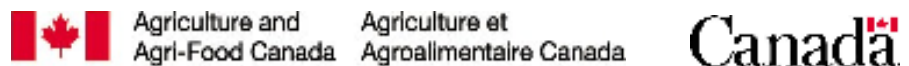


A Guide to Understanding the Canadian Organic Standards Permitted Substances List

Prepared by **Canadian Organic Growers**

January 2010

Canadian Organic Growers gratefully acknowledges funding provided by Agriculture and Agri-Food Canada through the Advancing Canadian Agriculture and Agri-Food (ACAAF) program.



Disclaimer

This is a document developed voluntarily by the Canadian organic sector. It is not an official part of the **Canada Organic Regime**. The views and opinions expressed in this document are those of the authors and not of the competent authority (the Canadian Food Inspection Agency). Persons using this document are cautioned that the interpretations presented here may not be those of the entire organic certification system, nor of the competent authority.

Every attempt has been made to develop an authoritative work that respects the principles of organics and follows international procedures. However, interpretation is subjective by nature – if someone feels one way about something, there is bound to be someone who feels the opposite way. In the end, users of this document must bear ultimate responsibility for their own decisions on their operation.

Table of Contents

ORGANIC PRODUCTION SYSTEMS PERMITTED SUBSTANCES LISTS (CAN/CGSB-32.311-2006, AMENDED DECEMBER 2009)

INTRODUCTION (INFORMATIVE)	4
1. SCOPE	4
2. REFERENCED PUBLICATIONS	5
3. REQUIREMENTS FOR ADDING OR AMENDING SUBSTANCES IN THE LISTS	5
4. PERMITTED SUBSTANCES LISTS FOR CROP PRODUCTION	5
5. PERMITTED SUBSTANCES LISTS FOR LIVESTOCK PRODUCTION.....	28
6. PERMITTED SUBSTANCES LISTS FOR PROCESSING.....	33
7. APPENDIX A ORGANIC PRODUCTION SYSTEMS REVIEW RECORD	45

Organic Production Systems Permitted Substances Lists (CAN/CGSB-32.311-2006, Amended October 2008)

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
<p>INTRODUCTION (INFORMATIVE)</p> <p>Organic operations in Canada remain subject to all applicable laws and regulations. Substances that appear on CAN/CGSB-32.311, <i>Organic Productions Systems - Permitted Substances Lists</i>, are subject to the <i>Pest Control Products Act</i> (PCPA) or the <i>Food and Drugs Act</i> (FDA) when used in Canada as pesticides or disinfectants. Health Canada's Pest Management Regulatory Agency (PMRA) is the federal authority responsible for the regulation of pest control products (including sanitizers) under the PCPA and Regulations. Disinfectants are regulated by Health Canada's Therapeutic Products Directorate (TPD) under the FDA and Regulations.</p>	<p>The purpose of a Permitted Substances List is to authorize the use of substances that are not organic but deemed necessary for organic production. Organic substances are not listed in the PSL because they do not need to be – operators are automatically allowed to use organic tomatoes or garlic, for example and required to use the organic form if it is commercially available. Occasionally, you will find organic substances are listed to provide operators with specific direction on how they may be used. For example, honey (organic honey) is listed in Paragraph 5.3 (Livestock Health Care Products and Production Aids) to ensure that livestock producers know they are not allowed to use non-organic honey for that purpose.</p> <p>This introductory paragraph instructs organic producers and processors to be aware of the laws which govern the use of pest control and disinfectant products in Canada. Other laws include the <i>Feeds Act</i>, <i>Fertilizers Act</i>, the <i>Health of Animals Act</i>, and their related regulations.</p> <p>The Permitted Substances Lists (PSL) (CAN/CGSB-32.311-2006) do not list products, but rather lists substances. Products are those commercial formulations which are available on the market (brand name products). Producers are cautioned that commercial formulations (products) often contain inerts in addition to the active ingredient. Inerts are added to stabilize, preserve or improve the flowability (for example) of the active ingredient. Only the inerts listed in 4A and 4B of the Pest Management Regulatory Agency's List of Formulants are allowed. Attention should be paid to stipulations in the annotation of the substance regarding acceptable origin, non-GE status, requirements to 'document' a need to use a particular substance, and requirements to ensure a substance does not cause a build-up in the soil.</p>
<p>1. SCOPE</p> <p>1.1 This standard¹ provides additional information to CAN/CGSB-32.310, <i>Organic Production Systems – General Principles and Management Standards</i>. It consists of requirements for adding or amending permitted substances in the following lists, organized by category of use.</p>	
<p>1.2 Quantities and dimensions in this standard are given in metric units with yard/pound equivalents, mostly obtained through soft conversion, given in parentheses. The metric units shall be regarded as official in the event of dispute or unforeseen difficulty arising from the conversion.</p>	

