIA ANR screening comments April 2014
0.1.6	10 July 2014	Revision – CFIA_ACIA ANR screening comments July 2014
1.0	16 July 2014	Approval – CFIA_ACIA July 2014

DATE: (D/M/Y):	APPROVED BY:

TABLE OF CONTENTS	PAGE NO.

INTRODUCTION

As a non-profit national organization, the Canadian Honey Council (CHC) has been promoting industry research and development, in association with consumer awareness, to the Canadian beekeeping sector for over seven decades. Today, the CHC represents the collective interests of over 7,000 beekeepers (who annually maintain more than 620,000 colonies) within a diverse membership framework that includes provincial producer associations, industry stakeholder groups and government bodies.

The CHC is especially committed to providing consumers with the highest level of food safety assurance of Canadian honey products. The continuing safety of Canadian honey products is a joint effort from committed producers, producer-packers and other industry stakeholders, under an alignment founded on established safe practices within the sector, direction from a network of Provincial Apiculturists, and mandatory adherence to existing regulations of federal, provincial/territorial and local governments.

i. THE HACCP-BASED ON-FARM FOOD SAFETY PROCESS

In order to strengthen the voluntary participation and commitment to enhanced food safety the CHC has worked diligently with industry and government stakeholders over the past decade to develop a recognized on-farm food safety standard based on guidelines of the CFIA and the internationally-recognized Hazard Analysis and Critical Control Point (HACCP[2]) system as part of the Canadian On-Farm Food Safety (COFFS) Program. Although its implementation may inevitably increase the level of responsibility among participants, the ***CBISQT*** Program is designed to offer producers and producer-packers the opportunity to clearly identify hazards on their farm operation, focus prevention strategies following a more effective hazard-based priority perspective, and through effective documentation, to strengthen the integrated value-chain for Canadian honey producers and producer-packers.

The foundation of the voluntary CHC's on-farm food safety program is the **Canadian Bee Industry Safety Quality Traceability (*CBISQT*) Producer Manual** for extracted raw[3] honey and cut comb honey which is unextracted. The ***CBISQT*** **Producer Manual** addresses a number of inputs[4] and process steps that are predominant in the production and primary processing of extracted raw honey and comb honey within the Canadian sector and the biological, chemical and/or physical hazards that could affect the food safety of honey products intended for human consumers.

ii. THE CANADIAN HONEY HAZARD PROFILE

The ***CBISQT*** Program is unique in its profile of generic food safety hazards associated with both the apiary environment and the primary processing facility/honey house. Hazards affecting the food safety of honey within the apiary can occur as a result of contamination from the environment, from contaminated farm inputs, or as a result of errors occurring at process steps. Controlling naturally occurring biological **(B)**, chemical **(C)** and physical **(P)** hazards within the apiary environment is especially complex and impractical given the variable nature of agricultural systems and foraging bees. Toxin-producing spores of *Clostridium botulinum*[5] and *Bacillus* spp., common soil- and dust-borne bacteria, can contaminate honey products (especially honey) and are important biological hazards during the harvesting and extraction of honey; especially if honey supers are transported and handled incorrectly. However, few hazardous biological agents are associated with honey during the stages of

[2] Hazard Analysis and Critical Control Point system as defined by Codex Alimentarius Commission 2003. Recommended International Code of Practice General Principles of Food Hygiene Hazard Analysis and Critical Control Point (HACCP) System and Guidelines for its Application, Annex to CAC/RCP 1-1969 (Rev. 4-2003), 11 pp.

[3] See the **Glossary of Terms** for a definition of "raw honey", among other terms used within the context of this Manual.

[4] For a complete description of beekeeping and processing inputs and processing steps used in this Manual refer to **Appendix II**, and **Appendix III**, respectively.

[5] Spores of *C. botulinum* that affect human health (e.g. type B spores) cannot multiply or produce toxins in undiluted honey due to its inhibitory properties and high ratio of dissolved sugar. Currently, there are no process steps that could be applied to remove or kill spores in honey aside from high temperature (i.e. > 100°C (212°F)) that significantly impairs product quality.

production and primary processing in Canada[6]. This is attributable in part, by the low incidence of environment contaminants and hazardous biotoxins from foraging sources, and the unique antimicrobial properties of unadulterated raw honey[7] that effectively inhibits fermentation and prevents microbial growth.

Several chemical hazards, including residues of medications (e.g. antibiotics) and related on-hive pesticide treatments (e.g. miticides and monitoring aids applied on-hive), petrochemical-based products and farm chemicals (e.g. pest management products used off-hive for pest control, water treatment aids, maintenance and cleaning/sanitation products) can be contaminants of raw honey if products are handled or applied incorrectly (e.g. no used according to label or manufacturer's instructions) during the preseason (prior to the active season of foraging, production and extraction of honey) or postseason.

In the on-farm processing environment, hazards associated with the contamination of raw honey can occur from: a) incorrect inputs (e.g. raw materials, or packaging), b) operational errors during receiving, extraction and primary processing (e.g. excessive chemical residues from medications[8] not in conformance with legislative residue limits, and manufacturer's labelling), and through "external" contaminants such as environmental pollution (e.g. heavy metals), unhygienic personnel, faulty equipment, pest activity, incorrect waste disposal, and extraneous materials (e.g. unfilterable or unfiltered fragments of glass, plastic or metal) from breakage or other contamination during processing or packing.

iii. PURPOSE AND SCOPE

The purpose of the ***CBISQT*** **Producer Manual** is to highlight the on-farm food safety risks in the production and primary processing of raw honey and to provide the minimum necessary food safety assurance procedures and document controls for an operational food safety system scaled to the Canadian producer.

The ***CBISQT*** **Producer Manual** refers only to honey produced by Western/European honey bees, *Apis mellifera* L., referred throughout this manual simply as "bees". Production elements within the scope of the ***CBISQT*** Program involve managing the apiary environment, receiving and storage of farm inputs, livestock health, and at harvest, the collection, transportation and temporary storage of honey supers within the processing facility or honey house. Processing activities includes receiving raw honey inputs (from on- and/or off-farm sources) and extracting liquid and comb honey. Processing is minimal and may include filtration and packing with a variety of small or large bulk containers; all within a temperature limit range of about 35° - 40°C (95° - 104°F) in a process that is designed to ensure effective fluid flow while retaining the intrinsic properties of raw honey. The ***CBISQT*** Program does <u>not</u> apply to high temperature processing/pasteurizing establishments or the production and processing of flavoured honey, royal jelly, raw propolis, pollen or wax products for human consumption.

iv. HOW TO USE THIS MANUAL

The ***CBISQT*** **Producer Manual** is intended to serve as a procedural guide for producers and producer-packers to control food safety hazards through the systematic application of generic Good Production Practices (**GPP**s). **GPPs** are designed to control hazards related to the Canadian on-farm sector through a series of generic production and process steps contain a detailed series of procedures within a management framework, and a documentation system

[6] Canadian Food Inspection Agency. 2008. Reference Database for Hazard Identification. 301 pp.

[7] Antimicrobial properties of raw honey will be diminished proportionately as honey is diluted, as may be the case where diluted honey is used as an ingredient with other food products. In the manufacturing of secondary products, there may be an added risk of diluted and/or adulterated honey contaminating a food with biological pathogens that would not be a hazard in undiluted or unadulterated raw-honey alone.

[8] For example, antibiotic treatments against foulbrood (i.e. American (AFB), resistant AFB (rAFB) and European (EFB) foulbrood), synthetic fungicides against nosemosis (*Nosema apis, N. cerenae*), synthetic miticide treatments for varroa mites (VM) (*Verroa destructor*) including pesticide resistant VM (rVM)) and tracheal mites (*Acarapis woodi*), synthetic pesticides and synthetic repellents.

that is designed to complement existing legislation. Most **GPPs** within the ***CBISQT*** **Producer Manual** include the following elements:

- identification and inventory of potential (**B**), (**C**) and (**P**) hazards within the production, processing and/or packing environment for raw honey that could pose a food safety risk to consumers,
- prevention, elimination or adequate control procedures for food safety hazards,
- regular inspection and monitoring procedures, including inventory control of high risk materials (e.g. medications, finished honey),
- a corrective action contingency plan to control hazards should they occur,
- forms for recording all deviations, corrective actions and preventative measures that document what food safety incident occurred, when and where the incident occurred, what products (if any) were affected, and the personnel responsible for corrective action.
- a process for communicating risk to personnel working within the apiary and/or the processing facility and for reporting food safety incidents, and
- a process of regular oversight and review of the ***CBISQT*** Program for continuous improvement.

Essential elements related to control, monitoring, corrective action and record keeping procedures are referred to as "**Must Do's**" and are highlighted throughout the Manual as MUST DO.

A series of generic HACCP-based records are included in **Appendix I**. and are intended to be used directly, or as a guide, to provide a written system of communication for the ***CBISQT*** Program and, as an option, by auditors in cases where verification of the Program's ongoing effectiveness is required. Records indicated as MUST DO are associated with Control Points (CPs) that are *mandatory to all producers and producer-packers* on the ***CBISQT*** Program.

The ***CBISQT*** Program is designed to be an achievable goal for Canadian beekeepers and can be implemented either by the producer[9] or other designees, as approved by the producer, provided that there is commitment to develop, manage, achieve, and continuously improve the objectives of honey safety assurance through training. If you are a Canadian producer or producer-packer engaged in the production and on-farm processing of extracted raw honey and/or comb honey, we strongly encourage you to use the ***CBISQT*** **Producer Manual** as a guide to maintaining and improving the safety of your honey products, regardless of the size of your operation.

v. MUST DO STATEMENT OF COMPLIANCE - Producer Responsibility

Producers must adhere to existing regulatory standards of federal, provincial/territorial (e.g. CFIA and Health Canada) and local governments for all aspects of honey production and processing. In following the voluntary ***CBISQT*** Program, producers and producer-packers are required to tailor the established on-farm food safety practices and record keeping requirements described throughout this Manual with their own operation. In following the ***CBISQT*** Program, producers and producer-packers must complete the *Producer Responsibility: Statement of Intent* **- FORM 0.0.1** and all other relevant **GPPs** and related documents[10] as described within this Manual.

[9] Producers, beekeepers and producer-packers are synonymous with the terms *producers/owners* or *person responsible* throughout this manual. See the **Glossary of Terms** for a complete description of all terms used in this Manual.

[10] Always refer to the latest version of the ***CBISQT*** Program and the CHC web site at *http://www.honeycouncil.ca* for further updates.

GPP 1 – APIARY MANAGEMENT:
LOCATION, OFF-HIVE PEST CONTROL, HIVE EQUIPMENT MAINTENANCE/CLEANING AND WASTE DISPOSAL

1.1 PURPOSE AND SCOPE

1.1.1 Managing the local foraging sources, environment and related activities occurring within the apiary, especially events associated with off-hive pest control, hive maintenance and waste disposal (e.g. used supers, frames, tools and/or instruments), are important control points in the production of raw honey under the ***CBISQT*** Program. The purpose of **GPP 1** is to provide management guidelines to prevent or reduce the risk of potential contamination of raw honey from food safety hazards associated with such events associated with management of the apiary.

1.1.2 **GPP 1** addresses the sources and management procedures of potential biological and chemical hazards within the apiary environment that could negatively affect the food safety of raw honey before, during and following the active season of honey production.

1.2 RESPONSIBILITIES AND QUALIFICATIONS

1.2.1 The *Producer/Owner* has the overall responsibility for implementing **GPP 1** based on their capabilities, knowledge of food safety and regulatory requirements, and technical experience. These duties include ensuring that:

a) all relevant personnel are aware of hazards associated with management of the apiary and take appropriate measures with respect to maintenance procedures for hive equipment[11], monitoring and controlling pests, and managing hive activities and waste generated within the apiary to limit robbing behaviour[12].

b) all procedures associated with **GPP 1** are conducted in a safe and sanitary manner to reduce the risk of biological, chemical and/or physical contamination to honey,

c) designated personnel conducting tasks associated with **GPP 1** are effectively supervised,

d) monitoring, corrective action and record keeping procedures for **GPP 1** are communicated, understood and followed correctly by all relevant personnel, and

e) records related to **GPP 1** are effectively documented and controlled.

1.2.2 All designated personnel following **GPP1** must have a complete understanding of the described hazards and relevant procedures, and have the appropriate training regarding these procedures.

1.2.3 All designated personnel are responsible for reporting problems (hazardous incidents) from **GPP 1** to the *Producer/Owner*.

1.3 FOOD SAFETY HAZARDS

1.3.1 **Apiary Location** - Residues of toxic environmental pollutants (e.g. polychlorinated biphenyls (PCBs), heavy metals (e.g. lead)) and farm chemicals, from agricultural or industrial sites (e.g. dumps, golf courses, petrochemical facilities, etc.) in proximity to apiaries, incorrect application of off-hive pest control

[11] Hive equipment includes wood, plastic or metal equipment (e.g. supers, frames, hive tools and/or instruments), and/or wax materials (e.g. foundation).

[12] Bees may rob honey from weaker colonies in situations where local supplies of nectar are scarce, or will seek more easily accessible food sources if exposed honey or open sources of feed supplements (e.g. sugar water) are readily available because of incorrect hive management or waste disposal practices.

products within the apiary (e.g. wrong product, rate, method or time of application) or from indirect exposure (e.g. spray drift, irrigation, flooding) in the vicinity of the colonies, can lead to the contamination of raw honey before, during and following the active season and have potential[13] as foodborne hazards to human consumers.

1.3.2 **Foraging Sources** - Be aware that a small number of plant nectar sources in Canada, including narrow leaf milk vetch (*Astragalus pectinatus*), mountain laurel (*Kalmia* sp.), and certain plant varieties within the families Boraginaceae, Compositae, Ericaceae (e.g. rhododendrons and azaleas), Leguminosae and Ranunculaceae (e.g. tansy ragwort (*Senecio jacobaea*), produce biotoxins (e.g. grayanotoxin among other pyrrolizidine alkaloids (PAs)) which have the potential to be contaminants of raw honey and are reportedly toxic to human consumers[14].

1.3.3 **Off-Hive Pest Control** – Contamination by residues of off-hive pest management products (e.g. pesticides) as a result of incorrect product usage or method of application.

1.3.4 **Maintenance of Hive Equipment**

a) Contamination by residues of chemicals (e.g. petrochemical-based products) as a result of incorrect product usage or method of application (e.g. wrong maintenance product, method of repair or mishandling).

b) Contamination by extraneous materials (e.g. metal, glass, rock/sand) as a result of incorrect maintenance (e.g. wrong method of repair or mishandling).

1.3.5 **Cleaning/Sanitizing of Hive Equipment**

a) Contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) as a result of faulty (e.g. non-routine or inadequate) cleaning or sanitation practices.

b) Contamination by residues of chemicals (e.g. sanitation/cleaning products) as a result of incorrect product usage or method of application (e.g. wrong product or rate of application).

1.3.6 **Waste Disposal** (**Used Hive Equipment**) **–** Contamination by residues of chemicals (e.g. maintenance products, medications) in used hive equipment (with contaminated honey/comb) as a result of incorrect disposal.

1.4 ACCEPTABLE LIMITS FOR CONTROL MUST DO

1.4.1 **Off-Hive Pest Control** – All pest management products are used according to label instructions.

1.4.2 **Maintenance of Hive Equipment**

a) Maintenance chemicals for hive equipment are only used according to label instructions.

b) No hive equipment contaminated by extraneous material from incorrect maintenance is used for honey production.

[13] Among farm chemicals (e.g. oils, petrochemical-based maintenance products, cleaning/sanitation compounds and pesticides), many insecticides are highly toxic to foraging bees and generally kill foragers before they return to contaminate honey within the hive. However, the science is unknown that field application of insecticides is a food safety hazard for honey products.

[14] To date, there are no reports of this risk to consumers of honey products in Canada.

1.4.3 **Cleaning/Sanitizing of Hive Equipment -** Only hive equipment cleaned or sanitized according to product label instructions is used.

1.4.4 **Waste Disposal (Used Hive Equipment) -** All hive equipment, and related honey and comb contaminants, are disposed of in a manner consistent with all applicable regulations, including preventing the contamination of raw honey from bee robbing or other sources of contamination.

1.5 CONTROL PROCEDURES

1.5.1 Apiary Location

a) Before the active season of nectar flow and honey production, the location of apiaries (and appropriate livestock stocking rates) should be determined in relation to the local foraging sources, environment and prevailing floral conditions (e.g. abundant nectar and pollen sources to limit robbing behaviour) as determined through regular observations within the environment and referring to historical production records where available.

b) Avoid locating apiaries near environments where air-, food- or water -borne contaminants from industrial activity, sewage, pollution or flooding could heighten the risk of contamination of raw honey before, during or after the active foraging season.

c) Agricultural activities occurring on-farm and on lease land should be observed weekly during the active season (or more frequently as warranted) to provide an awareness of agricultural practices in the surrounding area (e.g. pesticide spray drift, contamination of incoming water) and to recognize and minimize hazards to foraging bees and honey within the hive.

1.5.2 **Foraging Sources** - Where warranted for uncontrolled land used for bee foraging sources, it is recommended that the producer have a contract, agreement, or letter of understanding with adjacent landowners for notification and responsible use of hazardous pest management products (e.g. pesticides) to limit bee activity among contaminated forage sources, agricultural activities near the apiary, or other outside influences (e.g. wetlands, power lines, wastelands, adjacent property, etc.) that could affect the food safety assurance of raw honey.

1.5.3 Off-Hive Pest Control

a) MUST DO Residues of pesticides from incorrect application of chemical products (e.g. wrong product, rate, method or time of application) used off-hive for pests[15] within the apiary when maintaining colonies, can lead to the contamination of raw honey before, during and following the active season and have potential as foodborne hazards to human consumers. Before the active season, ensure that all pest control activities used within the apiary to control off-hive pests, including the use of all off-hive pesticides and poison bait stations, are registered/approved and used following manufacturer's instructions to avoid incorrect product usage or method of application and to eliminate opportunities for cross-contamination of raw honey.

b) MUST DO All pest control measures targeting vertebrate pests must be in compliance with federal and/or provincial Wildlife Acts and Regulations, where applicable, that govern the stressing, capturing or killing

[15] Vertebrate pests including bears (*Ursus* spp.), striped skunks (*Mephitis mephitis*), and house mice (*Mus musculus*), are key off-hive pests of apiaries responsible contributing to both destruction of hive boxes and frames and contamination of honey and bee brood. Bear and skunk feeding damage is most prevalent during honey flow, whereas house mice enter hives in later autumn or winter and consume bee brood and stored honey and pollen, contaminating hives with feces and potentially pathogenic microorganisms.

of wildlife.

c) MUST DO Where possible, avoid conducting off-hive pest management activities (e.g. pesticide application) during the active season where there is a greater risk of contaminating raw honey. In cases where off-hive pests are a continuous nuisance during the active season, adopt preventative measures ranging from repellents, poisoning, trapping and killing, to relocation of hives, depending upon the risk of contamination.

1.5.4 **Maintenance of Hive Equipment**

a) MUST DO Ensure all hives and related hive equipment is maintained in accordance with manufacturer's instructions to prevent malfunction, contamination from incorrect maintenance product used, method of repair, or mishandling.

b) MUST DO A regular maintenance program for hive equipment, tools and related beekeeping instruments should be in place to ensure beekeeping equipment is fully functional and maintained correctly before or following the active season.

c) MUST DO Avoid conducting maintenance activities during the active season where there is a greater risk of contaminating raw honey.

d) MUST DO The maintenance program following the active season should be conducted by correctly trained personnel to prevent contamination of honey products from residues of chemical (e.g. paint, varnish, wood preservatives and other petrochemical-based product residues such as oils and lubricants) or physical contaminants (e.g. metal or wood fragments) during inspection, handling or maintenance activities.

1.5.5 MUST DO **Cleaning/Sanitizing of Hive Equipment** - Following use, (before or following the active season) ensure that all hive equipment, tools, and related beekeeping instruments are correctly cleaned or sanitized (e.g. appropriate cleaning/sanitizing product used and method of application), as warranted, to prevent contamination of honey products from biological or chemical hazards.

1.5.6 **Waste Disposal (Used Hive Equipment)**

a) MUST DO Recognize the risk of introduction and/or transmission of pathogens and other hazardous agents from used hive equipment. Equipment contaminated with waste chemicals generated from off-hive the control pests, or maintenance products used to maintain surfaces and hive equipment must not become contaminants to honey supers, feed and water, work surfaces and personnel.

b) MUST DO Ensure that no brood or honeycomb, or other used hive equipment and materials, are disposed of within the apiary site. Upon removal from the hive, all such materials must be disposed of promptly in sealed containers or other bee-proof enclosures.

c) MUST DO All used wood, plastic or metal equipment (e.g. supers, frames, tools and/or instruments), and/or wax materials generated by the farm operation that is intended as waste, must be removed, transported, stored, and disposed of correctly in accordance with existing legislation, where applicable.

d) MUST DO Dispose of all used hive equipment in a manner that reduces the direct or indirect incidence and occurrence of food-borne pathogens (e.g. spores of *C. botulinum*) and chemical contaminants (e.g. petrochemical-based products, other farm chemicals, off-hive pest control products) to honey products and the apiary environment.

e) MUST DO Waste disposal of hive equipment (contaminated with honey/comb) must not be conducive to robbing from worker bees, proliferation of pest species (e.g. rodents, birds, and insects) within the local surroundings, or other environmental contamination.

1.6 MONITORING PROCEDURES

1.6.1 **Apiary Location -** Inspect the apiary before the start of each active season, and every seven (7) to ten (10) days, or more frequently as required, during the active season to observe the effectiveness of the location in sustaining colonies, and to identify potential problems within the apiary environment that could require continued surveillance or preventative corrective action (e.g. apiary relocation).

1.6.2 **Foraging Sources -** Inspect surrounding foraging sources before the start of each active season, and every seven (7) to ten (10) days, or more frequently as required, during the active season to observe the effectiveness of the foraging sources in sustaining colonies, and to identify potential problems within the foraging environment that could require continued surveillance or preventative corrective action (e.g. apiary relocation).

1.6.3 MUST DO **Off-Hive Pest Control** - During the maintenance of colonies, inspect the apiary for signs of off-pest activity every seven (7) to ten (10) days, or more frequently as required, during the active season to avoid pest entry or contamination and effectively time control measures. Off-hive pest control activities carried out within the apiary that may affect the food safety assurance of honey, related to monitoring pest activity, must be documented in the *Off-Hive Pest Control – Monitoring and Corrective Action Record* (**FORM 1.0.2**).

1.6.4 **Maintenance of Hive Equipment**

a) MUST DO Inspect and confirm the condition and integrity of all hive equipment, including beekeeping tools and related instruments, before the active season to ensure equipment is fully functional and correctly maintained before and following reuse. Inspect hives and related equipment associated with apiary every seven (7) to ten (10) days, or more frequently as required, during the active season to ensure all hive equipment is fully operational. All hive maintenance activity is documented in the *Apiary – Monitoring and Corrective Action Record* (**FORM 1.0.1**).

b) MUST DO Confirm by direct observation of personnel, at least once before the active season, that all maintenance procedures, chemicals, and schedules for hive equipment are followed correctly according to manufacturers' instructions and/or accepted practices. Review the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) for correctness before allowing any personnel to conduct procedures associated with the maintenance of hive equipment; especially during control points associated with the use of maintenance chemicals and handling procedures to prevent contamination by extraneous materials. Maintenance activities carried out within the apiary that could affect the food safety assurance of honey, including wrong method of repair or mishandling, must be documented in the *Apiary – Monitoring and Corrective Action Record* (**FORM 1.0.1**).

1.6.5 MUST DO **Cleaning/Sanitizing of Hive Equipment -** All hive equipment, beekeeping tools and related instruments must be inspected at monthly intervals (or more frequently as warranted during the production cycle) to ensure equipment is clean and/or sanitary (where warranted) in order to prevent or otherwise, minimize the risk of contamination of raw honey. Confirm by direct observation of personnel, at least once before the start of the active season, that all cleaning and sanitation procedures and schedules for hive equipment is followed correctly according to manufacturers' instructions and accepted practices. Cleaning and/or sanitizing activities carried out on hive equipment that may affect the food safety assurance of raw honey must be documented in the *Apiary – Monitoring and Corrective Action Record* (**FORM 1.0.1**).

1.6.6 MUST DO **Waste Disposal (Used Hive Equipment) -** Inspect and confirm the accuracy, integrity and safety of waste disposal activities associated with used hive equipment by self-inspection and through record keeping (*Waste Shipping Lot Record* (**FORM 9.0.4**)) in cases where raw honey is disposed of, at monthly intervals (or more frequently as warranted during the active season or production cycle) in order to monitor any disposal practice that potentially could contaminate raw honey.

1.7 CORRECTIVE ACTION PROCEDURES

1.7.1 **Apiary Location -** Assess and determine the nature of the any problems associated with the apiary at the location where the problem occurs, at the time of monitoring, or when the problem is first detected. Note that corrective actions to prevent, to eliminate, or to reduce the prevalence of environmental contaminants (e.g. pesticides, polychlorinated biphenyls (PCBs), heavy metals or industrial chemicals) to an acceptable level are not feasible. In cases where there is a recognized risk of contamination, relocate apiaries, or take other measures before or following the active season, to avoid contamination of raw honey.

1.7.2 **Foraging Sources –** Given that bees forage for nectar and pollen from diverse agricultural crops and wild plants over a search area that could exceed ten (10) kilometers from the apiary, it is not possible to control access to foraging sources. However, where possible, know where foraging generally occurs and before or during the active season, avoid or relocation apiaries that are close to foraging sources where there is a risk of contamination of raw honey by residues of chemicals (e.g. pesticides), environmental pollutants (from agricultural or industrial activity) or toxic plants (e.g. golf courses, ornamental gardens).

1.7.3 MUST DO **Off-Hive Pest Control** - Assess and determine the nature of the any problems associated with off-hive pest control within the apiary at the location where the problem occurs, at the time of monitoring, or when the problem, or error, is first detected. Note that any corrective actions to prevent, to eliminate, or to reduce pest problems must be documented in the *Off-Hive Pest Control – Monitoring and Corrective Action Record* (**FORM 1.0.2**). These actions may include isolation and disposal of contaminated hive equipment and raw honey from incorrect off-hive pest management activities. In cases where contaminated honey is discarded with used hive equipment, dispose in a recognized waste facility and document within the *Waste Shipping Lot Record* (**FORM 9.0.4**). For disposal of raw honey refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING**.

1.7.4 MUST DO **Maintenance of Hive Equipment** - Assess and determine the nature of the any problems associated with the correct maintenance or functioning of hive equipment at the location where the problem occurs, at the time of monitoring, or when the problem, or error, is first detected. Note that any corrective actions to prevent, to eliminate, or to reduce problems associated with maintenance of hive equipment must be documented in the *Apiary – Monitoring and Corrective Action Record* (**FORM 1.0.1**), as warranted. These actions may include isolation and disposal of contaminated hive equipment and raw honey from incorrect maintenance activities. Honey products that are rejected as a result of incorrect maintenance procedures must be remediated for non-human consumption, or discarded in a recognized waste facility and

documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**).

1.7.5 MUST DO **Cleaning/Sanitation of Hive Equipment** - Assess and determine the nature of any problems associated with cleaning or sanitizing (where warranted) of hive equipment at the location where the problem occurs, at the time of monitoring, or when the problem, or error, is first detected. Note that any corrective actions to prevent, to eliminate, or to reduce pest problems must be documented in the *Apiary – Monitoring and Corrective Action Record* (**FORM 1.0.1**), as warranted. These actions may include isolation and disposal of contaminated hive equipment and raw honey from incorrect cleaning or sanitation activities.

1.7.6 **Waste Disposal (Used Hive Equipment)**

a) MUST DO In cases where contaminated honey is discarded with used hive equipment, dispose in a recognized waste facility and document within the *Waste Shipping Lot Record* (**FORM 9.0.4**). For disposal of raw honey refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING**.

b) MUST DO If contamination or chemical spills occurs within the apiary ensure that contaminants and affected hive equipment is promptly and correctly sanitized or cleaned when noticed, or disposed of correctly (Follow **GPP 9 –FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL, AND WASTE DISPOSAL**). Incidents of possible contamination and all corrective action taken to eliminate or prevent any hazards to the apiary environment, including hives, and related feed and water supplies, must be documented in the *Apiary – Monitoring and Corrective Action Record* (**FORM 1.0.1**).

c) MUST DO If there are indications on the farm operation that suggest potential environmental contamination from hazardous agents, then tests of soil, water, air or livestock may be warranted. All test results from third parties should be recorded within the *Testing Record* (**FORM 1.0.3**) and referenced to corrective actions in the *Apiary – Monitoring and Corrective Action Record* (**FORM 1.0.1**), as warranted.

1.8 TRAINING PROCEDURES

1.8.1 MUST DO Ensure that personnel are trained in correct off-hive pest management, hive equipment maintenance/cleaning and waste disposal procedures, in recognizing hazards associated with apiary management, and in controlling hazards related to **GPP 1**, in order to ensure accuracy and compliance with written procedures and practices and record keeping. Document and monitor training in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1)**.

1.8.2 MUST DO Visually confirm by direct observation of personnel at least once during the implementation of **GPP 1**, and more frequently as warranted by the control procedure (e.g. before the start of each season or active season or processing cycle), that procedures are followed correctly, that personnel are competent in meeting the requirements of **GPP 1**, and to identify potential problems areas that require continued training as documented in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1)**.

1.8.3 MUST DO Re-train any personnel not following the procedures of **GPP 1** and document in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) in accordance with **GPP 11 – PERSONNEL: CAPABILITIES, QUALIFICATIONS AND PERSONAL HYGIENE**.

1.8.4 

Review compliance to procedures at least once annually to confirm the effectiveness of **GPP 1**, to identify aspects requiring improvement, and to assess the need for additional training.

1.9 RECORD KEEPING PROCEDURES

1.9.1 Review compliance to record keeping procedures annually, or more frequently as warranted by the control procedure (e.g. before the start of each active season or processing cycle), in order to provide information about the effectiveness of record keeping.

1.9.2 Ensure that all personnel following **GPP 1** are trained in record keeping, in order to ensure accuracy and compliance with written procedures. Visually confirm by direct observation of personnel at least once, (preferably before the active season or processing cycle) that record keeping procedures are followed correctly for all aspects of **GPP 1**, and in accordance with procedures detailed in **GPP 12 – RECORD CONTROL, TRACEABILITY AND PRODUCT RECALL.**

1.9.3 Ensure that all farm records specified and provided in **GPP 1** are completed (i.e. signed and dated) and updated as required and maintained for at least eight (8) years by the producer/owner to facilitate traceability and/or product recall.

1.10 RECORDS

- FORM 1.0.1 Apiary - Monitoring and Corrective Action Record
- FORM 1.0.2 Off-Hive Pest Control – Monitoring and Corrective Action Record
- FORM 1.0.3 Testing Record

1.11 CROSS-REFERENCED RECORDS

- FORM 9.0.4 Waste Shipping Lot Record
- FORM 11.0.1 Personnel Training – Monitoring and Corrective Action Record

GPP 2 – RECEIVING INPUTS

2.1 PURPOSE AND SCOPE

2.1.1 Most food safety hazards can be avoided initially by maintaining good control over the condition and acceptability of inputs arriving on-farm. The purpose of **GPP 2** is to provide guidelines to prevent or reduce the risk of contamination of raw honey associated with receiving the wrong content and/or condition of inputs. Visual inspection of farm inputs at receiving, especially to confirm correct identification, food grade specifications[16] and good condition, is pivotal to the control process under the ***CBISQT*** Program.

2.1.2 **GPP 2** addresses sources of potential biological and chemical hazards, and related good practices for the prevention or control of such hazards, when receiving *feed supplements, hive equipment, farm chemicals*, *medications*, *packaging materials* and *processing equipment* on-farm. For procedures associated with receiving *raw honey* inputs refer to **GPP 7** – **RAW HONEY: RECEIVING, STORING. EXTRACTING AND PROCESSING**. For procedures associated with receiving water refer to **GPP 10 – POTABLE WATER MANAGEMENT.**

2.2 CTS RESPONSIBILITIES AND QUALIFICATIONS

2.2.1 The *Producer/Owner* has the overall responsibility for implementing **GPP 2** based on their capabilities, knowledge of food safety and regulatory requirements, and technical experience. These duties include ensuring that:

a) all farm inputs are received from reputable suppliers and intended to be used in specific ways as determined by supplier's declaration, manufacturer's instructions and/or label directions, to ensure optimum effectiveness and safety,

b) only medications and related treatments (e.g. antibiotics, miticides and pest monitoring aids) from reputable suppliers are received, as verified against purchase orders, and are approved for apiculture (recommended or authorized by a Provincial Apiculturist or veterinarian[17]),

c) all used hive and processing equipment is received from reputable suppliers, and is correctly manufactured, reconditioned and decontaminated as determined by supplier's declaration, manufacturer's instructions and/or label directions, to ensure optimum effectiveness and safety,

d) designated personnel conducting tasks associated with **GPP 2** are effectively supervised,

e) monitoring, corrective action and record keeping procedures for **GPP 2** are communicated, understood and followed correctly by all relevant personnel, and

f) all purchase orders, supplier's declarations, product labels, package inserts, Material Safety Data Sheets (MSDSs) for hazardous chemical products received, and other records related to **GPP 2**, are effectively documented and controlled.

2.2.2 All designated personnel following **GPP 2** must have a complete understanding of the described hazards and relevant control procedures, and have the appropriate training regarding these procedures.

2.2.3 All designated personnel are responsible for reporting problems (hazardous incidents) from **GPP 2** to the

[16] The term "***food grade***" used throughout this Manual refers to material approved and/or evaluated by the CFIA and Health Canada for food use under regulations (e.g. Food and Drugs Act).

[17] Receiving and usage of unapproved or off-label medications, outside of the approval of a Provincial Apiculturist or not under a valid veterinarian-client-patient relationship (VCPR), is not acceptable.

Producer/Owner.

2.3 FOOD SAFETY HAZARDS

2.3.1 Contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) as a result of unsanitary transport carriers, equipment and/or mishandling in transit.

2.3.2 Contamination by residues of chemicals (e.g. petrochemical-based products) as a result of fouled transport carriers, equipment and/or mishandling in transit.

2.3.3 Contamination at source by residues of chemicals (e.g. petrochemical-based products, lead) in bulk and/or small containers as a result of incorrectly manufactured (e.g. non Food and Drug Act/Regulations-compliant) containers, coatings , plastic liners gaskets, lids, packaging, etc..

2.3.4 Contamination by extraneous material (e.g. metal, glass, rock/sand) as a result of fouled transport carriers, equipment and/or mishandling in transit.

2.3.5 Contamination by erroneous or unauthorized medications as a result of wrong product, incorrect identification, and/or incomplete documentation upon receipt.

2.3.6 Contamination at source by residues of chemicals (e.g. petrochemical-based products) as a result of incorrectly manufactured (e.g. non Food and Drug Act/Regulations-compliant) packaging accessories (e.g. packaging liners, lids, sealing wax, etc.) for small containers.

2.3.7 Contamination at source by extraneous material (e.g. metal, plastic, glass) as a result of incorrectly manufactured or reconditioned product (e.g. bulk metal, plastic drums/totes and/or small containers).

2.4 ACCEPTABLE LIMITS FOR CONTROL 

2.4.1 **Feed Supplements** - All feed supplement inputs that are damaged, punctured, or with indications of being cross-contaminated with chemicals (e.g. petrochemical-based products) as a result of fouled transport carriers, equipment and/or mishandling in transit are rejected for use upon delivery (not unloaded).

2.4.2 **Hive Equipment**

a) All hive equipment inputs that are damaged, punctured, or with indications of being cross-contaminated with chemicals (e.g. petrochemical-based products) as a result of fouled transport carriers, equipment and/or mishandling in transit are rejected for use upon delivery (not unloaded).

b) No hive equipment contaminated by extraneous materials (e.g. metal, glass, rock/sand) as a result of fouled transport carriers, equipment and/or mishandling in transit, are accepted on-farm.

c) Only correctly manufactured and/or reconditioned hive equipment, as determined by supplier's declaration, manufacturer's instructions and/or label directions, and visually inspected to be free of dirt, is accepted on-farm for the production of honey.

2.4.3 **Medications/Treatments**

a) Only approved/registered or authorized medications (e.g. antibiotics) and treatments (e.g. miticides) are accepted on-farm.

b) All medication/treatment inputs that are damaged, punctured, or with indications of being cross-

contaminated with chemicals (e.g. petrochemical-based products) as a result of fouled transport carriers, equipment and/or mishandling in transit are rejected for use upon delivery (not unloaded).

2.4.4 **Farm Chemicals** - All farm chemical inputs that are damaged, punctured, or with indications of being cross-contaminated with chemicals (e.g. petrochemical-based products) as a result of fouled transport carriers, equipment and/or mishandling in transit are rejected for use upon delivery (not unloaded).

2.4.5 **Packaging Materials**

a) Only new small containers and new, reconditioned or reused bulk containers, of food-grade quality and Food and Drug Act/Regulations-compliant, are used to pack honey.

b) Only reused bulk containers with known traceability (e.g. history of usage) are used to pack honey.

c) Only correctly reconditioned, cleaned and reusable bulk containers, free of pathogenic bacteria (e.g. spores *of Clostridium* spp., *Bacillus* spp.) are used to pack honey.

d) No packaging materials contaminated by pathogenic bacteria (e.g. *Clostridium* spp, *Bacillus* spp., *E. coli, Salmonella* spp.) as a result of unsanitary transport carriers, equipment and/or mishandling in transit are accepted on-farm.

e) All packaging material inputs that are damaged, punctured, or with indications of being cross-contaminated with chemicals (e.g. petrochemical-based products) as a result of fouled transport carriers, equipment and/or mishandling in transit are rejected for use upon delivery (not unloaded).

f) No packaging materials contaminated by extraneous material (e.g. metal, glass, rock/sand) as a result of fouled transport carriers, equipment, and/or mishandling in transit are accepted on-farm.

g) Only new packaging materials, of food-grade quality and Food and Drug Act/Regulations-compliant, are used to pack honey.

2.4.6 **Processing Equipment**

a) No new or reconditioned processing equipment, contaminated by pathogenic bacteria (e.g. *Clostridium* spp, *Bacillus* spp., *E. coli, Salmonella* spp.) as a result of unsanitary transport carriers, equipment and/or mishandling in transit are accepted on-farm.

b) No new or reconditioned processing equipment inputs, that are damaged, punctured, or with indications of being cross-contaminated with chemicals (e.g. petrochemical-based products) as a result of fouled transport carriers, equipment and/or mishandling in transit are rejected for use upon delivery (not unloaded)..

c) Only processing equipment free of contamination by extraneous material (e.g. metal, glass, rock/sand) as a result of fouled transport carriers, equipment and/or handling in transport, are accepted on-farm.

d) Only correctly manufactured and/or reconditioned processing equipment, as determined by supplier's declaration, manufacturer's instructions and/or label directions, and visually inspected to be free of dirt, is accepted on-farm for the processing of honey.

2.5 CONTROL PROCEDURES

2.5.1 Feed Supplements

a) MUST DO Ensure all feed inputs are visually inspected at the time of receipt on-farm in order to confirm product is clean and free of residues of chemicals (e.g. petrochemical-based products) as a result of unsafe transportation conditions (e.g. conditions that could result in contamination from biological, chemical and/or physical hazards), contaminated equipment or mishandling in transit.

b) MUST DO Only feed inputs, from reputable suppliers (preferably using HACCP-based good manufacturing or production practices), are received as verified against purchase orders and/or supplier's declarations.

c) Retain all receipts, invoices, bills of lading and/or packing slips and supplier declarations related to feed supplements in a secure location in accordance with **GPP 12 – RECORD CONTROL, TRACEABILITY AND PRODUCT RECALL.**

2.5.2 MUST DO **Hive Equipment -** All incoming new and/or reconditioned hive equipment (e.g. supers, frames, tools and/or instruments) and/or wax materials, must be visually inspected at the time of receipt in order to ensure product is clean (visually unsoiled), in good condition or repair and free of residues of chemicals (e.g. petrochemical-based products) and extraneous materials (e.g. metal, glass, rock/sand) as a result of fouled transport carriers, equipment or mishandling in transit. Extraneous soil or dirt must be removed (e.g. through scraping or brushing) if detected on any hive equipment inputs or associated pallets.

2.5.3 Medications/Treatments

a) MUST DO Only approved/registered medications, and related treatments, used in conformance with the practices described in **GPP 4 - LIVESTOCK HEALTH MANAGEMENT: HANDLING AND USE OF FEED SUPPLEMENTS AND MEDICATIONS**, are received, inventoried and used, as verified against purchase orders from reputable suppliers.

b) MUST DO All antibiotics and other veterinary drugs received are approved/registered with Health Canada's Veterinary Drugs Directorate (VDD) for the treatment of bee diseases, or as authorized/approved for use by the Provincial Apiculturist (or equivalent), and must have a Drug Identification Number (DIN). Related treatments, including pesticides used for the treatment of tracheal mites and for pest control within the apiary must be approved/registered with the Health Canada Pest Management Regulatory Agency (PMRA) and must have a Pest Control Product (PCP) number or approval for use from the Minister of Health. Refer to the Health Canada's Drug Product Database for veterinary drugs approved for use in Canada (*www.hc-sc.gc.ca/dhp-mps/prodpharma/databasdon/index-eng.php*) and PMRA's Pesticide Product Information Database (*www.hc-sc.gc.ca/cps-spc/pest/part/protect-proteger/publi-regist/index-eng.php*) for pesticides approved for use in Canada.

c) MUST DO All incoming medications, related treatments, and documentation (e.g. prescriptions, invoices and/or receipts), are examined for correctness at the time of receipt (e.g. correct DIN for antibiotics, PCP registration numbers for pesticide treatments, "food grade" acceptability where required, within limits of product expiry date, unopened and undamaged), and that all supplier's declaration documents are collected, checked for correctness, and retained, as warranted.

d) MUST DO A documented inventory must be kept of all acceptable incoming materials and records including date received, quantity, supplier and lot code for veterinary medicines, and other related approved/registered treatments. Record all inventory information within the *Medications/Treatments – Inventory and Disposal Record* (**FORM 4.0.1**).

e) MUST DO Retain all receipts, invoices, bills of lading and/or packing slips and supplier declarations related to the receipt of medications/treatments in a secure location in accordance with **GPP 12 – RECORD CONTROL, TRACEABILITY AND PRODUCT RECALL.**

f) MUST DO All medications/treatments must be visually inspected at the time of receipt in order to ensure product is clean and free of any hazardous chemical contaminants as a result of fouled transport carriers, equipment and/or mishandling in transit.