4 *References throughout this document to "this standard" refer to CAN/CGSB-32.311, Organic Production Systems – Permitted Substances Lists.*

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
<p>2. REFERENCED PUBLICATIONS</p> <p>2.1 The following publications are referenced in this standard:</p>	
<p>2.1.1 Canadian General Standards Board (CGSB) CAN/CGSB-32.310 – Organic Production Systems – General Principles and Management Standards.</p>	
<p>2.1.2 Canadian Council of Ministers of the Environment (CCME) Guidelines for Compost Quality</p>	
<p>2.1.3 Ministère du Développement durable, de l'Environnement et des Parcs du Québec, Direction du milieu rural Guidelines for the beneficial use of fertilizing residuals</p>	
<p>2.1.4 Pest management Regulatory Agency (PMRA) Regulatory Note REG2007-04 – PMRA List of Formulants.</p>	
<p>2.2 A dated reference in this standard is to the issue specified. An undated reference in this standard is to the latest issue. The sources are given in the Notes section.</p>	
<p>3. REQUIREMENTS FOR ADDING OR AMENDING SUBSTANCES IN THE LISTS</p> <p>3.1 Section 10 of CAN/CGSB-32.310, <i>Organic Production Systems – General Principles and Management Standards</i>, outlines the requirements for adding or amending substances in the lists.</p>	
<p>4. PERMITTED SUBSTANCES LISTS FOR CROP PRODUCTION</p> <p>4.1 Classification – Crop production substances are classified according to the following uses and applications:</p> <p>a. Soil Amendments are substances applied to the soil to improve fertility and tilth and to correct soil problems. Fertilizers, plant foods and soil amendments are primarily used for their plant nutrient content and may be applied to the soil or to the foliage of plants.</p> <p>b. Crop Production Aids and Materials are substances used in conjunction with other substances, which may or may not be directly applied to the crop or soil, or substances used to control diseases or pests. Examples include</p> <ul style="list-style-type: none"> i. adjuvants, equipment cleaners, insect traps and plastic mulch ii. vertebrate animal pest management substances iii. plant disease management substances iv. insect pest management (invertebrates), mites, molluscs and crustacean substances v. nematode management substances. <p>c. Weed Management.</p>	

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
<p>4.2 Soil Amendments and Crop Nutrition — Unless otherwise specified, the soil amendments and crop nutrients listed below shall not contain substances prohibited by par. 1.4.1 of CAN/CGSB-32.310, <i>Organic Production Systems — General Principles and Management Standards</i>, or not permitted by this standard.</p>	
Common Name(s)	Origin and Usage
<p>Agar - For use in initial mushroom spawn production.</p>	<p>Agar is a gelatinous substance used as a solid substrate to contain culture medium for microbiological work. It is obtained from some species of red algae, or seaweed. Any source of agar is allowed for use in production of mushroom spawn.</p>
<p>Alfalfa meal and pellets - Use organic alfalfa unless commercially unavailable. Ensure non-organic alfalfa is not a product of genetic engineering.</p>	
<p>Algae - See <i>Aquatic plant products</i>.</p>	
<p>Amino acids, non-synthetic - Amino acids produced by plants, animals and micro-organisms that are not from genetic engineering and that are extracted or isolated by hydrolysis or by physical or other non-chemical means are considered non-synthetic. Non-synthetic amino acids may be used as plant growth regulators or chelating agents.</p>	<p>Amino acids (molecules) are the building blocks of proteins and are present in all forms of life. They are used as chelating agents and other uses in the chemical industry. There are 20 'standard' amino acids (there are many nonstandard or unspecified amino acids) and most can be produced synthetically. Operators do not need to be chemists to use this list – check with your supplier to ensure you are using nonsynthetic amino acids.</p>
<p>Animal manure - See Sections 5 and 6 of CAN/CGSB 32.310, <i>Organic Production Systems – General Principles and Management Standards</i>.</p>	
<p>Animal manure, processed - Manures treated by mechanical and/or physical (including heat) methods, and/or to which are added biological, mineral or other substances listed in paragraph 4.2 are allowed. Sources of manures shall meet the requirements in par. 5.5.1 of CAN/CGSB 32.310, <i>Organic Production Systems – General Principles and Management Standards</i>. The operator shall be able to demonstrate that best practices known to eliminate human pathogens during the process have been used or that the requirements in par. 5.5.2.5 of CAN/CGSB 32.310, <i>Organic Production Systems – General Principles and Management Standards</i> have been met.</p>	
<p>Aquatic plant products - Shall not contain synthetic preservatives, such as formaldehyde, or fertilizing substances not listed in this Standard. Natural (non-synthetic) extracts are allowed. Extraction with synthetic solvents is prohibited except for potassium hydroxide or sodium hydroxide, provided the amount of solvent used does not exceed the amount necessary for extraction. The manufacturer shall prove the need to use sodium hydroxide.</p>	<p>This includes a range of products generically called seaweed meal (kelp meal, kelp extract, and liquid seaweed) which have been extracted using allowed solvents.</p>
<p>Ash - Ash from plant and animal sources only. Ash from burning minerals, manure, coloured paper, plastics, or other synthetic substances is prohibited.</p> <p>Ash obtained from off-farm sources shall not exceed the limits (category C1) for acceptable levels (mg.kg) of arsenic, cadmium, chromium, copper, lead and mercury specified in</p>	<p>If you use ash from your woodstove, be prepared to assure your certifying body that you do not burn coloured paper, plastics or anything other than plain paper and untreated wood in your stove.</p> <p>Operators wishing to use ash from off-farm sources will need to provide a laboratory analysis of that ash to show that it does</p>

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
<p>the Quebec Ministered u Geveolppment durable, Environnement et Parcs, Direction du milieu rural publications, <i>Guidelines for the beneficial use of fertilizing residuals</i>.</p> <p>Shall not cause buildup of heavy metals in soil over repeated applications.</p>	<p>not exceed the maximum levels for arsenic, cadmium, chromium, lead, and mercury.</p>
<p>Basalt - Mined or quarried volcanic rock minerals.</p>	<p>Basalt powders can include trace minerals such as iron, silicon, manganese, and zinc.</p>
<p>Bentonite - See <i>Mined minerals and unprocessed mined minerals</i>.</p>	<p>Bentonite is a general name for a number of impure clays, such as sodium bentonite, and calcium bentonite. They are used extensively in drilling, casting, pharmaceuticals, winemaking and as a soil supplement.</p>
<p>Biodynamic preparations for soil and plants - Horn manure spray (Prep 500) or horn silica (Prep 501). See also par. 4.3 for other biodynamic preparations.</p>	<p>Preparations 500 and 501 are field preparations. Used for stimulating humus formation.</p>
<p>Biotite (iron, magnesium or aluminum silicates)</p>	<p>Biotite is ‘potassium iron magnesium aluminum silicate hydroxide fluoride’; a mineral in the mica group, common in many rocks. It is sometimes used as a soil amendment.</p>
<p>Blood meal - Allowed only if sterilized.</p>	<p>Blood meal is dried, powdered blood used as a high-nitrogen fertilizer. It is one of the highest nonsynthetic sources of nitrogen and if over-applied it can burn plants with excessive ammonia. Whole (fresh from animal processing plants) blood is delivered to drying plants, then centrifuged to remove foreign material and then circulated through a disintegrator to rid all remaining foreign particles before spray drying.</p> <p>Operators who wish to use blood meal will need to ensure that is has been sterilised during its manufacture. At present, it is not clear that blood meal is routinely sterilised during manufacture.</p>
<p>Bone meal - Permitted only if guaranteed free of specified risk materials including the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord) of cattle aged 30 months or older; and the distal ileum (portion of the small intestine) of cattle of all ages.</p>	<p>The Fertilisers Regulations 2007 (administered by the CFIA) assures consumers that commercially labelled bone meal is not allowed to contain specified risk materials. Any bone meal offered for sale in Canada must comply with these regulations which read in part: 11. (1) A fertilizer or supplement shall not contain (c) except in accordance with a permit issued under Section 160 of the <i>Health of Animals Regulations</i> for the purpose of Paragraph 6.4 of those Regulations, proteins derived from specified risk material, in any form, that was removed from the carcasses of cattle or that is contained in the carcasses of cattle that died or were condemned before they otherwise would have been slaughtered for human consumption as food.</p> <p>“Specified risk material” means (a) the skull, brain, trigeminal ganglia, eyes, tonsils, spinal cord and dorsal root ganglia of cattle aged 30 months or older, and.(b) the distal ileum of cattle of all ages”</p> <p>This section from the Fertilizers Regulations provides the guarantee that commercially marketed bone meal in Canada is free of specified risk materials.</p>