2.5.4 Farm Chemicals

a) MUST DO All farm chemical inputs, including, maintenance chemicals, non-hive pesticides and cleaning/sanitation chemicals, must be received on-farm in a clean condition and free of residues of chemical contaminants (e.g. petrochemical-based products) that could potentially cross-contaminate honey products, as a result of unsafe transportation conditions (e.g. conditions that could result in contamination from biological, chemical and/or physical hazards), faulty equipment or mishandling in transit.

b) Only farm chemicals, from reputable suppliers should be received, as verified against purchase orders and/or supplier`s declarations, or inputs are rejected and returned to the supplier.

c) Retain all receipts, invoices, bills of lading and/or packing slips and supplier declarations related to the receipt of farm chemicals in a secure location in accordance with **GPP 12 – RECORD CONTROL, TRACEABILITY AND PRODUCT RECALL.**

2.5.5 Packaging Materials

a) MUST DO All incoming packaging materials at the time of receipt are clean, in good condition or repair and free of any hazardous biological, chemical and/or physical contaminants as a result of incorrect transport carriers, faulty equipment, or mishandling in transit.

b) MUST DO Only new small (0.15 – 5.0 kg) containers correctly manufactured and suitable for use in packing honey products (food-grade quality, Food and Drug Act/Regulations-compliant[18], clean/sanitary and prescribed size) are received.

c) MUST DO Only bulk containers (i.e. capacity greater than 5 kg) containers correctly manufactured and suitable for use in packing honey products (food-grade quality, Food and Drug Act/Regulations-compliant[18], clean and sanitary, and prescribed size) are received. In cases where material is not listed, a

[18] Coatings, paints, plastic, detergents, disinfectants, lubricants and other materials used for food contact surfaces, equipment or as maintenance inputs must conform to Canadian Food and Drug Act/Regulations. For example, the CFIA's "*Reference Listing of Accepted Construction, Packaging Materials and Non-Food Chemical Products*" (CFIA 2012. Reference Listing of Accepted Construction Materials, Packaging Materials and Non-Food Chemical Products (http://active.inspection.gc.ca/scripts/fssa/reference/reference.asp?lang=e) *(accessed 17 May 2012)*).

letter of no objection from Health Canada and/or a letter of guarantee from the supplier must be on file. To prevent possible lead-based paint contaminants or solder from foreign drums, it is recommended that only drums and totes that are new and clean or have a supplier's letter of compliance, are used. In addition, bulk containers received on-farm must be inspected and either washed before storage (see **GPP 3.7.5**) or filling in order to remove pathogenic bacteria (e.g. spores *of Clostridium* spp., *Bacillus* spp.) and other hazardous materials. Bulk containers may be filled without washing at a later process step if new, or visually clean, sound and reusable if reconditioned, as determined by the producer upon inspection. Ensure that all bulk containers are inspected to determine if washing is required before storage/filling. Always refer to the latest version of the CHC's **Honey Industry Bulk Container Standard** (see *www.honeycouncil.ca*).

d) MUST DO Ensure records required for new and reconditioned bulk containers confirm the identification and correctness of bulk containers, that empty containers are clean, free of extraneous material, and provide correct logistical information with known history (e.g. usage and/or traceability) in accordance with the latest version of the CHC's **Honey Industry Bulk Container Standard**. Ensure that all old label identifiers on bulk containers are removed or covered over, if present, before reuse. Retain all relevant information on the identification and history of bulk containers in a secure location in accordance with **GPP 12 – RECORD CONTROL, TRACEABILITY AND PRODUCT RECALL.**

e) MUST DO All packaging materials and containers must be visually inspected for particulate matter to ensure there is no physical contamination. All bulk containers (e.g. drums, totes, polyethylene liners) visibly contaminated with particulate matter (e.g. plant material, soil, wood, metal, non-metallic mineral matter, glass) wood, plastic, or metal fragments and/or broken glass in product received, are not acceptable. Any bulk containers with visible physical contaminants must be rejected and returned to the supplier, or re-cleaned, re-filtered (where remedial action is warranted and feasible) and re-inspected for acceptability. Refer to **GPP 8 – FINISHED HONEY: PACKING MANAGEMENT, STORAGE AND PRODUCT SHIPPING** in cases where glass contamination occurs.

f) MUST DO Ensure that only packaging accessories (e.g. packaging liners, lids, sealing wax, etc.) are correctly manufactured and suitable for use in packing honey products (food-grade quality, Food and Drug Act/Regulations-compliant and clean/sanitary) are received.

2.5.6 MUST DO **Processing Equipment -** All incoming processing equipment (e.g. extractors, uncapping equipment, tools, instruments and/or related parts) must be visually inspected at the time of receipt in order to ensure product is clean, in good condition or repair and free of any contaminants or damage during shipment.

2.6 MONITORING PROCEDURES

2.6.1 MUST DO Inspect transport carriers at time of arrival for cleanliness and each consignment for breakage, damage or signs of contamination (e.g. dirt, chemical residues) to confirm that incoming farm inputs used for beekeeping, honey processing or packing are correctly identified and acceptable according to condition, documentation and product use. Information related to receiving for all acceptable farm inputs must be documented on a continuing basis throughout the year, as frequently as required. Document acceptable inputs in the *Receiving - Monitoring and Corrective Action Record (***FORM 2.0.1**), the *Bulk Container Inspection and Corrective Action Record* **(FORM 2.0.2**), or the *Medications/Treatments - Inventory and Disposal Record* (**FORM 4.0.1**) before handling any product for inventory or immediate use.

2.6.2 MUST DO Examine all invoices, bills of lading, receipts, supplier's declarations and/ or affidavits of traceability for all accepted farm inputs at the time of receipt to confirm that such records have been

correctly signed to verify that product is correct as ordered and manufactured (e.g. Food and Drug Act/Regulations-compliant, CFIA Reference Listing of Accepted Construction Materials, Packaging Materials and Non-Food Chemical Products, or Health Canada letter of no objection). Ensure reconditioned (e.g. reused bulk containers) are in good condition (e.g. clean and correctly reconditioned, or rewashed as warranted) and traceable (e.g. reused bulk containers with a known history of usage). Ensure that all inputs are visually inspected to confirm acceptability (e.g. clean condition, correct product) before being inventoried and recorded on the *Receiving - Monitoring and Corrective Action Record (***FORM 2.0.1**), the *Bulk Container Inspection and Corrective Action Record* (**FORM 2.0.2**), or the *Medications/Treatments - Inventory and Disposal Record* (**FORM 4.0.1**).

2.6.3 Visually observe the condition of all receiving areas for biological, chemical (e.g. opened packaging, or spillage) and physical hazards (e.g. broken glass) on a weekly basis or more regularly, as warranted during the production cycle. Ongoing supporting good production practice programs should be in place and reviewed monthly for glass breakage (Refer to **GPP 8 – FINISHED HONEY: PACKING MANAGEMENT, STORAGE AND PRODUCT SHIPPING**) for disposal of honey (Refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING** and for sanitation/cleaning, pest control and waste disposal (Refer to **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL**).

2.7 CORRECTIVE ACTION PROCEDURES

2.7.1 MUST DO Assess and determine the nature of the any deviation in **GPP 2** at the location where the problem occurs, at the time of monitoring, or when the problem is first detected. Document any errors or problems that have been identified associated with **GPP 2** on the *Receiving – Monitoring and Corrective Action Record* (**FORM 2.0.1**). These actions may include isolation and disposal of contaminated inputs. Record what specific corrective action and preventative measures were taken, and the date of error.

2.7.2 MUST DO All incorrect inputs (e.g. inputs that are illegibly-labelled, damaged, punctured, non-verifiable against purchase orders and/or supplier's declarations, or where there are indications that inputs were contaminated with hazardous biological, chemical or physical agents as a result of unsafe transportation conditions) must be rejected for use upon delivery from the transportation carrier, not unloaded, and directly returned to the supplier. In the event that unacceptable material is received, the item must be labelled and set aside, or segregated, to prevent contamination until it can be returned to the supplier and recorded in the *Receiving – Monitoring and Corrective Action Record* (**FORM 2.0.1**), the *Bulk Container – Inspection and Corrective Action Record* (**FORM 2.0.2**) (in cases where used bulk containers must be reconditioned and cleaned), or the *Medications/Treatments – Inventory and Disposal Record* (**FORM 4.0.1**), or disposed of by a method that will not cause a food safety hazard. All rejected product that is not returned to the supplier is discarded in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**). Follow **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL**, Provincial Regulations and contact the Provincial Apiculturist, where warranted.

2.7.3 MUST DO Ensure that all deviations and corrective action taken upon receipt of any medication or treatment is documented in the *Receiving - Monitoring and Corrective Action Record* (**FORM 2.0.1**). In the event that unacceptable medications are received, the item is labelled and set aside, or segregated to prevent contamination until it can be returned to the supplier and recorded (*Receiving - Monitoring and Corrective Action Record* (**FORM 2.0.1**). Incorrect inputs (i.e. contaminated or unapproved medications and treatments), inputs that are damaged, punctured, cross-contaminated or illegibly-labelled incoming materials as a result of unsafe transportation conditions (e.g. conditions that result in contamination from biological, chemical and/or physical hazards),, must be rejected for use upon delivery from the

transportation carrier (i.e. not unloaded), returned to the supplier upon delivery, and recorded in the *Receiving - Monitoring and Corrective Action Record* (**FORM 2.0.1**). All rejected product that is not returned to the supplier is discarded in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**).

2.7.4 MUST DO All chemical inputs on the farm operation including farm chemicals, pesticides, sanitizers and other materials, that are not received, identified or handled correctly (e.g. in accordance with manufacturer's label instructions), or are exposed to biological and/or chemical contaminants in transit or receipt as a result of direct contact, or indirectly from cross-contamination, are rejected for use. All deviations and corrective action taken to eliminate or prevent any biological, chemical and physical contaminants to receiving goods must be documented in the *Receiving - Monitoring and Corrective Action Record* (**FORM 2.0.1**).

2.7.5 MUST DO Reused bulk containers received on-farm with no known history of usage or contaminated, must be rejected for use upon delivery from the transportation carrier (not unloaded), returned to the supplier upon delivery, or disposed of by a method that will not cause a food safety hazard. All rejected product that is not returned to the supplier is discarded in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**) and referenced in the *Bulk Container - Inspection and Corrective Action Record* (**FORM 2.0.2**).

2.8 TRAINING PROCEDURES

2.8.1 MUST DO Ensure that personnel are trained in correct receiving procedures for farm inputs, in recognizing hazards associated with incorrect inputs, and in controlling hazards related to **GPP 2**, in order to ensure accuracy and compliance with written procedures and practices and record keeping. Document and monitor training in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1)**.

2.8.2 MUST DO Visually confirm by direct observation of personnel at least once during the receipt of farm inputs, and more frequently as warranted by the control procedure (e.g. before the start of each season or active season or processing cycle), that procedures are followed correctly for **GPP 2**, that personnel are competent in meeting the requirements of **GPP 2,** and to identify potential problems areas that require continued training as documented in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1)**.

2.8.3 MUST DO Re-train any personnel not following the procedures of **GPP 2** and document in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) in accordance with **GPP 11 – PERSONNEL: CAPABILITIES, QUALIFICATIONS AND PERSONAL HYGIENE**.

2.8.4 MUST DO Review compliance to procedures at least once annually to confirm the effectiveness of **GPP 2**, to identify aspects requiring improvement, and to assess the need for additional training.

2.9 RECORD KEEPING PROCEDURES

2.9.1 Review compliance to record keeping procedures annually, or more frequently as warranted by the control procedure (e.g. before the start of each active season or processing cycle), in order to provide information about the effectiveness of record keeping.

2.9.2 Ensure that all personnel following **GPP 2** are trained in record keeping, in order to ensure accuracy and compliance with written procedures. Visually confirm by direct observation of personnel at least once,

preferably before the active season or processing cycle, that record keeping procedures are followed correctly for all aspects of *GPP 2*, and in accordance with procedures detailed in **GPP 12 – RECORD CONTROL, TRACEABILITY AND PRODUCT RECALL.**

2.9.3 Ensure that all farm records specified and provided in **GPP 2** are completed (i.e. signed and dated) and updated as required and maintained for at least eight (8) years by the producer/owner to facilitate traceability and/or product recall.

2.10 RECORDS

- FORM 2.0.1 Receiving - Monitoring and Corrective Action Record
- FORM 2.0.2 Bulk Container Inspection and Corrective Action Record
- FORM 4.0.1 Medications/Treatments – Inventory and Disposal Record

2.11 CROSS-REFERENCED RECORDS

- FORM 9.0.4 Waste Shipping Lot Record
- FORM 11.0.1 Personnel Training – Monitoring and Corrective Action Record

GPP 3 – STORING INPUTS

3.1 PURPOSE AND SCOPE

3.1.1 Maintaining good control over the storage of on-farm inputs, including regular monitoring of storage areas to ensure the specifications of storage and the integrity of inputs are correct, is a fundamental component to the ***CBISQT*** Program. Frequent inspection of storage site, followed by appropriate pest management activities, can also decrease the likelihood of pest build up and diminish the risk of contamination from pathogenic bacteria in dust and/or excrement of wild/domestic animals, and limit the risk of physical hazards from errors in storage or handling.

3.1.2 The purpose of **GPP 3** is to provide guidelines to prevent or reduce the risk of contamination of honey associated with inadequate storage conditions or location. Safe handling and placement of inputs within segregated storage area locations (see **Table 3.1** below for a listing of recommended storage areas for various farm inputs) can reduce contamination or eliminate opportunities for cross-contamination of honey products and thus lower the food safety risk to consumers.

3.1.3 **Table 3.1 RECOMMENDED STORAGE AREA LOCATIONS AND STORAGE ITEMS**

AREA	STORAGE ITEM
1	Livestock[19] Hive and Processing Equipment Feed Supplements[20] and Potable Water
2	Medications/Treatments
3	Raw Honey (on- and/or off-farm full honey supers and/or bulk containers)
4	Bee Repellents Farm Chemicals (maintenance, cleaning/sanitation and off-hive pest control products)
5	Packaging Materials (small, large containers and labels) Finished Honey Products

3.1.4 **GPP 3** addresses sources of potential biological, chemical and physical hazards, and related good practices for the prevention or control of such hazards, during the on-farm storage of *hive equipment*, *feed supplements*, *potable water*, *medications* and *repellents, farm chemicals, packaging materials* and *processing equipment.* For procedures associated with storing raw honey, in **Area 3**, and finished honey in **Area 5**, refer to **GPP 7 - RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING** and **GPP 8 - FINISHED HONEY: PACKING MANAGEMENT, STORAGE AND PRODUCT SHIPPING**, respectively.

3.2 RESPONSIBILITIES AND QUALIFICATIONS

3.2.1 The ***Producer/Owner*** has the overall responsibility for implementing **GPP 3** based on their capabilities, knowledge of food safety and regulatory requirements, and technical experience. These duties include ensuring that:

a) all farm inputs are stored under segregated conditions and specific locations (see **Table 3.1**) on the farm operation in accordance with designated storage requirements for each input, in order to achieve optimum storage effectiveness and eliminate opportunities for cross-contamination

[19] There are no food safety hazards associated with the storage of livestock or indoor overwintering that are addressed by the ***CBISQT*** Program.

[20] Stored feed supplements refers to various dry or liquid commercial ingredients including additive-free granulated sucrose (white table sugar), liquid high-fructose corn syrup (HFCS), and/or liquid sucrose used to feed bees at various times of the year.

among farm inputs during storage which may have negative effects on food safety assurance,

b) ongoing supporting programs during the process of storing inputs related to control of glass and other physical hazards (see **GPP 8 – FINISHED HONEY: PACKING MANAGEMENT, STORAGE AND PRODUCT SHIPPING**) and pest management (see **GPP 9 - FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL)** are in operation and effective through regular monitoring, corrective action and documentation,

c) designated personnel conducting tasks associated with **GPP 3** are effectively supervised,

d) monitoring, corrective action and record keeping procedures for **GPP 3** are communicated, understood and followed correctly by all relevant personnel, and

e) all records related to **GPP3** are effectively documented and controlled.

3.2.2 All designated personnel following **GPP 3** must have a complete understanding of the described hazards and relevant procedures, and have the appropriate training regarding these procedures.

3.2.3 All designated personnel are responsible for reporting problems (hazardous incidents) from **GPP 3** to the *Producer/Owner*.

3.3 FOOD SAFETY HAZARDS

3.3.1 Contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) in dust and/or excrement of wild/domestic animals (e.g. *E. coli*, *Salmonella* spp.) from unsanitary or fouled storage conditions or location.

3.3.2 Contamination by residues of chemicals (e.g. petrochemical-based products, pesticides), as a result of fouled storage conditions or location.

3.3.3 Contamination by extraneous material (e.g. glass, plastic, or metal fragments), as a result of fouled storage conditions, or mishandling during storage.

3.4 ACCEPTABLE LIMITS FOR CONTROL 

3.4.1 Hive Equipment (Area 1)

a) All hive equipment is stored under correct conditions to prevent contamination by pathogenic bacteria in dust (e.g. spores of *Clostridium* spp., *Bacillus* spp.) and/or excrement of wild/domestic animals (e.g. *E. coli*, *Salmonella* spp.) as a result of unsanitary storage conditions or location.

b) All hive equipment is stored in a distinct storage area isolated from inputs in other storage areas in order to eliminate opportunities for cross-contamination.

3.4.2 Processing Equipment (Area 1)

a) All processing equipment is stored under correct conditions to prevent contamination by pathogenic bacteria in dust (e.g. spores of *Clostridium* spp., *Bacillus* spp.) and/or excrement of wild/domestic animals (e.g. *E. coli*, *Salmonella* spp.) as a result of unsanitary storage conditions or location.

b) All processing equipment is stored in a distinct storage area isolated from inputs in other storage areas in order to eliminate opportunities for cross-contamination.

3.4.3 **Feed Supplements (Area 1)**

a) All feed supplements are stored under correct conditions to prevent contamination by pathogenic bacteria in dust (e.g. spores of *Clostridium* spp., *Bacillus* spp.) and/or excrement of wild/domestic animals (e.g. *E. coli, Salmonella* spp.) as a result of unsanitary storage conditions or location.

b) All feed supplements are stored in a distinct storage area isolated from inputs in other storage areas in order to eliminate opportunities for cross-contamination.

3.4.4 **Potable Water (Area 1)**

a) All water is stored under correct conditions to prevent contamination by pathogenic bacteria in dust (e.g. spores of *Clostridium* spp., *Bacillus* spp.) and/or excrement of wild/domestic animals (e.g. *E. coli, Salmonella* spp.) as a result of unsanitary storage conditions or location.

b) All water is stored in a distinct storage area isolated from inputs in other storage areas, in order to eliminate opportunities for cross-contamination.

3.4.5 **Medications/Treatments (Area 2) -** All medications/treatments are stored in accordance with manufacturers' label directions, in a distinct storage area isolated from inputs in other storage areas, in order to eliminate opportunities for cross-contamination.

3.4.6 **Bee Repellents (Area 4) -** All bee repellents are stored in accordance with manufacturers' label directions, in a distinct storage area isolated from inputs in other storage areas, in order to eliminate opportunities for cross-contamination.

3.4.7 **Farm Chemicals (Area 4)** - All farm chemicals are stored in accordance with manufacturers' label directions, in a distinct storage area isolated from inputs in other storage areas, in order to eliminate opportunities for cross-contamination.

3.4.8 **Packaging Materials (Area 5)**

a) All packaging materials, including new small containers or used, reconditioned and/or new bulk containers, are stored under conditions that prevent contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) in dust, dirt and/or excrement (e.g. *E. coli, Salmonella* spp.) of wild/domestic animals as a result of unsanitary storage conditions or location.

b) All packaging materials, including new small containers or used, reconditioned and/or new bulk containers, are stored in a distinct storage area isolated from inputs in other storage areas, in order to prevent cross-contamination by residues of chemicals.

c) All packaging materials are handled in a manner that prevents contamination by extraneous material (e.g. glass, metal, dust/dirt) as a result of mishandling during storage.

3.5 CONTROL PROCEDURES

3.5.1 **General Storage Conditions**

a) MUST DO All farm inputs must be stored in designated storage areas (see **Table 3.1**) under a clean and dry storage environment (e.g. stored above floor level to prevent water damage) at a temperature suitable for the storage item (as determined by manufacturer), protected from dust and

excrement of wild/domestic animals and free of chemical contaminants (e.g. farm chemicals, petrochemical-based products, medications, etc.) and extraneous materials such as glass or other physical hazards.

b) MUST DO All storage areas must have a regular schedule for pest monitoring and control as outlined in **GPP 9 FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL.**

c) MUST DO All storage areas must have a regular schedule for maintenance and cleaning/sanitation monitoring and control as outlined in **GPP 9 FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL**.

3.5.2 **Hive Equipment (Area 1)**

a) All hive equipment (e.g. honey supers) and related feeding devices are stored in a designated storage location under dust-free and clean conditions following handling procedures that avoid breakage and contamination from particulate matter.

b) Friction-top plastic feeding pails are stored under dust-free and clean conditions, following handling procedures that avoid breakage and contamination from particulate matter.

c) Following extraction and reboxing, empty supers and frames are returned to the field for reuse or are held in a designated storage location following correct procedures for cleaning and/or maintenance (Refer to **GPP 1 –APIARY MANAGEMENT: LOCATION, OFF-HIVE PEST CONTROL, HIVE EQUIPMENT MAINTENANCE/CLEANING AND WASTE DISPOSAL**). Note that empty supers subjected to extended freezing temperatures during storage will safely eliminate greater wax moth (*Galleria mellonella*) pests from comb[21].

3.5.3 MUST DO **Processing Equipment (Area 1) -** All processing equipment is stored in a designated storage location under conditions free from sources of biological pathogens (e.g. *E. coli* or *Salmonella* spp. from rodent or bird excrement), chemical contaminants (e.g. farm chemicals, petrochemical-based products, medicines and other treatments, etc.) and physical hazards.

3.5.4 **Feed Supplements (Area 1)**

a) MUST DO All feed supplements are stored in an appropriate designated storage location, at a recommended temperature and storage time, to prevent the risk of contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) in dust, dirt and/or excrement (e.g. *E. coli*, *Salmonella* spp.) of wild/domestic animals as a result of unsanitary storage conditions or location, and degradation of feed supplements from high temperatures[22] over an extended period of time.

[21] There are currently no approved/registered chemical treatments in Canada for wax moths in stored honeycomb. However, all life stages are susceptible in winter to rapid freezing under conditions of cold storage (e.g. -15° to -20°C (5°to -4°F) for 72h or greater).

[22] HFCS stored for prolonged periods or exposed to high temperature (>25°C (77°F) may have elevated levels of hydoxymethfurfural (HMF) that could contaminate honey and increase toxicity to bees. By comparison, the recommended storage temperature for unprocessed honey is below 10°C (50°F).

b) MUST DO Commercial pollen supplement patties[23], or dry supplement (e.g. pollen, soybean flour, soy meal, fish meal or protein powder) are potential human allergens and must be isolated and stored[24] in hygienic containers at controlled temperature in clean refrigerators or freezers to eliminate opportunities for contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) in dust, dirt and/or excrement (e.g. *E. coli*, *Salmonella* spp.) of wild/domestic animals as a result of unsanitary storage conditions or location, or cross-contamination with other feed supplements.

c) Ensure all stored feed supplements are subject to inventory rotation where applicable.

d) When choosing pollen substitute diets, note that certain ingredients (e.g. soybean meal) acting alone, or mixed together with pollen from some plant sources (including honey itself), can evoke an allergic reaction in a rare number of hyper-sensitized human consumers[25].

3.5.5 **Potable Water (Area 1)**

a) MUST DO Water that has been treated and deemed potable must be stored in suitable sealed containers that prevent contamination from handling or the storage environment**.** Potable water, where not distributed directly from a municipal or well supply, must be stored in clean water holding containers/tanks, designed and labelled for such purposes within a designated storage area to prevent open contamination of water storage reserves by dust, dirt or excrement from wildlife and/or domesticated animals, petrochemical-based products and/or other farm chemicals.

b) MUST DO Stored water is only acceptable for use if there is a water management program in place (Refer to **GPP 10 – POTABLE WATER MANAGEMENT**).

3.5.6 MUST DO **Medications/Treatments (Area 2) -** All medications/treatments must be stored in a designated and secure location, in accordance with manufacturers' label directions or Material Safety Data Sheet (MSDS) instructions, subject to inventory rotation, where applicable, and separated from non-chemical products. MSDS are available from most chemical suppliers and must be convenient for use by personnel.

3.5.7 MUST DO **Bee Repellents (Area 4)** – All bee repellents must be stored in accordance with manufacturers' label directions, in a distinct storage area isolated from inputs in other storage areas in order to eliminate opportunities for cross-contamination.

3.5.8 **Farm Chemicals (Area 4)**

a) MUST DO All farm chemicals must be stored in a designated and secure location, in accordance

[23] Pollen is mixed with sucrose to form patties used within the hive as a supplementary protein source in autumn or early spring, or other times when natural pollen sources are scarce.

[24] Pollen mixtures have a limited storage life and should be used on demand from correctly stored ingredients, or sealed in clean plastic containers and refrigerated for up to two (2) weeks or frozen for long-term storage.

[25] Bauer, l. et. al. 1996. Food allergy to honey: Pollen or bee products? Characterization of allergenic proteins in honey by means of immunoblotting. J. Allergy Clin. Immun. 97:65-73

with manufacturers' label directions or Material Safety Data Sheet (MSDS) instructions, subjected to inventory rotation, where applicable, and separated from non-chemical products. MSDS are available from most chemical suppliers and must be convenient for use by personnel.

b) MUST DO Farm chemicals must be stored in a separate area isolated from each other to eliminate opportunities for cross-contamination and housed separately from the honey processing area to prevent the risk of contamination of honey products.

c) MUST DO Petroleum fuel, oils, greases, and other highly flammable petrochemical-based products, must be labeled as such and stored in an enclosure specifically designed for such products.

3.5.9 **Packaging Materials (Area 5)**

a) MUST DO Empty small- and bulk-sized honey containers, packaging accessories (e.g. labels, tape, glue) and finished product must be handled and stored in a manner that minimizes water and dirt exposure and contamination by biological, chemical and/or physical hazards from the storage conditions, location, or through mishandling.

b) MUST DO All empty bulk honey containers (washed and reconditioned or clean and new drums/totes) must be stored in a clean dry area, without exposure to any biological, chemical or physical hazards. Reconditioned bulk containers must be washed with potable water before use to prevent a biosecurity hazard. Refer to the **CFIA National Bee Farm-Level Biosecurity Standard** for more information. All bulk honey containers are returned to their designated storage area after they are emptied and cleaned in the processing facility.

3.6 MONITORING PROCEDURES

3.6.1 MUST DO Inspect all storage areas before storing any products and document in the *Storage - Monitoring and Corrective Action Record* (**FORM 3.0.1**) in order to confirm the correct condition of stored inputs, and suitability of storage location in accordance with manufacturer's label instructions.

3.6.2 MUST DO Visually observe each consignment (e.g. hive and processing equipment, feed supplements, potable water, medications/treatments, bee repellents, farm chemicals and packaging materials) at the time of storage to confirm that inputs are correctly identified, acceptable according to storage area requirements, stored under correct conditions according to label instructions, and documented in the *Storage - Monitoring and Corrective Action Record* **(FORM 3.0.1)**.

3.6.3 MUST DO Routine inspections must be conducted at least monthly on a continuing basis throughout the year, and at weekly intervals, or more frequently as warranted, throughout the active season, and recorded within the *Storage - Monitoring and Corrective Action Record* (**FORM 3.0.1**). Inspect storage areas (both internally and externally) to identify any signs of contamination associated with biological (e.g. bird or rodent activity, pest entry and/or contamination), chemical (e.g. opened farm chemical packaging, spillage or other signs of contamination) or physical hazards (e.g. broken glass, dust) from mishandling or incorrect storage conditions. Refer to **GPP 9** and document pest monitoring activity within the *Facility Pest Control – Monitoring and Corrective Action Record* (**FORM 9.0.5**).

3.7 CORRECTIVE ACTION PROCEDURES

3.7.1 MUST DO Assess and determine the nature of the any deviation in **GPP 3** at the location where the problem occurs, at the time of monitoring, or when the problem is first detected. Document any errors or problems that have been identified associated with **GPP 3** on the *Storage - Monitoring and Corrective Action Record* (**FORM 3.0.1**). These actions may include maintenance, cleaning, pest management, isolation and disposal of contaminated inputs. Refer to **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL** and document what specific corrective action and preventative measures were taken, and the date of error. For disposal of raw honey refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING.**

3.7.2 MUST DO All farm inputs including feed supplements, medications/treatments, hive and processing equipment, farm chemicals, bee repellents, potable water and packaging materials that are not stored correctly on the farm operation, or are exposed to biological, chemical or physical contaminants during storage as a result of direct contact, or indirectly from cross-contamination, are rejected for use, if not correctly remediated (e.g. cross-contaminated honey supers that are impossible to clean). All deviations and corrective action taken to eliminate or prevent any biological, chemical and physicals hazards to storage areas, or related goods, must be documented within the *Storage - Monitoring and Corrective Action Record* (**FORM 3.0.1**) and the *Bulk Container Inspection and Corrective Action Record* (**FORM 2.0.2**), where warranted.

3.7.3 MUST DO If chemical spills or cross-contamination occurs in the storage area of the farm operation, ensure that contaminants are promptly and correctly sanitized or cleaned when noticed, or disposed of correctly following manufacturer`s or MSDS instructions. All corrective action must be documented within the *Storage - Monitoring and Corrective Action Record* (**FORM 3.0.1**).Dispose of contaminated materials following accepted protocols[26]. If contaminated medications are disposed of document in the *Medications/Treatments – Inventory and Disposal Record* (**FORM 4.0.1**). If potable water is contaminated refer to **GPP 10 – POTABLE WATER MANAGEMENT** and document in the *Storage - Monitoring and Corrective Action Record* (**FORM 3.0.1**) and cross-reference with the *Potable Water – Sampling, Treatment and Corrective Action Record* (**FORM 10.0.1**).

3.7.4 MUST DO Packaging materials intended for use with food that is contaminated from contact with pests, other biological contaminants, or chemical contaminants, must not be used, are properly disposed of following and actions documented within the *Storage - Monitoring and Corrective Action Record* (**FORM 3.0.1**)..

3.7.5 MUST DO All reconditioned/reused empty bulk containers (e.g. metal or plastic drums/totes) stored on-farm must be washed correctly before filling to remove biological or chemical contaminants, or they are rejected for use. A record of washing is kept on the *Bulk Container Inspection and Corrective Action Record* (**FORM 2.0.2**). Always refer to the latest version of the CHC's **Honey Industry Bulk Container Standard** when storing and cleaning bulk containers.

[26] All honey products in contact with contaminated storage inputs must be discarded in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**). For disposal of raw honey refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING.**

3.8 TRAINING PROCEDURES

3.8.1 MUST DO Ensure that personnel are trained in correct storing procedures, in recognizing hazards associated with incorrect storage conditions or location, and in controlling hazards related to **GPP 3**, in order to ensure accuracy and compliance with written procedures and practices and record keeping. Document and monitor training in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1).**

3.8.2 MUST DO Visually confirm by direct observation of personnel at least once during the implementation of **GPP 3**, and more frequently as warranted by the control procedure (e.g. before the start of each season or active season or processing cycle), that procedures are followed correctly, that personnel are competent in meeting the requirements of **GPP 3**, and to identify potential problems areas that require continued training as documented in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1)**.

3.8.3 MUST DO Re-train any personnel not following the procedures of **GPP 3** and document in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) in accordance with **GPP 11 – PERSONNEL: CAPABILITIES, QUALIFICATIONS AND PERSONAL HYGIENE**.

3.8.4 MUST DO Review compliance to procedures at least once annually to confirm the effectiveness of **GPP 3**, to identify aspects requiring improvement, and to assess the need for additional training.

3.9 RECORD KEEPING PROCEDURES

3.9.1 Review compliance to record keeping procedures annually, or more frequently as warranted by the control procedure (e.g. before the start of each active season or processing cycle), in order to provide information about the effectiveness of record keeping.

3.9.2 Ensure that all personnel following **GPP 3** are trained in record keeping, in order to ensure accuracy and compliance with written procedures. Visually confirm by direct observation of personnel at least once, preferably before the active season or processing cycle, that record keeping procedures are followed correctly for all aspects of **GPP 3**, and in accordance with procedures detailed in **GPP 12 – RECORD CONTROL, TRACEABILITY AND PRODUCT RECALL.**

3.9.3 Ensure that all farm records specified and provided in **GPP 3** are completed (i.e. signed and dated) and updated as required and maintained for at least eight (8) years by the producer/owner to facilitate traceability and/or product recall.

3.10 RECORDS

- FORM 3.0.1 Storage - Monitoring and Corrective Action Record

3.11 CROSS-REFERENCED RECORDS

- FORM 2.0.2 Bulk Container Inspection and Corrective Action Record
- FORM 4.0.1 Medications/Treatments – Inventory and Disposal Record
- FORM 9.0.4 Waste Shipping Lot
- FORM 9.0.5 Facility Pest Control – Monitoring and Corrective Action Record
- FORM 10.0.1 Potable Water – Sampling, Treatment and Corrective Action Record
- FORM 11.0.1 Personnel Training – Monitoring and Corrective Action Record

GPP 4 – LIVESTOCK HEALTH MANAGEMENT: HANDLING AND USE OF FEED SUPPLEMENTS, MEDICATIONS AND TREATMENTS

4.1 PURPOSE AND SCOPE

4.1.1 Safe handling and use of feed supplements, medications (e.g. antibiotics) and related on-hive pest management treatments (e.g miticides and mite monitoring and diagnostic aids) are an important aspect of livestock management under the ***CBISQT*** Program. Medications, whether used alone or mixed with feed supplements, are designed, manufactured and prescribed for definite purposes and are intended to be handled and used in specific ways to ensure optimum effectiveness and safety. Incorrect preparation/mixing of feed supplements, errors in product usage (e.g. wrong dosage, application method, and withdrawal or withholding time of medication or pest management product), or mishandling of such products during feeding, hive inspection and maintenance procedures, can result in unintended chemical residues in raw honey products and could pose a food safety risk to consumers.

4.1.2 The purpose of **GPP 4** is to ensure that non-medicated and medicated feed supplements, medications and related on-hive pest management treatments are identified, mixed, applied, managed, and disposed of correctly in order to reduce the potential for contamination of raw honey. This procedure applies to producers who use Provincial Apiculturist-approved or prescription[27] off-label antibiotics or other treatments within hives.

4.2 RESPONSIBILITIES AND QUALIFICATIONS

4.2.1 The ***Producer/Owner*** has the overall responsibility for implementing **GPP 4**. These duties include ensuring that:

a) all medications for treating bee diseases and pest management products (e.g. for controlling bee mites (*Varroa* spp.) or as monitoring and diagnostic aids) are approved, mixed and applied within the hive during defined intervals and correct withdrawal times in accordance with all label instructions and/or treatment recommendations listed by the Provincial Apiculturist or veterinarian, to prevent contamination of raw honey,

b) all non-medicated and medicated feed supplements are prepared under hygienic conditions using approved feed ingredients from known and sanitary sources,

c) designated personnel conducting tasks associated with **GPP 4** are effectively supervised,

d) monitoring, corrective action and record keeping procedures for **GPP 4** are communicated, understood and followed correctly by all relevant personnel, and

e) all records related to **GPP 4** are effectively documented and controlled.

4.2.2 All designated personnel following **GPP 4** must have a complete understanding of the described hazards and relevant safe handling, mixing and application procedures, and have the appropriate training regarding these procedures.

4.2.3 Ensure that all designated personnel are trained in the correct procedures to prepare/mix feed supplements, administer medications/treatments, and are familiar with all regulatory requirements, manufacturer's labeling, and veterinarian advice affecting the prescribed treatment, and usage; including dose and withdrawal periods for all applicable medications and related treatments.

[27] In some cases, or regions, this may be determined through valid veterinarian-client-patient relationships with veterinarians knowledgeable in bee disease management.

4.2.4 All designated personnel are responsible for reporting problems (hazardous incidents) from **GPP 4** to the *Producer/Owner*.

4.3 FOOD SAFETY HAZARDS

4.3.1 Mixing Non-Medicated Feed Supplements

a) Contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) as a result of honey, sucrose, high-fructose corn syrup (HFCS) and/or or pollen mixed in unsanitary conditions (e.g. contaminated containers or tools).

b) Contamination by pathogenic bacteria (e.g. spores of *Bacillus* spp.) and/or enteric viruses as a result of untreated (non-potable) water mixed with sugar feed.

c) Contamination by residues of medication (e.g. antibiotics, miticides) from incorrectly labelled or cleaned mixing equipment.

4.3.2 Mixing Medicated Feed Supplements

a) Contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) as a result of honey, sucrose, high-fructose corn syrup (HFCS) and/or or pollen mixed with medications in unsanitary conditions (e.g. contaminated containers or tools).

b) Contamination by pathogenic bacteria (e.g. spores of *Bacillus* spp.) and/or enteric viruses as a result of untreated (non-potable) water mixed with sugar feed and medication

c) Contamination by residues of medications/treatments (e.g. antibiotics, miticides) from incorrectly labelled or cleaned mixing equipment.

d) Contamination by residues of medications/treatments (e.g. antibiotics, miticides) as a result of incorrect product usage or method of application (e.g. wrong treatment or dosage in medicated feed).

4.3.3 Feeding Non-Medicated Feed Supplements

a) Contamination by pathogenic bacteria (e.g. spores of *Clostridum* spp., *Bacillus* spp.) as a result of soiled open drums, top hive feeders and feed pails.

b) Contamination by residues of medications/treatments (e.g. antibiotics, miticides) as a result of feeding from unlabelled feeding devices (e.g. medicated pails).

4.3.4 Preseason Treating (medications with/without feed supplements)

a) Contamination by pathogenic bacteria (e.g. spores of *Clostridum* spp., *Bacillus* spp.) as a result of soiled open drums, top hive feeders and feed pails.

b) Contamination by residues of medications/treatments (e.g. antibiotics, miticides) as a result of feeding from unlabelled feeding devices (e.g. medicated pails).

c) Contamination by residues of medications/treatments (e.g. antibiotics, miticides, mite monitoring aids and diagnostics) as a result of incorrect treatment, dosage and/or incorrect withdrawal time.

4.3.5 **Postseason Treating -** Contamination by residues of medications/treatments as a result of incorrect product usage or method of application (e.g. unregistered treatments).

4.3.6 **Colony Maintenance** - Contamination by residues of maintenance chemicals as a result of incorrect product usage or method of application.

4.3.7 **Waste Disposal (Medications) –** Contamination by residues of medications/treatments in feed supplements, as a result of incorrect disposal, that promotes detrimental bee foraging (robbing).

4.4 ACCEPTABLE LIMITS FOR CONTROL MUST DO

4.4.1 **Mixing Non-Medicated Feed Supplements**

a) Non-medicated feed supplements are only mixed under sanitary conditions with clean containers and tools.

b) All non-medicated feed supplements are mixed only with potable water.

c) All non-medicated feed supplements are provided only from clean, clearly identified feed pails, or other mixing equipment, used solely for that purpose to prevent contamination with residues of medications/treatments.

4.4.2 **Mixing Medicated Feed Supplements**

a) Medicated feed supplements are only mixed under sanitary conditions with clean containers and tools.

b) All medicated feed supplements are mixed only with potable water.

c) All medicated feed supplements are provided only from clean, clearly identified feed pails, or other mixing equipment, used solely for that purpose to prevent contamination with residues of medications/treatments.

d) Only medicated feed supplements prepared and mixed with the correct medication/treatment and dosage according to label instructions are used.

4.4.3 **Feeding Non-Medicated Feed Supplements**

a) Only clean open drums, top hive feeders and feed pails are used when feeding non-medicated feed supplements.

b) All non-medicated feed supplements are provided only from feed pails, or other feeding devices, used solely for that purpose to prevent contamination.

4.4.4 **Preseason Treating (medications with/without feed supplements)**

a) Only clean open drums, top hive feeders and feed pails are used when feeding medicated feed supplements.

b) All medicated feed supplements are provided only from labelled feed pails, or other feeding devices, used solely for that purpose to prevent contamination.

c) All medications/treatments (e.g. antibiotics, miticides, mite monitoring aids and diagnostics) are used only at the appropriate dosage, and at the correct time in the production cycle for treatment and withdrawal according to label instructions.

4.4.5 **Postseason Treating** - Only approved/registered medications/treatments are used during the postseason at

the appropriate dosage, and at the proper time in the production cycle according to label instructions.

4.4.6 **Maintaining Colonies** – Maintenance chemicals are only used according to label instructions.

4.4.7 **Waste Disposal (Medications/Treatments)** - All medications in feed supplements, and raw honey contaminated with medications, are disposed in a manner consistent with all applicable regulations, including preventing the contamination of raw honey from bee robbing.

4.5 CONTROL PROCEDURES

4.5.1 Mixing Non-Medicated Feed Supplements

a) 

Prevent contamination of non-medicated feed supplements with pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) during preparation by ensuring that sanitary practices are used at the time of mixing and preparation (e.g. hygienic mixing equipment, containers, tools, personnel and mixing procedures). All equipment, containers and tools used in the mixing and preparation of non-medicated feed supplements must be functioning properly and clean prior to use and before reuse. Only sanitizers approved for use with beekeeping, and at recommended rates, are used.

b) 

Ensure that no non-medicated feed supplements (e.g. sugar) are prepared with unknown or otherwise unsanitary sources of water. When formulating and mixing ensure that only potable water is used in order to prevent contamination from pathogenic bacteria and other microorganisms.

c) 

A separate container is used for mixing and storing non-medicated feed supplements, and all feed pails and other related equipment are segregated and/or labelled to ensure medicines or other treatments are not used to eliminate opportunities for cross-contamination with non-medicated feed containers or pails.

d) Refer to the manufacturer's instructions and/or other authorized recommendations for correct mixing protocols and document all preparation and feeding activities. Supplier declarations should be sought, where available, to ensure that purchased sugar or other feed is suitable for the purpose of feeding bees. Only sugar recognized as safe for food (i.e. Health Canada/CFIA recognized) is used for mixing feed supplements.