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
Borate - Shall only be used for a documented deficiency relative to the type of crop. See also <i>Boron products</i> .	Borate refers to a number of common borate salts including sodium metaborate, and sodium tetraborate. A “documented deficiency” would require a soil or tissue test indicating the soil is low in boron.
Borax (sodium tetraborate) - See <i>Boron products</i> .	
Boron products - The following soluble boron products may be used: sodium tetraborate (borax and anhydrous) and sodium octaborate. Shall only be used for a documented deficiency relative to the type of crop. See also <i>Trace elements (micronutrients)</i> for documentation requirements.	Boron is an essential micronutrient, but is common in most soils. This is why the standard requires a soil test (indicating soil is low in Boron) before Boron products can be used. Note that it is easy to over-compensate for a boron deficiency and cause a damaging excess of boron in soil. Operators do not need permission from their certifying body to use Boron products, but they must be able to prove that their soil is deficient in Boron (soil or tissue tests are the only way to ‘document’ a boron deficiency) upon investigation.
Calcium Carbonate - See <i>Limestone</i> .	This is a common substance found as rock in all parts of the world, and is the main component of shells of marine organisms, snails, and eggshells. Calcium carbonate is the active ingredient in agricultural lime, and is usually the principal cause of hard water.
Calcium chloride - Natural sources only. May be used to adjust nutrient deficiencies and physiological disorders. Shall not cause build-up of salts in soil over repeated applications.	Natural sources of calcium chloride are those derived from limestone. Prohibited sources of calcium chloride are those derived from the ammonia-soda process (the Solvay process). Operators wishing to use calcium chloride will need to obtain documentation that the product they are using has been derived from limestone (not from the Solvay process). If a certifying body observes an operator using calcium chloride over many seasons (i.e., more than one), they should request soils samples that will indicate build-up of salts in the soil.
Calcium, natural sources - Sources include shells from aquatic animals.	Calcium does not occur (as a stand-alone element/metal) in nature and instead is found in various mineral compounds including limestone, gypsum, fluorite dolomite or calcite. This is why the substance mentions ‘natural sources’ of calcium, instead of (pure) calcium. Seashells are mentioned as a natural source of calcium (among other things) for soils.
Calcium sulphate (gypsum) - See <i>Gypsum (calcium sulphate)</i> .	
Cannery wastes - Use only if organically grown or as composting feedstocks. See <i>Composting feedstocks</i> for mandatory composting requirements.	Cannery wastes are by-products from food processing. They do not have to be from preparation for canning (could be for freezing, for instance) but the intent of the standard is that such materials, if used as soil amendments, must be from organic sources. If used for compost, then the compost annotation applies.
Cardboard - Cardboard that is not waxed or impregnated with fungicide or substances not on these lists; may be used as mulch or compost feedstock.	‘Cardboard’ is a generic term referring to any heavy paper-pulp based board, such as card stock, paperboard and corrugated fibreboard. Suppliers of these products should be able to confirm that the products they sell are not impregnated with fungicide or wax. Operators should keep records of the attestation (from suppliers) that cardboard used complies with this standard.
Clay - Bentonite, perlite and zeolite as a soil amendment or seed pellet additive. These are also listed individually in this standard. See also <i>Mined minerals and unprocessed mined minerals</i> .	This substance includes all kinds of clay.
Compost - See <i>Compost obtained from off-farm sources</i> ,	