4.5.2 Mixing Medicated Feed Supplements

a) 

Prevent contamination of medicated feed supplements with pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) during preparation by ensuring that sanitary practices are used at the time of mixing and preparation (e.g. hygienic mixing equipment, containers, tools, personnel and mixing procedures). All equipment, containers and tools used in the mixing and preparation of medicated feed supplements must be functioning properly and clean prior to use and before reuse. Only sanitizers approved for use with beekeeping, and at recommended rates, are used.

b) 

Ensure that no medicated feed supplements are prepared with unknown or otherwise unsanitary sources of water. When formulating and mixing ensure that only potable water is used in order to prevent contamination from pathogenic bacteria and other microorganisms.

c) 

A separate container must be used for mixing and storing medicated feed supplements, and all feed pails and other related equipment must be segregated and labelled "*Medicated Feed Only*" to eliminate opportunities for cross-contamination with non-medicated feed supplements. Treatment containers are not

reused for any medicated feed unless a policy exists to clean all containers after any medicated feeding. All equipment used for formulation, weighing and mixing must be cleaned, flushed or otherwise isolated from contaminants after each use to eliminate opportunities for cross-contamination of medicated feed.

d) 

Ensure all antibiotics/veterinary drugs, mite monitoring and diagnostic treatments are prepared and used in accordance with manufacturer's instructions and/or other authorized recommendations for mixing, correct dosage and methods of use as hive treatments, including withdrawal time. Antibiotics and other veterinary drugs are mixed and used in accordance with Health Canada's Food and Drugs Act. Miticides and other pesticides are mixed and used in accordance with the Pest Control Products Act which is regulated by the Pest Management Regulatory Agency **(**PMRA**)**.

e) 

Only sugar recognized as safe for food (i.e. Health Canada/CFIA recognized) is used for mixing treatments. Supplier declarations should be sought, where available, to ensure that purchased sugar or other feed is suitable for the purpose of feeding bees.

f) 

Ensure that all prescription and other documentation for extra-label use is recorded and cross-checked with medicated feed supplement requirements (e.g. dosage and withdrawal period).

4.5.3 Feeding Non-Medicated Feed Supplements

a) 

When feeding non-medicated feed supplements, prevent exposure of feed, open drums, top hive feeders and feed pails, to potential pathogens and other honey contaminants in soil or dust (e.g avoid ground contact).

b) 

Ensure that all feed pails and other related equipment is labelled "*Feed Only*" and restricted to that use to eliminate opportunities for cross-contamination by chemicals (e.g. medications) from feed pails used incorrectly for other purposes.

c) Ensure that pollen-based non-medicated feed supplements are <u>not</u> fed to bees during the active season while honey supers are on the hives in order to reduce the risk of contaminating raw honey with pollen supplements which are potential allergens for human consumers.

4.5.4 Preseason Treating (medications with/without feed supplements)

a) 

When feeding medicated feed supplements, prevent exposure of feed, open drums, top hive feeders and feed pails, to potential pathogens and other honey contaminants in soil or dust (e.g avoid ground contact).

b) 

Ensure that all feed pails and other related equipment is labelled "*Medicated Feed Only*" and restricted to that use to eliminate opportunities for cross-contamination by chemicals (e.g. other medications/treatments or farm chemicals) from feed pails used incorrectly for other purposes.

c) 

Use documentation to confirm that only medications or other treatments that are approved for bees and /or recommended or prescribed by your Provincial Apiculturist and/or veterinarian are used. Check all labels before use in order to confirm correct medication, expiry date, dosage, method of administration and withdrawal time. For example, feeding medicated feed (e.g. the antibiotic fumagillin (Fumagilin-B™) in liquid feed or oxytetracycline (Oxytet™) with icing sugar) to colonies in spring and

autumn carries a potential risk for chemical contamination of honey products.

d) MUST DO Ensure that medicated feed is used correctly[28] for the management of *Nosema* spp (e.g. used in the form of water and sugar syrup combined with antibiotics) and foulbrood diseases (e.g. used in the form of powder) as a spring or autumn treatment only; when all honey supers have been removed. No medicated feed supplements are administered while honey supers are on the hive (i.e. during nectar flow) to avoid any risk of contamination of raw honey intended or human consumption. Ensure that no miticides used as monitoring[29] or as diagnostic devices (e.g. coumaphos, fluvalinate, formic acid or other chemical treatments) are added to hives when honey supers are in place.

e) MUST DO Ensure medications or other treatments are removed from hives in a timely manner in compliance with the recommended withdrawal period. No honey supers are placed on hives until all medications are removed from such hives in compliance with the manufacturer's required withdrawal period for such medications and treatments.

4.5.5 MUST DO **Postseason Treating -** Check all labels and related documentation before use in order to confirm correct medication/treatment, expiry date, dosage, and time of administration that only medications or other treatments approved for bees and/or recommended or prescribed by your Provincial Apiculturist and/or veterinarian, are used postseason.

4.5.6 **Maintaining Colonies**

a) Inspect and maintain colonies following accepted beekeeping practices at least monthly, or more frequently as warranted, during the active season.

b) Ensure that supers are not in ground contact with soil or vegetation at any time during inspection or maintenance of the colony to prevent contamination of honeycomb from pathogenic bacteria in soil or dust.

c) MUST DO Ensure that all maintenance on hive brood boxes is conducted with materials and paints that do not contain lead-based materials or other hazardous wood preservatives, farm chemicals, cleaning compounds or petrochemical-based products.

d) Adopt and comply with biosecurity or site quarantine practices when inspecting or moving brood boxes and using hive tools, in order to minimize or reduce the risk of introduction or transmission of disease and pests throughout the apiary. Refer to the **CFIA National Bee Farm-Level Biosecurity Standard**.

4.5.7 **Waste Disposal (Medications/Treatments)**

a) MUST DO All expired products/packaging of medications (e.g. antibiotics), miticides and other hive treatments, including used monitoring and diagnostic aids and related products, must be disposed of in accordance with manufacturer's labeling instructions and existing legislation.

b) MUST DO Ensure that all used medications and related treatments are disposed of in a manner that does not

[28] For example, medicated feed (i.e. sugar syrup) can generally be provided within top feeders placed on the top of brood chambers usually for up to three (3) weeks when daytime temperatures remain above 4°C.

[29] Frequent and reliable monitoring and diagnosis is essential for effective mite control. When monitoring for mites in cases where honey supers are in place, use an alcohol wash, ether or icing sugar roll monitoring method and ensure that no chemical treatments come in contact with honey.

expose bees and/or honey products to contamination from residues in the environment, feed sources or water supply.

c) 

Dispose of expired or outdated medications in a manner that prevents risk of exposure to livestock or environmental contamination.

d) Ensure records for waste disposal of medications are maintained and note all dates of disposal and related comments.

e) For disposal of raw honey potentially contaminated with medications refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING**.

4.6 MONITORING PROCEDURES

4.6.1 Mixing Non-Medicated Feed Supplements

a) 

Observe and confirm the accuracy, integrity and safety of all non-medicated feed supplements that are formulated or mixed by visual inspection before preparation; especially with respect to cleanliness of mixing containers and tools and any processes that potentially could contaminate feed before or during mixing. Document all monitoring activities related to the condition of mixing equipment for non-medicated feed supplements within the *Non-Medicated Feed Supplements - Monitoring and Corrective Action Record* (**FORM 4.0.2**).

b) 

Before preparing non-medicated feed supplements confirm that the water used for mixing feed supplements is potable. (Refer to **GPP 10 – POTABLE WATER MANAGEMENT**). Inspect and confirm the condition of equipment and potability of water by visual inspection and through the *Potable Water – Sampling, Treatment and Corrective Action Record* (**FORM 10.0.1**), to ensure equipment is fully functional and correctly maintained before and following reuse, and that water used for mixing feed supplements is potable. Document all monitoring activities related to mixing non-medicated feed supplements within the *Non-Medicated Feed Supplements - Monitoring and Corrective Action Record* (**FORM 4.0.2**).

c) 

Visually inspect all equipment and/or materials that may contaminate non-medicated feed supplements and monitor any processes that potentially could contaminate feed with such agents before mixing feed supplements. Ensure that all mixing equipment is correctly labelled and cleaned to prevent contamination as a result of incorrect product used. Document all monitoring activities related to mixing non-medicated feed supplements within the *Non-Medicated Feed Supplements - Monitoring and Corrective Action Record* (**FORM 4.0.2**).

4.6.2 Mixing Medicated Feed Supplements

a) 

Observe and confirm the accuracy, integrity and safety of all medicated feed supplements that are formulated or mixed by visual inspection before preparation; especially with respect to cleanliness of mixing containers and tools and any processes that potentially could contaminate feed before or during mixing. Document all monitoring activities related to the condition of mixing equipment for medicated feed supplements within the *Medicated Feed Supplements - Monitoring and Corrective Action Record* (**FORM 4.0.3**).

b) MUST DO Before preparing medicated feed supplements confirm that the water used for mixing feed supplements is potable. (Refer to **GPP 10** – **POTABLE WATER MANAGEMENT**). Inspect and confirm the condition of equipment and potability of water by visual inspection and through the *Potable Water – Sampling, Treatment and Corrective Action Record* (**FORM 10.0.1**), to ensure equipment is fully functional and correctly maintained before and following reuse, and that water used for mixing feed supplements is potable. Document all monitoring activities related to mixing medicated feed supplements within the *Medicated Feed Supplements - Monitoring and Corrective Action Record* (**FORM 4.0.3**).

c) MUST DO Visually inspect all equipment and/or materials that may contaminate medicated feed supplements and monitor any processes that potentially could contaminate feed before mixing feed supplements. Ensure that all mixing equipment is correctly labelled and cleaned to prevent contamination as a result of incorrect product used, method of application (wrong treatment, or dosage). Document all monitoring activities related to mixing medicated feed supplements within the *Medicated Feed Supplements - Monitoring and Corrective Action Record* (**FORM 4.0.3**).

d) MUST DO Confirm the accuracy, integrity and safety of all medicated feed supplements that are formulated or mixed on the farm operation by visual inspection before preparation and by examination of inventory records (e.g. *Medications/Treatments – Inventory and Disposal Record* (**FORM 4.0.1**)), manufacturer's instructions, product labels and other recommendations); especially with respect to segregation from non-medicated feed supplements, and mixing equipment. Document all monitoring activities related to the condition of mixing equipment for medicated feed supplements within the *Medicated Feed Supplements - Monitoring and Corrective Action Record* (**FORM 4.0.3).**

4.6.3 Feeding Non-Medicated Feed Supplements

a) MUST DO Observe and confirm the accuracy, integrity and effective operation of all non-medicated feeding devices in the apiary by visual inspection weekly during feeding; or more frequently as warranted. Inspect open drums, top hive feeders and feed pails to ensure that they are not soiled or in ground contact to prevent contamination from pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) in dust/dirt, and are correctly labeled and distinct from medicated feeders. Document all monitoring activities related to feeding non-medicated feed supplements within the *Non-Medicated Feed Supplements - Monitoring and Corrective Action Record* (**FORM 4.0.2**).

b) MUST DO Before feeding, ensure that all open drums, top hive feeders and feed pails are correctly labeled and distinct from medicated feeders. Document all monitoring activities related to feeding devices within the *Non-Medicated Feed Supplements - Monitoring and Corrective Action Record* (**FORM 4.0.2).**

4.6.4 Preseason Treating (medications/treatments with/without feed supplements)

a) MUST DO Observe and confirm the accuracy, integrity and effective operation of all medicated feeding devices in the apiary by visual inspection weekly during feeding; or more frequently as warranted. Inspect open drums, top hive feeders and feed pails to ensure that they are not soiled or in ground contact to prevent contamination from pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) in dust/dirt,. Document all monitoring activities related to feeding medicated feed supplements within the *Medicated Feed Supplements - Monitoring and Corrective Action Record* (**FORM 4.0.3).**

b) MUST DO Before feeding, ensure that all open drums, top hive feeders and feed pails are correctly labeled

and distinct from non-medicated feeders. Document all monitoring activities related to feeding devices within the *Medicated Feed Supplements - Monitoring and Corrective Action Record* (**FORM 4.0.3).**

c) MUST DO Review inventory records (*Medications/Treatment – Inventory and Disposal Record* (**FORM 4.0.1**)), manufacturer's instructions, product labels and other recommendations before preseason administration of any medication (e.g. antibiotic) or treatment program on colonies to confirm correct treatment, mixing, application procedures and withdrawal periods, to ensure medications and/or treatments are approved/registered (e.g. recognized by the Veterinary Drugs Directorate of Health Canada and/or the Pest Management Regulatory Agency, respectively) as required, and to modify treatments and application procedures as necessary to ensure adequate control.

d) MUST DO Confirm by self-inspection at the time of application that all medications/treatments are authorized with respect to extra-label veterinary medications and withdrawal intervals and correct dosage, are administered by competently trained personnel to correctly identified hives, and that all treatment activities are documented within the *Medications/Treatments - Monitoring and Corrective Action Record* (**FORM 4.0.5).**

e) MUST DO Before honey supers are added to the hive ensure that the product withdrawal period is confirmed and the earliest date of harvest is recorded by reviewing the *Medications/Treatments - Monitoring and Corrective Action Record* (**FORM 4.0.5**).

f) Before administration of any medication/treatment visually observe and confirm the accuracy, integrity and safety of treatment activities by self-inspection and through record keeping through the optional *On-Hive Pest/Disease Monitoring Log* (**FORM 4.0.4**), where available.

4.6.5 **Postseason Treating**

a) MUST DO Review inventory records including the *Medications/Treatments – Inventory and Disposal Record* (**FORM 4.0.1**), manufacturer's instructions, product labels and other recommendations before postseason administration of any medication/treatment on colonies to confirm correct treatment, mixing, application procedures and withdrawal periods, to ensure products are approved/registered (e.g. recognized by the Pest Management Regulatory Agency) as required, and to modify treatments and application procedures as necessary to ensure adequate control.

b) MUST DO Confirm by self-inspection at the time of postseason application that all medications/treatments are authorized with respect to extra-label veterinary medications and withdrawal intervals and correct dosage, are administered by competently trained personnel to correctly identified hives, and that all treatment activities are documented within the *Medications/Treatments – Monitoring and Corrective Action Record* (**FORM 4.0.5)**.

c) Before postseason administration of any medication or related treatment visually observe and confirm the accuracy, integrity and safety of treatment activities by self-inspection and through record keeping through the optional *On-Hive Pest/Disease Monitoring Log* (**FORM 4.0.4**), where available.

4.6.6 MUST DO **Maintaining Colonies** - Inspect and confirm the accuracy, integrity and safety of colony maintenance activities by self-inspection and through record keeping. Incorrect maintenance, contamination from maintenance activities, or other problems associated with maintenance must be documented in the *Apiary - Monitoring and Corrective Action Record* (**FORM 1.0.1**) on a continuing basis

throughout the year, as frequently as required when maintaining colonies. Document all colony maintenance activities within the *Apiary - Monitoring and Corrective Action Record* (**FORM 1.0.1**) to ensure dates of procedures, operators, and descriptions of all management activities (e.g. off-hive pest management products, maintenance chemicals, or cleaning products), including colony maintenance and inspection, are correct and are administered by competently trained personnel.

4.6.7 MUST DO **Waste Disposal (Medications/Treatments) -** Inspect and confirm the accuracy, integrity and safety of waste disposal activities associated with the disposal of unused medications/treatments by self-inspection and through record keeping (*Apiary - Monitoring and Corrective Action Record* (**FORM 1.0.1**) and *Waste Shipping Lot Record* (**FORM 9.0.4**)) in cases where raw honey is disposed of, at monthly intervals (or more frequently as warranted during the active season or production cycle) in order to monitor any disposal practice that potentially could contaminate raw honey. Document all medication and registered treatment disposals in the *Medications/Treatments – Inventory and Disposal Record* (**FORM 4.0.1**).

4.7 CORRECTIVE ACTION PROCEDURES

4.7.1 MUST DO **Mixing Non-Medicated Feed Supplements -** Corrective actions associated with the mixing of non-medicated feed supplements must be taken at the location where the problem occurs, at the time of monitoring or when the problem is determined. In cases where there is: i) concern over the feed ratio or a suspicion of any contamination, ii) suspicion that a serious error has occurred (e.g. pollen feed supplement) or iii) feed supplements may be contaminated (e.g. non-potable water), then all contaminated or incorrectly mixed product must be withheld from application (e.g. segregated and rejected for use) and documented in the *Non-Medicated Feed Supplements – Monitoring and Corrective Action Record* (**FORM 4.0.2**) for remediation or correct disposal in a recognized waste facility in accordance with **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL**.

4.7.2 **Mixing Medicated Feed Supplements**

a) MUST DO Corrective actions associated with the mixing of medicated feed supplements must be taken at the location where the problem occurs, at the time of monitoring or when the problem is determined. In cases where there is: i) concern over the feed ratio or a suspicion of any contamination, ii) suspicion that a serious error has occurred (e.g. pollen feed supplement) or iii) feed supplements may be contaminated (e.g. non-potable water), then all contaminated or incorrectly mixed product must be withheld from application (e.g. segregated and rejected for use) and documented in the *Medicated Feed Supplements – Monitoring and Corrective Action Record* (**FORM 4.0.3**) and cross-referenced in the *Medications/Treatments – Inventory and Disposal Record* **(FORM 4.0.1)** for correct disposal in a recognized waste facility in accordance with **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL**.

b) MUST DO If in cases where there is concern over the treatment dosage/feed ratio or a suspicion of any contamination, suspicion that a serious error has occurred (e.g. wrong or overdose of medication) or medications or treatments may be contaminated, then all mixed product must be withheld from application, (e.g. segregated and rejected for use). If unacceptable residues are present, incorrect preparations must be documented in the *Medicated Feed Supplements – Monitoring and Corrective Action Record* (**FORM 4.0.3**), cross-referenced in the *Medications/Treatments - Monitoring and Corrective Action Record* (**FORM 4.0.5**). Corrective action may include: i) reviewing mix formula and consultation with Provincial Apiculturist, veterinarian or other specialist as necessary, ii) reviewing or readdressing container instructions and equipment protocols, iii) submitting samples of feed mixtures to a laboratory for analysis, iv) disposal of mixed product according to Provincial Regulations, v) adopting preventative measures as necessary (e.g. re-train personnel, re-evaluate procedure) and/or correct disposal in a recognized waste

facility. Follow **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL FOR DISPOSAL** of medications and document in the *Medications/Treatments – Inventory and Disposal Record* (**FORM 4.0.1**). For disposal of raw honey refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING**.

4.7.3 MUST DO **Feeding Non-Medicated Feed Supplements -** Assess and determine the nature of the any problems associated with the feeding non-medicated supplements at the location where the problem occurs, at the time of monitoring, or when the problem is first detected. If contaminated feed supplements are present in the apiary, preparations must be removed and correctly disposed in a recognized waste facility in accordance with **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL.** Record what specific corrective action and preventative measures were taken, and the date of error, on the *Non-Medicated Feed Supplements – Monitoring and Corrective Action Record* (**FORM 4.0.2**).

4.7.4 MUST DO **Preseason Treating (medications with/without feed supplements) -** Corrective actions associated with errors in the preseason application of medication (e.g. antibiotics miticides, mite monitoring aids and diagnostics) must be taken at the location where the problem occurs, at the time of monitoring or when the problem is determined. Document any errors or problems that have been identified during the administration of any treatment, including corrective action. These actions include: i) replacing soiled medicated feed containers and related feeding devices as warranted , ii) delaying "supering" until the end of the all treatment withdrawal periods, iii) adding no supers on hives during any prescribed treatment, and iv) removal of all application devices and tools. Record what specific corrective action and preventative measures were taken, and the date of error, on the *Medications/Treatments - Monitoring and Corrective Action Record* (**FORM 4.0.5**). Contact the Provincial Apiculturist and/or your veterinarian for corrective treatment procedures and withdrawal procedures, as necessary.

4.7.5 MUST DO **Postseason Treating -** Corrective actions associated with errors in the post season application of medications/treatments must be taken at the location where the problem occurs, at the time of monitoring or when the problem is determined. Document any errors or problems that have been identified during the administration of any treatment, including corrective action. Record what specific corrective action and preventative measures were taken, and the date of error, on the *Medications/Treatments - Monitoring and Corrective Action Record* (**FORM 4.0.5**). Contact the Provincial Apiculturist and/or your veterinarian for corrective treatment procedures and withdrawal procedures, as necessary.

4.7.6 MUST DO **Maintaining Colonies -** Corrective actions associated with errors in the colony maintenance must be taken at the location where the problem occurs, at the time of monitoring or when the problem is determined. Document any errors or problems that have been identified during the any maintenance activity, including corrective action, within the *Apiary - Monitoring and Corrective Action Record* (**FORM 1.0.1**) to ensure dates of procedures, operators, and descriptions of all management activities (e.g. off-hive pest management products, maintenance chemicals, or cleaning products), including colony maintenance and inspection, are correct.

4.7.7 **Waste Disposal (Medications/Treatments)**

a) MUST DO Assess and determine the nature of the any problems associated with the disposal of medications at the location where the problem occurs, at the time of monitoring, or when the problem is first detected. In cases where an incorrect dosage of medication/treatment, treatment interval, withdrawal time or other failure in following label instructions is suspected, all honey supers or honey extracted from such hives must be isolated from production, sealed, labelled and tested for residues if intended for human use,

remediated for non-human use, or destroyed. If unacceptable residues are present, honey must be rejected for human consumption or remediation, and correctly disposed in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**). Follow **GPP 9 FACILITY MANAGEMENT – MAINTENANCE, PEST CONTROL, CLEANING/SANITATION AND WASTE DISPOSAL**. For disposal of raw honey refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING**. Record what specific corrective action and preventative measures were taken, and the date of error, on the *Medications/Treatments - Monitoring and Corrective Action Record* (**FORM 4.0.5**). Contact the Provincial Apiculturist for correct disposal procedures for contaminated honey product, as necessary.

b) MUST DO All used medicines (and related medicated feed supplements), treatments and monitoring aids must be correctly disposed in a recognized waste facility and documented within the *Medications/Treatments – Inventory and Disposal Record* (**FORM 4.0.1**). Refer to **GPP 9 FACILITY MANAGEMENT – MAINTENANCE, PEST CONTROL, CLEANING/SANITATION AND WASTE DISPOSAL**. Medication equipment or related treatment devices that have come in direct contact with pests, or chemical contaminants must be sanitized, if applicable, or must be rejected for use and properly disposed. Follow **GPP 9 FACILITY MANAGEMENT – MAINTENANCE, PEST CONTROL, CLEANING/SANITATION AND WASTE DISPOSAL.**

c) MUST DO In cases where medications are discarded with contaminated honey, dispose in a recognized waste facility and document within the *Medications/Treatments – Inventory and Disposal Record* (**FORM 4.0.1**). For disposal of contaminated raw honey refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING**.

d) MUST DO If contamination occurs within the apiary ensure that medications and any affected hive equipment is promptly removed when noticed and disposed of correctly (Follow **GPP 1 – APIARY MANAGEMENT: LOCATION, OFF-HIVE PEST CONTROL, HIVE EQUIPMENT MAINTENANCE/CLEANING AND WASTE DISPOSAL**). Incidents of possible contamination and all corrective action taken to eliminate or prevent any hazards to the apiary environment, including hives, and related feed and water supplies, must be documented in the *Apiary – Monitoring and Corrective Action Record* (**FORM 1.0.1**) and the *Medications/Treatments – Inventory and Disposal Record* (**FORM 4.0.1**).

e) If there are indications on the farm operation that suggest potential environmental contamination from hazardous agents, then tests of soil, water, air or livestock may be warranted. All test results from third parties should be recorded within the *Testing Record* (**FORM 1.0.3**) and referenced to corrective actions in the *Apiary – Monitoring and Corrective Action Record* (**FORM 1.0.1**), as warranted.

4.8 TRAINING PROCEDURES

4.8.1 MUST DO Ensure that personnel are trained in safe product handling and use of medications, in recognizing hazards associated with livestock health management, in preparing and providing feed supplements, and in controlling hazards related to **GPP 4**, in order to ensure accuracy and compliance with written procedures and practices and record keeping. Document and monitor training in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1)**.

4.8.2 MUST DO Visually confirm by direct observation of personnel at least once during the implementation of **GPP 4**, and more frequently as warranted by the control procedure (e.g. before the start of each season or active season or processing cycle), that procedures are followed correctly, that personnel are competent in meeting the requirements of **GPP 4**, and to identify potential problems areas that require continued training

as documented in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1)**.

4.8.3 MUST DO Re-train any personnel not following the procedures of **GPP 4** and document in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) in accordance with **GPP 11 – PERSONNEL: CAPABILITIES, QUALIFICATIONS AND PERSONAL HYGIENE**.

4.8.4 MUST DO Review compliance to procedures at least once annually to confirm the effectiveness of **GPP 4**, to identify aspects requiring improvement, and to assess the need for additional training.

4.9 RECORD KEEPING PROCEDURES

4.9.1 Review compliance to record keeping procedures annually, or more frequently as warranted by the control procedure (e.g. before the start of each active season or processing cycle), in order to provide information about the effectiveness of record keeping.

4.9.2 Ensure that all personnel following **GPP 4** are trained in record keeping, in order to ensure accuracy and compliance with written procedures. Visually confirm by direct observation of personnel at least once, preferably before the active season or processing cycle, that record keeping procedures are followed correctly for all aspects of **GPP 4**, and in accordance with procedures detailed in **GPP 12 – RECORD CONTROL, TRACEABILITY AND PRODUCT RECALL.**

4.9.3 Ensure that all farm records specified and provided in **GPP 4** are completed (i.e. signed and dated) and updated as required and maintained for at least eight (8) years by the producer/owner to facilitate traceability and/or product recall.

4.10 RECORDS

- FORM 4.0.1 Medications/Treatments – Inventory and Disposal Record
- FORM 4.0.2 Non-Medicated Feed Supplements – Monitoring and Corrective Action Record
- FORM 4.0.3 Medicated Feed Supplements – Monitoring and Corrective Action Record
- FORM 4.0.4 On-Hive Pest/Disease Monitoring Log (*optional*)
- FORM 4.0.5 Medications/Treatments - Monitoring and Corrective Action Record

4.11 CROSS-REFERENCED RECORDS

- FORM 1.0.3 Testing Record
- FORM 9.0.4 Waste Shipping Lot Record
- FORM 10.0.1 Potable Water – Sampling, Treatment and Corrective Action Record
- FORM 11.0.1 Personnel Training – Monitoring and Corrective Action Record

GPP 5 – HONEY HARVESTING: HANDLING AND TRANSPORTING FULL HONEY SUPERS

5.1 PURPOSE AND SCOPE

5.1.1 The purpose of **GPP 5** is to provide guidelines to prevent or reduce the risk of contamination of raw honey associated with the harvesting and movement ("transport in") of on-farm honey; primarily in providing safe practices for the handling and transportation of full honey supers to the processing facility.

5.1.2 **GPP 5** addresses sources of potential biological, chemical and physical hazards, and related good practices for the prevention or control of such hazards, when handling, and transporting raw honey from the apiary to the processing facility; including hive handling equipment, vehicles and pallets used for moving full honey supers within the farm operation.

5.2 RESPONSIBILITIES AND QUALIFICATIONS

5.2.1 The ***Producer/Owner*** has the overall responsibility for implementing **GPP 5** based on their capabilities, knowledge of food safety and regulatory requirements, and technical experience. These duties include ensuring that:

a) all hives are correctly identified to confirm honey supers are in the correct condition for harvest before removing supers with full honeycomb,

b) transportation equipment and vehicles used for moving raw honey are correctly cleaned to remove biological and chemical contaminants and covered in order to reduce the potential for physical contamination of honey.

c) all raw honey is treated in a manner that limits or prevents contact with pathogenic spores of *Clostridium* spp. and *Bacillus* spp. in dust/soil or dead brood, chemicals (e.g. petrochemical-based products), as a result of incorrect cleaning or handling of pallets or carriers, and contamination from extraneous materials (e.g. soil, wood, metal, rocks/stones, glass), as a result of mishandling or unsafe transportation conditions,

d) designated personnel conducting tasks associated with **GPP 5** are effectively supervised,

e) monitoring, corrective action and record keeping procedures for **GPP 5** are communicated, understood and followed correctly by all relevant personnel, and

f) all records related to **GPP 5** are effectively documented and controlled.

5.2.2 All designated personnel following **GPP 5** must have a complete understanding of the described hazards and relevant procedures, and have the appropriate training regarding these procedures.

5.2.3 All designated personnel are responsible for reporting problems (hazardous incidents) from **GPP 5** to the *Producer/Owner*.

5.3 FOOD SAFETY HAZARDS

5.3.1 **Removing Full Honey Supers**

a) Contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) as a result of full honey supers in contact with soil/dust.

b) Contamination by residues of medications/treatments as a result of incorrect identification and/or incomplete

treatment documentation, resulting in removal of full honey supers with incomplete withdrawal period.

5.3.2 **Transporting Full Honey Supers**

a) Contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) in soil/dust as a result of fouled transport carriers, equipment and/or mishandling during transit (e.g. uncovered loads.

b) Contamination by residues of chemicals (e.g. petrochemical-based products) as a result of fouled transport carriers, equipment and/or mishandling during transit.

c) Contamination by residues of chemicals (e.g. petrochemical-based products) from pallets or transport carriers with no unique identification, known traceability, or other confirmation of food-grade use.

d) Contamination by extraneous material (e.g. metal, glass, rock/sand) as a result of fouled transport carriers, equipment and/or mishandling during transit (e.g. uncovered loads).

5.4 ACCEPTABLE LIMITS FOR CONTROL 

5.4.1 **Removing Full Honey Supers**

a) Honey supers and frames are never in contact with soil/dust from direct contact with ground to prevent contamination by spores of *Clostridium* spp. and/or *Bacillus* spp.

b) Only correctly identified production lots of honey supers that have met withdrawal times for medications/treatments are removed for harvest and extraction.

5.4.2 **Transporting Full Honey Supers**

a) Only honey supers covered and handled to prevent contamination from pathogenic bacteria (e.g. spores of *Clostridium spp, Bacillus spp.*) are transported to the processing facility.

b) Only honey supers assembled on pallets or carriers with known traceability and/or history of food grade usage are transported to the processing facility.

c) No honey supers are transported on fouled transport carriers, or equipment contaminated by residues of chemicals (e.g. petrochemical-based products).

d) Only honey supers covered and handled to prevent contamination from extraneous material (e.g. metal, glass, rock/sand) during transit, are transported to the processing facility.

5.5 CONTROL PROCEDURES

5.5.1 **Removing Full Honey Supers**

a) 

All hive handling equipment and honey supers must be visibly clean and free of dirt residue or particulate matter (i.e. soil). If dirt is detected, ensure that it is removed correctly (i.e. scraping, brushing, and/or washing, as warranted) before supers are removed. Ensure hive-handling equipment and honey supers are placed on upended hive top cover or clean pallets to avoid contamination with dirt or other soil residue. During handling, ensure that honey supers do not come in direct ground contact with soil, dust or vegetation. Related hive handling equipment must be visibly clean and free of any dirt residue.

b) MUST DO Ensure production lots are correctly identified and that only correctly identified honey, suitable for harvest and extraction, is removed for transportation to the processing facility. The date, location, and lot identification designator of full honey supers must be documented before transport out of the apiary.

5.5.2 **Transporting Full Honey Supers**

a) MUST DO All pallets, carriers and vehicles must be inspected and their condition documented before loading honey to ensure cleanliness for transport (e.g. free from dirt, petrochemical-based products, organic waste, or other biological, chemical or physical contaminants).

b) MUST DO All pallets, exteriors of bulk containers, and transportation vehicles must be clean and free of hazardous biological, chemical or physical agents before use.

c) MUST DO All honey must be correctly covered during transportation to prevent contamination from hazardous biological agents (e.g. spores of *C. botulinum*), chemicals and/or particulate matter (e.g. dirt, dust).

d) MUST DO Only pallets with a known history of usage, and not used for any other application, are used for transporting full honey supers.

5.6 MONITORING PROCEDURES

5.6.1 Removing Full Honey Supers

a) MUST DO Visually confirm when removing honey supers, that all production lots are correctly identified, during removal no full honey supers are placed in direct contact with soil/dust from the ground/soil) and production lots are accurately documented in the *Honey Super Lot – Monitoring and Corrective Action Record* (**FORM 5.0.1)**.

b) MUST DO Confirm by review of the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) before the active season, and by direct observation at the time of removing honey supers, that personnel, where available, are correctly trained in the safe handling and removal of full honey supers and take appropriate measures to avoid contamination of raw honey with biological or chemical contaminants.

c) MUST DO Immediately before removing full honey supers, examine all relevant records associated the application of medications/treatments (Refer to **GPP 4 - LIVESTOCK HEALTH MANAGEMENT: HANDLING AND USE OF MEDICATIONS**) in order to confirm information about the nature and termination of treatments (*Medications/Treatments – Monitoring and Corrective Action Record* – **FORM 4.0.5**), and the dates of positioning of the supers are accurate.

d) MUST DO Before removal of full honey supers, ensure that all chemical withdrawal times have been duly recorded and are accurate, and that no devices from previous hive treatments (e.g. plastic strips) are still present within the brood box. Confirm the date, location, and harvest lot identification designator of full honey supers before transport within the *Honey Super Lot – Monitoring and Corrective Action Record*

(**FORM 5.0.1)** to ensure that only correctly identified honey is transported to the processing facility and to facilitate traceability of production lots.

5.6.2 **Transporting Full Honey Supers**

a) MUST DO Confirm by review of the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) before the active season, and by direct observation at the time of loading full honey supers, that personnel are correctly trained in the safe handling, loading and transportation of full honey supers and are aware of appropriate measures to avoid contamination of raw honey with biological or chemical contaminants.

b) MUST DO Visually inspect the condition of pallets and carriers used during *transport in* before any lot of filled honey supers is approved for transport by direct observation to ensure correctness with respect to traceability and/or history of food grade usage and record condition in the *Honey Super Lot – Monitoring and Corrective Action Record* (**FORM 5.0.1)**.

c) MUST DO Visually inspect all containers and vehicles used for transporting honey supers at the time of loading to confirm correctness before any load with full honey supers is approved for transport. Before transportation to the processing facility, record the load conditions for each lot moved within the *Honey Super Lot – Monitoring and Corrective Action Record* (**FORM 5.0.1)** to ensure honey supers are correctly covered to prevent contamination.

5.7 CORRECTIVE ACTION PROCEDURES

5.7.1 Removing Full Honey Supers

a) MUST DO Assess and determine the cause of error during the removal of honey supers within the apiary at the location where the problem or hazardous incident occurs, at the time of monitoring, or when the error is determined. During handling, reject all full honey supers-that are misidentified, or have come in direct ground contact with soil, dust or vegetation if not correctly remediated (e.g. cleaned in the field or returned to the honey facility and cleaned before use). All rejected product is discarded in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**).

b) MUST DO Record the date, location, and lot numbers of supers rejected during handling and corrective action taken (i.e. cleaning or disposal) within the *Honey Super Lot – Monitoring and Corrective Action Record* (**FORM 5.0.1)** and cross-reference within the *Apiary- Monitoring and Corrective Action Record* (**FORM 1.0.1)**, where warranted.

5.7.2 Transporting Full Honey Supers

a) MUST DO Assess and determine the cause of error during the collection and transportation of full honey supers to the processing facility at the location where the problem (hazardous incident) occurs, at the time of monitoring, or when the error is determined. Record all deviations and corrective action taken on the *Honey Super Lot – Monitoring and Corrective Action Record* (**FORM 5.0.1)**.

b) MUST DO Review cleaning protocols, loading and unloading procedures for transporting honey supers and/or load covering and other transit protocols. Reject for use all pallets or carriers contaminated by

soil/dust, residues of chemicals (e.g. petrochemical-based products) or extraneous material (e.g. rock/sand), that are not cleaned correctly, or have no known identity or history of use (i.e. traceability). Document corrective action within the *Honey Super Lot – Monitoring and Corrective Action Record* (**FORM 5.0.1)**.

c) MUST DO In cases, where honey supers are suspected of contamination (e.g. exposure to dust/soil or chemical contamination), ensure that such supers are segregated and held in a manner that is not conducive to robbing from worker bees until tested, remediated or disposed of. Obtain samples from supers within each apiary for third party testing as warranted, following procedures provided by the competent authority (e.g. Provincial Apiculturist), or testing body. Record what specific corrective action and preventative measures were taken, and the date of error, on the *Honey Super Lot – Monitoring and Corrective Action Record* (**FORM 5.0.1)**. If unacceptable chemical residues are present, contaminated honey must be disposed of in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**). Any contaminated or otherwise waste raw honey and related comb must be isolated then discarded in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**), or remediated for non-human consumption, where warranted. Follow **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING** for all raw honey disposals.

5.8 TRAINING PROCEDURES

5.8.1 MUST DO Ensure that personnel are trained in safe handling and transportation procedures for full honey supers, in recognizing hazards associated with honey harvesting, and in controlling hazards related to **GPP 5**, in order to ensure accuracy and compliance with written procedures and practices and record keeping. Document and monitor training in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1)**.

5.8.2 MUST DO Visually confirm by direct observation of personnel at least once during the implementation of **GPP 5**, and more frequently as warranted by the control procedure (e.g. before the start of each season or active season or processing cycle), that procedures are followed correctly, that personnel are competent in meeting the requirements of **GPP 5**, and to identify potential problems areas that require continued training as documented in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1)**.

5.8.3 MUST DO Re-train any personnel not following the procedures of **GPP 5** and document in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) in accordance with **GPP 11 – PERSONNEL: CAPABILITIES, QUALIFICATIONS AND PERSONAL HYGIENE**.

5.8.4 MUST DO Review compliance to procedures at least once annually to confirm the effectiveness of **GPP 5**, to identify aspects requiring improvement, and to assess the need for additional training.

5.9 RECORD KEEPING PROCEDURES

5.9.1 Review compliance to record keeping procedures annually, or more frequently as warranted by the control procedure (e.g. before the start of each active season or processing cycle), in order to provide information about the effectiveness of record keeping.

5.9.2 Ensure that all personnel following **GPP 5** are trained in record keeping, in order to ensure accuracy and compliance with written procedures. Visually confirm by direct observation of personnel at least once, preferably before the active season or processing cycle, that record keeping procedures are followed correctly for all aspects of **GPP 5**, and in accordance with procedures detailed in **GPP 12 – RECORD**

CONTROL, TRACEABILITY AND PRODUCT RECALL.

5.9.3 Ensure that all farm records specified and provided in **GPP 5** are completed (i.e. signed and dated) and updated as required and maintained for at least eight (8) years by the producer/owner to facilitate traceability and/or product recall

5.10 RECORDS

- FORM 5.0.1 Honey Super Lot - Monitoring and Corrective Action Record

5.11 CROSS-REFERENCED RECORDS

- FORM 1.0.1 Apiary – Monitoring and Corrective Action Record
- FORM 4.0.5 Medications/Treatments – Monitoring and Corrective Action Record
- FORM 9.0.4 Waste Shipping Lot Record
- FORM 11.0.1 Personnel Training – Monitoring and Corrective Action Record

GPP 6– PROCESSING FACILITY: DESIGN GUIDELINES

6.1 PURPOSE AND SCOPE

6.1.1 The purpose of **GPP 6** is to provide management guidelines to aid in the design, construction and/or renovation of a typical on-farm honey processing facility in order to prevent or reduce the risk of potential contamination of raw honey from food safety hazards associated with events that could occur before, during and following the active season of honey extraction and processing.

6.1.2 **GPP 6** addresses the sources and management procedures of potential biological and chemical hazards within the processing facility environment, identified within the ***CBISQT*** Program that could negatively affect the food safety of raw honey before, during and following the active season of honey extraction and processing.

6.2 RESPONSIBILITIES AND QUALIFICATIONS

6.2.1 The ***Producer/Owner*** has the overall responsibility for implementing **GPP 6** based on their capabilities, knowledge of food safety and regulatory requirements, and technical experience. These duties include ensuring that:

a) all facilities are designed, constructed and/or renovated in a manner intended to reduce the risk of biological, chemical and/or physical contamination to honey products, and

b) designated personnel conducting tasks associated with **GPP 6** are effectively supervised.

6.2.2 All designated personnel following **GPP 6** must have a complete understanding of the described hazards and relevant procedures, and have the appropriate training regarding these procedures.

6.2.3 All designated personnel are responsible for reporting problems (hazardous incidents) from **GPP 6** to the *Producer/Owner*.

6.3 FOOD SAFETY HAZARD PROFILE

6.3.1 All potential hazards affecting on-farm safety of honey primary processing on the premises, as described within the ***CBISQT*** Producer Manual should be considered for the design and construction of the processing facility, including the risk of natural disaster (e.g. flooding).

6.4 FACILITY DESIGN GUIDELINES

6.4.1 **Facility Map –** An optional schematic diagram of the honey processing facility (*Honey Processing and Packing Facility Map* – **FORM 6.0.1**) should be drawn up to identify common points of cross-contamination with **B**- biological, **C**-Chemical, or **P**-Physical hazards. Diagram and identify receiving areas, uniquely identified storage containers and disposal areas, processing facilities, and any areas where the risk of contamination may occur from the environment (e.g. flooding) or other activities and adjacent external influences (e.g. wetlands, power lines, wastelands, neighbouring property, etc.) that could affect the food safety assurance of honey products**.**

6.4.2 The schematic should demonstrate access control points, operational flow, as well as visitor and personnel movement. The purpose of this map is to identify areas of possible cross contamination and to take appropriate preventive action.

6.4.3 **Location –** Be aware that the on-farm processing environment, including the immediate surroundings and conditions within the processing facility or storage areas, can introduce or assist in the transmission of hazardous biological agents (including the introduction of airborne infectious agents and other pathogens),

and chemical contaminants.

6.4.4 **Biosecurity** –Honey extraction, processing or other facilities should be located sufficiently apart from neighbouring areas where agricultural chemicals and waste materials are stored, and in a manner where access by unauthorized visitors (i.e. persons and/or vehicles) can be effectively controlled by gates, barriers, fences, direction signs or 'access prohibited' signs, and foot/boot bath stations, where necessary, in order to ensure that no unauthorized and/or contaminated personnel enter facilities. Refer to the **CFIA National Bee Farm-Level Biosecurity Standard** for more information.

6.4.5 **Building Materials and Processing Equipment** – Ensure that all construction and surface materials associated with honey extraction, processing, storage areas and handling facilities are free from potential sources of chemical (e.g. paint or other sources of lead or heavy metals) and physical contamination (e.g. wood or metal particulate matter, glass or acrylic plastic fragments, etc.). There is a potential chemical hazard from lead in non-food grade honey handling, processing and storage equipment, therefore all metal used in processing equipment should not contain lead, including solder. A supplier's declaration should be sought at the point of receiving to ensure the correct standard is met (e.g. stainless steel, 300 series or greater). A lead swab test (e.g. LeadCheck™ Swabs) should be conducted to detect the presence of lead solder residues in stainless steel processing equipment before first use.

6.4.6 **Facility Design** - The honey extraction and processing facility should be designed and constructed to facilitate the production of safe honey products, with materials and work areas that can be easily accessed and cleaned. Ensure that there is adequate space to conduct the activities required for the processing of honey, including lighting and ventilation appropriate to the task, and minimal dust, dirt, odours, smoke and other contaminants in areas where honey is processed and packed. Refer to **GPP 3 – STORING INPUTS**, **GPP 5 – HONEY HARVESTING: HANDLING AND TRANSPORTING HONEY SUPERS, GPP 7 – RAW HONEY: RECEIVING, STORING EXTRACTING AND PROCESSING, GPP 8 – FINISHED HONEY: PACKING MANAGEMENT, STORAGE AND PRODUCT SHIPPING** and **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL** for specific requirements.

6.4.7 Ensure that *honey production and holding facilities* are of sufficient size to ensure that honey products are isolated from bird, rodent and insect pests, including other bee stock.

6.4.8 Ensure that all *honey storage, extraction, processing and packing facilities* meet adequate housing requirements including appropriate size and ventilation, division of clean and soiled work areas, and separation of production areas from storage areas with hazardous inputs (e.g. farm chemicals).

6.4.9 The layout of the facility requires distinct separation of the honey processing areas from potential sources of contaminants through the establishment of separate work areas within the honey production facility; namely loading area, hot room, extracting room, tank and filling room, and storage area.

6.4.10 Separation of the processing area from areas that may introduce contaminants, (i.e. washrooms and loading areas) should be incorporated into the design of the facility by means of doors, partitions, location or other effective means. Ensure that the flow through of processed honey, packaging material and waste materials are independent and unconnected to safeguard that there is no cross-contamination with finished product.

6.4.11 **Accessibility** - Minimize the introduction of dirt and dust into the processing areas by a) paving, grading and draining roadways, loading areas and pathways, b) sealing passageways between buildings to control carry-over of dust and dirt by footwear, c) sealing loading bays, and d) restricting the use of dollies and carts to either the field or the plant.

6.4.12 **Water Supply –** Ensure the processing facility has access to an adequate supply of potable water (in

conformance with Provincial water quality standards). Refer to **GPP 10 – POTABLE WATER MANAGEMENT**.

6.4.13 **Washroom Facility –** Ensure that a hand washing sink with potable water, soap, single use hand towels (or hand blower) and flushing toilet is provided for personnel on the premises, or in close proximity with no risk of cross-contamination due to need for personnel hygiene (Refer to **GPP 11 – PERSONNEL: CAPABILITIES, QUALIFICATIONS AND PERSONAL HYGIENE**) and movement of personnel to and from washroom facilities. All washroom facilities should be accessible, properly stocked, cleaned and well-maintained, particularly during the active processing season.

6.4.14 **Sewage and Waste –** A sewage and waste disposal system should be in place that, a) disposes all sewage and waste, b) is in good order and repair, and c) has effluent lines large enough to handle peak loads and to prevent cross contamination or back flow into the processing area(s). In addition, in order to conform to environmental standards for waste disposal, wash water from the extraction room may require special treatment and handling. Consult local authorities for details on regulations that apply.

6.4.15 **Recycling and Waste Disposal -** The honey processing facility should be designed to handle waste and recyclable matter. Waste containers should be labelled, easy to clean and fitted with tight fitting lids. Plastic liners are recommended for bins to ensure containers are leak proof, non-absorbent and resistant to insects, rodents and other animals. It is recommended that all recycling and waste disposal containers are located on concrete pads, and disposed of as regularly as warranted to prevent hazardous contamination.

6.4.16 **Processing Area -** The design of new, or upgrade of old facilities, should focus on hygiene. The objective is to protect honey products from contaminants, and eliminate opportunities for cross-contamination.

6.4.17 **Processing Equipment -** Equipment for processing honey should be accessible for cleaning, sanitizing, maintenance, calibration and inspection. Stainless steel or plastic honey holding equipment must be food grade and lead free. All equipment should be intact and not include signs of degradation that could negatively affect the food safety of honey products.

6.4.18 **Heating, Cooling, Plumbing, Power -** Plumbing, electrical and ducting pipes should be laid out so that there are no areas where extraneous materials (i.e. dust and dirt) can accumulate. Structural members should be chosen to minimize or eliminate hard-to-clean areas. Round pipes rather than I beams are preferred. Ensure that plumbing is part of a monthly facility inspection routine to confirm that pipes do not leak, pool water or condensation, or function incorrectly; otherwise, maintenance is required.

6.4.19 **Building Exterior -** Buildings should be designed and maintained to prevent the entry and harborage of pests and the entry of contaminants (e.g. cleared buffer strip surrounding the building). Entryways and other openings into the building, like conveyors, chutes or services should be sealed against pest and dust entry by means of air curtains, strip curtains or self-closing devices. Building exteriors should not include covered ledges where birds or insects potentially roost or nest. Any nests should be promptly removed. Processing areas should be separated from other areas by means of open spaces and doors. Processing areas should not open directly to the outside.

6.4.20 **Building Interior (Materials) -** Building materials for interiors of processing areas should: a) not emit toxic vapours, b) be impervious to moisture, c) have a smooth finish, d) be resistant to rust, corrosion and rot, d) be impact resistant or protected from impact and free from chips, flakes or loose fibers, e) have light colored finishes to aid in the identification of contaminants, f) cleanable surfaces, and g) all contact surfaces should be of food grade materials.

6.4.21 **Walls, Ceilings and Floors –**Ensure that walls and ceilings are installed in all honey extraction and storage areas. Surfaces must be*:* a) smooth to prevent the accumulation of dirt, and minimize

condensation, b) impervious to moisture to prevent mould development, c) light colored and free of paint flakes, d) easy to clean, e) flush with all joints sealed for ease of cleaning, d) crevice sealed to control pests and dust, e) coved between walls and ceilings, and walls and floors in "wet" areas, f) capped on partitions that do not reach the ceiling and on window sills to prevent the accumulation of dust and dirt, g) washable and nontoxic, and h) with floors sloped and drained to prevent pooling of water. Paint is not recommended in the processing area; the use of metal or plastic wall /roof covering is recommended.

6.4.22 **Lighting -** Lighting should be adequate for the task at hand. Ensure that shatterproof covers are installed on all light fixtures. Suggested illumination guidelines are no less than: a) 540 lux (lumen/m2) at inspection points (deboxing for visual comb check, manual uncapping areas, extraction inspection points), b) minimum ceiling height of 3 meters, c) minimum double 91 cm (36") fluorescent tubes with diffusers at 1.2 m spacing, d) 220 lux in work rooms, and e) 110 lux in other areas.

6.4.23 **Ventilation –** Ensure ventilation systems have: a) sufficient natural or mechanical ventilation in the honey processing area to remove excess heat, fumes, smoke, odors, vapor, steam and airborne particles, b) feature screens and filters that are easily removable for cleaning, c) maintain a positive air pressure inside the facilities, d) maintain a target air exchange rate of four (4) air changes per hour, and e) that air is not drawn from potentially hazardous areas.

6.4.24 The ideal ventilation flow within the facility should allow clean, filtered air forced in at the point where finished honey is stored prior to filling, flowing across extraction to deboxing, to the super loading area and finally to super storage areas, chemical and pesticide stores and parking areas.

6.4.25 Ensure that air conditioners, evaporative coolers and other equipment that can provide breeding areas for bacteria (e.g. *Listeria*, sp., *Legionella* sp.) are not located near production lines or where they can collect overflow or condensate water. All such equipment should be cleaned prior to use with a bleach/water solution to control potentially hazardous bacteria.

6.5 RECORDS

- FORM 6.0.1 Honey Processing and Packing Facility Map (*optional*)

GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING

7.1 PURPOSE AND SCOPE

7.1.1 Several methods to extract and process raw honey are employed by producer-packers across Canada, depending upon the scale of the operation and the intended market. The ***CBISQT*** Program recognizes that a number of process steps could occur from the time honey supers (from on-farm and/or off-farm suppliers) or bulk containers (from off-farm suppliers) are received at the on-farm processing facility/honey house to the point where honey is extracted and processed. Typical process steps involved in the extraction and primary processing of various raw liquid, crystallized or creamed/whipped honey products for human consumption are described in **Appendix III.** The purpose of **GPP 7** is to provide guidelines to prevent, or otherwise reduce, the risk of contamination of honey associated with these generic steps.

7.1.2 Mature honeycomb and raw honey are very stable as unadulterated food products, however, honey can be contaminated before receiving, and during extraction and processing by spores of pathogenic bacteria (e.g. *C. botulinum*, *Bacillus* spp.) on beeswax, chemical residues from medications and other treatments, and physical contaminants from foreign objects (e.g. wood, metal, plastic fragments or stones). Several of these hazards are associated with mishandling or incorrect processing procedures during extracting, processing, and storing raw honey. **GPP 7** addresses sources of potential biological, chemical and physical hazards, and related good practices for the prevention or control of such food safety hazards, when receiving honey supers or bulk honey on-farm, and during the extracting and processing stages. For requirements for personnel involved in the receiving, storing, extracting and processing of raw honey refer to **GPP 11 – PERSONNEL: CAPABILITIES, QUALIFICATIONS AND PERSONAL HYGIENE.**

7.2 RESPONSIBILITIES AND QUALIFICATIONS

7.2.1 The ***Producer/Owner*** has the overall responsibility for implementing **GPP 7** based on their capabilities, knowledge of food safety and regulatory requirements, and technical experience. These duties include ensuring that:

a) all on-farm and/or off-farm full honey supers and off-farm bulk honey containers received and stored on the farm operation meet the requirements outlined in **GPP 7**,

b) all processing steps are conducted in a safe and sanitary manner to minimize the risk of biological, chemical and/or physical contamination to honey,

c) designated personnel involved with honey extraction, uncapping and processing are aware of the importance of control points and acceptable limits for the prevention of hazards (e.g. mishandling frames or uncapping brood comb),

d) all personnel conducting tasks associated with **GPP 7** are effectively supervised, monitoring, corrective action and record keeping procedures for **GPP 7** are communicated, understood and followed correctly by all relevant personnel and,

e) all errors or problems associated with **GPP 7** that are detected through regular inspection, and corresponding corrective actions to address such problems, are recorded in order to ensure that operational procedures are accurate and that preventative food safety measures are effective.

7.2.2 All designated personnel following **GPP 7** must have a complete understanding of the described hazards and relevant procedures, are competent in adoption of safe handling and hygienic procedures; especially during the process step of removing frames from supers (deboxing), uncapping wax from honeycomb and excluding brood comb, and have the appropriate training regarding these procedures.

7.2.3 All designated personnel are responsible for reporting problems (hazardous incidents) from **GPP 7** to the *Producer/Owner*.

7.3 FOOD SAFETY HAZARDS

7.3.1 **Receiving Raw Honey** (**On-Farm and/or Off-Farm**)

a) Contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) as a result of fouled transport carriers, equipment and/or mishandling in transit.

b) Contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) as a result of receiving wrong consignment (e.g. incorrect identification, and/or incomplete documentation).

c) Contamination by residues of farm chemicals (e.g. petrochemical-based products) as a result of fouled transport carriers, equipment and/or mishandling in transit.

d) Contamination by residues of chemicals (e.g. antibiotics, miticides, monitoring aids) as a result of receiving wrong consignment (e.g. incorrect identification, and/or incomplete documentation).

e) Contamination by extraneous material (e.g. metal, glass, rock/sand) as a result of fouled transport carriers, equipment and/or mishandling in transit.

7.3.2 **Storing Raw Honey**

a) Contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) in dust and/or excrement (e.g. *E. coli, Salmonella* spp.) of wild/domestic animals as a result of unsanitary storage conditions or location.

b) Contamination by residues of chemicals (e.g. petrochemical-based products, pesticides) as a result of fouled storage conditions or location.

c) Contamination by extraneous material (e.g. wood, plastic, or metal) as a result of fouled storage conditions or location.

7.3.3 **Heating (Hot Room)** - Contamination by residues of chemicals (e.g. petrochemical-based products, farm chemicals) as a result of fouled storage conditions or location.

7.3.4 **Deboxing -** Contamination by extraneous material (e.g. wood, plastic, or metal) as a result of mishandling (e.g. broken frames).

7.3.5 **Uncapping**

a) Contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) as a result of fouled instruments, processing equipment, premises and/or personnel during uncapping honeycomb.

b) Contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) as a result of uncapping honeycomb with dead brood.

c) Contamination by residues of chemicals (e.g. medications/treatments) as a result of mishandling deboxed brood comb.

7.3.6 **Pumping** - Contamination by extraneous material (e.g. metal, glass) as a result of damaged equipment (e.g. broken machinery).

7.3.7 **Holding/Settling -** Contamination by extraneous material (e.g. metal, glass) in open holding/settling tanks as a result of damaged equipment (e.g. unshielded broken light fixtures).

7.3.8 **Filtering -** Contamination by extraneous material (e.g. metal) as a result of damaged equipment (e.g. fragmented filters).

7.3.9 **Waste Disposal (Honey and Related Products)**

a) Contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) as a result of incorrect disposal that promotes detrimental bee foraging (e.g. robbing).

b) Contamination by residues of chemicals (e.g. antibiotics, miticides, monitoring aids) as a result of incorrect disposal that promotes detrimental bee foraging (e.g. robbing).

7.4 ACCEPTABLE LIMITS FOR CONTROL 

7.4.1 **Receiving Raw Honey** (**On-Farm and/or Off-Farm**)

a) No honey (full honey supers and/or bulk containers) contaminated by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.), as a result of unsanitary transport carriers, equipment and/or mishandling in transit, are accepted on-farm.

b) Only honey (full honey supers and/or bulk containers) correctly identified and with complete food safety documentation is accepted on-farm.

c) All honey inputs (full honey supers and/or bulk containers) that are damaged, punctured, or with indications of being cross-contaminated with chemicals (e.g. petrochemical-based products) as a result of fouled transport carriers, equipment and/or mishandling in transit are rejected for use upon delivery (not unloaded).

d) No honey (full honey supers and/or bulk containers) contaminated by extraneous material (e.g. metal, glass, rock/sand), as a result of fouled transport carriers, equipment and/or mishandling in transit, are accepted on-farm.

7.4.2 **Storing Raw Honey**

a) All raw honey is held under correct storage conditions (e.g. clean/sanitary condition and location) to prevent contamination by pathogenic bacteria.

b) All raw honey is held under correct storage conditions (e.g. clean condition and location) to prevent contamination by residues of farm chemicals.

c) All raw honey is held under correct storage conditions (e.g. clean condition and location) to prevent contamination by extraneous materials (e.g. wood, plastic, metal).

7.4.3 **Heating (Hot Room) –** All raw honey is held in a contaminant-free hot room.

7.4.4 **Deboxing -** Deboxing is only conducted with handling procedures that prevent contamination of honey.

7.4.5 **Uncapping**

a) All uncapping is conducted with cleaned instruments, processing equipment and premises according to product label instructions, by competently trained personnel following safe handling procedures.

b) No honeycomb with dead brood is uncapped.

c) No brood comb is mishandled or uncapped.

7.4.6 **Pumping -** Only pumping equipment maintained according to manufacturer's instructions/accepted practices to prevent contamination by extraneous materials is used.

7.4.7 **Holding/Settling -** Only holding/settling equipment maintained according to manufacturer's instructions/accepted practices to prevent contamination by extraneous materials is used.

7.4.8 **Filtering -** Only filtering equipment maintained according to manufacturer's instructions/accepted practices to prevent contamination by extraneous materials is used.

7.4.9 **Waste Disposal (Honey and Related Products) -** All waste honey, and related products, is disposed of in a manner consistent with all applicable regulations, including measures to prevent detrimental bee foraging (robbing).

7.5 CONTROL PROCEDURES

7.5.1 Receiving Raw Honey (On-Farm and/or Off-Farm)

a) MUST DO All raw honey inputs (full honey supers and/or bulk containers) must be visually inspected at the time of receipt on-farm in order to ensure product is clean and free of any contaminants or damage as a result of unsafe transportation conditions (e.g. uncovered loads, contaminated carriers, pallets or handling equipment), faulty equipment or mishandling in transit (Refer to **GPP 5 – HONEY HARVESTING: HANDLING AND TRANSPORTING HONEY SUPERS)**.

b) MUST DO All incoming raw honey inputs, and related documentation (e.g. purchase orders, invoices and/or other records), are examined for correctness at the time of receipt, and that all supplier's declaration documents (e.g. *Supplier's Declaration* (**FORM 8.0.4)** and *Shipping Lot Record* (**FORM 8.0.5**)) are collected, checked for correctness, and retained. Only raw honey inputs, from the on-farm operation in accordance with the ***CBISQT*** Program, or from the reputable suppliers (preferably using the ***CBISQT*** Program), are received on-farm. In cases where the option of third party testing of raw honey inputs is requested, record all test results within the *Testing Record* (**FORM 1.0.3**).

c) Determine the cause for returned honey at the control point of receiving in order to assess any risk (including how honey will be handled for storage, reprocessed or disposed of, and how containers will be handled and cleaned). Surplus honey or honey that has been returned because of crystallization or inaccurate grading can be forwarded for reuse or reprocessing. Honey that has darkened because of overheating in transit should be set aside and tested for elevated levels of hydroxymethylfurfural (HMF) (>40 mg/kg HMF[30]); a sugar breakdown product used as a quality indicator since it increases in direct

[30] Codex Alimentarius Commission 2001. Codex Standard for Honey, Codex Stan 12-1981

proportion to high temperature (> 35°C (95°F)) and storage time. Returned honey that has been heated in transit should be set aside and tested for HMF. Ensure honey that has been recalled by the CFIA for chemical residues is discarded in a recognized waste facility. Follow **GPP 2** and Provincial Regulations where warranted.

d) MUST DO Honey returned for suspected physical contamination should be visually inspected. Ensure wood, metal or plastic contamination is removed by remedial re-filtering, where possible. Glass contamination is unacceptable in honey for human consumption, and ensure such contaminated honey is segregated for alternative use (e.g. bee feed supplement) or is correctly discarded in a recognized waste facility following Provincial Regulations where warranted.

e) Metal drums that are not food-grade quality may be refurbished through a reconditioning facility that uses food-grade products. Drums that are in poor condition (e.g. rust, leaks) and are not suitable for reconditioning should be discarded in a recognized waste facility or scrap metal disposal site.

f) MUST DO Retain all receipts, invoices, bills of lading and/or packing slips and supplier declarations related to raw honey in a secure location in accordance with **GPP 12 – RECORD CONTROL, TRACEABILITY AND PRODUCT RECALL.**

7.5.2 **Storing Raw Honey**

a) MUST DO Ensure that all full honey supers and bulk containers containing raw honey are stored in a designated storage location under a clean and dry storage environment at a temperature suitable for the storage item (as determined by the requirements of the product), protected from dust and excrement of wild/domestic animals and free of chemical contaminants (e.g. farm chemicals, petrochemical-based products, medications, etc.) and extraneous materials such as glass or other physical hazards.

b) MUST DO All storage areas for raw honey must have a regular schedule for pest monitoring and control as outlined in **GPP 9 - FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL.**

c) MUST DO All storage areas for raw honey must have a regular schedule for maintenance and cleaning/sanitation monitoring and control as outlined in **GPP 9 FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL**.

7.5.3 MUST DO **Heating (Hot Room) –** Ensure that all honey supers and bulk containers are held in a designated room under suitable conditions that prevent contamination from chemicals (e.g. petrochemical-based products) as a result of fouled storage conditions or location.

7.5.4 MUST DO **Deboxing -** Monitoring the process of deboxing is essential to reduce the risk of contamination from physical hazards affecting the food safety assurance of raw honey. Ensure that all honey supers are visually inspected for breakage following deboxing to ensure all broken or splintered frames and fragments are detected and separated.

7.5.5 MUST DO **Uncapping** – Ensure that all uncapping is conducted in a clean environment by competent and hygienic personnel (following correct procedures to identify and segregate intact brood comb) to prevent

contamination of raw honey from biological or chemical hazards that may be present in brood comb if it is uncapped or mishandled. For correct disposal of brood comb refer to **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL**.

7.5.6 MUST DO **Pumping –** Ensure that all pumping equipment is maintained in accordance with all maintenance procedures and schedules according to manufacturers' instructions. Refer to **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL**.

7.5.7 MUST DO **Holding/Settling -** Ensure that all holding and settling tanks, and related equipment, are maintained in accordance with all maintenance procedures and schedules according to manufacturers' instructions. Refer to **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL**.

7.5.8 MUST DO **Filtering -** Ensure that all filters, and related equipment, are maintained in accordance with all maintenance procedures and schedules according to manufacturers' instructions. Refer to **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL**.

7.5.9 **Waste Disposal (Honey and Related Products)**

a) MUST DO Recognize the risk of introduction and/or transmission of hazardous pathogens and other agents from discarded honey and related products. Honey contaminated with waste chemicals generated from off-hive the control pests, or maintenance products used to maintain surfaces and hive equipment must not become contaminants to honey supers, feed and water, work surfaces and personnel.

b) MUST DO Ensure that no waste honey is disposed of near the processing facility. Waste honey materials must be disposed of promptly in sealed containers or other bee-proof enclosures and must not be conducive to robbing from worker bees, proliferation of pest species (e.g. rodents, birds, and insects) within the local surroundings, or other environmental contamination.

c) MUST DO All honey rejected for human consumption and not slated for other use (e.g. as a autumn feed supplement), and related products intended as waste, must be discarded in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**). Waste disposal must not be conducive to robbing from worker bees resulting in biological or chemical contamination of honey supers, proliferation of pest species (e.g. rodents, birds, and insects) within the local surroundings, or other environmental contamination.

d) MUST DO Follow **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL** and Provincial Regulations where warranted.

7.6 MONITORING PROCEDURES

7.6.1 **Receiving Raw Honey** (**On-Farm and/or Off-Farm**)

a) MUST DO Inspect transport carriers and consignments of on-farm and/or off-farm full honey supers at the

time of arrival for breakage, damage or signs of contamination (e.g. dirt) to confirm that input lots are correctly identified and acceptable according to condition and documentation. Confirm by direct observation of personnel, at least once before the start of the active season, that all procedures are followed correctly according to **GPP 7**. Observe personnel on a daily basis, as warranted, during the process of receiving to confirm correct procedures. Information related to receiving for all honey inputs must be documented on a continuing basis as frequently as required. Review the *Honey Super Lot – Monitoring and Corrective Action* (**FORM 5.0.1**) to confirm condition of full honey supers at transport from on-farm sources and the *Supplier's Declaration* (**FORM 8.0.4**) and related ***CBISQT*** documents or equivalent, from off-farm suppliers. Document acceptable inputs in the *Receiving Full Honey Supers - Monitoring and Corrective Action Record (***FORM 7.0.1**) before handling any product for immediate inventory or use.

b) MUST DO Inspect transport carriers and consignments of bulk containers of off-farm honey, at the time of arrival for breakage, punctures, damage or signs of contamination (e.g. dirt) to confirm that input lots are correctly identified and acceptable according to condition and documentation. Confirm by direct observation of personnel, at least once before the start of the active season, that all procedures are followed correctly according to **GPP 7**. Observe personnel on a daily basis, as warranted, during the process of receiving to confirm correct procedures. Information related to receiving for all off-farm bulk containers must be documented on a continuing basis as frequently as required. Review the *Supplier's Declaration* (**FORM 8.0.4**) and related ***CBISQT*** documents (Refer to **GPP 8 – FINISHED HONEY: PACKING MANAGEMENT, STORAGE AND PRODUCT SHIPPING**), or equivalent, from off-farm bulk honey suppliers. Document acceptable inputs in the *Receiving Full Honey Bulk Containers - Monitoring and Corrective Action Record (***FORM 7.0.2**) before handling any product for immediate inventory or use

7.6.2 **Storing Raw Honey**

a) MUST DO Inspect all storage areas allocated for storing raw honey (Refer to **Area 3**, **GPP 3 - STORING INPUTS**) before the start of the active season or processing cycle, and before storing raw honey in order to provide information about the effectiveness of procedures and to identify potential problems areas requiring corrective action and continued observation. Record any potential hazards, the effectiveness of storage controls (including temperature and humidity requirements), and the overall suitability of the storage location in the *Storage - Monitoring and Corrective Action Record* **(FORM 3.0.1)**.

b) MUST DO Visually observe each consignment at the time of storage to confirm that inputs are correctly identified, acceptable according to storage sector requirements, stored under correct conditions, and documented in the *Storage - Monitoring and Corrective Action Record* **(FORM 3.0.1)**.

c) MUST DO Routine inspections for any signs of contamination within the raw honey storage area must be conducted at least monthly on a continuing basis throughout the year, and at weekly intervals, or more frequently as warranted, throughout the active season, and recorded within the *Storage - Monitoring and Corrective Action Record* **(FORM 3.0.1)**. Inspect storage areas to identify signs of any contamination associated with biological hazards (e.g. bird or rodent activity or buildup), chemical hazards (e.g. opened packaging, spillage or other signs of contamination), and physical hazards (e.g. broken glass, dust) from mishandling or incorrect storage conditions.

7.6.3 MUST DO **Heating (Hot Room) -** All raw honey consignments (full honey supers or bulk containers), and the hot room must be visually inspected before each heating cycle for exactness (e.g. correct identification

of consignments, clean/undamaged condition, uncontaminated area) to ensure that storage conditions (e.g. temperature, humidity and storage duration) and consignments are controlled. Damaged or contaminated supers or containers, or other problems associated with the hot room, must be documented in the *Extraction/Processing Honey – Monitoring and Corrective Action Record* (**FORM 7.0.5**).

7.6.4 MUST DO **Deboxing** - Directly observe all activities associated with deboxing including handling and inspecting of frames of honeycomb to ensure that procedures are followed correctly by trained personnel. Confirm by direct observation of personnel, at least once at the start of the active season, that all procedures are followed correctly according to **GPP 7** and by review of the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**). Observe personnel on a daily basis, as warranted, during the process of deboxing and inspection to confirm correct procedures. Wood frames should be inspected visually for breakage at deboxing and discarded if broken or splintered. Damaged or contaminated supers or containers, or other problems associated with deboxing and inspection must be documented in the *Extraction/Processing Honey – Monitoring and Corrective Action Record* (**FORM 7.0.5**).

7.6.5 MUST DO **Uncapping** - Directly observe all activities associated with uncapping wax from frames and identifying and excluding brood comb at the start of the active season to ensure that procedures are followed correctly by trained personnel following hygienic procedures. Confirm by direct observation of personnel on a daily basis, as warranted, during the process of uncapping to confirm that all procedures are followed correctly according to **GPP 7** and by review of the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) and the *Personnel Hygiene – Monitoring and Corrective Action Record* (**FORM 11.0.2**). Contamination of raw honey, or other problems associated with incorrect uncapping of honeycomb or brood comb, must be documented in the *Extraction*/*Processing Honey – Monitoring and Corrective Action Record* (**FORM 7.0.5)**.

7.6.6 MUST DO **Pumping** – Inspect pumping equipment or other related mechanical parts (e.g. valves, honey gates) that come in direct contact with raw honey for signs of wear before and after each production cycle, or more frequently as warranted, in order to prevent contamination from extraneous material. A maintenance schedule for machinery and other equipment must be in place and documented on the *Facility and Equipment Maintenance - Monitoring and Corrective Action* Record (**FORM 9.0.2**) to ensure equipment is fully functional and operating correctly. Refer to **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL.** Record all pump maintenance or replacement on the *Facility and Equipment Maintenance - Monitoring and Corrective Action* Record (**FORM 9.0.2**) to ensure pump equipment is operating correctly.

7.6.7 MUST DO **Holding/Settling** - Inspect holding and settling tanks and other related mechanical parts that come in direct contact with raw honey for signs of wear before and after each production cycle, or more frequently as warranted. A maintenance schedule for holding and settling tanks, and other related equipment, must be in place and documented on the *Facility and Equipment Maintenance - Monitoring and Corrective Action Record* (**FORM 9.0.2**) to ensure equipment is fully functional and operating correctly. Refer to **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL**. Visual inspection must be performed to ensure that the sump or settling tank is not completely drained at the end of each production lot. Record all sump maintenance on the *Facility and Equipment Maintenance - Monitoring and Corrective Action Record* (**FORM 9.0.2**) to ensure sump equipment is operating correctly.

7.6.8 MUST DO **Filtering** – Inspect filters and other mechanical parts (e.g. valves, honey gates) that come in

direct contact with honey products for signs of wear before and after each production cycle, or more frequently as warranted, in order to prevent contamination from non-filterable extraneous material. A maintenance schedule for filters must be in place and documented on the *Facility and Equipment Maintenance - Monitoring and Corrective Action Record* (**FORM 9.0.2**) to ensure filters are fully functional and operating correctly. Filters must be cleaned weekly in high volume facilities (or as required to perform its task), checked for signs of wear, and recorded on the *Facility and Equipment Maintenance - Monitoring and Corrective Action Record* (**FORM 9.0.2**), following **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL**. Record all filter maintenance or replacement on the *Facility and Equipment Maintenance - Monitoring and Corrective Action Record* (**FORM 9.0.2**) to ensure filter equipment is operating correctly.

7.6.9 MUST DO **Waste Disposal (Honey and Related Products) -** Inspect and confirm the accuracy, integrity and safety of waste disposal activities associated with waste honey and related products by self-inspection and through record keeping (*Waste Shipping Lot Record* (**FORM 9.0.4**)) at monthly intervals (or more frequently as warranted during the active season or production cycle) in order to monitor any disposal practice that potentially could contaminate raw honey.

7.7 CORRECTIVE ACTION PROCEDURES

7.7.1 Receiving Raw Honey (On-Farm and/or Off-Farm)

a) MUST DO In the event that perceived or unacceptable (e.g. signs of contamination, misidentified consignments, filled honeycomb with dead or decaying brood) honey supers or bulk containers are received at the processing facility, then supers or containers are labelled and segregated to prevent contamination and documented (*Receiving Full Honey Supers – Monitoring and Corrective Action Record* (**FORM 7.0.1**) or *Receiving Full Honey Bulk Containers – Monitoring and Corrective Action Record* (**FORM 7.0.2**) until they can be suitably tested, remediated (e.g. full honeycomb with dead brood can be used as brood comb and bulk containers can be reused following cleaning), returned to the supplier, or correctly discarded in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**).

b) MUST DO In the case of possible contamination of off-farm honey that requires testing or recall, refer to the supplier's *Check Sample Record* (**FORM 7.0.4**) for bulk containers where available, and document any third party test results in the *Testing Record* (**FORM 1.0.3**).

7.7.2 MUST DO **Storing Raw Honey** – All raw honey that has been inadvertently exposed to hazardous biological agents, chemical residues (e.g. petrochemical-based products, treatments, repellents) or extraneous material during storage must be isolated, sealed, labelled for corrective action and recorded in the (*Storing – Monitoring and Corrective Action Record* (**FORM 3.0.1**). Honey contaminated by physical hazards must be correctly remediated (e.g. filtered during processing steps), isolated and used for non-human consumption, or correctly disposed. If hazardous biological, chemical or physical contaminants are present, all isolated honey must be discarded in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**), or remediated for non-human use.

7.7.3 MUST DO **Heating (Hot Room) -** All raw honey consignments (full honey supers or bulk containers) that could be contaminated by residues of chemicals (e.g. petrochemical-based products) from a contaminated hot room must be isolated, sealed, labelled for corrective action and recorded in the *Extraction/Processing Honey – Monitoring and Corrective Action Record* (**FORM 7.0.5**). If hazardous chemical contaminants

are present, all isolated honey must be discarded in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**), or allocated for non-human use.

7.7.4 MUST DO **Deboxing -** All raw honey that has been inadvertently exposed to extraneous material during deboxing must be isolated, sealed, labelled for corrective action and recorded in the *Extraction/Processing Honey – Monitoring and Corrective Action Record* (**FORM 7.0.5**). Honey contaminated by physical hazards must be correctly remediated (e.g. filtered during processing steps), isolated and used for non-human consumption if unfilterable, or correctly discarded in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**).

7.7.5 MUST DO **Uncapping -** Ensure that corrective actions related to problems in controlling hazards resulting from the use of unsanitary equipment, instruments, premises or personnel during uncapping, uncapping honeycomb with dead brood, or mishandling deboxed brood comb are correctly taken at the time of occurrence or detection. All raw honey that has been inadvertently exposed to potentially hazardous biological agents or chemical residues from brood comb must be isolated, sealed, labelled for corrective action and recorded in the *Extraction/Processing Honey – Monitoring and Corrective Action Record* (**FORM 7.0.5**). Corrective action associated with training personnel is documented in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**). Corrective action associated with the hygiene of personnel is documented in the *Personnel Hygiene – Monitoring and Corrective Action Record* (**FORM 11.0.2**). All isolated honey must be discarded in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**), or tested for hazardous chemicals and, if safe, remediated for non-human use.

7.7.6 MUST DO **Pumping -** If pumps or other mechanical parts in direct contact with honey products during processing are found excessively warn or damaged then replace with correct equipment or other mechanical parts in order to prevent physical contamination. All raw honey that has been inadvertently exposed to extraneous material during pumping because of damaged equipment must be isolated, sealed, labelled for corrective action and recorded in the *Extraction/Processing Honey – Monitoring and Corrective Action Record* (**FORM 7.0.5**). Honey contaminated by physical hazards must be correctly remediated (e.g. filtered during processing steps), isolated and used for non-human consumption if unfilterable, or correctly discarded in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**). Document all problems and corrective action taken with respect to equipment maintenance in the *Facility and Equipment Cleaning/Sanitation – Monitoring and Corrective Action Record* (**FORM 9.0.3**) in accordance with **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL**.

7.7.7 MUST DO **Holding/Settling -** All raw honey that has been inadvertently exposed to extraneous material in holding or settling tanks because of damaged equipment must be isolated, sealed, labelled for corrective action and recorded in the *Extraction/Processing Honey – Monitoring and Corrective Action Record* (**FORM 7.0.5**). Honey contaminated by physical hazards must be correctly remediated if possible (e.g. filtered during processing steps), isolated and used for non-human consumption if unfilterable, or correctly discarded in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**). Document all problems and corrective action taken with respect to equipment maintenance in the *Facility and Equipment Maintenance – Monitoring and Corrective Action Record* (**FORM 9.0.2**) in accordance with **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL**.

7.7.8 MUST DO **Filtering -** If filters or other mechanical parts in direct contact with honey products during

processing are found excessively warn or damaged then replace with correct filters, or other mechanical parts in order to prevent physical contamination. In the event of broken metal occurring during filtration as a result of wear, all processing equipment, and honey outputs must be inspected for contaminants. All raw honey that has been inadvertently exposed to extraneous material during filtration because of damaged filters must be isolated, sealed, labelled for corrective action and recorded in the *Extraction/Processing Honey – Monitoring and Corrective Action Record* (**FORM 7.0.5**). Honey contaminated by physical hazards must be correctly remediated (e.g. filtered during processing steps), isolated and used for non-human consumption if unfilterable, or correctly discarded in a recognized waste facility in unfilterable and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**). Document all problems and corrective action taken with respect to equipment maintenance in the *Facility and Equipment Maintenance – Monitoring and Corrective Action Record* (**FORM 9.0.2**) in accordance with **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL**.

7.7.9 **Waste Disposal (Honey and Related Products)**

a) MUST DO All honey rejected on-farm, or returned, for suspected contamination by residues of farm chemicals must be set aside, sampled for independent laboratory testing as warranted and correctly discarded in a recognized waste facility if results of chemical contamination are positive. All records, deviations and corrective action taken upon disposal are documented on the *Waste Shipping Lot Record* (**FORM 9.0.4**) and all test results are recorded in the *Testing Record* (**FORM 1.0.3**).

b) MUST DO Rejected or waste honey products, including comb and other similar waste generated by processing, which cannot be correctly remediated, must be sent for rendering or buried in landfill. Ensure slumgum waste product is buried in a landfill. Wax that is not forwarded to an appropriate storage area on-farm, or shipped off-farm to further processors or rendering facilities, must be discarded in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**). Follow Provincial Regulations where warranted.

c) MUST DO All aspects of waste management that could affect the food safety assurance of honey products must be documented**.** Ensure records for waste disposal are maintained within the *Waste Shipping Lot Record* (**FORM 9.0.4**). In cases where contaminated honey or related products are discarded, dispose in a recognized waste facility in a manner consistent with all applicable regulations, including preventing the likelihood of robbing from worker bees resulting in contamination of honey supers by farm chemicals or other environmental contamination, and document within the *Waste Shipping Lot Record* (**FORM 9.0.4**).

7.8 TRAINING PROCEDURES

7.8.1 MUST DO Ensure that personnel are trained in correct receiving, storing, uncapping, extracting and processing procedures for raw honey, in recognizing hazards associated with raw honey and comb honey, in appropriate handling procedures, and in the control or prevention of hazards related to **GPP 7**, in order to ensure accuracy and compliance with written procedures and practices and record keeping. Document and monitor training in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1).**

7.8.2 MUST DO Visually confirm by direct observation of personnel at least once during the implementation of **GPP 7**, and more frequently as warranted by the control procedure (e.g. before the start of each season or active season or processing cycle), that procedures are followed correctly, that personnel are competent in meeting the requirements of **GPP 7**, and to identify potential problems areas that require continued

training as documented in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1)**.

7.8.3 MUST DO Re-train any personnel not following the procedures of **GPP 7** and document in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) in accordance with **GPP 11 – PERSONNEL: CAPABILITIES, QUALIFICATIONS AND PERSONAL HYGIENE**.

7.8.4 MUST DO Review compliance to procedures at least once annually to confirm the effectiveness of **GPP 7**, to identify aspects requiring improvement, and to assess the need for additional training.

7.9 PRODUCTION LOT CHECK SAMPLES

7.9.1 MUST DO Honey *check samples* are an important part of verifying honey products under the ***CBISQT*** Program. Ensure that check samples are taken from the middle of each lot of honey when containers/drums are filled. Lot size is determined by the tank capacity or the daily production, whatever method is clearly traceable. Each sample size should be in the range of 250 g. The number of check samples required, however, will be determined by the producer in accordance with the size of the shipment load, customer requirements before sales, and the potential for post-sale requests. Date, lot designation and container/drum number must be recorded in the *Check Sample Record* (**FORM 7.0.4**) and a check sample retained for a period of two (2) years from the date the lot was sold. The sample should be stored in a glass or plastic container in darkness at a temperature range of 18° to 24°C (64° to 75°F).

7.9.2 MUST DO Ensure that a check sample from each lot of honey is retained with the same information on the label as the lot it represents, in the event of product testing or a product recall. See **GPP 12 - RECORD CONTROL, TRACEABILITY AND PRODUCT RECALL**.

7.9.3 For recall purposes, identifying lot numbers must be linked among the *Honey Super Lot – Monitoring and Corrective Action Record* (**FORM 5.0.1**), *Receiving Full Honey Supers - Monitoring and Corrective Action Record* (**FORM 7.0.1**), *Receiving Full Honey Bulk Containers - Monitoring and Corrective Action Record* (**FORM 7.0.2**), *Honey Extraction Record* (**FORM 7.0.3**), *Check Sample Record* (**FORM 7.0.4**), the *Extraction/Processing Honey - Monitoring and Corrective Action Record* (**FORM 7.0.5**), the *Container/Drum – Filling Record* (**FORM 8.0.1**), the *Packing Honey – Monitoring and Corrective Action Record* (**FORM 8.0.2**), the *Supplier`s Declaration* (**FORM 8.0.4**), the *Shipping Lot Record* (**FORM 8.0.5**), the *Shipping Lot Itemization Record* (**FORM 8.0.6**), and the *Shipping Lot Corrective Action Record* (**FORM 8.0.7**) where lot numbers and container identification are identified throughout the production cycle.

7.10 RECORD KEEPING PROCEDURES

7.10.1 Review compliance to record keeping procedures annually, or more frequently as warranted by the control procedure (e.g. before the start of each active season or processing cycle), in order to provide information about the effectiveness of record keeping.

7.10.2 Ensure that all personnel following **GPP 7** are trained in record keeping, in order to ensure accuracy and compliance with written procedures. Visually confirm by direct observation of personnel at least once, preferably before the active season or processing cycle, that record keeping procedures are followed correctly for all aspects of **GPP 7**, and in accordance with procedures detailed in **GPP 12 – RECORD**

CONTROL, TRACEABILITY AND PRODUCT RECALL.

7.10.3 Ensure that all farm records specified and provided in **GPP 7** are completed (i.e. signed and dated) and updated as required and maintained for at least eight (8) years by the producer/owner to facilitate traceability and/or product recall.