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
<i>Compost produced on the farm, Compost tea Composting feedstocks.</i>	
<p>Compost obtained from off-farm sources - Compost obtained from off-farm sources shall conform to the criteria in <i>Composting feedstocks</i>.</p> <p>In addition, compost obtained from off-farm sources:</p> <ol style="list-style-type: none"> shall not exceed the maximum acceptable contents of trace contaminants (in mg/kg) and foreign matter outlined for unrestricted use (Category A) compost according to Canadian Council of Ministers of the Environment (CCME) publication <i>Guidelines for Compost Quality</i>; shall not cause a build-up of heavy metals in soil over repeated applications; shall meet criteria for acceptable levels (MPN/g total solids) of human pathogens as specified in the CCME publication <i>Guidelines for Compost Quality</i>. <p>See <i>Worm castings</i> for information on vermicompost; <i>Microbial products</i> for information on compost starters.</p>	<p>The requirements for off-farm (commercial) compost require laboratory testing to ensure the product meets the compost quality guidelines; and that the product will not cause a build-up of heavy metals in the soil over time; and that the product is not contaminated with human pathogens. Most producers of commercial compost products will provide a laboratory analysis of their product (if they won't provide this, don't buy the product). Alternatively, the company producing the product may provide a guarantee that the product meets the compost quality guidelines http://www.ccme.ca/. In this case, an operator using the product would need to prove that the product will not cause a build-up of heavy metals in the soil over time. This could be accomplished by a laboratory analysis which showed that the common heavy metals of concern (arsenic, cadmium, chromium, copper, lead and mercury) did not exceed national averages. The analysis (supplied by the company that produced the product) should show the levels of heavy metals in the product along with the national limits for heavy metals.</p>
<p>Compost produced on the farm - Compost produced on the farm shall conform to the criteria for <i>Composting feedstocks</i>.</p> <p>In addition if made from animal manures or other likely sources of human pathogens, compost produced on the farm shall:</p> <ol style="list-style-type: none"> reach a temperature of 55°C (130°F) for a period of four consecutive days or more. The compost piles shall be mixed or managed to ensure that all of the feedstock heats to the required temperature for the minimum time; or meet limits for acceptable levels (MPN/g total solids) of human pathogens specified in the Canadian Council for Ministers of the Environment publication <i>Guidelines for Compost Quality</i>; or be considered as aged or raw manure rather than compost (i.e. meet the requirements in par. 5.5.2.5 of CAN/CGSB-32.310 <i>Organic Production Systems – General Principles and Management Standards</i>). <p>See <i>Worm castings</i> for information on vermicompost; <i>Microbial products</i> for information on compost starters.</p>	<p>This standard provides for three different ways to manage compost produced on the farm. Operators have their choice of which criteria they wish to comply with in their composting operation:</p> <ol style="list-style-type: none"> to comply with this paragraph, an operator needs to keep detailed records of the temperature of compost piles, and of their efforts to turn the piles during the most active (hottest) composting phase. to comply with this paragraph, operators need to procure compost analysis that indicate the compost meets the acceptable levels of human pathogens as described in the compost guidelines. to comply with this requirement an operator should be using 'aged manure'. In this case the operator is not spreading compost; rather they are spreading manure and must follow the application rules (90 or 120 days as appropriate) in 5.5.2.5 when applying the aged manure.
<p>Compost tea - Compost tea shall be made from composts conforming to the criteria in <i>Compost produced on the farm</i> or <i>Compost obtained from off-farm sources</i> in this table or <i>Worm castings</i> respecting the annotation for "Worm castings". Other substances listed in CAN/CGSB-32.311, <i>Organic Production Systems – Permitted Substances Lists</i>, may be added to compost tea.</p> <p>If the compost tea is applied directly on edible part of plants, the operator shall be able to demonstrate that best practices known to eliminate pathogens during the process have been used OR the requirements for raw manure in Paragraph 5.5.2.5 of CAN/CGSB-32.310, <i>Organic Production Systems</i></p>	<p>There are many and varied recipes for compost tea—the standard does not specify any procedure, and allows some flexibility in what materials can be used to make compost tea (any substance compliant with the PSL); however one point everyone agrees upon is that the source materials should be properly produced compost, not raw or aged manure.</p> <p>Unfortunately there is no single best practice available for the production of compost tea. The science is still in its infancy, and there are competing views about what would entail best practice to eliminate human pathogens during production and application of compost tea. Common-sense suggestions include:</p>

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
<p>– <i>General Principles and Management Standards</i> have been met.</p> <p>See definition for <i>Compost Tea</i> in section 3 of CAN/CGSB-32.310, <i>Organic Production Systems – General Principles and Management Standards</i>.</p>	<ul style="list-style-type: none"> • using properly prepared compost that has been thoroughly heated and turned many times to ensure uniform heating and killing of pathogens • there does not seem to be any correlation between aerobic (bubbling air in the brewing vessel) and non-aerobic (brewing without the addition of air) and pathogens • there is some evidence to support an increased risk of pathogens if additives (such as molasses and sugar substrates) other than water and compost are added when brewing • there is some evidence that freshly made (finished) compost is safer for use in compost tea as aged compost can allow for re-growth of pathogens • use potable water • sanitise the production equipment between production runs • keep out disease-spreading organisms from the production process (rodents, birds, flies) • brew time and temperature can affect the quality of the product. Most practitioners suggest a quick brew time (less than 24 hours) • the product should be applied in less than 48 hours; otherwise there is an opportunity for re-introduction of pathogenic organisms • the time between application and harvest – if the tea is applied as a soil drench, no delay between application and harvest should be required (provided the tea is properly prepared); if applied aerially, at least three days should lapse between application and harvest to permit solarisation of any pathogenic organisms • the crop architecture – crops that are exposed to the sun are safer than shaded crops (UV sterilisation) – wet sites are more dangerous than dry sites (wet is better for the growth of pathogens) • type of crop – grains are considered low hazard (because they are subsequently dried) • how the crop is handled after harvest – if it is dried or sanitised in some manner, there is less risk than if the crop is kept fresh and moist <p>Certifying bodies should ensure that operators are following best management practices in their production of compost tea. Otherwise, the resulting product should only be applied according to 5.5.2.5 (90 or 120 days as appropriate).</p>
<p>Composting feedstocks - Acceptable feedstocks include:</p> <ol style="list-style-type: none"> a. animal manures conforming to par. 5.5.1 of CAN/CGSB-32.310 <i>Organic Production Systems - General Principles and Management Standards</i>; b. animal, animal products and by-products (including fishery); c. plants and plants by-products (including forestry and source-separated yard debris such as grass clippings and leaves); d. soils and minerals in conformity with CAN/CGSB-32.310, <i>Organic Production Systems General Principles</i> 	<p>This standard provides some flexibility for operators to use manure from any source (conforming to 5.5.1 of the Management Standards) as part of their composting plan. Operators are also allowed to use fish and animal by-products (excluding SRM) and plant residue from any source. However, use of these products requires documentation to confirm they are not contaminated (which would be difficult to obtain) or they must be composted thoroughly and professionally to ensure that any contaminants would be degraded. The documentation required in this case would be records of a proper composting plan, including heat</p>