7.11 RECORDS

- FORM 7.0.1 Receiving Full Honey Supers - Monitoring and Corrective Action Record
- FORM 7.0.2 Receiving Full Honey Bulk Containers - Monitoring and Corrective Action Record
- FORM 7.0.3 Honey Extraction Record
- FORM 7.0.4 Check Sample Record
- FORM 7.0.5 Extraction/Processing Honey - Monitoring and Corrective Action Record

7.12 CROSS-REFERENCED RECORDS

- FORM 1.0.3 Testing Record
- FORM 3.0.1 Storage – Monitoring and Corrective Action Record
- FORM 5.0.1 Honey Super Lot – Monitoring and Corrective Action Record
- FORM 8.0.1 Container/Drum – Filling Record
- FORM 8.0.2 Packing Honey – Monitoring and Corrective Action Record
- FORM 8.0.4 Supplier`s Declaration
- FORM 8.0.5 Shipping Lot Record
- FORM 8.0.6 Shipping Lot Itemization Record
- FORM 8.0.7 Shipping Lot Corrective Action Record
- FORM 9.0.2 Facility and Equipment Maintenance – Monitoring and Corrective Action Record
- FORM 9.0.3 Facility and Equipment Cleaning/Sanitation – Monitoring and Corrective Action Record
- FORM 9.0.4 Waste Shipping Lot Record
- FORM 11.0.1 Personnel Training – Monitoring and Corrective Action Record

GPP 8 – FINISHED HONEY: PACKING MANAGEMENT, STORAGE AND PRODUCT SHIPPING

8.1 PURPOSE AND SCOPE

8.1.1 Honey products intended for wholesale or retail use are packed according to the nature of the honey product, regulatory requirements for food safety and the demands of the purchaser Finished honey can be packed in an assortment of packaging materials[31] including small glass, plastic, metal or ceramic retail-size containers or, in many cases where the packing is conducted off-farm, in bulk containers (metal or plastic drums or totes) of varying size and construction. For these reasons, managing the packing environment and activities occurring within the facility associated with the use of food packaging materials, packing procedures (e.g. filling, sealing and labelling of containers) and shipping of finished product are important control points under the ***CBISQT*** Program. Furthermore, correct documentation attesting to the safety of honey products in conformance with the ***CBISQT*** Program is forwarded with all honey products shipped from the farm operation.

8.1.2 The purpose of **GPP 8** under the ***CBISQT*** Program is to provide guidelines to prevent, or otherwise reduce, the risk of contamination of finished or packed honey associated with the processes of on-farm packing, storage and shipping.

8.1.3 **GPP 8** addresses sources of potential biological, chemical and physical hazards[32], and related good practices for the prevention or control of such hazards through effective glass management[33] among other procedures, when packing, storing and shipping finished honey from the farm operation.

8.2 RESPONSIBILITIES AND QUALIFICATIONS

8.2.1 The ***Producer/Owner*** has the overall responsibility for implementing **GPP 8** based on their capabilities, knowledge of food safety and regulatory requirements, and technical experience. These duties include ensuring that:

a) all packaging materials are correct for their intended purpose and are acceptable for food use,

b) all processing steps associated with **GPP 8** are conducted in a safe and sanitary manner to reduce the risk of biological, chemical and/or physical contamination to finished honey products,

c) broken glass and other extraneous metal or plastic material are managed correctly within the processing environment to reduce the likelihood that extraneous materials could constitute a food safety risk to consumers,

d) honey products intended for shipping to further processing facilities, direct sales, or other farms, off of the originating farm operation, do not contain hazardous chemical residues, or extraneous material from contaminated transportation carriers,

e) documentation attesting to the safety of honey products in conformance with the ***CBISQT*** Program is forwarded with all uniquely identified and labelled honey products shipped from the farm operation,

[31] The container size for retail sale must meet relevant requirements of the federal Food and Drugs Act or provincial marketing act.

[32] This does not include an allowance for extraneous bee material (e.g. wax, leg/wing fragments) in bulk honey shipments since it is assumed such materials will be filtered by packers during further processing.

[33] In the context of GPP 8, the term *glass management* encompasses the management of all extraneous glass, plastic and metal contaminants including brittle plastic, thermometers, gauge covers, glassware used for testing, packaging containers, windows, skylights, lighting, lighting covers, equipment guards, and equipment lights, etc.

f) designated personnel conducting tasks associated with **GPP 8** are effectively supervised,

g) monitoring, corrective action and record keeping procedures for **GPP 8** are communicated, understood and followed correctly by all relevant personnel, and

h) all records related to **GPP 8** are effectively documented and controlled.

8.2.2 All designated personnel following **GPP 8** must have a complete understanding of the described hazards and relevant procedures, and have the appropriate training regarding these procedures.

8.2.3 All designated personnel are responsible for reporting problems (hazardous incidents) from **GPP 8** to the *Producer/Owner*.

8.3 FOOD SAFETY HAZARDS

8.3.1 Packaging Materials (Small and/or Bulk Containers)

a) Contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) as a result of faulty (e.g. inadequate) cleaning or sanitizing practices on bulk containers prior to use.

b) Contamination by residues of chemicals (cleaning/sanitation products) as a result of incorrect product usage or method of application (e.g. wrong product, rate, method of application).

8.3.2 Packing Management (Filling, Sealing, Labelling)

a) Contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) as a result of fouled instruments, processing equipment, premises and/or unhygienic personnel during packing.

b) Contamination by extraneous material (e.g. glass, plastic, or metal fragments) as a result of mishandling during packing.

8.3.3 Storage (Finished Honey Products)

a) Contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) in dust and/or excrement (e.g. *E. coli*, *Salmonella* spp.) of wild/domestic animals as a result of unsanitary storage conditions or location.

b) Contamination by residues of farm chemicals (e.g. petrochemical-based products, pesticides) as a result of fouled storage conditions or location.

c) Contamination by extraneous material (e.g. glass, plastic, or metal fragments) as a result of fouled storage conditions and/or mishandling during storage.

8.3.4 Product Shipping

a) Contamination by pathogenic bacteria (e.g. *Clostridium* spp., *Bacillus* spp. *E. coli*, *Salmonella* spp.) as a result of unsanitary transport carriers, faulty equipment and/or mishandling in transit.

b) Contamination by residues of chemicals (e.g. petrochemical-based products) as a result of fouled transport carriers, faulty equipment and/or mishandling in transit.

8.4 ACCEPTABLE LIMITS FOR CONTROL

8.4.1 **Packaging Materials (Small and/or Bulk Containers) -** Only bulk containers that are clean/sanitary according to manufacturer's instructions/accepted practices are used for packing honey.

8.4.2 **Packing Management (Filling, Sealing, Labelling)**

a) Only instruments, processing equipment, premises and personnel that are clean/sanitary and/or hygienic according to manufacturer's instructions/accepted practices are used for packing honey.

b) No honey contaminated by extraneous materials (e.g. glass, plastic or metal fragments) is packed.

8.4.3 **Storage (Finished Honey Products)**

a) All finished honey is stored under correct conditions to prevent contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) in dust and/or excrement (e.g. *E. coli*, *Salmonella* spp.) of wild/domestic animals as a result of unsanitary storage conditions or location.

b) All finished honey is stored and handled under correct conditions to prevent contamination by residues of farm chemicals as a result of fouled storage conditions or location.

c) All finished honey is stored under conditions that prevent contamination by extraneous material (e.g. glass, plastic, metal).

8.4.4 **Product Shipping**

a) Honey is only handled and shipped under safe transportation conditions to prevent contamination by pathogenic bacteria (e.g. *Clostridium* spp, *Bacillus* spp., *E. coli*, *Salmonella* spp.).

b) Honey is only shipped under safe transportation conditions to prevent contamination from residues of chemicals (e.g. petrochemical-based products).

8.5 CONTROL MEASURES

8.5.1 **Packaging Materials (Small and/or Bulk Containers)**

a) MUST DO Small containers (under 5 kg) used for packaging honey must be new and cleaned, if required, with correct cleaning products (e.g. soap) at the manufacturer's recommended rate and method of application) and properly rinsed with potable water; following storage and before use.

b) MUST DO Bulk containers for packaging honey are preferably new; but used metal drums may be reused only if correctly reconditioned and accompanied by a supplier's declaration that containers are of food-grade materials, traceable and cleaned correctly or cleaned and a drum liner will be used. A food grade polyvinyl liner must be used with bulk containers in cases where traceability is questionable; especially for recycled drums that have previously been correctly cleaned before use.

8.5.2 **Packing Management (Filling, Sealing, Labelling)**

a) MUST DO All raw honey must be packed in a designated packing area under a clean and dry environment

that prevents any contamination of honey by hazardous substances from fouled instruments, processing equipment, premises and/or personnel during the process of packing.

b) MUST DO The packing area must have a regular schedule for pest monitoring and control as outlined in **GPP 9 FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL**.

c) MUST DO The instruments, processing equipment and premises used for packing must have a regular schedule for maintenance and cleaning/sanitation monitoring and control as outlined in **GPP 9 FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL.**

d) MUST DO All personnel involved in the handling of packaging material and packing procedures must be trained in packing management and follow correct hygienic procedures as outlined in **GPP 11 – PERSONNEL: CAPABILITIES, QUALIFICATIONS AND PERSONAL HYGIENE**.

e) Ensure that the container size for retail sale meets all relevant requirements of federal and provincial legislation. New labels are applied to sealed containers after the honey is packed and ensure that any old identifier labels on bulk containers are removed prior to packing (e.g. at receiving). For compliance with federal labelling regulations, ensure that labels indicate the name, address, packer number (if registered), lot number and weight information.

8.5.3 MUST DO *Glass Breakage/Physical Hazards*

a) An action plan for handling broken glass and/or acrylic resinous materials[34] during receipt, storage and filling should be directed to the prevention of glass breakage and on required protocols to address cleaning and disposal, should breakage occur. Review receiving, handling, cleaning and other glass management protocols, including disposal procedures following the occurrence of any glass breakage incident, to ensure that contaminated honey products are not shipped from the farm operation.

b) Take preventative measures as necessary (e.g. replace hazardous materials, re-train personnel, re-evaluate procedures, etc.) following the detection of the cause of any error. The glass management policy should be reviewed annually to ensure that all personnel assigned to tasks within the processing facility where glass breakage could occur, are correctly trained on inspection, clean up and disposal procedures, in addition to safe handling procedures.

c) An action plan to identify and remove any broken glass within the receiving and storage areas and the processing and packing facility must be in place to ensure that hazardous contaminants to honey products are controlled.

d) Shield, cover, or otherwise protect light fixtures and bulbs on task lighting to control the risk of breakage and contamination of honey products. Ensure that all light fixtures in receiving, storage, extraction, and processing areas are fitted with safety bulbs, or shatter proof covers to control breakage. Ensure that the effectiveness of the protection is maintained over time through regular inspection.

e) Replace glass fixtures or windows with polycarbonate plastic or use protective coverings (i.e. safety light

[34] Acrylic resinous materials such as Acrylite®, Plexiglass®, and Lucite® are used as a construction material in some honey processing facilities and could shatter upon impact creating a physical hazard.

bulbs, shatter proof covers) in areas of the storage, processing and packing facility where there is a risk of breakage that could result in contamination of honey products.

f) In areas within the honey receiving, storage, processing and packing environment where glass or brittle plastic materials cannot be replaced (e.g. skylights, glass thermometers, acrylic equipment), ensure that these materials remain intact and are not a food safety hazard.

g) Develop, implement and verify specific procedures for handling glass breakage at process steps ranging from receipt and storage of glass containers to filling and capping, in proportion to the level of associated risk of breakage and contamination to honey products.

h) In order to minimize the impact of breakage, glass containers must not be received or stored near raw honey or other packaging materials. In cases where segregation is not possible, procedures for cleaning broken glass must include a thorough inspection of the cleaned area and affected materials to ensure that all fragments of glass have been effectively removed.

i) Ensure that no secondary glass sources are present within the honey receiving, storage, processing and packing area (e.g. mirrors, glassware, jewelry or other belongings of personnel) that could increase the level of associated risk of breakage and contamination to honey products.

j) During the process of honey packing, ensure glass containers are inspected by correctly trained personnel for contaminants before filling. Glass containers are usually passed through an inverted cleaning system that will remove foreign material prior to filling. In operations where glass containers are not inverted before inspection and exposed to compressed air, additional steps to ensure proper cleanup for breakage during receiving and storage may be required. Stop the processing line immediately at filling if any signs of physical contamination are detected and take corrective action (e.g. disposal of contaminated honey).

k) Ensure that all personnel involved in the glass management program (i.e. inspection, monitoring, cleaning and record keeping) are trained.

8.5.4 Storage (Finished Product)

a) MUST DO All finished or packed honey products in suitable containers (e.g. clean and leak proof) must be stored in a designated storage area (see **Area 5**, Table 3.1 – **GPP 2 STORING INPUTS**) under a clean and dry environment that prevents deterioration due to high storage temperatures, absorption of moisture, or any contamination by hazardous substances from surroundings (e.g. pathogenic bacteria in dust and excrement of wild/domestic animals, chemical contaminants (e.g. farm chemicals, petrochemical-based products, medications, etc.) and extraneous materials such as glass or other physical hazards.

b) MUST DO The storage area for finished products must have a regular schedule for pest monitoring and control as outlined in **GPP 9 FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL**,

c) MUST DO The storage area for finished products must have a regular schedule for maintenance and cleaning/sanitation monitoring and control as outlined in **GPP 9 FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL.**

8.5.5 **Product Shipping**

a) MUST DO Production lots of honey products are held in suitable storage conditions on-farm until shipped within a variety of containers by commercial and non-commercial carriers, in accordance with the requirements of the buyer. Ensure that transport carriers and conditions for transporting finished honey products do not comprise the food safety of shipped products at the point of shipping from the farm operation by inspecting carriers before loading.

b) MUST DO Avoid using trucks to transport honey that ship other commodities to avoid the potential for contamination.

c) MUST DO All transport vehicles must be visually inspected before loading to ensure that they are clean and free from biological or chemical contaminants before transport.

d) Ensure that shipping records document all honey products that have moved through the facility for further processing, sale, storage or disposal. Each bulk container label, or outer box label for small containers, bears a unique identification number to reflect production lot, shipping lot identifier, weight information and date packed. Ensure that old identifiers are removed from bulk containers and all containers are correctly marked with the producer's name, address and product information.

e) Although shipments may consist of different production lots, ensure that each lot shipped contains information relating to: a) date of shipment, b) destination, c) carrier, d) shipping lot number, e) production lot numbers, and f) drum information (number, IDs, weight). All honey products shipped are uniquely identified and documented to ensure correct identification of product and traceback in the event of product return or recall (Refer to **GPP 12 – RECORD CONTROL, TRACEABILITY AND PRODUCT RECALL)**.

8.6 MONITORING PROCEDURES

8.6.1 MUST DO **Packaging Materials** - All containers and packaging materials are visually inspected before each packing cycle for cleanliness and to ensure that containers are suitable to protect honey products from contamination or damage. Confirm the acceptability of bulk containers by review of the *Bulk Container Inspection and Corrective Action Record* (**FORM 2.0.2**). Damaged or contaminated packaging materials, or other problems associated with packaging materials must be documented in the *Packing Honey – Monitoring and Corrective Action Record* (**FORM 8.0.2**) on a continuing basis throughout the year, as frequently as required during the active season.

8.6.2 **Packing Management (Filling, Sealing, Labelling)**

a) MUST DO Continuous visual inspection and preventive maintenance throughout the cycle of packing ensures the operational effectiveness of the packing management program in accordance with **GPP 9**. Confirm by direct observation of personnel on a daily basis, as warranted, during the process of packing to confirm that all procedures are followed correctly according to **GPP 7** and by review of the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) and the *Personnel Hygiene – Monitoring and Corrective Action Record* (**FORM 11.0.2**). For inventory and recall purposes daily itemize all containers/drums filled and document within the *Container/Drum - Filling Record* (**FORM 8.0.1)**. The appropriate frequency for monitoring observations by correctly trained personnel and documentation of the packing process within the *Packing Honey - Monitoring and Corrective Action Record* (**FORM 8.0.2**)) over the course of the annual production cycle, will be determined by the likelihood of problems (e.g.

breakage), the associated risk to the product, and the time required to regain process control before honey products are inventoried or shipped from the farm operation.

b) MUST DO *Glass Breakage/Physical Hazards* - During receiving and throughout the processing cycle, visually inspect all containers and other inventoried glass sources for breakage on a daily basis within packing areas of the facility and document all inspection results on the *Packing Honey - Monitoring and Corrective Action Record* (**FORM 8.0.2**).

8.6.3 **Storage (Finished Product)**

a) MUST DO Visually inspect all storage areas established for storing finished product (**Area 5,** refer to **GPP 3 – STORING INPUTS**) before moving honey products into storage in order to detect and document any problems related to storage (e.g. opened packaging, or spillage) in the *Storage – Monitoring and Corrective Action Record* **(FORM 3.0.1**).

b) MUST DO When finished product is in storage, inspect the storage facility on a weekly basis, or more regularly, as warranted during the active season cycle, for signs or activity from pests (e.g. rodents, birds, insects or other pests) and document in the *Facility Pest Control – Monitoring and Corrective Action Record* **(FORM 9.0.5**). Refer to **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL** for procedures related to pest management.

8.6.4 **Product Shipping**

a) MUST DO Before loading, inspect all transport carriers for adequate cleanliness and to ensure that shipping or transportation containers are suitable to protect honey products from contamination or damage and document in the *Shipping Out – Monitoring and Corrective Action Record* **(FORM 8.0.3**).

b) MUST DO ***Supplier`s Declaration*** *and* ***Shipping Lot Record*** **-** Ensure at the point of shipping that the *Supplier's Declaration* (**FORM 8.0.4),** accompanies each shipment along with the *Shipping Lot Record* (**FORM 8.0.5**), and includes correct container and carrier identification, gross, tare, and net product weights, shipping information related to mode of transportation and destination. For inventory and recall purposes itemize and review at the time of shipping all containers/drums shipped as documented on the *Shipping Lot Itemization Record* (**FORM 8.0.6**).

8.7 CORRECTIVE ACTION PROCEDURES MUST DO

8.7.1 **Packaging Materials**

a) MUST DO Assess and determine the nature of the any deviation in the sanitary condition of packaging materials at the location where the problem occurs, at the time of monitoring, or when the problem is first detected. Document all errors associated with packaging materials on the *Packing Honey - Monitoring and Corrective Action Record* (**FORM 8.0.2)** and/or the *Bulk Container Inspection and Corrective Action Record* (**FORM 2.0.2**). Record any specific corrective action and preventative measures taken, and the date of error.

b) These actions may include reconditioning and cleaning for reuse or isolation and disposal of contaminated materials. Refer to **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST**

CONTROL AND WASTE DISPOSAL for supporting procedures on corrective action. For disposal of raw honey refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING**.

8.7.2 **Packing Management (Filling, Sealing, Labelling)**

a) 

Assess and determine the cause of error in packing management (e.g. unsanitary or fouled instruments, processing equipment, premises and/or personnel) where the problem occurs, at the time of monitoring, or when the error or problem is first detected. Corrective action associated with training personnel is documented in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**). Corrective action associated with the hygiene of personnel is documented in the *Personnel Hygiene – Monitoring and Corrective Action Record* (**FORM 11.0.2**). Document all errors associated with packing management on the *Packing Honey - Monitoring and Corrective Action Record* (**FORM 8.0.2)**. Record any specific corrective action and preventative measures taken, and the date of error of during packing.

b) 

These actions may include isolation and disposal of contaminated finished honey, corrective action in sanitation/cleaning and/or maintenance of packing equipment, or the retraining of personnel. Refer to **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL** and **GPP 11 – PERSONNEL: CAPABILITIES, QUALIFICATIONS AND PERSONAL HYGIENE** for supporting procedures on corrective action. For disposal of raw honey refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING** and document in the *Waste Shipping Lot Record* **(FORM 9.0.4)**.

c) 

Glass Breakage/Physical Hazards - Corrective action procedures to address removal of glass contaminants from affected surfaces among personnel include immediate notification of the producer/owner or designee of any breakage incident, an accounting of all broken glass (where feasible), complete removal from the affected area, and documentation. Document all glass breakage and other hazards associated with packing, including any honey that may have been contaminated within the *Packing Honey - Monitoring and Corrective Action Record* (**FORM 8.0.2)**; completed only after corrective actions has been taken and it is deemed safe to resume the filling operation.

d) 

If glass breakage occurs during the filling process, ensure that the quantity of containers, and affected area, are identified in order to ensure all fragments are removed from the area during cleanup. Cleaning equipment used for glass breakage must be designated “for glass use only” and cleaned on a frequent basis to eliminate opportunities for cross-contamination. Corrective action procedures for other types of glass breakage in the facility is also required in cases where broken glass or brittle plastic contaminates receiving, storage or extraction areas of the processing facility during the course of operations such as during equipment maintenance (i.e. bulb replacement), cleaning, or handling. Dispose of hazardous glass at a recognized landfill or recycling centre using containers marked “broken glass”. Dispose of all honey products exposed to broken glass according to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING** and document within the *Waste Shipping Lot Record* (**FORM 9.0.4**). Waste disposal must not be conducive to robbing from worker bees resulting in contamination of honey supers, proliferation of pest species (e.g. rodents, birds, and insects) within the local surroundings, or other environmental contamination.

e) *Product Labelling and Lot Code Identification on Finished Product* – Refer to CFIA guidelines for product labeling and identification of honey products in accordance with existing regulations (e.g. Food and Drugs Act, Food and Drug Regulations, Consumer Packaging and Labelling Act and Consumer Packaging and Labelling Regulations) for lot code identification and mandatory package label requirements associated with common names, location of label, language, net quantity declaration, among other identifiers,

including nutrition labeling (See **Appendix III** for example).

8.7.3 **Storage (Finished Product)**

a) MUST DO Assess and determine the nature of the any deviation in the sanitary condition of finished honey products at the location where the problem occurs, at the time of monitoring, or when the problem is first detected. Document all errors associated with storage of finished product on the *Packing Honey - Monitoring and Corrective Action Record* (**FORM 8.0.2)**. Record any specific corrective action and preventative measures taken, and the date of error.

b) MUST DO These actions may include isolation, remediation (e.g. filtering) or disposal of contaminated honey product. Refer to **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL** for supporting procedures on corrective action. For disposal of raw honey refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING** and document in the *Waste Shipping Lot Record* **(FORM 9.0.4)**.

8.7.4 **Product Shipping**

a) MUST DO Assess and determine the nature of the any deviation in the sanitary condition of transport carriers and/or containers as they are first detected upon arrival before any finished product is loaded. Document all errors associated with the sanitary condition and operational effectiveness of transport carriers and/or containers on the *Shipping Out - Monitoring and Corrective Action Record* (**FORM 8.0.3)**. Record any specific corrective action and preventative measures taken, and the date of error.

b) MUST DO These actions may include isolation of contaminated carriers, refusal to load/unload, replacement or remediation (e.g. cleaning) of carriers, and/or remediation or disposal of contaminated finished honey product. Refer to **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL** for supporting procedures on corrective action. For disposal of raw honey refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING** and document in the Waste Shipping Lot Record **(FORM 9.0.4)**.

c) MUST DO In the event that the *Supplier`s Declaration* (**FORM 8.0.4**) and/or the *Shipping Lot Record* (**FORM 8.0.5**) is not sent with the shipped product, or there is an error in product detected after shipping, the producer/owner must contact the new owner and relay revised records, or return product as quickly as possible. Document corrective action in the *Shipping Lot Corrective Action Record* (**FORM 8.0.7**). The action of the new owner may include refusal to unload honey products that are not correctly documented and return of shipment to the supplier.

8.8 TRAINING PROCEDURES

8.8.1 MUST DO Ensure that personnel are trained in correct packing management, storage and product shipping procedures, in recognizing hazards associated with finished honey products, and in controlling hazards related to **GPP 8**, in order to ensure accuracy and compliance with written procedures and practices and record keeping.

8.8.2 MUST DO Visually confirm by direct observation of personnel at least once during the implementation of **GPP 8**, and more frequently as warranted by the control procedure (e.g. before the start of each season or

active season or processing cycle), that procedures are followed correctly, that personnel are competent in meeting the requirements of **GPP 8**, and to identify potential problems areas that require continued training.

8.8.3 

Re-train any personnel not following the procedures of **GPP 8** and document in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) in accordance with **GPP 11 – PERSONNEL: CAPABILITIES, QUALIFICATIONS AND PERSONAL HYGIENE**.

8.8.4 

Review compliance to procedures at least once annually to confirm the effectiveness of **GPP 8**, to identify aspects requiring improvement, and to assess the need for additional training.

8.9 RECORD KEEPING PROCEDURES

8.9.1 Review compliance to record keeping procedures annually, or more frequently as warranted by the control procedure (e.g. before the start of each active season or processing cycle), in order to provide information about the effectiveness of record keeping.

8.9.2 Ensure that all personnel following **GPP 8** are trained in record keeping, in order to ensure accuracy and compliance with written procedures. Visually confirm by direct observation of personnel at least once, preferably before the active season or processing cycle, that record keeping procedures are followed correctly for all aspects of **GPP 8**, and in accordance with procedures detailed in **GPP 12 – RECORD CONTROL, TRACEABILITY AND PRODUCT RECALL.**

8.9.3 Ensure that all farm records specified and provided in **GPP 8** are completed (i.e. signed and dated) and updated as required and maintained for at least eight (8) years by the producer/owner to facilitate traceability and/or product recall.

8.10 RECORDS

- FORM 8.0.1 Container/Drum – Filling Record
- FORM 8.0.2 Packing Honey – Monitoring and Corrective Action Record
- FORM 8.0.3 Shipping Out - Monitoring and Corrective Action Record
- FORM 8.0.4 Supplier's Declaration
- FORM 8.0.5 Shipping Lot Record
- FORM 8.0.6 Shipping Lot Itemization Record
- FORM 8.0.7 Shipping Lot Corrective Action Record

8.11 CROSS-REFERENCED RECORDS

- FORM 2.0.2 Bulk Container Inspection and Corrective Action Record
- FORM 3.0.1 Storage – Monitoring and Corrective Action
- FORM 9.0.4 Waste Shipping Lot Record
- FORM 9.0.5 Facility Pest Control – Monitoring and Corrective Action Record
- FORM 11.0.1 Personnel Training – Monitoring and Corrective Action Record
- FORM 11.0.2 Personnel Hygiene – Monitoring and Corrective Action Record

GPP 9–FACILITY MANAGEMENT: MAINTENANCE AND CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL

9.1 PURPOSE AND SCOPE

9.1.1 Managing the local processing environment and activities occurring within the processing facility/ honey house, especially events associated with maintenance, cleaning/sanitation, pest control and waste disposal are important control points in the processing and packing of raw honey under the ***CBISQT*** Program. The purpose of **GPP 9** is to provide management guidelines to prevent or reduce the risk of potential contamination of raw honey from food safety hazards associated with common facility management practices within a typical on-farm producer-packer operation.

9.1.2 **GPP 9** addresses the sources and management procedures for potential biological, chemical and physical hazards that could negatively affect the food safety of raw honey occurring before, during and following the active season of honey extraction and processing. These procedures address the need to provide adequate maintenance of processing equipment, extraction and processing facilities, regular cleaning and sanitation procedures, and adequate washing facilities for the area and all equipment in contact with or close proximity to the product using correct chemicals, effective monitoring and control of pests within the facility, and safe disposal of farm chemicals. For disposal procedures for waste honey refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING**.

9.2 RESPONSIBILITIES AND QUALIFICATIONS

9.2.1 The ***Producer/Owner*** has the overall responsibility for implementing **GPP 9** based on their capabilities, knowledge of food safety and regulatory requirements, and technical experience. These duties include ensuring that:

a) all relevant personnel are aware of hazards associated with management of the processing facility and take appropriate measures with respect to maintenance and cleaning/sanitation procedures for processing equipment, monitoring and controlling pests, and managing chemical waste generated within the facility in a safe manner to prevent or reduce the risk of contamination of honey products intended for human consumption,

b) all procedures for the maintenance and operation of processing equipment, and safe use of chemicals, are conducted according to manufacturers' instructions based on a recognized schedule or regular monitoring,

c) designated personnel conducting tasks associated with **GPP 9** are effectively supervised,

d) monitoring, corrective action and record keeping procedures for **GPP 9** are communicated, understood and followed correctly by all relevant personnel, and

e) all records related to **GPP 9** are effectively documented and controlled.

9.2.2 All designated personnel following **GPP 9** must have a complete understanding of the described hazards and relevant procedures, and have the appropriate training regarding these procedures.

9.2.3 All designated personnel are responsible for reporting problems (hazardous incidents) from **GPP 9** to the *Producer/Owner*.

9.3 FOOD SAFETY HAZARDS

9.3.1 **Maintenance of Processing Equipment/Facilities**

a) Contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) as a result of

unsanitary maintenance procedures (e.g. unclean tools) on processing equipment or related facilities.

b) Contamination by residues of chemicals (e.g. petrochemical-based products) as a result of incorrect product usage or method of application ((e.g. wrong maintenance product, method of repair or mishandling) on processing equipment or related facilities.

c) Contamination by extraneous material (e.g. metal, plastic, glass) as a result of incorrect maintenance (e.g. non-routine or inadequate repairs, mishandling) on processing equipment or related facilities.

9.3.2 **Cleaning/Sanitation of Processing Equipment/Facilities**

a) Contamination by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) as a result of faulty (e.g. non-routine or inadequate) cleaning or sanitation practices for processing equipment or related facilities.

b) Contamination by residues of chemicals (e.g. sanitation/cleaning products) as a result of incorrect product usage or method of application (e.g. wrong product or rate of application) on processing equipment or related facilities.

9.3.3 **Facility Pest Control** – Contamination by pathogenic bacteria (e.g. *E. coli, Salmonella* spp.) from excrement of wild/domestic animals as a result faulty pest control on processing equipment or related facilities.

9.3.4 **Waste Disposal (Farm Chemicals)** – Contamination by residues of chemicals (e.g. pesticides, cleaning/sanitation products, water treatment aids as a result of incorrect disposal.

9.4 ACCEPTABLE LIMITS FOR CONTROL MUST DO

9.4.1 **Maintenance of Processing Equipment/Facilities**

a) No processing equipment, or related facilities, contaminated by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) as a result of unsanitary maintenance procedures (e.g. unclean tools) is used for processing honey.

b) Maintenance chemicals for processing equipment, or related facilities, are only used according to label instructions.

c) No processing equipment, or related facilities, contaminated by extraneous material from incorrect maintenance is used for processing honey.

9.4.2 **Cleaning/Sanitation of Processing Equipment/Facilities** – Only processing equipment that has been cleaned/sanitized with cleaning or sanitizing products used according to manufacturer's instructions, are used for processing honey.

9.4.3 **Facility Pest Control** – No processing equipment, or related facilities, contaminated by pathogenic bacteria (e.g. spores of *Clostridium* spp., *Bacillus* spp.) from excrement of wild/domestic animals as a result of faulty pest control, is used for processing honey.

9.4.4 **Waste Disposal (Farm Chemicals)** - All farm chemicals are disposed in a manner consistent with all applicable regulations to prevent contamination.

9.5 CONTROL PROCEDURES

9.5.1 Maintenance of Processing Equipment/Facilities

a) MUST DO A maintenance program must be implemented to address all potential hazards related to mechanical maintenance procedures for processing equipment and facilities. Ensure maintenance procedures on processing equipment is performed according to manufacturers' instructions by correctly trained personnel.

b) MUST DO All farm chemicals used for maintenance (e.g. grease, paint) that may come in contact with honey products must be approved for food use and applied at label recommended rates following the manufacturer's instructions regarding use.

c) MUST DO All aspects of maintenance of processing equipment, tools, related instruments or facilities that could affect the food safety of honey products must be documented.

d) MUST DO Monitoring should be conducted on at least monthly intervals (or more frequently as warranted during the production cycle) to prevent breakage or malfunction that could lead to chemical or physical contamination of honey products.

9.5.2 Cleaning/Sanitation of Processing Equipment/Facilities

a) MUST DO All processing equipment and areas of the processing facility, including storage areas, must be cleaned and sanitized using correct materials[35] on a regular basis, as warranted by the level of production activity within facilities and the degree of cleaning, or sanitation, where required.

b) MUST DO Ensure that all chemical-based cleaning and sanitation products are used in accordance with label instructions, correct method of application, recommended dose and/or application time) within the processing facility.

c) MUST DO Ensure that all chemical agents used to clean or sanitize surfaces and processing equipment is not contaminants within the processing facility, including work surfaces and personnel through the adoption of an adequate rinsing program. Review cleaning/sanitation records on an ongoing daily basis during the processing cycle to assess the need for preventative or corrective action.

d) MUST DO All aspects of cleaning or sanitation of equipment or facilities that could affect the food safety of honey products must be documented.

[35] Recommended cleaning agents include a solution of vinegar and hot water (at 40°C or greater) or hot water alone. Soap is generally not used for daily cleanup of honey processing areas. Detergents, however, should be used to clean processing equipment and facilities, especially where contamination from oils or lubricants is a risk. A water/bleach solution is also used to clean floor drains or other waste water collection and drainage equipment.

9.5.3 Facility Pest Control

a) MUST DO Ensure that no hazardous chemical or biological pesticides are used on or near processing equipment within the processing facility and storage areas for packaging materials and honey products. No chemical pesticides (e.g. poison baits or bait stations) are placed in any honey processing area. In place of pesticides, snap traps, sticky traps, or other physical or mechanical control devices must be used to control various pest species; especially rodents, birds and insects, which are common sources of biological contamination on-farm. Wild and domesticated animals, and their excreta, harbour and transmit pathogenic bacteria (e.g. *E. coli*, *Salmonella* spp.) and other microorganisms, which left unmanaged, could negatively affect the safety assurance of stored honey products or packaging materials before, during and following the active season.

b) MUST DO Ensure that an effective pest control program is implemented year round in the processing facility to eliminate any potential for contamination of honey or packaging materials from pest activity. Ensure that all pest control activities within the processing facility and storage areas are applied following manufacturer's instructions, by correctly trained personnel, and do not cross-contamination any honey products.

c) MUST DO All aspects of pest control that could affect the food safety of honey products must be documented.

9.5.4 Waste Disposal (Farm Chemicals)

a) MUST DO Ensure that all expired products/packaging of farm chemicals used to control pest species, sanitize surfaces and processing equipment, or petrochemical-based products used in maintenance of processing equipment are disposed of in accordance with manufacturer's labelling instructions and existing legislation.

b) MUST DO Ensure that all used farm chemicals are disposed of in a manner that does not contaminate the environment, feed sources or water supply on-farm.

c) MUST DO Waste disposal of farm chemicals in conjunction with contaminated honey must not be conducive to robbing from worker bees resulting in biological or chemical contamination of honey supers, proliferation of pest species (e.g. rodents, birds, and insects) within the local surroundings, or other environmental contamination. For disposal of farm chemicals contaminated with raw honey refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING** and Provincial Regulations where warranted.

d) MUST DO All aspects of waste disposal that could affect the food safety of honey products must be documented.

9.6 MONITORING PROCEDURES

9.6.1 Maintenance of Processing Equipment/Facilities

a) MUST DO Inspect and confirm the condition and integrity of the processing facility including processing

equipment, tools and related instruments, before the active season to ensure equipment/facilities are fully functional and correctly maintained before and following reuse. Inspect all the interior and exterior of all facilities associated with extraction, processing and packing honey products seasonally, or more frequently as required, during the active season to ensure all areas are fully operational. All annual inspection activities carried out within the interior and exterior of the processing facility that could affect the food safety assurance of honey, should be documented in the optional *Facility (Interior/Exterior) – Monitoring and Corrective Action Checklist* (**FORM 9.0.1**).

b) MUST DO Inspect and confirm the condition and integrity of all processing equipment, including tools and related instruments, before the active season to ensure equipment is fully functional and correctly maintained before and following reuse. Inspect processing equipment associated with extraction, processing and packing honey products seasonally, or more frequently as required, during the active season to ensure all equipment is fully operational. Confirm by direct observation of personnel, at least once before the start of the active season, that all maintenance procedures and schedules for processing equipment is followed correctly according to manufacturers' instructions. Review the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) for correctness before allowing any personnel to conduct procedures associated with the maintenance of processing equipment or facilities; especially during control points associated with the use of maintenance chemicals and handling procedures to prevent contamination. Maintenance activities carried out within the facility that could affect the food safety assurance of honey (e.g. calibration, maintenance, repair or other activity) must be documented in the *Facility and Equipment Maintenance - Monitoring and Corrective Action Record* (**FORM 9.0.2)**.

9.6.2 Cleaning/Sanitation of Processing Equipment/Facilities

a) MUST DO Ensure that processing facilities and related equipment are correctly cleaned following manufacturer's cleaning/sanitation product label instructions before each use and document monitoring activity within the *Facility and Equipment Cleaning/Sanitation – Monitoring and Corrective Action Record* (**FORM 9.0.3**). Confirm by direct observation of personnel, before the start of the active season, that cleaning and sanitation products, procedures and schedules for processing equipment are followed correctly according to product labels and/or manufacturers' instructions. Review the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) for correctness before allowing any personnel to conduct procedures associated with the cleaning and sanitation of processing equipment and facilities.

b) MUST DO Ensure that facilities used for personnel, especially toilet facilities and hand-washing stations, are correctly cleaned and serviced on a weekly basis (or more frequently while in use as warranted during the active season), and documented following the *Facility and Equipment Cleaning/Sanitation – Monitoring and Corrective Action Record* (**FORM 9.0.3**). Confirm by direct observation of personnel, at least once before the start of the active season, that all cleaning and sanitation products, procedures and schedules for toilet facilities and hand-washing stations are followed correctly according to product labels and/or manufacturers' instructions. Review the *Personnel Hygiene – Monitoring and Corrective Action Record* (**FORM 11.0.2**) for correctness before allowing any personnel to conduct procedures associated with the cleaning and sanitation of processing equipment and facilities.

9.6.3 Facility Pest Control

a) MUST DO Inspect and confirm the accuracy, integrity and safety of all pest controls within the processing facility and storage areas (including processing equipment) by self-inspection and through

record keeping in order to monitor any control action that potentially could contaminate honey products or packaging materials, and which requires preventative or corrective action. Record all pest controls used near processing facilities and storage areas in the *Facility Pest Control – Monitoring and Corrective Action Record* (**FORM 9.0.5**) at time of application. Confirm by direct observation of personnel, at least once before the start of the active season, that all pest control procedures and schedules for monitoring processing equipment and facilities are followed correctly according to manufacturers' instructions and accepted practices. Review records at monthly intervals (or more frequently as warranted during the active season) to ensure correct application of chemical products to processing facilities within the farm operation.

b) MUST DO Traps and other methods of non-pesticide control used in processing areas must be inspected weekly in the off season and daily in the active season and are recorded in the *Facility Pest Control – Monitoring and Corrective Action Record* (**FORM 9.0.5**) to avoid pest entry or contamination and determine the effectiveness of control.

9.6.4 **Waste Disposal (Farm Chemicals)** MUST DO The accuracy, integrity and safety of all waste disposal activities on the farm operation that could contaminate honey products must be confirmed by self-inspection and through record keeping (*Waste Shipping Lot Record* **(FORM 9.0.4)**). At monthly intervals (or more frequently as warranted during the active season), monitor any disposal practice that potentially could contaminate the on-farm environment and honey products, and which requires preventative or corrective action. Annually review all records related to waste disposal procedures used on the farm operation, as well as any records demonstrating that procedures have effectively been implemented (e.g. task sheets, self-inspection, random checks, etc.).

9.7 CORRECTIVE ACTION PROCEDURES

9.7.1 Maintenance of Processing Equipment/Facilities

a) MUST DO All problems (i.e. deviations) associated with the correct maintenance or function of processing equipment (including calibration) that are detected through regular monitoring, and corresponding corrective actions to address such problems, must be documented in the *Facility and Equipment Maintenance - Monitoring and Corrective Action Record* (**FORM 9.0.2)** in order to ensure that operational procedures are accurate, maintenance chemicals are used correctly, and that preventative food safety measures are effective.

b) MUST DO Honey products that are rejected as a result of incorrect maintenance procedures must be remediated for non-human consumption, or discarded in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**).

9.7.2 Cleaning/Sanitation of Processing Equipment/Facilities

a) MUST DO Ensure that water treatment, cleaning and sanitation procedures, and use of related products, are effective through visual self-inspection and a review of records. If problems (i.e. deviations) arise where cleaning or sanitizing products are not used according to manufacturer's instructions or errors are detected in cleaning and sanitation procedures with processing equipment, tools and related processing and storage areas, document their occurrence in the *Facility and Equipment Cleaning/Sanitation – Monitoring and Corrective Action Record* (**FORM 9.0.3**) and provide a description of corrective action

taken (e.g. remedial cleaning/sanitation, retraining of personnel, or increased monitoring) in order to ensure that preventative measures for eliminating contaminants are operational.

b) MUST DO Honey products that are rejected as a result of incorrect cleaning and sanitation procedures for human consumption must be discarded in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**), or remediated for other use (e.g. as a bee feed supplement). For disposal of raw honey refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING**. Waste disposal must not be conducive to robbing from worker bees resulting in contamination of honey supers by cleaning/sanitation chemicals or other environmental contamination.

9.7.3 **Facility Pest Control**

a) MUST DO Any problems associated with pest control product usage, and corresponding corrective actions to address such problems, must be documented in the *Facility Pest Control – Monitoring and Corrective Action Record* (**FORM 9.0.5**) in order to ensure that preventative food safety measures are operational**.** All documents related to the pest control plan, including MSDS for each rodenticide and other pesticides used, and inspection reports indicating that the control plan has been effectively implemented, must be retained.

b) MUST DO Honey products that are rejected as a result of contamination from incorrect (e.g. faulty) pest control procedures if not remediated, must be segregated for non-human use, or discarded in a recognized waste facility and documented within the *Waste Shipping Lot Record* (**FORM 9.0.4**). For disposal of raw honey refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING**.

9.7.4 **Waste Disposal (Farm Chemicals)** MUST DO **-** All farm chemical waste material must be disposed of according to correct procedures according to manufacturers' labelling, MSDS instructions and Provincial Regulations, where warranted All records, deviations and corrective action taken upon disposal are documented on the *Waste Shipping Lot Record* (**FORM 9.0.4**). For disposal of farm chemicals contaminated with raw honey refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING**. Waste disposal must not be conducive to robbing from worker bees resulting in contamination of honey supers by farm chemicals or other environmental contamination.

9.8 TRAINING PROCEDURES

9.8.1 MUST DO Ensure that personnel are trained in correct maintenance, cleaning/sanitation, pest management and waste disposal procedures, in recognizing hazards associated with facility management, and in controlling hazards related to **GPP 9**, in order to ensure accuracy and compliance with written procedures and practices and record keeping. Document and monitor training in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1)**.

9.8.2 MUST DO Visually confirm by direct observation of personnel at least once during the implementation of **GPP 9**, and more frequently as warranted by the control procedure (e.g. before the start of each season or active season or processing cycle), that procedures are followed correctly, that personnel are competent in meeting the requirements of **GPP 9**, and to identify potential problems areas that require continued training as documented in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1)**.

9.8.3 

Re-train any personnel not following the procedures of **GPP 9** and document in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) in accordance with **GPP 11 – PERSONNEL: CAPABILITIES, QUALIFICATIONS AND PERSONAL HYGIENE**.