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
<p><i>and Management Standards.</i></p> <p>The following are prohibited as compost feedstocks: sewage sludge; compost starter and feedstocks fortified with substances not included in this standard or prohibited by par 1.4.1 of CAN/CGSB-32-310, <i>Organic Production Systems – General Principles and Management Standards</i>; leather by-products; glossy paper; waxed cardboard; paper containing coloured ink; and animals, animal products and animal by-products that are not guaranteed free of the risk materials specified in <i>Bone meal</i>.</p> <p>Except for animal manures, feedstocks that may be contaminated by substances not included in this standard or prohibited by par. 1.4.1 of CAN/CGSB-32.310, shall required documentation to confirm the absence of those substances OR documentation substantiating the common degradation of such contaminants through the composting process.</p> <p>See <i>Microbial products</i> for information on compost starters.</p>	<p>measurements and records of compost turning. The reference to soils means that any soil used in compost must be certified organic. Any mineral used in compost must be listed in Paragraph 4.3 of the Permitted Substances Lists. The materials not allowed in compost are self-explanatory.</p>
<p>Copper products - These products shall be used in a manner that prevents excessive copper accumulation in the soil. Buildup of copper in soil may prohibit future use. Use with caution. No visible residue shall be allowed on harvested crops. Basic copper sulphate, copper oxide, copper sulphate and copper oxysulphate may be used to correct documented copper deficiencies. Copper ammonia base, copper ammonium carbonate, copper nitrate and cuprous chloride are prohibited as sources of copper for plant nutrients</p>	<p>The best way to avoid excessive copper accumulation in the soil is to use copper products sparingly. Certifying bodies should ensure that operators have thoroughly assessed their need to use copper products before they are applied—that operators are not just using this substance because their neighbours are using it. Documented copper deficiencies means that a soil or tissue test must indicate the need for copper in the soil.</p>
<p>Dolomite - See <i>Limestone</i>.</p>	<p>Dolomite lime should only be used in the case of a magnesium deficiency.</p>
<p>Enzymes - Acceptable if derived microbiologically from natural substances and not fortified with synthetic plant nutrients. Ensure enzymes are not obtained through genetic engineering.</p>	<p>Enzymes are bio-molecules that catalyze (i.e., increase the rates of chemical reactions). Almost all enzymes are proteins. There are thousands of enzymes used for many industrial purposes. Industrial enzymes are produced using a process called Submerged Fermentation. This involves growing carefully selected microorganisms (bacteria and fungi) in closed vessels containing a broth of nutrients (the fermentation medium) and a high concentration of oxygen (aerobic conditions). As the microorganisms break down the nutrients, they release the desired enzymes into solution. Operators wishing to use enzymes as soil amendments will need to verify (with the supplier) that the product they wish to use was derived from natural substances and has not been fortified with synthetic plant nutrients. Additionally enzymes are now being produced using genetic engineering—check with the supplier to ensure enzymes are not products of genetic engineering.</p>
<p>Epsom salts - See <i>Magnesium sulphate</i>.</p>	
<p>Feather meal</p>	<p><i>Canadian Fertiliser Regulations</i>: “Hydrolysed feather meal - A product manufactured from feathers by treatment with steam under pressure. The addition of 0.5% sulphuric acid facilitates the hydrolysis at lower temperatures. The nitrogen content ranges from 11 to 14%.”</p>

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
	The addition of sulphuric acid (if it remains in the product) would make the use of feather meal prohibited in organic production according to Paragraph 4.2.1 of this standard. Operators wishing to use feather meal should ensure that it does not contain sulphuric acid.
Feldspar - See <i>Mined minerals and unprocessed mined minerals</i> .	Feldspar is the name of a large group of rock-forming minerals which make up as much as 60% of the Earth's crust. It can be used as a soil amendment. See the annotation for mined minerals for restrictions regarding the use of feldspar.
Ferric and ferrous compounds - Includes ferric oxide, ferric sulphate and ferrous sulphate. See <i>Iron products; Trace elements (micronutrients)</i> .	Ferric is a term that means containing or having to do with iron.
Fish emulsions or solubles - See <i>Fish products</i> .	
Fish farm wastes - Shall be composted.	See the compost annotations for regulations regarding composting fish farm wastes.
Fish hydrolysate - See <i>Fish products</i> .	
Fish meal powder - Natural substances or those derived from natural substances, without the addition of ethoxyquin or other chemically synthesized substances or chemical treatment. See also <i>Fish products</i> .	Ethoxyquin is an antioxidant used as a food preservative and a pesticide. It is commonly used as a preservative in pet foods to prevent the rancidification of fats. Operators wishing to use fish meal powder should obtain documentation from their supplier that ethoxyquin or other chemically synthesized substances have not been used (or added to the product) in the production of the fish meal powder.
Fish emulsions or solubles - See <i>Fish products</i> .	
Fish products - Natural substances or those derived from natural substances without the addition of ethoxyquin or other chemically synthesized substances or chemical treatment except that liquid fish products as soil and plant amendments may be pH adjusted with (in preferential order) organic vinegar, organic citric acid, or phosphoric acid, or sulphuric acid. The amount of acid used shall not exceed the minimum needed to reach pH 3.5. Shall not contain synthetic preservatives or fertilizing substances not listed in this Standard.	This substance refers to a range of fertilisers derived from fish by-products (heads, guts and bones). See guidance for 'fish meal powder' regarding ethoxyquin. Operators should check with suppliers of fish products to ensure the products they use comply with this standard. Most suppliers will post detailed data sheets regarding their products.
Fulvic acid - Dilute neutral to acidic extracts of humates.	See 'humic acid' for a definition of 'humates'.
Granite dust - Sources that are mixed with petroleum products, such as from stone engraving, are prohibited. See also <i>Mined minerals and unprocessed mined minerals</i> .	This substance is also referred to a rock dust.
Greensand (glauconite) - See <i>Mined minerals and unprocessed mined minerals</i> .	Greensand is a mined mineral powder with a total potash content of around 7%. The product is derived from glauconite, a green-coloured mineral closely related to micas and clays that is essentially a hydrous potassium silicate. Greensand is an unprocessed mineral product.
Guano, bat or bird - Shall be decomposed, dried deposits from wild bats or birds. Domesticated fowl excrement is considered <i>manure</i> , not <i>guano</i> . See <i>Compost</i> .	Guano has a number of uses, including as a soil builder, lawn treatment, and as compost activator (microbes speed up decomposition).
Gypsum (calcium sulphate) - Mined source; for correcting calcium and sulphur deficiencies and for amending soil salinity problems documented by soil and plant tissue testing. Sulphates produced using sulphuric acid are prohibited.	Gypsum is a naturally occurring mineral that is a source of calcium and sulphur. The annotation requires soil or tissue tests to document the need for this substance.