9.8.4 

Review compliance to procedures at least once annually to confirm the effectiveness of **GPP 9**, to identify aspects requiring improvement, and to assess the need for additional training.

9.9 RECORD KEEPING PROCEDURES

9.9.1 Review compliance to record keeping procedures annually, or more frequently as warranted by the control procedure (e.g. before the start of each active season or processing cycle), in order to provide information about the effectiveness of record keeping.

9.9.2 Ensure that all personnel following **GPP 9** are trained in record keeping, in order to ensure accuracy and compliance with written procedures. Visually confirm by direct observation of personnel at least once, preferably before the active season or processing cycle, that record keeping procedures are followed correctly for all aspects of **GPP 8**, and in accordance with procedures detailed in **GPP 12 – RECORD CONTROL, TRACEABILITY AND PRODUCT RECALL.**

9.9.3 Ensure that all farm records specified and provided in **GPP 9** are completed (i.e. signed and dated) and updated as required and maintained for at least eight (8) years by the producer/owner to facilitate traceability and/or product recall.

9.10 RECORDS

- FORM 9.0.1 Facility (Interior/Exterior) – Monitoring and Corrective Action Checklist (*optional*)
- FORM 9.0.2 Facility and Equipment Maintenance - Monitoring and Corrective Action Record
- FORM 9.0.3 Facility and Equipment Cleaning/Sanitation – Monitoring and Corrective Action Record
- FORM 9.0.4 Waste Shipping Lot Record
- FORM 9.0.5 Facility Pest Control - Monitoring and Corrective Action Record

9.11 CROSS-REFERENCED RECORDS

- FORM 11.0.1 Personnel Training – Monitoring and Corrective Action Record

GPP 10 – POTABLE WATER MANAGEMENT

10.1 PURPOSE AND SCOPE

10.1.1 Potable water, otherwise known as water deemed safe for human consumption, is an important prerequisite for honey production and processing under the ***CBISQT*** Program. Potable water is used in for mixing feedstuffs, cleaning hive equipment and tools, and is used as a supplement in an assortment of watering devices during periods where there is a shortage of water available to colonies in the field.

10.1.2 Although no water is added to raw honey[36] during on-farm processing, potable water is regularly used as an indirect processing aid for the cleaning/sanitation of bulk honey containers, processing tools, equipment and surfaces within extraction, processing/packing and storage areas of the facility. Environmental pollutants, water–borne biological pathogens and residues of toxic chemicals in untreated water, or incorrectly treated potable water, are important food safety concerns. Infrequent inspection of water sources, treatment procedures, and distribution systems can also heighten the risk of contamination directly to raw honey or indirectly to packed products if such systems are faulty or otherwise in error. The purpose of **GPP 10** is to provide guidelines for managing potable water in order to prevent or reduce the risk of contamination of raw honey and packed products, respectively.

10.1.3 Untreated or incorrectly treated water can harbour a number of pathogenic microorganisms, including bacteria (e.g. *C. botulinum*, *Bacillus cereus*, *Escherichia coli* O157:H7, *Salmonella* spp., *Vibrio cholerae* , *Shigella* spp.), viruses (e.g. Norwalk and hepatitis A) and protozoa such as *Cryptosporidium parvum*, *Cyclospora cayetanesis* and *Giardia lamblia)*. Pathogenic bacteria in contaminated water from waste or sewage (e.g. coliform bacteria in fecal material) can also contaminate raw honey and could pose a foodborne hazard to human consumers. **GPP 10** addresses sources of potential biological, chemical and physical hazards, and related good practices for the prevention or control of such hazards, when receiving, treating, and distributing potable water within the farm operation. For procedures associated with storing potable water (**Area 1**), refer to **GPP 3 – STORING INPUTS**.

10.2 RESPONSIBILITIES AND QUALIFICATIONS

10.2.1 The ***Producer/Owner*** has the overall responsibility for implementing **GPP 10** based on their capabilities, knowledge of food safety and regulatory requirements, and technical experience. These duties include ensuring that:

a) steps are taken to avoid contamination of water reserves, collection points and other water supplies (e.g. municipal or well water, surface water sources and cisterns) by hazardous biological and chemical substances, and all chemicals used on-farm are in compliance with regulations and manufacturer's instructions; especially with regards to method of application, dosage, wait times, minimum distance requirements from sources of water, and method of disposal,

b) only municipal or well water that meets federal guidelines (e.g. Canadian Drinking Water Guidelines) and/or provincial legislation/guidelines for drinking water is used for mixing feed supplements and within the processing facility (e.g. cleaning and sanitation)

c) all potable water associated with receiving, distribution and use is not contaminated with pathogenic fecal coliform bacteria (e.g. *E. coli*, *Cryptosporidum* spp., spores of *C. botulinum*) or enteric viruses, as a result of errors in water treatment, sanitation procedures, or faulty distribution systems,

d) untreated (non-potable) water is excluded from any contact with honey products, processing equipment,

[36] Honey absorbs water and is prone to fermentation and microbial degradation when diluted. Honey products are rejected for human consumption when water content is above 20% because of the risk of microbial contamination.

tools, containers or packaging materials,

e) water treatment aids used for well or surface water are approved, where warranted, and correctly used according to manufacturer's instructions to prevent contamination of raw honey products,

f) potable water from a municipal supply, or treated on-farm, is distributed under specific conditions in order to prevent contamination of honey products,

g) no equipment within the water supply and distribution network contaminates the water supply and ultimately, taints honey products with residues of chemicals(e.g. copper and lead materials),

h) designated personnel conducting tasks associated with **GPP 10** are effectively supervised,

i) monitoring, corrective action and record keeping procedures for **GPP 10** are communicated, understood and followed correctly by all relevant personnel, and

j) all records related to **GPP 10** are effectively documented and controlled.

10.2.2 All designated personnel following **GPP 10** must have a complete understanding of the described hazards and relevant procedures, and have the appropriate training regarding these procedures.

10.2.3 All designated personnel are responsible for reporting problems (hazardous incidents) from **GPP 10** to the *Producer/Owner*.

10.3 FOOD SAFETY HAZARDS

10.3.1 **WATER: Receiving**

a) Contamination by pathogenic fecal coliform bacteria (e.g. *Cryptosporidum* spp.) and/or enteric viruses as a result of unsanitary transport carriers, equipment and/or mishandling in transit.

b) Contamination by residues of chemicals (e.g. petrochemical-based products), as a result of fouled transport carriers, equipment and/or mishandling in transit.

10.3.2 **WATER: Treating -** Contamination by residues of chemicals (e.g. biocides, disinfectants and other water treatment aids such as chlorine and ozone) as a result of incorrect product usage or method of application.

10.3.3 **WATER: Distributing**

a) Contamination by pathogenic fecal coliform bacteria (e.g. *Cryptosporidum* spp.) and/or enteric viruses as a result of an unsanitary (e.g. unsealed) distribution system.

b) Contamination by residues of chemicals (e.g. petrochemical-based products) as a result of an incorrect (e.g. non-food grade) distribution system.

c) Contamination by extraneous materials (e.g. metal, glass, rock/sand) as a result of an incorrect (e.g. unsealed) distribution system.

10.4 ACCEPTABLE LIMITS FOR CONTROL 

10.4.1 **WATER: Receiving -** All incoming water at the time of receipt is free of any hazardous biological or chemical contaminants as a result of incorrect transport carriers, faulty equipment, or mishandling in

transit.

10.4.2 **WATER: Treating –** Only water that has been treated with water treatment aids, following manufacturer's instructions for dose and method of application, is used as potable water.

10.4.3 **WATER: Distributing -** Only potable water that has been supplied and transferred within an uncontaminated water distribution system is used as potable water.

10.5 CONTROL PROCEDURES

10.5.1 **WATER: Receiving**

a) MUST DO No water contaminated by biological hazards or residues of farm chemicals (e.g. petrochemical-based products) as a result of fouled transport carriers, equipment and/or mishandling in transit, is accepted on-farm.

b) MUST DO Municipal or well water supplies generally do not require supplemental treatment if there is a potable water management program established. At a minimum, the management program requires ongoing water treatment based on routine water testing (annually, or more frequently as warranted by the active season) and retention of all documents related to testing and method of treatment (e.g treatment aids such as chlorine, ozone, UV irradiation, filtration). Ensure all aspects of water usage that could affect the food safety assurance of honey products, including receiving, storage and use, are controlled according to **GPP 10** and documented accordingly.

c) MUST DO Surface, well and cistern water is acceptable only if there is a water management program in place.

d) MUST DO Avoid contamination of water reserves, collection points and streams by hazardous biological materials (i.e. waste effluent) and chemicals, and ensure that all biological waste products and agricultural chemicals are used in compliance with legislation and manufacturer's labelling (i.e. especially with regards to method of application, dosage, wait times minimum distance requirements from sources of water, and method of disposal).

10.5.2 **WATER: Treating**

a) MUST DO All treatments are conducted in accordance with manufacturer/supplier instructions for treatment aids and equipment. In circumstances where the water supply is received from a well, cistern or dugout, water must be routinely tested to determine that water is acceptable, and it is treated with water treatment aids (e.g. UV, chlorine, ozone, sanitizers and disinfectants) to control any potential biological hazards.

b) MUST DO Water treatment aids**,** sanitizers and disinfectants must be appropriate for food use and applied at label recommended rates following manufacturer's instructions regarding the use of biocides, detergents and disinfectants (preparation of surfaces, dilution, contact period, etc.). In processing areas, use only water treatment aids, sanitizers or disinfectants recommended for food production and follow the manufacturers' description and use for rate and dosage and stepwise sanitary procedures.

c) MUST DO Record details of all water treatments, where relevant, and any third-party water tests, if

conducted**.**

10.5.3 **WATER: Distributing**

a)  Reduce all hazards to food safety associated with the introduction of pathogens, chemical contaminants and physical hazards into water and water distribution equipment, and manage waste water and waste effluent in a manner that ensures that the distribution system in uncontaminated and that water leaving the distribution system is of a quality suitable for its intended use (i.e. potable).

b)  At a minimum, test water within the distribution system annually and retain all documents.

10.6 MONITORING PROCEDURES

10.6.1  **WATER: Receiving -** All water received on-farm must be in a clean condition and free of any hazardous chemical contaminants that could potentially cross-contaminate honey products, as a result of unsafe transportation conditions (e.g. conditions that could result in contamination from biological, chemical and/or physical hazards), faulty equipment or mishandling in transit. All water sources intended for potable use, especially for mixing feed and use within the honey processing facility, must be tested annually, or more frequently as warranted, to ensure correctness or the need for corrective action. Confirm by review of documentation and/or third-party testing that incoming potable water is correctly identified and acceptable according to federal guidelines (e.g. Canadian Drinking Water Guidelines) and/or provincial legislation/guidelines for drinking water. Information related to receiving potable water, including sampling and testing records, must be retained and/or documented within the *Potable Water – Sampling, Treatment and Corrective Action Record (***FORM 10.0.1**) or *Testing Record* (**FORM 1.0.3)** and reviewed annually, or more frequently as warranted by changes in supply.

10.6.2  **WATER: Treating -** Inspect and confirm the condition and integrity of all water treatment aids, and related equipment, before the active season to ensure equipment is fully functional and correctly maintained before and following reuse. Confirm by direct observation of personnel that all water treatment aids, procedures for treating non-potable water, and for collecting water samples for testing, are used or followed correctly according to manufacturers' instructions. Water treatment activities that may affect the food safety assurance of raw honey must be documented in the *Potable Water – Sampling, Treatment and Corrective Action Record (***FORM 10.0.1**). Record all test results in the *Testing Record* (**FORM 1.0.3**). Annually, review all documents that attest to the frequency of testing and quality of treated (potable) water, or more frequently as warranted during the active season.

10.6.3  **WATER: Distributing -** Inspect and confirm by self-inspection and through records (*Potable Water - Sampling, Treatment and Corrective Action Record* (**FORM 10.0.1**) and the *Testing Record* (**FORM 1.0.3**), if available, on a monthly basis (or more frequently as warranted during the active season) that the quality of water available (surface water and/or cisterns), supplied (municipal or well water), or stored on the farm operation is correct in order to ensure a clean water storage and distribution system. Monitor the condition of the water distribution system (e.g. water distribution facilities and related equipment and containers) on a weekly basis or more regularly, as warranted during the active season, for debris or other signs of contamination and document in the *Potable Water – Sampling, Treatment and Corrective Action Record (***FORM 10.0.1**). Ensure that all farm chemicals and waste products used or deposited in the vicinity of the water distribution system are in compliance with manufacturer's labelling and legislation with regards to method of application, dosage, wait times minimum distance requirements from sources of water, and method of disposal. Ongoing supporting programs must be in place and

monitored monthly for pest control, sanitation/cleaning and waste disposal (Refer to **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL**).

10.7 CORRECTIVE ACTION PROCEDURES

10.7.1 MUST DO Any errors or problems associated with receiving and distributing of potable water, and the treatment of non-potable water, that are detected through regular monitoring, and corresponding corrective actions to address such problems, must be documented in the *Potable Water - Sampling, Treatment and Corrective Action Record* (**FORM 10.0.1**) in order to ensure that operational procedures are accurate and that preventative food safety measures are effective.

10.7.2 MUST DO Tests of water may be warranted in some situations if there are indications that suggest potential contamination and remedial action. All test results should be recorded in the *Testing Record* (**FORM 1.0.3**) and referenced to corrective actions in the *Potable Water - Sampling, Treatment and Corrective Action Record* (**FORM 10.0.1**), as warranted.

10.7.3 MUST DO All documents related to the water management plan, including the frequency of third-party testing and quality of water used in the processing facility (*Testing Record* (**FORM 1.0.3**)), and documents from self-inspection reports (*Potable Water - Sampling, Treatment and Corrective Action Record* (**FORM 10.0.1**)) indicating that the water management plan has been effectively implemented, must be retained by the producer.

10.8 TRAINING PROCEDURES

10.8.1 MUST DO Ensure that personnel are trained in correct receiving, treating and distribution procedures for potable water, in recognizing hazards associated with potable water, and in controlling hazards related to **GPP 10**, in order to ensure accuracy and compliance with written procedures and practices and record keeping.

10.8.2 MUST DO Visually confirm by direct observation of personnel at least once during the implementation of **GPP 10**, and more frequently as warranted by the control procedure (e.g. before the start of each season or active season or processing cycle), that procedures are followed correctly, that personnel are competent in meeting the requirements of **GPP 10**, and to identify potential problems areas that require continued training.

10.8.3 MUST DO Re-train any personnel not following the procedures of **GPP 10** and document in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) in accordance with **GPP 11 – PERSONNEL: CAPABILITIES, QUALIFICATIONS AND PERSONAL HYGIENE**.

10.8.4 MUST DO Review compliance to procedures at least once annually to confirm the effectiveness of **GPP 10**, to identify aspects requiring improvement, and to assess the need for additional training.

10.9 RECORD KEEPING PROCEDURES

10.9.1 Review compliance to record keeping procedures annually, or more frequently as warranted by the control procedure (e.g. before the start of each active season or processing cycle), in order to provide information about the effectiveness of record keeping.

10.9.2 Ensure that all personnel following **GPP 10** are trained in record keeping, in order to ensure accuracy and compliance with written procedures. Visually confirm by direct observation of personnel at least once, preferably before the active season or processing cycle, that record keeping procedures are followed correctly for all aspects of **GPP 10**, and in accordance with procedures detailed in **GPP 12 – RECORD CONTROL, TRACEABILITY AND PRODUCT RECALL.**

10.9.3 Ensure that all farm records specified and provided in **GPP 10** must be completed (i.e. signed and dated) and updated as required and maintained for at least eight (8) years by the producer/owner to facilitate traceability and/or product recall.

10.10 RECORDS

- FORM 10.0.1 Potable Water - Sampling, Treatment and Corrective Action Record

10.11 CROSS-REFERENCED RECORDS

- FORM 1.0.3 Testing Record
- FORM 11.0.1 Personnel Training – Monitoring and Corrective Action Record

GPP 11 – PERSONNEL: CAPABILITIES, QUALIFICATIONS AND PERSONAL HYGIENE

11.1 PURPOSE AND SCOPE

11.1.1 Sufficient skills among designated personnel and follow-up training are important components of the ***CBISQT*** Program. Producers, producer-packers, managers, operators and other workers that make up the personnel of the farm operation can prevent, greatly reduce, or in some cases, eliminate, the occurrence of such hazards by adopting the suite of prerequisites of the ***CBISQT*** Program. In addition, ensure all personnel are qualified through training in all relevant **GPPs** and are compliant with all federal and provincial agriculture and food laws relevant to sound beekeeping and honey processing practices.

11.1.2 Adopting good hygienic practices among personnel, especially at extraction and straining process steps, linked with adequate training in the necessity of frequent hand-washing, sanitary footwear and regular cleaning (e.g. hand washing and boot-bath stations, equipment and facility), can greatly reduce, or in some cases, prevent, the occurrence of contamination of honey products with pathogenic bacterial spores (e.g. *C. botulinum* and *Bacillus* spp.). **GPP 11** addresses the need for all personnel to have a good understanding of all relevant Good Production Practices (**GPPs**) as outlined in the ***CBISQT*** Producer Manual.

11.2 RESPONSIBILITIES AND QUALIFICATIONS

11.2.1 The ***Producer/Owner*** has the overall responsibility for implementing **GPP 11** based on their capabilities, knowledge of food safety and regulatory requirements, and technical experience. These duties include ensuring that:

a) all elements of the ***CBISQT*** Program pertaining to the their own apiary and/or on-farm processing facility are operational,

b) all relevant personnel are capable and qualified in safe beekeeping practices, safe honey extraction/handling procedures in conjunction with acceptable personal hygiene in accordance with all relevant training requirements for **GPPs** within the ***CBISQT*** Program,

c) designated personnel directly involved in work activities identified by the ***CBISQT*** Program that could pose a food safety hazard, adopt appropriate protective/sanitary clothing, hygiene and hygienic work habits,

d) adequate washing and sanitary facilities and supplies are supplied and properly maintained,

e) capabilities, qualifications and related record keeping procedures for **GPP 11** are communicated, understood and followed correctly by all relevant personnel, and

f) all records related to **GPP 11** are effectively documented and controlled.

11.2.2 All designated personnel following the ***CBISQT*** Program must have:

a) a complete understanding of the described biological, chemical and physical hazards and relevant procedure associated with designated practices they are involved with, and have the appropriate capabilities regarding these procedures,

b) knowledge of bee disease surveillance and reporting, biosecurity requirements[37], approved and correct

[37] Refer to the **CFIA National Bee Farm-Level Biosecurity Standard**.

medication usage, and correct procedures associated with handling honey supers, honey harvesting, extraction, processing and packing, environmental protection, waste management, product shipping and product recall, and

c) adequate qualifications in order to ensure accuracy and compliance with good production practices, and record keeping involved with the ***CBISQT*** Program.

11.2.3 All designated personnel are responsible for reporting problems associated with **GPP 11** to the *Producer/Owner*.

11.3 CONTROL PROCEDURES

11.3.1 TRAINING

a) MUST DO Ensure that a training program is implemented to continuingly educate personnel in the importance of the ***CBISQT*** Program in controlling or preventing biological, chemical and/or physical hazards to honey products. Personnel must receive training associated with personal hygiene, recognition of brood comb, safe usage of chemicals for maintenance, pest control, sanitation, cleaning, water treatment and how to perform corrective actions associated with the latest version of the ***CBISQT*** Program.

b) MUST DO Food safety training, and continuing education, must provide personnel with a working knowledge of basic biosecurity principles and practices to minimize the likelihood of introducing or spreading pathogens, chemical and physical hazards present on the farm and methods of managing such risks, in addition to other food safety practices associated with beekeeping.

c) MUST DO Ensure all relevant personnel are trained on the importance of good personal hygiene and sanitary techniques when handling and storing honey. This training will include education in the sources and causes of contamination, hand-washing techniques, equipment sanitation, and other preventative measures. Ensure that personnel directly involved in the honey extraction understand the need for proper procedures to minimize the risk of contamination of honey products.

d) MUST DO Ensure that training of all personnel involved in the ***CBISQT*** Program is documented.

e) MUST DO Re-train any personnel not following the procedures of the ***CBISQT*** Program and document in accordance with **GPP 11** and other relevant **GPPs**.

11.3.2 PERSONNEL HYGIENE

a) MUST DO Personnel can be primary or secondary sources of biological contamination of honey products through a combination of incorrect hygiene and handling practices. Biological contamination from personnel is mainly during the process steps of extraction, processing and packing where honey products are exposed to contamination through direct handling or close proximity to the product. Ensure that the hygienic condition of personnel who extract and handle honey does not have a direct negative effect on the safety of food products intended for human consumption. Personnel must follow sound hygienic protocols to avoid the transmission of biological contaminants to honey products from transmissible foodborne illness, pathogenic microorganisms (e.g. coliform bacteria, *Salmonella* spp.), blood or particulate matter, and unsanitary footwear.

GPP 11 – PERSONNEL: CAPABILITIES, QUALIFICATIONS AND PERSONAL HYGIENE

b)  The health and hygiene practices among personnel and visitors are important control points for preventing the introduction of pathogens and contaminants onto the farm operation. Ensure personnel in contact with bees and honey products are in good health (e.g. no transmissible disease) and follow all biosecurity and sanitary measures (e.g. exclusion of wild/domestic animals, visitor restriction, suitable work attire, clean hands and footwear, restricted jewelry[38], open cuts, eating, chewing gum, spitting, smoking, etc.) while working in the apiary and/or processing facility. These measures are necessary to reduce the occurrence, or spread, of biological and/or chemical contaminants which may affect the food safety of honey products, and/or the health of bees. Refer to the CFIA's website (www.inspection.gc.ca) for information related to the *National Bee Farm-Level Biosecurity Standard*.

c)  The facility for harvesting and storing honey must only be accessed by authorized and trained personnel, during harvest cycles in order to minimize contamination routes for hazardous biological, physical and/or chemical agents.

d)  All personnel involved in the handling of bees and harvesting, handling and storage of honey are required to follow hygiene practices described in **GPP 11**. These requirements and practices include the following:

i) Behaviour – All personnel operating with the apiary or processing facility wear suitable clothing (including footwear and headwear), limited and contained jewelry, and will refrain from eating food (outside of designated areas), chewing gum, spitting, or smoking in, or in the vicinity of, the processing area.

ii) Hand-washing - All personnel handling honey at harvest or for further processing will use proper hand-washing techniques before commencing all harvest and handling activities, after contact with a potentially unsanitary surface, and after any breaks which may compromise personal hygiene.

iii) Restrooms - All toilet/hand-washing facilities used by personnel during extraction and/or processing of honey must be clean and properly supplied with single-use (disposable) paper towels (or hand blower), toilet paper, hand cleaner (soap), waste receptacles and potable water.

iv) First aid procedures - A fully stocked and current first aid kit must be available at the work site for use by designated personnel. Any cut, abrasion or other injury must be treated immediately to ensure the health and safety of the personnel and to minimize the risk of contamination to honey products. The producer/owner will be notified by personnel for further immediate treatment of any cuts, abrasions, or injuries.

v) Illness - All personnel who are involved in the harvest and handling of honey product must be of good health. Any personnel experiencing signs of transmissible illness or disease will notify the producer/owner immediately and will not handle honey during harvest, or be in direct contact or close proximity to honey product, without sanitary precautions in place (including exclusion), in order to eliminate opportunities for cross-contamination.

[38] Jewelry is either removed or, if not removable, covered over to eliminate opportunities for cross-contamination.

11.3.3 **COMMUNICATION**

a) MUST DO Ensure effective communication occurs between the producer/owner and all relevant personnel, in spoken and written communication at monthly intervals (or more frequently if warranted), especially before each harvest cycle, stressing the importance of good hygiene and sanitary techniques when harvesting, processing and handling honey products.

b) MUST DO Communicate to all relevant personnel that any objects in contact with honey products must be clean and sanitized or disinfected. This includes, but is not limited to, hands, harvesting equipment, containers and packaging material, processing equipment, storage equipment and transportation equipment.

11.4 MONITORING PROCEDURES

11.4.1 MUST DO Ensure that all personnel involved in beekeeping, the harvest and handling of raw honey have the appropriate skills and ***CBISQT*** Program training. Review the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) for correctness before allowing any personnel to conduct procedures associated with the harvesting, handling and storage process; especially during control points associated with medications and farm chemicals.

11.4.2 MUST DO Review the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) for competencies before allowing any personnel to conduct procedures associated with the extraction, processing, packing and handling of honey products; especially during control points such as the process step of deboxing/uncapping.

11.4.3 MUST DO All personnel involved in the extraction, processing, packing and handling of honey products must record their relevant health status within the *Personnel Hygiene - Monitoring and Corrective Action Record* (**FORM 11.0.2**) before conducting any procedures associated with the harvesting, handling and storage process. Other personnel may also be required to use this form if there is a risk of contamination to honey products from such personnel.

11.4.4 MUST DO Records of hazards associated with personnel, and corrective measures performed, should be maintained on the *Personnel Hygiene - Monitoring and Corrective Action Record* (**FORM 11.0.2**) on an ongoing basis throughout the production cycle.

11.4.5 MUST DO Ensure that toilet facilities and hand-washing stations are serviced and cleaned on a weekly basis (or more frequently as warranted) and checked at least daily during processing cycle. Refer to **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL.**

11.4.6 MUST DO Check the *Personnel Hygiene - Monitoring and Corrective Action Record* (**FORM 11.0.2**) before the start of the active season to ensure that all personnel involved in the harvest and handling of honey product have followed proper hygiene protocol with respect to specific hygienic concerns.

11.5 CORRECTIVE ACTION PROCEDURES

11.5.1 MUST DO All deviations from proper hygienic conditions of personnel and any corrective measures undertaken regarding such hygiene protocol should be recorded on the *Personnel Hygiene – Monitoring and Corrective Action Record (***FORM 11.0.2**).

11.5.2 MUST DO If, during the process of harvesting, extraction or processing, honey products have been potentially contaminated with biological pathogens by unhygienic personnel, product must be isolated, assessed and disposed of by competent personnel, as warranted. Refer to **GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL** and **GPP 11 – PERSONNEL: CAPABILITIES, TRAINING AND PERSONAL HYGIENE** for supporting procedures on corrective action. For disposal of raw honey refer to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING** and document in the *Waste Shipping Lot Record* **(FORM 9.0.4)**. When necessary, consult with your Provincial Apiculturist, veterinarian or other relevant health care professional to discuss preventative measures and corrective action (i.e. treatment options).

11.5.3 MUST DO Re-train any personnel not following the procedures of **GPP 11**.

11.6 RECORD KEEPING PROCEDURES

11.6.1 Review compliance to record keeping procedures annually, or more frequently as warranted by the control procedure (e.g. before the start of each active season or processing cycle), in order to provide information about the effectiveness of record keeping.

11.6.2 Ensure that all personnel following **GPP 11** are trained in record keeping, in order to ensure accuracy and compliance with written procedures. Visually confirm by direct observation of personnel at least once, preferably before the active season or processing cycle, that record keeping procedures are followed correctly for all aspects of **GPP 11**, and in accordance with procedures detailed in **GPP** 12 – RECORD CONTROL, TRACEABILITY AND PRODUCT RECALL.

11.6.3 Ensure that all farm records specified and provided in **GPP 11** are completed (i.e. signed and dated) and updated as required and maintained for at least eight (8) years by the producer/owner to facilitate traceability and/or product recall.

11.7 RECORDS

- FORM 11.0.1 Personnel Training - Monitoring and Corrective Action Record
- FORM 11.0.2 Personnel Hygiene - Monitoring and Corrective Record

GPP 12 – RECORD CONTROL, TRACEABILITY AND PRODUCT RECALL

12.1 PURPOSE AND SCOPE

12.1.1 Records contain written, printed and/or electronic information that provides historical evidence that process steps or procedures are completed. Records are also used as a monitoring tool to provide a description of problems that occur over time at a specific process step (i.e. deviations or what went wrong) and action taken to correct the problem (i.e. corrective action). Records associated with **GPP**s within the ***CBISQT*** Program are fundamental in the assessment of whether a control point (CP) is effectively controlled (e.g. monitoring activities, deviations and associated corrective action) or not.

12.1.2 As part of the prerequisite programs of the ***CBISQT*** Program, a set of examples of HACCP-based records for beekeeping operations have been developed by the CHC and are included as a series of forms in **Appendix I**. Records described in the Producer Manual are relevant to generic honey operations however, some records that are not applicable must be noted by producers, farm managers, or other designated personnel. Ensure that alternative forms tailored by individual beekeeping operations, at a minimum, include all elements within relevant ***CBISQT*** Program records.

12.1.3 When honey products that are potentially non-compliant with the ***CBISQT*** Program are shipped in error from the farm operation and enter, or are distributed, within the food supply chain, they may pose a food safety hazard for consumers. The purpose of **GPP 12** is to provide management guidelines for record keeping and an effective traceability and recall system for potentially non-compliant honey products when warranted following established CFIA protocols[39].

12.1.4 **GPP 12** addresses the procedures for record keeping, control of records, traceability and product recall within the on-farm operation. A traceability and recall system should be in place in order to trace the product received or shipped in order to effectively recall product from the customer, limit the extent of the recall by removing identified product from distribution as quickly and accurately as possible, and assist in identification and prevention of the potential source of non-compliant product when recall action is required (e.g. internal control, customer complaint, or CFIA action). An annual mock recall should be conducted to test the product recall system.

12.2 RESPONSIBILITIES AND QUALIFICATIONS

12.2.1 The ***Producer/Owner*** has the overall responsibility for implementing **GPP 12** based on their capabilities, knowledge of food safety and regulatory requirements, and technical experience. These duties include ensuring that:

a) all relevant records, established either from within the ***CBISQT*** Program or through received inputs, are retained in order to provide evidence of conformity to requirements of the ***CBISQT*** Program and the continuing effectiveness of the farm operation in providing assurance of safe honey products,

b) designated personnel conducting tasks associated with **GPP 12** are effectively supervised, and

c) monitoring, corrective action and record keeping procedures for **GPP 12** are communicated, understood and followed correctly by all relevant personnel,

12.2.2 All designated personnel following **GPP 12** must have a complete understanding of the relevant procedures, and have the appropriate training regarding these procedures.

12.2.3 All designated personnel are responsible for reporting problems associated with record control, traceability

[39] CFIA- FOOD RECALLS: MAKE A PLAN AND ACTION IT! *http://www.inspection.gc.ca/english/fssa/recarapp/rap/igguide/shtml*

and product recall under **GPP 12** to the *Producer/Owner*.

12.3 RECORD KEEPING AND CONTROL

12.3.1 A comprehensive and consistent recording system for documenting inputs, hazards, procedures, and implemented control actions is an important control point for the ***CBISQT*** Program. Record keeping of all relevant practices and procedures related to the on-farm operation also demonstrates due diligence with respect to regulatory requirements associated with production practices.

12.3.2 Accurate record keeping requires adherence to the following record keeping protocols:

a) records are completed in "real time" wherever possible to avoid errors to document "after the fact",

b) records are as accurate as possible and not contain false or misleading information, and

c) any errors in entering information must be struck through (e.g. ~~struck through)~~ rather than erased or otherwise obscured, followed by the correct information and initials at the change by the person responsible (e.g. producer/owner). If the correction occurs after a period of time has passed from the original entry point, then a note of time/date of correction and the reason for delay must be recorded on the record.

12.3.3 Retain all receipts, invoices, bills of lading and/or packing slips and supplier declarations associated with **GPP 2 - RECEIVING INPUTS** and store in a secure location. Ensure that all records specified and provided in the ***CBISQT*** Producer Manual (**Appendix I**.) are completed and updated as required, and maintained for at least eight (8) years to facilitate traceability and/or product recall.

12.3.4 Ensure all records associated with **GPPs** under the ***CBISQT*** Program are maintained in a secure manner in order to restrict unauthorized access and to provide assurance of retention.

12.3.5 Records may be retained on paper or electronically. Records maintained on computers are acceptable provided the producer, or designated personnel, implements appropriate controls to ensure the integrity of the electronic data. Ensure that access to the electronic database is restricted through password protection.

12.4 TRACEABILITY

12.4.1 Ensure that all honey products entering, or retained within the farm production system, are uniquely identified. All lots of honey products and bulk containers must be uniquely identified and documented to facilitate traceability and recall.

12.4.2 Acquire and retain all documents relevant to each product lot, in order to trace movement from the establishment of origin to their final destination (e.g. processing facilities), if necessary.

12.4.3 Apply a document system that can be used to ascertain the exact origin (e.g. apiary number) and destination of a honey products produced by the farm.

12.5 PRODUCT RECALL

12.5.1 *Internal Control Request*

a) In the event of receiving an *internal control request* for possible product recall identified from personnel within the farm operation, first identify the potential non-compliance issue with the honey product and then notify relevant personnel within the farm operation (e.g. producer/owner) in order to determine the need for

a *preliminary recall assessment*.

b) All relevant ***CBISQT*** Program records, and related documents, are reviewed for any indications of non-compliant product and need for corrective action during an on-farm investigation. If the preliminary recall assessment indicates no need for further corrective or recall action, document the internal control event in the *Internal Control Request*/*Product Complaint - Monitoring and Corrective Action Record* (**FORM 12.0.1**).

c) In cases where a preliminary recall assessment warrants possible recall action, contact the CFIA for more recall information regarding a further course of action, including implementing traceback and a product recall.

12.5.2 *Customer Complaint*

a) In the event of receiving a *customer complaint*, or any other external source of concern for possible product recall, first identify the potential non-compliance issue with the honey product and then notify relevant personnel within the farm operation (e.g. producer/owner) in order to determine the need for a *preliminary recall assessment*.

b) All relevant ***CBISQT*** Program records, and related documents, are reviewed for any indications of potential non-compliant product and need for corrective action. If the preliminary recall assessment indicates no need for further corrective or recall action, provide a written response back to the complainant and document in the *Internal Control Request*/*Product Complaint - Monitoring and Corrective Action Record* (**FORM 12.0.1**). Ensure that all information from the complainant regarding the potentially non-compliant product (including details on the product, complainant and the purported nature of non-compliance) are entered into the *Internal Control Request*/*Product Complaint - Monitoring and Corrective Action Record* (**FORM 12.0.1**).

12.5.3 *Traceback and Product Recall* - In cases where a preliminary recall assessment warrants possible recall action, contact the CFIA for more recall information regarding a further course of action, including implementing traceback and a product recall. During a recall process required by the CFIA, a bracketing method is used where honey lots above and below the affected lot must also be recalled. In the event of a product recall, ensure that all potentially non-compliant or incorrect honey products, and/or bracketed lots, are identified and subjected to corrective action through traceback and recall procedures.

12.5.4 *Complaint Referral* - If the non-compliance issue was not caused at your farm operation, then refer the complaint immediately to other related individuals, producers and producer-packers in the chain of custody.

12.6 MONITORING PROCEDURES FOR PRODUCT RECALL

12.6.1 *On-farm Honey Products* – At the preliminary recall assessment, and before a product recall, ensure that all potential recalled products are identifiable and honey products that are on the farm operation slated to be withdrawn from storage or pre-shipping areas, are identified and segregated from other products. At the point of recall, information regarding the reason for recall, the amount of product received, the amount of product in stock, the amount of product unaccounted for, corrective action, and the result of that corrective action are documented within the *Product Recall - Monitoring and Corrective Action Record* (**FORM 12.0.2**).

12.6.2 *Shipped Honey Products* - In circumstances where recall is warranted for products that have been shipped from the farm operation, ensure that all product records associated with a product recall reference the unique identification number for each product lot that refers back to the production lot *check sample* (Refer

to **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING**) and related documentation.

12.6.3 *Check Samples* – Visually confirm that check samples from recalled lots are available and suitable for third party testing as warranted by review of the *Check Sample Log* (**FORM 7.0**.. Ensure that any third-party test results on check samples are documented in the *Testing Record* (**FORM 1.0.3**). Visually confirm that identifying lot numbers of the *check sample* and container identification are verifiable throughout the production cycle and are linked wherever possible to the recall process. Documents that are reviewed during the traceback and recall process may include the following:

- *Honey Super Lot – Monitoring and Corrective Action Record* (**FORM 5.0.1**),
- *Receiving Full Honey Supers - Monitoring and Corrective Action Record* (**FORM 7.0.1**),
- *Receiving Full Honey Bulk Containers - Monitoring and Corrective Action Record* (**FORM 7.0.2**),
- *Honey Extraction Record* (**FORM 7.0.3**),
- *Check Sample Record* (**FORM 7.0.4**),
- *Extraction/Processing Honey - Monitoring and Corrective Action Record* (**FORM 7.0.5**),
- *Packing Honey - Monitoring and Corrective Action Record* (**FORM 8.0.2**),
- *Supplier`s Declaration* (**FORM 8.0.4**), and the
- *Shipping Lot Record* (**FORM 8.0.5**).

12.6.4 At the preliminary recall assessment, include in the *Product Recall – Monitoring and Corrective Action Record* (**FORM 12.0.2**) the name of the responsible person for recall within your farm operation, the name of the CFIA contact person for referral, including CFIA personnel contact information, and the date/time of referral.

12.6.5 Review the *Honey Super Lot – Monitoring and Corrective Action Record* (**FORM 5.0.1**), the *Extraction/Processing Honey – Monitoring and Corrective Action Record* (**FORM 7.0.5**), the *Packing Honey – Monitoring and Corrective Action Record* (**FORM 8.0.2**) the *Supplier`s Declaration* (**FORM 8.0.4**) the *Shipping Lot Record* (**FORM 8.0.5**) at the time of recall in order to identify and cross-reference the production lot numbers affected by tracing customer invoices, lot identification numbers of honey products, including date of harvest, date of shipment or other relevant records.

12.7 CORRECTIVE ACTION PROCEDURES FOR PRODUCT RECALL

12.7.1 In the event of a recall, notify the affected customers/distributors of the recall as soon as possible, and arrange for collection/consolidation of all products from all lot number(s) involved, if applicable, document within the *Internal Control Request/Product Complaint - Monitoring and Corrective Action Record* (**FORM 12.0.1**. Contact the CFIA regarding any corrective action to be taken.

12.7.2 Ensure that all recalled product is controlled and remediated, or disposed of, in accordance with the nature of recall actions and are documented within the *Product Recall - Monitoring and Corrective Action Record* (**FORM 12.0.2**) throughout the recall process. If corrective actions for remediation for non-human consumption are not warranted or feasible, dispose of the recalled product as required by Provincial Regulations, or other legislation, in a recognized waste facility and document within the *Waste Shipping Lot Record* (**FORM 9.0.4**). Follow **GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING** for all raw honey disposals.

12.8 TRAINING PROCEDURES

12.8.1 Ensure that personnel are trained in correct record control methods, in documentation, and in procedures associated with traceability and product recall related to **GPP 12**, in order to ensure accuracy and

compliance with written procedures and practices and record keeping.

12.8.2 Visually confirm by direct observation of personnel at least once during the implementation of **GPP 12**, and more frequently as warranted by the control procedure (e.g. before the start of each season or active season or processing cycle), that procedures are followed correctly, that personnel are competent in meeting the requirements of **GPP 12**, and to identify potential problems areas that require continued training.

12.8.3 Re-train any personnel not following the procedures of **GPP 12** and document in the *Personnel Training – Monitoring and Corrective Action Record* (**FORM 11.0.1**) in accordance with **GPP 11 – PERSONNEL: CAPABILITIES, QUALIFICATIONS AND PERSONAL HYGIENE**.

12.8.4 Review compliance to procedures at least once annually to confirm the effectiveness of **GPP 12**, to identify aspects requiring improvement, and to assess the need for additional training.

12.9 RECORD KEEPING

12.9.1 Review compliance to documented record keeping controls, and traceability/recall procedures annually, or more frequently as warranted by the control procedure (e.g. before the start of each active season or processing cycle), in order to provide information about the effectiveness of procedures and to identify potential problems areas requiring continued surveillance or retraining. **GPP 12** should be evaluated at least once annually to confirm correct application, and modified as necessary to ensure adequate control.

12.9.2 Ensure that all farm records specified and provided in **GPP 12** are completed (i.e. signed and dated) and updated as required and maintained for at least eight (8) years by the producer/owner or designee to facilitate traceability and/or product recall.

12.10 RECORDS

- FORM 12.0.1 Internal Control Request/Product Complaint - Monitoring and Corrective Action Record
- FORM 12.0.2 Product Recall - Monitoring and Corrective Action Record

12.11 CROSS-REFERENCED RECORDS

- FORM 1.0.3 Testing Record
- FORM 5.0.1 Honey Super Lot – Monitoring and Corrective Action Record
- FORM 7.0.1 Receiving Full Honey Supers - Monitoring and Corrective Action Record
- FORM 7.0.2 Receiving Full Honey Bulk Containers - Monitoring and Corrective Action Record
- FORM 7.0.3 Honey Extraction Record
- FORM 7.0.4 Check Sample Record
- FORM 7.0.5 Extraction/Processing Honey - Monitoring and Corrective Action Record
- FORM 8.0.2 Packing Honey – Monitoring and Corrective Action Record
- FORM 8.0.4 Supplier`s Declaration
- FORM 8.0.5 Shipping Lot Record
- FORM 9.0.4 Waste Shipping Lot Record
- FORM 11.0.1 Personnel Training – Monitoring and Corrective Action Record

GLOSSARY OF TERMS

Acceptable Limit – a criterion that separates acceptability from unacceptability in relation to food safety.

Active Season – a portion of the year, when honey bee colonies are active in the seasonal foraging of nectar/pollen and the production of honey, usually over a period when diurnal spring temperatures exceed a foraging threshold temperature of 10° - 13°C (50° - 55°F) until autumn when foraging is limited by the availability of nectar/pollen sources and cooler temperatures which fall below that threshold. In general, the active season in Canada varies from May – August (western Canada), from mid-May to mid-September (Quebec and northern New Brunswick), from April to October in other southern parts of Canada, and longer along coastal British Columbia.

Adequately Controlled – indicates that the identified hazard is eliminated or reduced to an acceptable level and defined as "equal to the requirement, in keeping with logic, fair, sensible and rational."

Adulteration – in respect of honey, when foreign sugars (e.g. corn syrup/cane sugar or other similar compounds or products) are added in excess of limits prescribed under existing regulations (see *contaminate*).

Apiary – location and sum total of honey bee colonies, hives and other equipment assembled in one site for beekeeping operations (i.e. beeyard).

Approved Food Grade Coating - material which meets the requirements of Division 23 of the Food and Drug Regulations for use as a coating for the interior and exterior of container surfaces, including drums, where honey products are in direct contact, or may come in contact with.

Audit – an optional systematic, independent and documented process for obtaining evidence and objective evaluation of the ***CBISQT*** Program in order to determine the extent to which program criteria have been met.

Beebread – a pelletized granular mixture of floral pollen and honey or nectar chemically modified by worker bees and packed into brood comb cells within the hive to be used as a food source for adult bees and developing larvae.

Biological Hazard - a pathogenic (disease-causing) organism (e.g. *C. botulinum*), or its products (i.e. biotoxin-producing spores), which when found in a food intended for human consumption, may cause illness to consumers.

Biosecurity – a series of management practices designed to minimize or prevent and control the introduction of infectious endemic and foreign diseases onto a farm, spread of disease within a farm operation, and the export of disease agents beyond the farm operation.

Biotoxin – a naturally produced compound produced or derived from plants or animals, which exhibits pronounced biological activity, notably toxicity, to a variety of organisms.

Brood Chamber –part of a hive where the brood is reared and food is stored and may include one or more hive bodies and the combs within.

Brood Comb – a hexagonal-shaped cell structure constructed by worker bees from beeswax as a brood chamber to support the development of bee larvae (brood).

Brood -immature or developing stages of bees: includes eggs, larvae, and pupae.

Bulk Container – a container that has a weight capacity of more than five (5) kg; constructed of either metal or plastic.

Cap – covering of cell.

GLOSSARY OF TERMS

Capped Brood – brood whose cells have been sealed by the bees with a porous cover to isolate the immature bees within during their non-feeding larval and pupal periods.

Capped Honey – honey stored in sealed cells.

Cappings – thin wax covering of cells full of honey, also, the same, after having been sliced from the surface of a honey filled comb to extracting the honey.

Cell – single unit of space in comb in which honey is stored or bee can be raised; worker cells are about 25 cells per square inch of comb, drone cells are about 18 cells per square inch.

Chemical Hazard – a chemical, drug, heavy metal, industrial pollutant, medicine, pesticide, poison, toxin or any other chemical substance which when found in a food intended for human consumption, may be toxic or cause illness to consumers.

Chunk Comb Honey – type of honey in which a piece of honeycomb is placed in container of liquified honey or wrapped "dry" in a plastic container.

Clean – a state where foreign or undesirable material has been physically removed from surfaces as necessary (see *sanitize*) as per manufacturer's instructions.

Coating - material to coat the interior and exterior of drums.

Colony – an aggregate or cluster of bees mainly comprised of several thousand worker bees and one queen, and at certain times during the season, several drones and brood bee inhabiting a hive receptacle, or in any other dwelling, as single social unit.

Comb - wax cellular structure that bees use for restraining their brood or as storage for pollen and honey. Fine particles of comb in suspension are grade defects and contribute to lack of clarity in filtered style honey.

Comb Foundation – frames containing manufactured sheets of beeswax with the foundation of worker cells embossed into the wax, or foundation constructed of food grade plastic.

Comb Honey - honey stored by bees in cells of freshly built broodless comb, which is sold in its original state as sealed whole comb or sections of comb.

Competence – demonstrated ability to apply appropriate knowledge and skills effectively.

Contaminate - to add foreign and unwanted matter to an object or to the environment.

Contamination -presence of a chemical, drug, heavy metal, industrial pollutant, medicine, microbe, pesticide, poison, toxin or any other substance not permitted by, or in excess of the limits prescribed under the Canadian Environmental Protection Act, the Food and Drugs Act (e.g. veterinary drugs) and the Pest Control Products Act (e.g. pesticides).

Control - to take all necessary actions to ensure and maintain compliance with criteria established in the HACCP plan, or the state wherein correct procedures are being followed and criteria are being met.

Control Measure: any action or activity that can be used to prevent or eliminate a food safety hazard or reduce it to an acceptable level.

Corrective Action*:* action taken when monitoring a Control Point (CP) indicates a loss of control.

GLOSSARY OF TERMS

Control Point (CP) – any point, step or procedure at which control can be applied to prevent, eliminate or reduce a biological, chemical or physical food safety hazard to an acceptable level.

Creamed Honey – also known as whipped, spun, churned or candied honey that occurs in a semi-solid state produced by seeding liquid honey with finely ground crystals of honey and controlling the natural crystallization process through mixing and temperature to achieve a smooth, spreadable, non-liquid consistency.

Cross-contamination - transfer of a contaminant from a source of contamination to a non-contaminated item (e.g. medicated and non-medicated feed)

Crystallized Honey -granulated or crystallized honey, irrespective of whether candied, fondant, creamed or spread type.

Deviation - a situation, or problem, where there is a failure within a process step to meet an acceptable limit.

Disinfectant - a chemical agent that is capable of destroying disease-causing bacteria or pathogens, but not spores or all viruses.

Document - any written, printed or electronic information that provides guidance and/or direction for performing work, making decisions, or rendering judgments which affect the effectiveness of the ***CBISQT*** Program. Information contained within a *document* is subject to change and can be revised, unlike *records* which are an historical record of an event that has happened, and expire over a given time interval (e.g. six years).

Documentation – the systematic, orderly and understandable descriptions and records of policies and procedures that affect the ***CBISQT*** Program.

Documented Procedure – an established, written, implemented and maintained description for executing an activity; may include work instructions and records to be generated. A procedure can be documented through flowcharts, diagrams, etc.

Drained Honey - honey that is obtained by draining uncapped broodless combs.

Escape Board – a board having one or more bee escapes in it that is used to remove bees from the supers above the bee escape.

Extracted Honey - honey that has been separated from decapped broodless combs in a process that involves centrifugal force, gravity, straining or other methods of extraction.

Extractor – machine that rotates honeycomb at sufficient speed to remove honey from the cells by centrifugal force.

Feed Ingredient: - a component or constituent of any combination or mixture making up a feed, including feed nutritional and non-nutritional additives from organic or inorganic substances.

Filtered Honey - honey which has been subjected to a process of filtration to significantly remove extraneous solids, fine particles, pollen grains, air bubbles, or other materials normally found in suspension, in order-to produce a clearer, and relatively uncrystalized honey product. Filtered honey is not considered to be raw honey (see *raw honey*).

Foreign Material - presence of extraneous material (e.g. fragments of metal or glass, wood chips, paint chips, excessive bee parts) which could affect the food safety of honey if unfilterable.

Fouled – a state of biological, chemical or physical contamination of inputs or products occurring at any production or processing step where soiled conditions, spillage, breakage, contact with pollutants or mishandling occurs.

GLOSSARY OF TERMS

Foundation – see comb foundation.

Frame -four assembled pieces of wood or food grade plastic designed to hold comb. It consists of one top bar, one bottom bar and two end bars.

Fume Board – a chemical repellent device comprised of an absorbent fabric layer for accepting liquid bee repellent chemicals, tacked to a 5-10 cm (2-4") thick wooden frame with a dark sheet metal or translucent plastic outer cover. During honey harvest, fume or acid boards, are placed on the top of the honey supers (in place of inner and outer covers) and chemical repellents are applied for a minimum amount of time in order to drive bees down and away from the top honey super prior to removal.

Generic – a program that applies nationally to all producers and producer-packers involved in the production of a commodity included in an on-farm food safety program.

Generic HACCP Model – a model that applies nationally to all producers and producer-packers involved in the production of a commodity included in an on-farm food safety program; the model contains the prescribed FORMs and documents, including CCP determination and the resulting HACCP plan.

Good Production Practices (GPPs) – general steps, measures or procedures that control the operational conditions within a production unit, allowing for environmental conditions that are favourable to the production of safe food as defined by the applicant's ***CBISQT*** Program. Good production practices are equivalent to prerequisite programs of HACCP and include generic procedures that describe the production processes.

Government – notably the Canadian Food Inspection Agency, Health Canada among other federal, provincial and territorial governments.

Granulated Honey – crystallized honey.

Granulation - initial formation of crystals in honey.

HACCP – the Hazard Analysis Critical Control Point system[40] is science-based, systematic and identifies specific hazards and measures for their control to ensure the safety of food. HACCP is a tool to assess hazards and establish control systems that focus on prevention rather than relying on end-product testing.

HACCP Plan - a document prepared in accordance with the principles of HACCP to ensure control of hazards which are significant for food safety in the segment of the food chain under consideration. A *generic HACCP plan* is used as guidance for farm operators since it is designed to address all hazards, and control points, within the entire honey production and primary processing sector and must be customized for each farm operation.

HACCP-Based – elements of food safety program based on HACCP principles but one in which the hazard analysis conducted is generic (i.e. covers all producers and producer-packers in a given commodity sector) and which results in a list of commonly accepted hazards and related controls that are then translated into a series of good production practices and records to which producers and producer-packers shall adhere.

Hazard – a biological, chemical or physical agent in, or condition of, food having the potential to cause an adverse health effect[41].

Hazard Analysis – a comprehensive analysis of all the steps in a production system; the analysis is conducted in accordance with HACCP principles in order to determine hazards, develop a HACCP plan and elaborate for each hazard its specific control point and acceptable limit as defined by Codex Alimentarius.

Hive Body – a wooden or plastic box that encloses the frames and forms part of the hive.

[40] Hazard Analysis and Critical Control Point System and Guidelines for its Applications; Annex to the Recommended International Code of Practice-General Principles of Food Hygiene (CAC/RCP 1- (1969), Rev. 3 (1997)

[41] Principles and Guidelines for the Conduct of Microbiological Risk Assessment (CAC/GL 30-1999) http://www.who.int/foodsafety/publications/micro/cac1999/en/ (*accessed 15 June 2012*)

GLOSSARY OF TERMS

Hive Equipment – equipment used in the operation of an apiary including hive bodies, supers, frames, top and bottom boards, and hive tools.

Hive Tool – a metal device used to open hives, pry frames apart, clean the hive etc.

Honeycomb – a hexagonal-shaped cell structure constructed by worker bees from beeswax in order to store honey.

Honey Gate – a faucet used for removing honey from tanks and other receptacles.

Honey House – a building used for extracting honey, storing supers, etc.

Honey Pump – pump for transferring liquid from one container to another.

Honey Sump – temporary honey holding area with baffles (that typically retain sizable pieces of wax comb which float to the surface) or without baffles (where a spinfloat is used).

Honey Flow – process of gathering of nectar from flowers and storing into cells by worker bees; usually peak amounts are collected during this period.

Hygiene - practices necessary for establishing and maintaining good health and sanitation.

Input – any material, additive, processing aid, ingredient or packaging material that is added or used for the production or processing of honey products.

Instrument - any tool or implement used in apiculture or in the processing of honey products.

Internal Audit – a systematic examination by an organization to determine its conformance with its on-farm food safety program's components, whether conducted by the organization's employees or a contracted body.

Level B "Must Do" Good Production Practice – general steps, measures or procedures which contain *acceptable limits*, as well as the what, who and when of monitoring procedures, deviation procedures and verification procedures (if submitted), and the records that are required to be kept in the context of controlling the operation conditions within a production unit to allow for environmental conditions that are favorable to the production of safe food as defined by an on-farm food safety program. Level B GPPs are denoted as MUST DO in the CHC's Producer Manual. (**Note:** *Good Production Practice Level A "Must Do" refers to critical control points and critical limits, which are not a feature of the* ***CBISQT*** Program.)

Liquid Honey –generally unfiltered or, in some cases, filtered honey that is free from visible crystals.

Livestock – all life stages of the honey bee, *Apis mellifera*, including purchased individual queen bees, nucleus colonies or package bees (i.e. queen cage with 1 to 2 kg (2 to 4 lbs) of worker bees) for the establishment of new colonies, replacement of old colonies, or the continuance/rejuvenation of ongoing colonies.

Lot - a collection of honey harvested within the same day or packed in containers under essentially the same conditions and identified by the establishment/regulated party as a "lot" for the purposes of sampling or sale. Lot size is determined by the tank capacity or the daily production, whatever method is clearly traceable.

Material Safety Data Sheet (MSDS) – a document comprised of standardized information provided by suppliers concerning the toxicity, health hazards, physical properties, reactivity and storage information for chemicals and related compounds.

Minimally Heated – heating (e.g. 24°- 40°C (75°-104°F) to allow suitable flow of liquid honey for extraction, but

GLOSSARY OF TERMS

well below high-temperature short-time (HTST) processing techniques (e.g. pasteurization at 70° -100°C (158° - 212°F) designed to destroy yeast cells).

Monitoring – the act of data gathering, based on a planned sequence of direct observations or measurements, to provide information about predefined sampling populations and to identify potential problems for surveillance activities.

Monitoring Aid – a device or product used in beekeeping to assist in the observation, surveillance, sampling and/or measurement of the colony condition over time especially with respect to bee pests (e.g. detection of *Varroa* mites by sticky boards, alcohol wash, ether rolls, etc.).

Nucleus- a small colony of bees used in queen rearing/ mating or to increase colony numbers.

On-farm Auditor – a person who is responsible for conducting audits of production units in accordance with the requirements of the recognized on-farm food safety program and who meets the standards set out in the on-farm food safety program management manual and policy and procedures criteria.

On-farm Food Safety Program – a systematic, HACCP-based approach to promote the production of safe products at the farm level; represented by a set of production practices, including preventative and control measures, producer manual, and management manual.

On-farm Food Safety Program Producer Manual – the manual provided to producers and producer-packers that sets out the requirements to which they must adhere in order to implement the on-farm food safety program on their farm.

Off-hive – management activities that occur outside of the hive and within the apiary. For example, rodenticides and insecticides are used as off-hive pest management products to control rats, mice and pest insect species, respectively, within the apiary.

Pathogen - a microorganism capable of producing disease when it enters the human or animal body.

Person Responsible – the producer/owner of the farm operation as is acknowledged by the signed *Producer Responsibility: Statement of Intent Form* (**FORM 1.0.1**). The terms *producer, producer-packer, farm manager, operator* and *designated personnel* are used interchangeably in this Manual as synonyms for the Person Responsible although these terms, and related usage, may vary according to the farm operation.

Pest Control Product Number (PCP #) – assigned number that identifies an approved/registered pest control product in Canada.

Petrochemical-Based Products – products derived from crude oil (petroleum) and related by-products that include gaseous and liquid fuels, lubricating oils, sulfur, fertilizers, insecticides, and a wide assortment of chemically derived products (e.g. ethylene glycol, solvents, detergents, plastics, etc.).

Physical Hazard - injurious extraneous material (e.g. metal, glass, plastic, rock/sand particles) that are generally two (2) mm or larger in size in any one dimension which, when found in a food intended for human consumption, may be injurious to consumers.

Plastic Liner - polyethylene bag, or liner which is suitable for direct food contact and able to withstand temperatures of 82^{o}C (180^{o}F) for period of eight (8) hours.

Plastic Seal - polyethylene sheet which is suitable for incidental food contact, but is not heat resistant as it is removed before melting the honey.

Pollen – a fine powdery granular substance from flowering anthers (i.e. male gametes) of seed plants that are

gathered by worker bees as a source of minerals, fats and vitamins for consumption by young nurse bees and conversion into brood food or "royal jelly".

Pollen Substitute – a food material used as an artificial substitute for pollen to supply the essential dietary protein, vitamins and fats. Substitutes used for bee feed include water, sugar and other material such as soy flour, brewer's yeast and egg yolk.

Pollen Supplement – a food material mixed with pollen to supplement the pollen supply within a hive.

Potable Water - water suitable or otherwise safe for human consumption, as determined by national and/or provincial standards.

Prerequisite Programs (PRPs) – programs designed to control hazards related to personnel and the production environment and typically include, but are not limited to, component programs related to facilities, inputs, manure management, water, sanitation, worker hygiene and training, equipment, pest control, transportation, storage practices, traceability and product recall.

Pressed Honey- honey obtained from pressing broodless combs.

Procedure – written and documented practices or work instructions that specify a way to carry out an activity or process.

Producer – a farm operator (*see person responsible*) engaged in a commercial enterprise for producing honey from apicultural production for the purpose of commercial sale of related honey products for human consumption.

Producer Declaration of Conformity (Self-declaration) – an attestation by the farm operation that all the specified requirements (Level B GPP's as well as any additional requirements) of the program are met; see Supplier's Declaration.

Producer-Packer - a farm operator (*see person responsible*) engaged in apicultural production, processing and packing of extracted honey for the purpose of retail sale of related honey products for human consumption.

Propolis - a combination of resins and gums gathered from plant sources used as "bee glue" for sealing cracks, repairing cells, or covering foreign material within the hive.

Raw Honey – ripe honey that has been removed from hives in full honey supers and subjected to nominal processing conditions which may include minimal heating (e.g. 24° - 40°C (75° - 104°F)) to allow for a suitable flow of liquid honey for extraction, prior to packing in order to retain certain quality and nutritional attributes for human consumption. Only honey that is unfiltered, including pieces of honeycomb referred to as comb honey, are considered as *raw honey*. (see *filtered honey*).

Receiving – the process of obtaining (i.e. through purchase or by other acquisition) and accepting correct incoming materials (i.e. receivables or inputs), including livestock, and related production inputs (including feed, equipment, packaging and other materials), that are delivered or otherwise conveyed to the farm operation.

Reconditioned Drum - a reused or recycled drum for honey storage that meets the following criteria: a) paint removed to bare metal, b) bottom chime recrimped and put back to round, c) coated with approved coating, and d) baked.

Record - any information that produces evidence that process steps are completed (e.g. requisitions, examination results and reports, worksheets, calibration records, records of audits, problems (i.e. deviations) and action taken). Records are used as a monitoring tool to provide a description of problems that occur over time at a specific process step (i.e. deviations or what went wrong) and action taken to correct the problem (i.e. corrective action). Records are

also used to track products and activities (e.g. honey production associated with hives, and processing outputs).

Records Assessment – an off-farm evaluation of a subset of records or other relevant information to determine the extent to which all or a subset of the specified requirements (Level B GPP's as well as any additional requirements) of the program are met. This evaluation might include direct communication with the farm representative.

Remaining GPP(s) – are GPPs that, during CCP determination have been evaluated to partially, but not adequately control a hazard. This GPP description includes the following information, who, when, and a brief description of what, of the monitoring procedure.

Remediation – the act or process of reversing or removing hazardous substances from honey products, notably the use of cleaning agents or filtration to remove hazardous biological or physical agents.

Rendering Wax – a process of melting combs and cappings and refining the wax.

Repellent – chemical inputs such as butyric anhydride used to repel bees from honey supers during harvest. Natural plant-based smoke inputs from wood chips, burlap or straw (lit in a metal smoker with firebox and bellows), are generally used to direct smoke in order to drive bees out of supers or calm bees during colony inspection. Physical repellents such as brushes, blowers and wooden/metal-screened clearer boards (i.e. bee escapes) are used as an alternative to chemical repellents to clear bees from honey supers during harvest

Reputable Supplier - an input provider that is well known/established, who follows a recognized (e.g. ***CBISQT*** Program) or certified food safety or quality management program where possible, and is able to provide written assurance of product safety.

Ripe Honey – honey from which bees have evaporated the moisture content of no more than 18.5 percent water.

Robbing Behavior – undesirable foraging behaviour when nectar is scarce, or other feed sources are more readily available (e,g. during hive manipulation and honey extraction activities), and worker bees forage from weaker hives, open feeders, or from exposed or waste honey and comb. Hive entrance reducers are also used to reduce robbing.

Robbed Honey – uncontrolled honey that foraging bees have acquired from non-floral sources (e.g. honey obtained from weaker colonies, exposed honey, sugar water or disposed hive materials).

Sanitary - free from disease-causing microorganisms and other harmful substances.

Sanitation - creation and maintenance of conditions favorable to good health and conditions free from disease.

Sanitize -treatment by heat or chemical agents to reduce the number of microorganisms present.

Sealed Brood – brood in late larval and pupal stages with cells sealed. See *capped brood*.

Slumgum – refuse from melted comb and cappings after the wax has been rendered or removed.

Step - a point, procedure, operation or stage in the food chain including raw materials, from primary production to final consumption.

Strained - honey strained to the extent that most of the particles, including comb, propolis, or other defects normally found in honey, have been removed. Grains of pollen, small air bubbles, and very fine particulate matter are not normally removed in this process.

Sump – a temporary holding area for honey located between the extractor and tank.

GLOSSARY OF TERMS

Super -a hive box or hive body with or without up to nine (9) frames made of wood or plastic. Boxes are 42 cm (16 5/8") wide and 50 cm (20") long with varying depths, including a standard 24.2 cm (9 5/8").

Supplier's Declaration - a written statement of conformity from a supplier/dealer that a product was produced under specified conditions; includes steps taken to reduce biological, chemical or physical contaminants in accordance with all applicable government legislation.

Surplus Honey –honey removed from the hive that is beyond the colony's requirements.

Third Party – a person or body recognized as independent from the owner/operator of the farm operation (e.g. auditors), in consideration of evaluation or inspection.

Tote – a bulk container having a storage capacity between 470-950 litres (125-250 gallons) comprised of an aluminum or plastic pallet, an aluminum cage and a plastic bladder.

Traceback – the process or ability to identify by means of paper or electronic records a food product and its producer, from where and when it came from the farm operation, and to where and when it was sent; also referred to as *source verification* or *traceability*.

Training – a process whereby subject matter is presented with the intent that it will be understood.

Transport In - collection and transportation of full honey supers or off-farm honey to the processing facility or honey house.

Transport Out – adding boxes with empty comb to a hive during periods of nectar flow and honey production in the spring (also referred to as "supering" or"supers on").

Treatment – the administration or application of a remedy for the management of communicable disease and/or control of pests. Treatments that involve pesticides or veterinary drugs must be approved/registered under the PMRA's or VDD's approval system.

Uncapping – process of removing the thin wax layer, or waxed capping, that seals cells containing honey.

Unsealed Brood – bee brood containing only egg and larval stages.

Verification – a process of applying methods, procedures, tests and other evaluations, in addition to monitoring of a control system or its records, that is performed on a regular basis to determine whether the preventive food safety control system is effective.

Whipped Honey – a form of smooth, spreadable honey, see *creamed honey*

ABBREVIATIONS/ACRONYMS

AAFC	Agriculture and Agri-Food Canada
AFB	American Foul Brood
CBISQT	Canadian Bee Industry Safety Quality Traceability
CCP	Critical Control Point
CFIA	Canadian Food Inspection Agency
CHC	Canadian Honey Council
COFFS	Canadian On-farm Food Safety
CP	Control Point
DIN	Drug Identification Number
EFB	European Foul Brood
GPP	Good Production Practice
HACCP	Hazard Analysis and Critical Control Point
HFCS	High-Fructose Corn Syrup
MSDS	Materials Safety Data Sheet
OFFS	On-farm Food Safety
PCPA	Pest Control Products Act
PCP#	Pest Control Product Number
PMRA	Pest Management Regulatory Agency
PRP	Pre-requisite program
rAFB	antibiotic resistant American Foulbrood
rVM	pesticide resistant *Varroa* Mite
VCPR	Veterinarian-Client-Patient Relationship
VDD	Veterinary Drugs Directorate (Health Canada)
VM	*Varroa* Mite

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APPENDIX I. RECORDS

SECTION	RECORD NAME
INTRODUCTION	FORM 0.0.1 Producer Responsibility: Statement of Intent
GPP 1 –APIARY MANAGEMENT: LOCATION, OFF-HIVE PEST CONTROL, HIVE EQUIPMENT MAINTENANCE/CLEANING AND WASTE DISPOSAL	FORM 1.0.1 Apiary - Monitoring and Corrective Action Record FORM 1.0.2 Off-Hive Pest Control - Monitoring and Corrective Action Record FORM 1.0.3 Testing Record
GPP 2 - RECEIVING INPUTS	FORM 2.0.1 Receiving - Monitoring and Corrective Action Record FORM 2.0.2 Bulk Container Inspection and Corrective Action Record
GPP 3 - STORING INPUTS	FORM 3.0.1 Storage - Monitoring and Corrective Action Record
GPP 4 – LIVESTOCK HEALTH MANAGEMENT: HANDLING AND USE OF FEED SUPPLEMENTS, MEDICATIONS AND TREATMENTS	FORM 4.0.1 Medications/Treatments – Inventory and Disposal Record FORM 4.0.2 Non-Medicated Feed Supplements - Monitoring and Corrective Action Record FORM 4.0.3 Medicated Feed Supplements - Monitoring and Corrective Action Record FORM 4.0.4 On-Hive Pest/Disease Monitoring Log **(*OPTIONAL*)** FORM 4.0.5 Medications/Treatments - Monitoring and Corrective Action Record
GPP 5 - HONEY HARVESTING: HANDLING AND TRANSPORTING FULL HONEY SUPERS	FORM 5.0.1 Honey Super Lot - Monitoring and Corrective Action Record
GPP 6 – PROCESSING FACILITY: DESIGN AND CONSTRUCTION GUIDELINES	FORM 6.0.1 Honey Processing and Packing Facility Map **(*OPTIONAL*)**
GPP 7 – RAW HONEY: RECEIVING, STORING, EXTRACTING AND PROCESSING	FORM 7.0.1 Receiving Full Honey Supers - Monitoring and Corrective Action Record FORM 7.0.2 Receiving Full Honey Bulk Containers – Monitoring and Corrective Action Record FORM 7.0.3 Honey Extraction Record FORM 7.0.4 Check Sample Record FORM 7.0.5 Extraction/Processing Honey - Monitoring and Corrective Action Record
GPP 8 – FINISHED HONEY: PACKING MANAGEMENT, STORAGE AND PRODUCT SHIPPING	FORM 8.0.1 Container/Drum – Filling Record FORM 8.0.2 Packing Honey – Monitoring and Corrective Action Record FORM 8.0.3 Shipping Out - Monitoring and Corrective Action Record FORM 8.0.4 Supplier's Declaration FORM 8.0.5 Shipping Lot Record FORM 8.0.6 Shipping Lot Itemization Record FORM 8.0.7 Shipping Lot Corrective Action Record
GPP 9 – FACILITY MANAGEMENT: MAINTENANCE, CLEANING/SANITATION, PEST CONTROL AND WASTE DISPOSAL	FORM 9.0.1 Facility (Interior/Exterior) – Monitoring and Corrective Action Checklist **(*OPTIONAL*)** FORM 9.0.2 Facility and Equipment Maintenance - Monitoring and Corrective Action Record FORM 9.0.3 Facility and Equipment Cleaning/ Sanitation – Monitoring and Corrective Action Record FORM 9.0.4 Waste Shipping Lot Record FORM 9.0.5 Facility Pest Control - Monitoring and Corrective Action Record

APPENDIX I. RECORDS

SECTION	RECORD NAME
GPP 10 – POTABLE WATER MANAGEMENT	FORM 10.0.1 Potable Water - Sampling, Treatment and Corrective Action Record
GPP 11 – PERSONNEL: CAPABILITIES, QUALIFICATIONS AND PERSONAL HYGIENE	FORM 11.0.1 Personnel Training – Monitoring and Corrective Record FORM 11.0.2 Personnel Hygiene – Monitoring and Corrective Record
GPP 12 –RECORD CONTROL, TRACEABILITY AND PRODUCT RECALL	FORM 12-01 Internal Control Request/Product Complaint – Monitoring and Corrective Action Record FORM 12-02 Product Recall – Monitoring and Corrective Action Record

MUST DO

CBISQT ID:	PRODUCER RESPONSIBILITY: STATEMENT OF INTENT	FORM 0.0.1

Instructions: *The undersigned agrees to the following:*

*to conform to and comply with the Canadian Honey Council's (CHC) Canadian Bee Industry's Safety Quality Traceability(**CBISQT**)* **Program**, *a recognized (most recent) version of the national On-Farm Food Safety System (OFFS) program as presented in the **CBISQT*** **Producer Manual**,

*provide training to all farm personnel/employees with designated responsibilities for the on-going delivery of the **CBISQT*** **Program** *at the producer's or producer-packer's location(s). This training will be updated annually with material as provided by the CHC HACCP coordinator,*

*to conduct an annual review of the **CBISQT*** **Program** *and to include updates from the Canadian Honey Council as provided, and*

*compile, identify the location, and maintain on file, all relevant HACCP-based records used in the **CBISQT*** **Program**. *All written records and electronic information, created by the producer/owner or designated personnel, demonstrate the effectiveness of the **CBISQT*** **Program** *and are clearly identified and retrievable.*

FARM NAME		LOCATION	
MAILING ADDRESS			
PERSON RESPONSIBLE (*Producer/Owner*): (PRINT NAME)			
SIGNATURE		DATE (D/M/Y)	

MUST DO

CBISQT ID: :	APIARY - MONITORING AND CORRECTIVE ACTION RECORD	FORM 1.0.1

Instructions: *Monitor at least every twelve (12) months, and before any significant management events or activities, and ensure that problems are identified, corrective action is taken to eliminate biological, chemical and physical hazards that may contaminate honey products, and to ensure actions are recorded. Use this record for documenting all monitoring and corrective action associated with procedures, equipment or activities within the apiary site, as warranted throughout the year. Third-party tests of soil, water, air or livestock may be warranted in some situations if there are indications that suggest potential contamination, otherwise mark the column as N/A. Any tests conducted must be cross-referenced in the* **Testing Record** *(***FORM 1.0.3***).*

APIARY SITE (identification, location and/or number):

MONITORING		CORRECTIVE ACTION					
DATE	PROCEDURE, EQUIPMENT OR ACTIVITY	PROBLEM	CORRECTIVE ACTION TAKEN	PRODUCT USED	RATE	DATE COMPLETED	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing*)

SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	OFF-HIVE PEST CONTROL - MONITORING AND CORRECTIVE ACTION RECORD	FORM 1.0.2

Instructions: *Monitor at least every week during the active season, and before any significant management events or activities, in order to ensure that problems are identified, corrective action is taken to eliminate biological, chemical and physical hazards that may contaminate honey products, and all activities are recorded. Traps and control methods must be monitored a minimum of once a week (when in use) and the findings recorded below. Assess and determine the nature of the any problem associated with off-hive pest control at the location where the problem occurs, at the time of monitoring/inspection, or when the problem is first detected. Each trap or area controlled (e.g., for rodents, insects) must be recorded. Make additional copies as necessary. Use this record for documenting all monitoring and corrective action associated with off-hive pest control, as warranted throughout the year.*

MONITORING						CORRECTIVE ACTION				
DATE INSPECTED	PEST	BAIT STATION LOCATION	RESULT	PROBLEM	INITIALS	CORRECTIVE ACTION TAKEN	PRODUCT USED	RATE	DATE COMPLETED	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing*)

SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	TESTING RECORD	FORM 1.0.3

Instructions*: Log all third party tests conducted from honey, soil, water, air or bee livestock samples as may be warranted in some situations. Include test reference number and attach and/or store any relevant test results with this record.*

SAMPLING			TESTING		
TYPE OF TEST	LOCATION	DESCRIPTION	COMPANY NAME	TEST RESULT	DATE TEST COMPLETED

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR SAMPLE/RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing*)
SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	RECEIVING – MONITORING AND CORRECTIVE ACTION RECORD	FORM 2.0.1

Instructions: *At the time of delivery, monitor, assess and determine the nature of the any problem associated with receiving farm inputs at the location where the problem occurs, at the time of receiving, monitoring and/or inspection, or when the problem is first detected. Use this record for documenting all monitoring and corrective action associated with the receiving of farm inputs, as warranted throughout the year. When receiving on-farm or off-farm honey for processing refer to* **Receiving Full Honey Supers – Monitoring and Corrective Action Record (FORM 7.0.1**) *or* **Receiving Full Bulk Honey Containers – Monitoring and Corrective Action Record (FORM 7.0.2)**.

DATE RECEIVED	SUPPLIER & INVOICE #	ITEM DESCRIPTION	EXPIRY DATE	SUPPLIER`S DECLARATION Y/N?	PROBLEM	CORRECTIVE ACTION TAKEN	DATE COMPLETED	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing***)**

SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	BULK CONTAINER INSPECTION AND CORRECTIVE ACTION RECORD	FORM 2.0.2

Instructions: *Monitor, assess and determine the nature of the any problem associated with empty bulk containers at the location where the problem occurs, at the time of inspection, or when the problem is first detected. Use this record for documenting all monitoring and corrective action associated with the bulk container inspection, as warranted throughout the year.*

DATE RECEIVED	BULK CONTAINER SUPPLIER	FOOD-GRADE MATERIAL Y/N	NO. BULK CONTAINERS IN SHIPMENT	LOT ID	PROBLEM	CORRECTIVE ACTION TAKEN	DATE COMPLETED	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing*)
SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	STORAGE - MONITORING AND CORRECTIVE ACTION RECORD	FORM 3.0.1

Instructions: *Monitor, assess and determine the nature of the any problem associated with storing farm inputs at the storage area* where the problem occurs, at the time of monitoring/inspection, or when the problem is first detected. Use this record for documenting all monitoring and corrective action associated with the storage of farm inputs, as warranted throughout the year. If **potable water** is contaminated document here and cross-reference with the* Potable Water – Sampling, Treatment and Corrective Action Record (**FORM 10.0.1**).

DATE IN	ITEM DESCRIPTION	STORAGE AREA *	LOCATION	QUANTITY	UNIT OF MEASURE	PROBLEM OR CONDITION	CORRECTIVE ACTION TAKEN	DATE COMPLETED	INITIALS

***Area 1** - Livestock, Hive and Processing Equipment, Feed Supplements and Potable Water
Area 2 - Medications/Treatments
Area 3 - Raw Honey (on- and/or off-farm full honey supers and/or bulk containers)
Area 4 - Bee Repellents and Farm Chemicals (maintenance, sanitation, cleaning, and off-hive pest control products)
Area 5 - Packaging Materials and Finished Honey Products

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing***)**

SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	MEDICATIONS/TREATMENTS - INVENTORY AND DISPOSAL RECORD	FORM 4.0.1

Instructions: *Maintain inventory details of approved/registered medications (e.g. antibiotics) and treatments (e.g. miticides, monitoring aids) upon receipt and at disposal. Use this record for documenting all monitoring and corrective action associated with the inventory and disposal of medications/treatments, as warranted throughout the year.*

INVENTORY								DISPOSAL		
DATE RECEIVED	PRODUCT NAME	IDENTIFICATION NUMBER* (DIN/PCP#)	BATCH NO.	QUANTITY RECEIVED	SUPPLIER	INVOICE OR BILL OF SALE #	EXPIRY DATE	DISPOSAL COMMENTS	DISPOSAL DATE:	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing***)**

SIGNATURE_____DATE _____(D/M/Y)

* Drug Identification Number (DIN) or Pest Control Products Number (PCP#)

MUST DO

CBISQT ID:	NON-MEDICATED FEED SUPPLEMENTS – MONITORING AND CORRECTIVE ACTION RECORD	FORM 4.0.2

Instructions: *Monitor, assess and determine the nature of the any problem associated with the mixing and delivery of non-medicated feed supplements at the location where the problem occurs, at the time of inspection, or when the problem is first detected. Details regarding ingredients, mixing, and corrective action in the mixing and feed delivery must be documented here. Use this record for documenting all monitoring and corrective action associated with non-medicated feed supplements, as warranted throughout the year.*

NON-MEDICATED FEED SUPPLEMENT						CORRECTIVE ACTION (MIXING OR FEED DELIVERY)				
DATE (D/M/Y)	FEED INGREDIENT		TYPE OF RATION	SUPPLIER	QUANTITY FORMULATED	PROBLEM	DATE DETECTED	ACTION TAKEN	DATE RESOLVED	INITIALS
	RATION	QUANTITY								

** Include feed delivery location where relevant.*

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing***)**

SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	MEDICATED FEED SUPPLEMENTS – MONITORING AND CORRECTIVE ACTION RECORD	FORM 4.0.3

Instructions: *Monitor, assess and determine the nature of the any problem associated with the mixing and delivery of medicated feed supplements at the location where the problem occurs, at the time of monitoring/inspection, or when the problem is first detected. Details regarding ingredients and mixing, and corrective action in the mixing and feed delivery must be documented here. Use this record for documenting all monitoring and corrective action associated with medicated feed supplements, as warranted throughout the year.*

MEDICATED FEED SUPPLEMENT							CORRECTIVE ACTION (MIXING OR FEED DELIVERY)				
DATE (D/M/Y) MIXED	TYPE OF FEED	MEDICATION NAME	DIN #	WITHDRAWAL PERIOD (DAYS)	QUANTITY ADDED	TOTAL FEED MIXED	PROBLEM*	DATE DETECTED	ACTION TAKEN	DATE RESOLVED	INITIALS

** Include feed delivery location where relevant.*
Cross reference with Medications/Treatments – Monitoring and Corrective Action Record *(***FORM 4.0.5***)*

ISSUE: 1	ISSUE DATE: (D/M/Y)

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing***)**

SIGNATURE_____DATE _____(D/M/Y)

OPTIONAL

CBISQT ID:	ON-HIVE PEST/ DISEASE MONITORING LOG	FORM 4.0.4

Instructions: *Use this record for logging preseason and postseason inspections or sampling for bee pests or disease following all monitoring activities.*

Date	Pest or Disease	Sampling Method	No. Colonies Sampled	No. Bees in Sample	No. Mites or AFB cells	% mite Infestation	Treatment Needed Y/N	Sent to Lab Y/N	Results	Initials of Sampler

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing*)

VERIFIED BY _____ SIGNATURE _____ DATE _____(D/M/Y)

MUST DO

CBISQT ID:	MEDICATIONS/TREATMENTS – MONITORING AND CORRECTIVE ACTION RECORD	FORM 4.0.5

Instructions: *Monitor, assess and determine the nature of the any problem associated with the use of approved/registered medications and related treatments at the location where the problem occurs, at the time of monitoring/inspection, or when the problem is first detected. Use this record for preseason and postseason treatments. Include applicator's initials for treatments and producer/owner or designee initials for corrective action. Cross reference with* **Medicated Feed Supplements – Monitoring and Corrective Action Record** (**FORM 4.0.3**) *where warranted. Use this record for documenting all monitoring and corrective action associated with approved/registered medications and related treatments, as warranted throughout the year.*

MEDICATION/TREATMENT							CORRECTIVE ACTION			
DATE APPLIED	PRODUCT & DOSE DIN/PCP #	EARLIEST SUPERING DATE	DATE REMOVED	WITHDRAWAL MET Y/N	PRODUCT EXPIRY DATE CONFIRMED Y/N	INITIALS	PROBLEM	CORRECTIVE ACTION	DATE COMPLETED	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ **(SIGNED OR INITIALLED) DATE:** _____ **(D/M/Y)**
(*review each record before signing***)**

SIGNATURE_____**DATE** _____**(D/M/Y)**

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MUST DO

CBISQT ID:	HONEY SUPER LOT - MONITORING AND CORRECTIVE ACTION RECORD	FORM 5.0.1

Instructions: *Monitor, assess and determine the nature of the any problem associated with the full honey supers at the location where the problem occurs (e.g. maintenance, harvesting and transportation), at the time of inspection, or when the problem is first detected. Use this record for documenting all honey super movements and transport conditions, as warranted during the active season.*

PROBLEM CODE:		CORRECTIVE ACTION CODE:
1. Foreign materials: (e.g. oil, dust/dirt) **2.** Damage (e.g., splintered hive equipment) **3.** Odours (e.g., petrochemical-based products) **4.** Maintenance required (e.g., faulty hinges, locks or load-securing devices)	**5**.Pallet ID (e.g. no identifier) **6**.Pallet Condition (Non Food Grade) **7**.Other (describe)	**A.** Brood comb separated from honeycomb **B.** Pallet/Vehicle cleaned **C.** Carrier rejected **D.** Pallet rejected and replaced **E.** Maintenance conducted **F.** Other (describe)

MONITORING								CORRECTIVE ACTION		
DATE	APIARY LOCATION ID	LOT #	SUPER - UNCOVERED GROUND CONTACT Y/N	DEAD BROOD REMOVED Y/N	PALLETS/ CARRIER CLEAN Y/N	LOAD COVERED Y/N	PROBLEM CODE	CORRECTIVE ACTION TAKEN	DATE COMPLETED	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

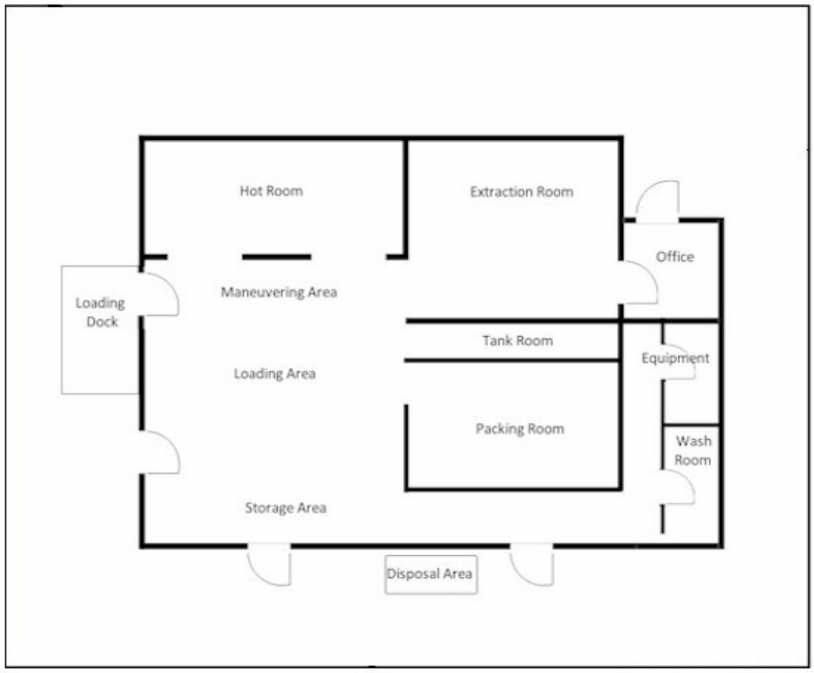
PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing*)

SIGNATURE_____DATE _____(D/M/Y)

OPTIONAL

***CBISQT* ID:**	**HONEY PROCESSING AND PACKING FACILITY MAP**	**FORM 6.0.1**

Instructions: *It is recommended that outline of the Honey Processing and Packing Facility (i.e. Honey House), and products moving within, are mapped at least every twelve (12) months, and before any significant management events or harvest activities, and ensure that all "**Possible Contaminated Sites**" are identified including receiving, storage and disposal areas, handling facilities, access control points, and personnel flow directions and any areas where the risk of contamination may occur.*



Property Name	Property Number
Legal land location	GPS coordinates

ISSUE: 1	**ISSUE DATE: (D/M/Y)**	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing***)**
SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	RECEIVING FULL HONEY SUPERS – MONITORING AND CORRECTIVE ACTION RECORD	FORM 7.0.1

Instructions: *Monitor, assess and determine the nature of the any problem associated with receiving full honey supers (from on- or off-farm) at the location where the problem occurs, at the time of inspection, or when the problem is first detected. Inspect carriers and each consignment at time of arrival (**transport in**) for breakage, damage or signs of contamination (e.g. dirt) to confirm that full honey super lots are correctly identified and acceptable according to condition and documentation. Use this record for documenting all monitoring and corrective action associated with the receipt of full honey supers, as warranted during the active season.*

MONITORING							CORRECTIVE ACTION		
DATE TRANSPORT IN	APIARY LOCATION /SUPPLIER ID	HARVEST DATE	LOT ID	TOTAL IN LOT	PROBLEM	INITIALS	CORRECTIVE ACTION TAKEN	DATE COMPLETED	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing***)**

SIGNATURE_____DATE _____(D/M/Y)

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MUST DO

CBISQT ID:	RECEIVING FULL HONEY BULK CONTAINERS – MONITORING AND CORRECTIVE ACTION RECORD	FORM 7.0.2

Instructions: *Monitor, assess and determine the nature of the any problem associated with receiving full honey bulk containers (from off-farm) at the location where the problem occurs, at the time of inspection, or when the problem is first detected. Inspect carriers and each consignment at time of arrival **(transport in)** for breakage, damage or signs of contamination (e.g. dirt) to confirm that honey bulk containers are correctly identified and acceptable according to condition and documentation. Use this record for documenting all monitoring and corrective action associated with the receipt of full honey supers, as warranted during the active season.*

MONITORING								CORRECTIVE ACTION		
DATE TRANSPORT IN	SUPPLIER ID	EXTRACTION DATE	LOT ID	TOTAL IN LOT	FILTERED Y/N	PROBLEM	INITIALS	CORRECTIVE ACTION TAKEN	DATE COMPLETED	INITIALS

ISSUE: 1 | ISSUE DATE: (D/M/Y)

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing*)

SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	HONEY EXTRACTION RECORD	FORM 7.0.3

Instructions: *Complete record daily following extraction and cross reference information with the* **Receiving Full Honey Supers – Monitoring and Corrective Action Record (FORM 7.0.1)** and/**or Receiving Full Honey Bulk Containers – Monitoring and Corrective Action Record (FORM 7.0.2)** . *Use the comments section to record details of honey source (e.g. floral source, attributes, etc.).*

APIARY LOCATION /SUPPLIER ID	LOT ID	EXTRACTION DATE	NO. OF CONTAINERS/ DRUMS EXTRACTED	QUANTITY ☐KG ☐ LB	COMMENTS	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing***)**

SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	CHECK SAMPLE RECORD	FORM 7.0.4

Instructions: *Take check samples (250 g) from the middle of each lot of honey when containers/drums are filled. Lot size is determined by the tank capacity or the daily production, whatever method is clearly traceable.*
The number of check samples required per lot is determined by the producer depending upon the size of shipment load, customer requirements before sales, in addition to possible post-sale requests.
Include the number of samples per lot in the comments section below.

DATE	LOT ID.	CONTAINER/DRUM NO.	LOT SIZE	STORAGE LOCATION	COMMENTS	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing***)**

SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	EXTRACTION/PROCESSING HONEY - MONITORING AND CORRECTIVE ACTION RECORD	FORM 7.0.5

Instructions: *Monitor, assess and determine the nature of the any problem associated with the extraction and processing of honey at the location where the problem occurs, at the time of inspection, or when the problem is first detected. Use this record for documenting all monitoring and corrective action associated with the extraction and processing of honey, as warranted during the active season.*

MONITORING (ITEM OR AREA)					CORRECTIVE ACTION		
DATE	LOT ID	PROBLEM	QUANTITY ☐KG ☐ LB	INITIALS	CORRECTIVE ACTION TAKEN	DATE COMPLETED	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing*)

SIGNATURE_____DATE _____(D/M/Y)

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MUST DO

CBISQT ID:	CONTAINER/DRUM - FILLING RECORD	FORM 8.0.1

Instructions: *Complete record following filling and cross reference information with the* **Receiving Full Honey Supers – Monitoring and Corrective Action Record (FORM 7.0.1)** and/**or Receiving Full Honey Bulk Containers – Monitoring and Corrective Action Record (FORM 7.0.2)**. *Use the comments section to record details of honey source (e.g. floral source, attributes, etc.) and the* **Check Sample Record (FORM 7.0.4).**

				WEIGHT ☐KG ☐ LB				
DATE	LOT NO.	CONTAINER/DRUM NO.	LOT SIZE	GROSS	TARE	NET	COMMENTS	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing*)

SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	PACKING HONEY - MONITORING AND CORRECTIVE ACTION RECORD	FORM 8.0.2

Instructions: *Monitor, assess and determine the nature of the any problem associated with packing honey (e.g. glass breakage) at the location where the problem occurs, at the time of inspection, or when the problem is first detected. Use this record for documenting all monitoring and corrective action associated with packing honey, as warranted during the active season.*

MONITORING (ITEM OR AREA)					CORRECTIVE ACTION		
DATE	LOT ID	PROBLEM	QUANTITY ☐KG ☐ LB	INITIALS	CORRECTIVE ACTION TAKEN	DATE COMPLETED	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing*)

SIGNATURE_____DATE _____(D/M/Y)

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MUST DO

CBISQT ID:	SHIPPING OUT – MONITORING AND CORRECTIVE ACTION RECORD	FORM 8.0.3

Instructions: *Monitor, assess and determine the nature of the any problem associated with shipping out honey products at the location where the problem occurs, at the time of inspection, or when the problem is first detected. Use this record for documenting all monitoring and corrective action associated with shipping out honey products as warranted during the year.*

PRODUCTION LOTS:	DESTINATION:	RECEIVER NAME:	RECEIVER ADDRESS:
SHIPPING LOT ID:	SHIPPING DATE:	CARRIER:	TOTAL NO. CONTAINERS:

MONITORING				CORRECTIVE ACTION		
CONTAINER/DRUM ID	PROBLEM	INITIALS	QUANTITY ☐KG ☐ LB	CORRECTIVE ACTION TAKEN	DATE COMPLETED	INITIALS
TOTAL NO. CONTAINERS IN SHIPPED LOT:						

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing*)

SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	SUPPLIER'S DECLARATION* *PRODUCER DECLARATION OF CONFORMITY (SELF-DECLARATION) PER SHIPMENT*			FORM 8.0.4
PRODUCTION LOTS:	DESTINATION:	PRODUCER-PACKER NAME:	PRODUCER-PACKER ADDRESS:	
SHIPPING LOT ID:	SHIPPING DATE:	CARRIER:		TOTAL NO. CONTAINERS:
RECEIVER NAME:		RECEIVER ADDRESS:		
PRODUCT TYPE:	QUANTITY			COMMENTS (DATE OF HARVEST, ETC.)
SHIPMENT NO.	GROSS WT ☐KG ☐ LB	TARE WT ☐KG ☐ LB	NET ☐KG ☐ LB	

The following statements relate to the location and time interval that the apiary and/or processing facility was producing-packing stated honey products for human consumption contained in this declaration.

- All honey products, beekeeping and processing equipment, and related inputs, have been controlled in accordance with the Canadian Honey Council's ***CBISQT* Program**, including safe handling, storage and transportation under conditions which minimize contamination from biological, chemical and physical hazards.
- Only medications/treatments approved/registered for use in bee hives and/or beekeeping equipment have been used following correct product, method of application (recommended preparation and dosage), withdrawal period before honey is harvested, and method of disposal, in accordance with all relevant federal, provincial legislation, Provincial Apiculturist, veterinary prescription and/or manufacturer's recommendations, as warranted.
- All apiaries and processing facilities, where stated, are operated in conformance with the ***CBISQT* Program** following relevant Good Production Practices for managing such hazards in accordance with the HACCP-based generic model.
- Records are retained for all colony treatments (e.g. medications, miticides, monitoring aids and diagnostics) and related aspects under the ***CBISQT* Program**.

I declare that all of the statements in this document are true and correct.

PERSON RESPONSIBLE FOR DECLARATION: _____ (SIGNED) DATE: _____ (D/M/Y)

***NOTE:** *This Form must be accompanied by the* **Shipping Lot Record** (**FORM 8.0.5**).

MUST DO

CBISQT ID:	SHIPPING LOT RECORD*		FORM 8.0.5
PURCHASE ORDER:	DESTINATION:	PRODUCER-PACKER NAME:	PRODUCER-PACKER ADDRESS:
SHIPPING NO:	SHIPPING DATE:	CARRIER:	TOTAL NO. CONTAINERS:
RECEIVER NAME:		RECEIVER ADDRESS:	
PRODUCT TYPE:		TRUCK SEAL NO.	

PRODUCT IDENTIFICATION	WEIGHT ☐KG ☐ LB					
CONTAINER/DRUM ID NO.	LOT NO.	GROSS	TARE	NET	COMMENTS	INITIALS
ISSUE: 1	ISSUE DATE: (D/M/Y)					

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing*)

SIGNATURE_____DATE _____(D/M/Y)

***NOTE:** *This Form must be accompanied by the* **Supplier`s Declaration** (**FORM 8.0.4**) *for each shipment off-farm.*

MUST DO

CBISQT ID:	SHIPPING LOT ITEMIZATION RECORD*		FORM 8.0.6
PURCHASE ORDER:	DESTINATION:	PRODUCER-PACKER NAME:	PRODUCER-PACKER ADDRESS:
SHIPPING NO:	SHIPPING DATE:	CARRIER:	TOTAL NO. CONTAINERS:
RECEIVER NAME:		RECEIVER ADDRESS:	

LOT NO.	NO. OF CONTAINERS
TOTAL NO. CONTAINERS/DRUMS	

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing*)

SIGNATURE_____DATE _____(D/M/Y)

***NOTE:** This Record must be accompanied by the *Supplier`s Declaration* (**FORM 8.0.4**) for each shipment off-farm.

MUST DO

CBISQT ID:	SHIPPING LOT - CORRECTIVE ACTION RECORD		FORM 8.0.7
PRODUCTION LOTS:	DESTINATION:	PRODUCER-PACKER NAME:	PRODUCER-PACKER ADDRESS:
SHIPPING LOT ID:	SHIPPING DATE:	CARRIER:	TOTAL NO. CONTAINERS:
RECEIVER NAME:		RECEIVER ADDRESS:	
PRODUCT TYPE:			

PRODUCT IDENTIFICATION							CORRECTIVE ACTION		
SHIPMENT LOT ID	CONTAINER ID	DRUM NO.	LOT NO.	PROBLEM	QUANTITY ☐KG ☐ LB	INITIALS	ACTION TAKEN	DATE COMPLETED	INITIALS
TOTAL NO. CONTAINERS IN LOT:									

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing*)

SIGNATURE_____DATE _____(D/M/Y)

| Tel: 877-356-8935 | E-Mail: chc-ccm@honeycouncil.ca | http://www.honeycouncil.ca |

OPTIONAL

CBISQT ID:	FACILITY (INTERIOR/EXTERIOR) - MONITORING AND CORRECTIVE CHECKLIST	FORM 9.0.1

Instructions: *An inspection of both the interior and exterior of the honey facility should be conducted annually (or more frequently as warranted during the active season), and the following checklist completed as an aid in facility maintenance.*

For any negative response □ N, *please describe the corrective action required below or reference in the* **Facility and Equipment Maintenance – Monitoring and Corrective Action Record (FORM 9.0.2)**.

EVALUATOR NAME:	SIGNATURE:	DATE:
LOCATION:		

Interior of Building		Exterior of Building	
□ Y □ N	Holes/crevices/leaks absent in building (e.g., walls, windows, screens)	□ Y □ N	Holes/crevices/leaks absent in building (e.g., walls, windows, screens)
□ Y □ N	Lights are shatterproof or protected where necessary	□ Y □ N	All windows can be closed or have close-fitting screens that are in good condition
□ Y □ N	Lighting is adequate	□ Y □ N	Perimeter strip (½ meter wide) established around building of stone, crushed gravel or short grass
□ Y □ N	Pipes are intact (not leaking)	□ Y □ N	Refuse accumulated within 3 m of building (e.g., unused machinery, garbage, etc.)
□ Y □ N	Floor drainage is adequate (floor sloped, drain covers clear)	□ Y □ N	Weeds are controlled
□ Y □ N	Floors, walls and ceilings are free from refuse, spills, pests, etc.	□ Y □ N	Land drainage around building is adequate
□ Y □ N	All doors are close-fitting and can be secured	□ Y □ N	Dumpsters are emptied as needed to prevent pest infestation, and surroundings are free of refuse/debris

DATE	PROBLEM	CORRECTIVE ACTION TAKEN	DATE COMPLETED	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing***)**

SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	FACILITY AND EQUIPMENT MAINTENANCE – MONITORING AND CORRECTIVE ACTION RECORD	FORM 9.0.2

Instructions: *Monitor, assess and determine the nature of the any problem associated with facility and equipment maintenance at the location where the problem occurs, at the time of inspection in accordance with an established maintenance schedule, or when the problem is first detected. Use this record for documenting all monitoring and corrective action associated with facility and equipment maintenance, as warranted during the active season.*

MONITORING										CORRECTIVE ACTION		
DATE	AREA OR EQUIPMENT DETAILS**	ACTIVITY CODE*	FILTER CHECKED Y/N	SUMP CHECKED Y/N	DATE DUE FOR NEXT INSPECTION	INITIALS	PROBLEM	PRODUCT USED	RATE	CORRECTIVE ACTION TAKEN	DATE COMPLETED	INITIALS

Activity Codes:* 1 – Calibration 2 – Maintenance 3 – Repair 4 – Cleanup 5 – Other *(specify)
** ***Equipment Codes:* *(a)* auger, *(b)* bottom bar cleaner, *(c)* conveyors, *(d)* de-boxer, *(e)* extractor, *(h)* heat exchanger, *(o)* other (*specify*), *(p)* pipes/valves/honey gate,**
***(pu)* pumps, *(s)* scales, *(su)* sump, *(t)* tanks, *(th)* thermometers, *(u)* uncapping device, *(w)* wax spinner**

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing*)

SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	FACILITY AND EQUIPMENT CLEANING/SANITATION - MONITORING AND CORRECTIVE ACTION RECORD	FORM 9.0.3

Instructions: *Monitor, assess and determine the nature of the any problem associated with facility and equipment cleaning and/or sanitation at the location where the problem occurs, at the time of inspection in accordance with an established cleaning or sanitation schedule, or when the problem is first detected. Use this record for documenting all monitoring and corrective action associated with facility and equipment cleaning/sanitation, as warranted during the year. Complete at least weekly (while the facility/equipment is in use) and daily during the active season. Cleaning/sanitation includes all floors, equipment, door handles, counter tops, toilets, sinks, paper towel dispensers, and garbage removal, where applicable.*

MONITORING							CORRECTIVE ACTION		
DATE	LOCATION CLEANED*	EQUIPMENT	INITIALS	PROBLEM	PRODUCT USED	RATE	CORRECTIVE ACTION TAKEN	DATE COMPLETED	INITIALS

**Location Codes:* 1 – Lunch Room 2 – Filling Room 3 – Extracting Room 4 – Hot Room 5 – Toilet/Hand-Washing Facility 6 -Other *(specify)*

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing***)**

SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	WASTE SHIPPING LOT RECORD	FORM 9.0.4

Instructions: *Monitor, assess and determine the nature of the any problem associated with waste shipping at the location where the problem occurs, at the time of inspection in accordance with an established cleaning or sanitation schedule, or when the problem is first detected. Use this record for documenting all monitoring and corrective action associated with waste shipping as warranted during the year.*

PRODUCTION LOTS:	DESTINATION:	NAME:	ADDRESS:
SHIPPING LOT ID:	SHIPPING DATE:	CARRIER:	TOTAL NO. CONTAINERS:
SUPPLIER NAME:		SUPPLIER ADDRESS:	
WASTE PRODUCT TYPE:			

REASON FOR REJECTION/DISPOSAL	CONTAINER ID	QUANTITY ☐KG ☐ LB	REMARKS/ACTION	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing*)

SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	FACILITY PEST CONTROL - MONITORING AND CORRECTIVE ACTION RECORD	FORM 9.0.5

Instructions: *Monitor, assess and determine the nature of the any problem associated with facility pest control at the location where the problem occurs, at the time of inspection in accordance with an established pest monitoring schedule, or when the problem is first detected. Use this record for documenting all monitoring and corrective action associated with facility pest control as warranted during the year. Traps and non-chemical control methods must be monitored a minimum of once a week (during the active season) within storage and processing facilities and the findings recorded below. Each trap or area controlled (e.g., for rodents, insects) must be recorded. Make additional copies as necessary.*

MONITORING								CORRECTIVE ACTION		
DATE INSPECTED	PEST	BAIT STATION LOCATION	RESULT	PROBLEM	INITIALS	PRODUCT USED	RATE	CORRECTIVE ACTION TAKEN	DATE COMPLETED	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing*)

SIGNATURE_____DATE _____(D/M/Y)

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MUST DO

CBISQT ID:	POTABLE WATER - SAMPLING, TREATMENT AND CORRECTIVE ACTION RECORD	FORM 10.0.1

Instructions: *Monitor, assess and determine the nature of the any problem associated with potable water at the location where the problem occurs, at the time of monitoring/inspection in accordance with an established schedule, or when the problem is first detected. Use this record for documenting all monitoring and corrective action associated with potable water as warranted during the year. Complete water tests annually, or more frequently as required through the active season. Include the initials of the sampler (monitoring) and manager (corrective action).If potable water is contaminated in storage, cross reference with* the Storage – Monitoring and Corrective Action Record (**FORM 3.0.1**).

MONITORING							CORRECTIVE ACTION		
DATE TESTED	WATER SOURCE	SAMPLE SITE	TEST RESULTS*	ANALYST	METHOD OF TREATMENT	PROBLEM	CORRECTIVE ACTION TAKEN	DATE COMPLETED	INITIALS

*All test results must be cross-referenced with the *Testing Record* (**FORM 1.0.3**)

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing***)**

VERIFIED BY _____SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	PERSONNEL TRAINING – MONITORING AND CORRECTIVE ACTION RECORD	FORM 11.0.1

Instructions: *Monitor, assess and determine the nature of the any problem associated with the competency of personnel at the location where the problem occurs, at the time of inspection, or when the problem is first detected. Use this record for documenting all monitoring and corrective action associated with the training of personnel throughout the production cycle or year, as warranted.*

*Training applies to safe handling and application techniques of products and practices related to beekeeping and honey processing (where applicable) and includes relevant aspects of the **CBISQT** Program including, but not limited to, handling bees, farm chemicals, medications, harvesting, processing, equipment maintenance/cleaning, and hygiene.*

NAME:	**DATE EMPLOYED:**

PREVIOUS TRAINING:

☐
☐
☐

MONITORING					CORRECTIVE ACTION		
TRAINING	DATE COMPLETED	PROBLEM	DATE DETECTED	INITIALS	CORRECTIVE ACTION	DATE COMPLETED	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED) DATE: _____ (D/M/Y)
(*review each record before signing*)

SIGNATURE_____DATE _____(D/M/Y)

MUST DO

CBISQT ID:	PERSONNEL HYGIENE - MONITORING AND CORRECTIVE ACTION RECORD	FORM 11.0.2

Instructions: *Monitor, assess and determine the nature of the any problem associated with the hygiene of personnel at the location where the problem occurs, at the time of monitoring/inspection, or when the problem is first detected. Use this record for documenting all monitoring and corrective action associated with the hygiene of personnel as warranted during the year.* ***All personnel involved in the harvest and handling of honey products*** *must complete this form before conducting any procedures associated with the harvesting, handling and storage process. Visitors to the farm operation may also be required to provide information if there is a risk of contamination to honey products.*

MONITORING					CORRECTIVE ACTION		
DATE	NAME OF PERSONNEL	HYGIENE PROTOCOL	HYGIENIC PROBLEM	INITIALS	CORRECTIVE ACTION TAKEN	DATE COMPLETED	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED)
(*review each record before signing***)**

SIGNATURE_____DATE: _____(D/M/Y)

MUST DO

CBISQT ID:	INTERNAL CONTROL REQUEST/PRODUCT COMPLAINT – MONITORING AND CORRECTIVE ACTION RECORD	FORM 12.0.1

Instructions: *Monitor, assess and determine the nature of the any problem associated with the internal control requests or product complaints from customers at the location where the problem occurs, at the time of monitoring/inspection, or when the problem is first detected. Use this record for documenting all monitoring and corrective action associated with an internal control request/product complaint at time of an internal control request or product complaint.*

	COMPLAINANT (CUSTOMER OR INTERNAL CONTROL)					CORRECTIVE ACTION (CUSTOMER OR INTERNAL CONTROL)				
DATE	NAME	CONTACT ADDRESS	CONTACT NUMBER	COMPLAINT OR NON-COMPLIANCE	PRODUCT ID	CORRECTIVE ACTION	RESULT	CAUSE	DATE COMPLETED	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED)
(*review each record before signing***)**

SIGNATURE_____DATE: _____(D/M/Y)

MUST DO

CBISQT ID:	PRODUCT RECALL – MONITORING AND CORRECTIVE ACTION RECORD	FORM 12.0.2

Instructions: *Use this record for documenting all monitoring and corrective action associated with a product recall at the time of a product recall request following the requirements of any Canadian Food Inspection Agency recall procedures.*

MONITORING							CORRECTIVE ACTION				
PRODUCT NAME	SHIPPING DATE	LOT ID	REASON FOR RECALL	AMOUNT OF PRODUCT RECEIVED	AMOUNT OF PRODUCT IN STOCK	AMOUNT OF PRODUCT UNACCOUNTED FOR	CORRECTIVE ACTION	RESULT	CAUSE	DATE COMPLETED	INITIALS

ISSUE: 1	ISSUE DATE: (D/M/Y)	

PERSON RESPONSIBLE FOR RECORD: _____ (SIGNED OR INITIALLED)
(*review each record before signing***)**

SIGNATURE_____DATE: _____(D/M/Y)

APPENDIX II.
DESCRIPTION OF TYPICAL FARM INPUTS FOR THE PRODUCTION AND PROCESSING OF RAW OR FILTERED HONEY

INPUT	DESCRIPTION
LIVESTOCK	Livestock inputs are comprised of purchased individual queen bees, nucleus colonies (i.e. queen with four or five frames of bees including brood, honey and pollen) package bees (i.e. queen cage with worker bees) and/or full size colonies for the establishment of new colonies, replacement of old colonies, or the continuance/rejuvenation of ongoing colonies. As an effective biosecurity practice, livestock should be purchased from reputable suppliers that provide certification affidavits of inspection for disease- and parasite-free status, and all documents associated with livestock purchasing should be retained. Refer to the **CFIA National Bee Farm-Level Biosecurity Standard**.
HIVE EQUIPMENT	**Wood Materials**- Wood and wood products are commonly used for construction of hive boxes and frames, bee escapes, bottom boards, top covers, queen excluders and feeders. Hive equipment brought onto the farm operation may be either new or used, provided that it is of suitable material. Residues of wood protective agents, especially pressure-treated wood with copper-based preservatives (e.g. alkaline copper quaternary, chromate copper arsenate (CCA) and copper azole), are toxic to honey bees and human consumers alike, and are not used for the construction of portions of hives that may come in contact with honey, with the exception of use as a hive stand. In order to reduce weathering, hive boxes may be also be painted on the outside with lead-free paint or dipped in paraffin wax.
	Plastic Materials (Plastic resin used for frames and foundation) – Plastic resin may be waxed or unwaxed. The advantage of plastic product is that it is durable in the extracting process and impervious to rodent and moth damage. All plastic products that come in contact with honey must be made of food grade material and should be accompanied by a manufacturer's declaration, stating its compliance.
	Metal Materials – Metal is used for wiring foundation, nailing frames, for queen excluders and for covering the top of the hive for protection from rain. Metal parts generally do not contact honey and there is no requirement for food grade metal. However, feeders, pails or metal containers that come in contact sugar syrup for feeding bees should be constructed from a food grade material (e.g. stainless steel). All metal should not contain lead, including solder.
	Comb/Wax Foundation Materials – Beeswax or beeswax foundation is commercially purchased for use in the hive to provide bees with a base for honeycomb. Bees use the drawn out wax structure provided by comb to store honey, pollen and brood.
	Feeding Devices – Feeding bees is highly variable depending upon the type of supplement, the time of year, the preferred internal or external location within the hive, and the operational scale of feeding. Equipment used for feeding includes an assortment of plastic feeder inserts, frame feeders and feeder pails/lids and external wooden hive-top and Boardman feeders with glass jars, friction-top plastic pails (15 kg) and open top drums.
	Watering Devices - Some sources of water that beekeepers provide include: (1) tub of water with wood floats to prevent the bees from drowning, (2) a faucet in the apiary that is left to drip steadily, or (3) filling Boardman entrance feeders (quart jars with holes in the lids) with water and placing them on the colony(ies). If using tubs of water, the water should be changed periodically to avoid stagnation and mosquito breeding. In most parts of Canada, water should be provided between March 1 and October 31.

APPENDIX II.
DESCRIPTION OF TYPICAL FARM INPUTS FOR THE PRODUCTION AND PROCESSING OF RAW OR FILTERED HONEY

INPUT	DESCRIPTION
FEED SUPPLEMENTS	**Sugar** - Honey bees require sources of carbohydrate (e.g. sucrose, fructose among other beet and cane sugars) for metabolism and to generate energy. Although honey is a preferred source of sugar in most cases[42], to ensure survival of colonies in northern latitudes during winter months, Canadian beekeepers are normally required to supply supplementary sugar in the form of syrup. Granular sugar is provided to bees either as sucrose syrup or as a high-fructose corn syrup (HFCS). Powdered sugar (e.g. icing or confectioners' sugar) can be used as a carrier for medication, but it is not a suitable feed source. Raw honey may also be used as a feed source for colonies. However, this practice is not recommended if the source of honey is unknown since there is an increased biosecurity risk of cross-contamination from diseased hives. Refer to the **CFIA National Bee Farm-Level Biosecurity Standard**.
	Pollen Supplements – Pollen, the powdery vegetative and reproductive cell substance from flowering seed plants is the preferred source of protein for feeding bees and developing larvae. Pollen contains a rich assortment of proteins, lipids, amino acids, vitamins and minerals that are essential for bee health and brood production. Few available natural pollen sources and poor foraging conditions can arrest brood production in the spring in much of Canada. Supplementary feeding of pollen is an especially important practice in honey–producing regions with a short growing season. Pollen for feeding bees is commercially available in the form of irradiated dry pollen or pre-mixed pollen patties. Pollen is mixed with sucrose to form patties used within the hive as a supplementary protein source in autumn or early spring, or other times when natural pollen sources are scarce.
	Pollen Substitutes – Pollen substitute diets are comprised of one or more of a variety of protein sources including soybean meal, fish meal or brewer's yeast, without the use of added pollen. Pollen substitute is usually mixed with sugar and vegetable oil to make patties that are provided to honey bees as supplemental feed when pollen from floral sources is limited or other times when additional protein is required.
POTABLE WATER (APIARY AND PROCESSING FACILITY)	Within the apiary, sources of water are provided to bees before, during and after the active season depending upon need and availability. Sources include tubs, open faucets, Boardman entrance feeders, drums or larger containers. Potable water is used in the apiary as a reagent to mix syrup solutions and alone, or with various chemicals, for washing equipment. Potable water is used in the processing facility for cleaning and/or sanitation of the processing facility and related equipment.

[42] NOTE: Honey derived from canola is not recommended as an over-winter feed source because it forms hard granules that are difficult for bees to access.

APPENDIX II.
DESCRIPTION OF TYPICAL FARM INPUTS FOR THE PRODUCTION AND PROCESSING OF RAW OR FILTERED HONEY

INPUT	DESCRIPTION
MEDICATIONS /TREATMENTS	***NOTE:*** *For a current listing of medications used in beekeeping see GPP 2.5.3b* **Antibiotics -** In Canada, the antibiotics oxytetracycline hydrochloride (OTC) (e.g. Oxytet-25™ DIN 02231111 and Foul Brood Mix™ DIN 02231110) are currently registered/approved with Health Canada's Veterinary Drugs Directorate (VDD) for the purpose of treating American Foul Brood (AFB) and European Foul Brood (EFB), bacterial diseases in honey bees. In Quebec all antibiotics used to treat colonies must be prescribed by a veterinarian. Fumagillin (Fumagilin B® DIN 02231180) is an antibiotic used to treat symptoms of nosemosis, a microsporidian disease caused by *Nosema apis* and *N. ceranae.*
	Miticides - Miticide inputs (i.e. acaricides) are used to treat varroa mites (*Varroa destructor*) and tracheal mites (*Acarapis woodi*); parasitic pests of honey bees which can significantly lower bee survivorship and disease resistance if left unmanaged. Miticide inputs range from synthetic chemicals (i.e. pyrethroid (e.g. Apistan® - fluvalinate, Apivar® - amitraz) and organophosphate (e.g. CheckMite+® - coumaphos) insecticides to naturally-occurring compounds such as formic acid, oxalic acid or essential oils (e.g. peppermint, spearmint, wintergreen, clove bud oil, lemongrass), where registered/approved. The action of treating honey bees for mites in spring and autumn is an important step in apiary management. Miticides are generally applied on plastic strips placed within the hive for up to six (6) weeks in early spring or autumn; outside the period of honey production (i.e. at least four (4) weeks before honey flow) to avoid any risk of contamination of honey for human consumption, or damage to brood.
	Pest Monitoring Aids – Several different types of monitoring aid inputs are available to detect and monitor mite prevalence and load, respectively within colonies. Monitoring methods range from quick and approximate detection to more complex and accurate measurements using fluvalinate (i.e. Apistan™), amitraz (i.e. Apivar™) and/or coumaphos (i.e. CheckMite+™) miticides on plastic strips in combination with adhesive-backed "sticky" boards. In Canada, the diagnosis of *Varroa* within colonies is conducted in early spring, after the spring honey flow, at the time of honey harvest, and in late autumn, using methods that range from simple tests using an alcohol wash (ethyl alcohol, isopropyl alcohol or diluted methyl hydrate), an ether roll or icing sugar test, to miticide-based plastic strips. Oxalic acid and formic acid at low levels are also used as a fumigant and diagnostic aid.
BEE REPELLENTS	**Chemical Repellents** - chemical inputs such as butyric anhydride (also known as butyric anhydride or butanoic acid) are used to repel bees from capped honey supers during harvest. Natural plant-based smoke inputs from wood chips, burlap or straw (lit in a metal smoker with firebox and bellows), are generally used to direct smoke in order to drive bees out of supers or calm bees during colony inspection.
	Physical Repellents - Brushes, blowers and wooden/metal-screened clearer boards (i.e. bee escapes) inputs are used as an alternative to chemical repellents to clear bees from honey supers during harvest.

APPENDIX II.
DESCRIPTION OF TYPICAL FARM INPUTS FOR THE PRODUCTION AND PROCESSING OF RAW OR FILTERED HONEY

INPUT	DESCRIPTION
FARM CHEMICALS	**Maintenance Chemicals** – Petrochemical-based products (e.g. gasoline, diesel, oil and other lubricants), non-lead paint, and paraffin inputs are used for the maintenance of hive equipment and machinery.
	Pesticide Chemicals (non-hive) – Rodenticide and insecticide inputs are used to control rats, mice and pest insect species within the vicinity of processing and facilities.
	Cleaning/Sanitation Chemicals – Detergent, disinfectant, acetic acid and lye inputs are commonly used in the cleaning and sanitizing of handling and processing equipment and storage areas. A mixture of commercial sodium hypochlorite (i.e. bleach)/water disinfectant is used for floor drains only, as required. Ensure that only potable hot water is used for cleaning within the honey processing facility.
PACKAGING MATERIALS	**Small Containers** – Honey is sold by weight rather than volume and is packed in a container sizes and packaging materials that must be in compliance with the Food and Drugs Act (i.e. food grade material). Sizes for small containers range from 0.15 – 5.0 kg. An assortment of compliant container types and sizes are available including glass bottles, plastic tubs, plastic clamshells (for comb honey), plastic rounds, ceramic jars and aluminum trays.
	Large containers - Honey that is packaged in containers larger than 5 kg is considered to be bulk size. Currently, there are a number of different types of bulk containers used by the Canadian honey industry to package honey, including new and reconditioned metal drums and plastic drums/totes. Refer to the latest version of the CHC's **Honey Industry Bulk Container Standard** for current guidelines.
	Packaging (outer containers and accessories) - A variety of materials such as labels, glue, ink cardboard, and wood are used for holding and labelling glass, plastic, ceramic or metal containers containing packed honey. Outer packaging materials used to pack honey are not a food safety hazard to honey products if handled and stored correctly.
PROCESSING EQUIPMENT	**Note:** *All metal used in processing equipment should not contain lead, including solder.* **Deboxing, Uncapping and Separation Equipment –**Various uncapping tools, motorized uncappers, spinner honey/wax separators, trays, clarifers, frame extractors, strainers, honey/wax melters, and related instruments are in use, depending upon the desired product output and the scale of the operation.
	Tanks and Related Equipment – An assortment of food grade quality stainless steel (e.g. 18, 20 gauge) or food grade plastic holding, storage, melting and bottling tanks, and associated sump tanks, augers, pumps, honey filters, honey gates, values, filter screens/strainers, stirrers, immersion heaters, gauges, instruments and equipment parts are in use, depending upon the desired product output and the scale of the operation.

APPENDIX II.
DESCRIPTION OF TYPICAL FARM INPUTS FOR THE PRODUCTION AND PROCESSING OF RAW OR FILTERED HONEY

INPUT	DESCRIPTION
	Packing Equipment- Several different types of honey filling/bottling and labelling equipment is in use depending upon the finished honey product output (e.g. liquid, crystallized or creamed) and the scale of the operation.

APPENDIX III.
DESCRIPTION OF TYPICAL HONEY EXTRACTION AND PROCESSING STEPS IN CANADA

PROCESS STEP	DESCRIPTION
HARVESTING HONEY SUPERS	The process of *handling* honey supers involves: a) adding boxes with empty comb to a hive during periods of nectar flow and honey production (referred to as "supering","supers on" and "transport out") in the spring and b) removing boxes as required in the summer (i.e. "transport in") after bees have filled comb with raw honey and cap the cells. In removing boxes at harvest, the top supers are "pulled" from the hive, full supers are removed ("supers off") and supers are transported from the apiary to the processing facility for extraction and primary processing, leaving bees behind in the hive. The process of "transport out" does not generally contribute to contamination of honey because worker bees will generally isolate or remove contaminants from honeycomb.
RECEIVING	In Canada during the summer months of July and August, the first step in the processing of honey is the delivery of honey-filled frames within full supers to a clean receiving area within the processing facility. Palleted and stacked supers are briefly held in the receiving area before they are moved into the hot room.
HEATING - STORAGE	Supers placed in the hot room are heated to about 38°C and may be dehumidified for one or two days, as necessary, in order to ensure the water content of honey is generally not above 18.5% and to lower honey viscosity within frames for ease of extraction.
DEBOXING AND UNCAPPING	The deboxing process involves the removal of frames of honeycomb from full honey supers. This process is either done manually or with the aid of mechanical deboxers. After visual inspection and rejection of any brood comb, frames with comb honey are sent down the processing line for uncapping. Once extracted, empty frames are returned to boxes and sent back to storage or to the field.
	Automatic uncapping machines are used commercially to mechanically remove wax cappings off frames of honeycomb at a uniform depth. Frames are moved forward for extraction whereas, wax and honey cuttings are augured into a collection tank usually situated beneath the uncapper. Uncapping may also be done manually with clean hand tools such as uncapping knives or cappings scratchers; tools designed to open or "scratch" cappings on honeycomb.
EXTRACTION	Honey extraction involves a process where honeycomb is subjected to centrifugal force, gravity, straining, or other means, to extract liquid honey. Most commercial operations use radial or tangential honey extractors to spin honey from honeycomb. In such cases, frames are placed in a metal basket and rotated mechanically to extract honey, or in the case of larger extractors, frames are fitted into slots. Smaller operations may use hand driven equipment, but in either case, extracted honey drains by gravity to a warmed low-lying drainage basin (i.e. sump) or holding tank situated below the extracting line where it is collected.
INPUT (Entry of Off-Farm Bulk Honey)	In Canada, *bulk honey* refers to liquid honey obtained through a process of extraction, setting, or straining (with, or without, minimal heating), and is packed in clean drums or totes. Off-farm honey enters the processing line at the process step of *settling* and before the process of *filtration*. Liquid honey from off-farm is poured into clean holding tanks where it is held for filtering and blending further down the honey processing line.

APPENDIX III.
DESCRIPTION OF TYPICAL HONEY EXTRACTION AND PROCESSING STEPS IN CANADA

PROCESS STEP	DESCRIPTION
SETTLING/SUMP	Honey from the extraction process flows into a heated sump where a metallic screen prevents large particles of wax and other debris from passing into the pump. Many commercial producers and producer-packers use this stage of settling as the primary means of removing wax particles, physical contaminants, such as insect parts, and air bubbles before pumping to a holding tank and shipping in bulk to a honey packer or further processor.
WAX / HONEY SEPARATION	A substantial amount of honey adheres to the wax cappings and requires separation during the extraction process. There are several methods used to separate and remove wax and other debris and return honey to the main production line. Wax is typically kept in containers for later processing.
SETTLING AND FILTRATION	Honey and wax cappings are left to settle in a food grade stainless steel settling tank or sump where wax is skimmed off the honey and the remaining honey is returned to the processing line. Cappings may also be removed from the comb into a food grade stainless steel containers and honey drained directly into a sump. Settling and screening is most effective in a warm environment, however, the efficiency of extraction of honey from the wax at this stage is low (less than 50%).
	Spinning - The wax spinner/whirl dry is a cappings processor similar in operation to the radial honey extractor. The wax/honey mixture is processed through the spinner which extracts the honey and retains the wax through centrifugal force. Honey is returned to the honey processing line, whereas wax is removed to be melted. Spinning is the most common method for separation and the efficiency of extraction of honey from wax at this stage ranges from 65-85%.
	Spin Float – One method has raw honey/wax pumped from the sump under the extractor through the spin float; a specialized honey pump that is designed to propel a combination of liquid honey and wax solids. The honey/wax mixture is pumped through a heat exchanger to ensure an even temperature (40°C). The mixture then flows into the spin float, which continuously separates the honey and wax. Unlike the wax spinner which must be manually emptied, the spin float passes the honey through and retains the wax and honey is then pumped into storage tanks. Wax, wood particles and bee parts are automatically cut off the catch surface and dropped down through the centre of the spin float, into a collection tray or a barrel. The efficiency of extraction of honey from the wax at this stage ranges from 80-95%.
	Wax press - Cappings may be also be pressed to remove excess honey which is drained and collected. Wax forms a solid cake which is removed and melted at a later processing stage.
	Capping Melter - A capping melter is processor used to liquifey wax from cappings that have been previously removed from honeycomb. In one method, a heat source at the tank base begins the separation process and a radiant source of heat overhead is used to melt the wax. Honey enters directly into the sump, whereas wax flows into separate containers where it hardens into blocks to be removed and stored.

APPENDIX III.
DESCRIPTION OF TYPICAL HONEY EXTRACTION AND PROCESSING STEPS IN CANADA

PROCESS STEP	DESCRIPTION
	Filtration - In some commercial operations, a second settling step may be implemented. Filtration employs a metallic mesh screen to remove particulate matter such as bee parts, propolis particles, pollen grains, extraneous solids, or other extraneous materials before liquid honey is packed as *filtered honey*. In cases where honey is intended for shipment to an off-farm packing facility, filtration may be omitted and the final product is sold as *raw honey*.
PUMPING /HOLDING	At the final processing step, honey is pumped from a settling tank to clean storage or holding tanks before it is bottled, placed in drums or otherwise packaged for direct sales or shipping.
HONEY OUTPUTS	***Comb Honey*** - Comb honey, also referred to as cut comb or chunk honey, is produced in the hive using self-contained units with a wax-coated, hexagonal imprinted base that bees use to build comb. Comb honey is not extracted, rather it is simply removed from honeycomb frames, cut and placed into containers. Comb honey is left unprocessed, and is either in packed in its original comb or cut into portions for direct sales or shipping. ***Liquid honey*** – Liquid honey is stored either unfiltered or filtered in food grade stainless steel holding tanks until it is required for filling small or bulk containers, depending upon its sale purpose. Liquid honey is also used to make *creamed* honey at a later stage in the process. ***Creamed Honey*** – Also known as whipped, spun, churned or candied honey, creamed honey is a semi-solid style of honey produced by seeding liquid honey with finely ground crystals of honey. By controlling the natural crystallization process that yields coarse granules, a fine crystalized and creamy consistency is produced after a few days at room temperature (20-25° C). In some cases, this process has been modified by using paddles to stir the honey mixture while holding the mixture at a constant temperature (e.g. 14° C). ***Pressed Honey*** - Pressed honey is produced after the process of unboxing/uncapping by compressing comb honey under pressure to extract honey. This activity is limited to a very small group of home-crafted or artisanal producers for local consumption and is not addressed in this Manual. ***Cappings Wax/Slumgum*** - *Cappings wax* (i.e. either light or dark coloured, from honey or old comb and scrapings, respectively) may be processed in a cappings melter, steam chest, solar melter or stored in a covered drum until shipped to a commercial rendering plant. *Slumgum* is the residue from melted comb and cappings after wax has been recovered from honey extraction. Slumgum is separated from clean wax during the rendering process. Many commercial beekeepers ship old brood comb and slumgum to rendering facilities for a percentage of the recovered wax. However, there is no market for slumgum and it may be gathered in containers and disposed of in a landfill.
HONEY NUTRITIONAL LABEL	Refer to the CFIA's Guide to Food Labelling and Advertising (www.inspection.gc.ca/food/labelling/guide-to-food-labelling-and-advertising/eng/13/1300118951990/1300118996556) for labelling honey products for public sale, among other references.