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
Humic acid - Dilute potassium hydroxide extracts of mined sources.	Humic and Fulvic acids are extracted from a form of lignite coal and clay known as leonardite. Humic and fulvic acids are general terms describing a large family of organic compounds similar to those extracted from naturally occurring soil organic matter.
Humus from worms and insects (vermi-compost) – See <i>Worm castings</i> .	
Hydrated magnesium sulphate - Epsom salts and kieserite. Sulphates produced using sulphuric acid are prohibited.	Magnesium sulphate is often used to correct magnesium deficiency in soil. Operators should ensure the product they wish to use has not been processed with sulphuric acid.
Inoculants - See <i>Microbial products</i> .	Some inoculants are products of genetic engineering. For example, one form of Rhizobium inoculant is produced through genetic engineering to enhance the rate of nitrogen-fixing by the rhizobium bacteria. Operators should assure themselves that the products they are using are not genetically engineered.
Iron products - Ferric oxide, ferric sulphate, ferrous sulphate, iron citrate, iron sulphate or iron tartrate may be used where a soil or plant nutrient-deficiency is documented by soil or tissue testing.	The annotation refers to the need for soil or tissue testing to prove the need for the addition of iron products to the soil. Note that this substance is a 'soil amendment' not a pesticide and may not be used for that purpose.
Iron sulphates - Sulphates produced using sulphuric acid are prohibited. See also <i>Iron products</i> .	See guidance for <i>Iron products</i> .
Kelp and kelp products - See <i>Aquatic plant products</i> .	
Kieserite - See <i>Magnesium sulphate, Mined minerals and unprocessed mined minerals</i> .	
Langbeinite - Mined sulphate of potash magnesia.	Langbeinite is a source of potassium especially for soils low in magnesium. Ensure that product is pure, as anti-caking, binding agents and dust control agents are often added in small amounts to improve the flowability, handling and blending characteristics of fertilisers.
Leaf mould	Leaf mould is a soil amendment produced by the breakdown of shrub and tree leaves. In this context, it is not considered compost, but it can be added to compost.
Limestone - Magnesium carbonate and calcium carbonate. May cause build-up of magnesium. Use with caution. Shall be from a natural source. Oyster shell flour, limestone, dolomite (not slaked), aragonite, eggshell meal, lime from sugar processing and mined calcium carbonate are acceptable. Calcium products that have been used in controlled atmosphere storage are prohibited.	Limestone is a sedimentary rock composed largely of the mineral calcite (calcium carbonate). The annotation to this substance provides the acceptable sources of limestone for use as a soil amendment.
Magnesium carbonate - Naturally occurring in dolomite and magnesite. Natural sources only.	Dolomitic lime (dolomite) is derived from calcium-magnesium limestone. See guidance for Limestone.
Magnesium rock - Natural substances or those derived from natural substances, without the addition of chemically synthesized substances or chemical treatments. See also <i>Mined minerals and unprocessed mined minerals</i> .	Magnesium does not occur as an element in nature. Magnesium rock refers to a number of the over 100 different magnesium compounds, such as magnesite (magnesium carbonate or dolomite) which occurs in rock formations.
Magnesium sulphate, mined - As kieserite or epsom salts. See also <i>Mined minerals and unprocessed mined minerals</i> . Allowed if mined. Sulphates produced using sulphuric acids are prohibited. From natural sources as a soil or plant amendment included with micronutrients; for use as a soil amendment where there is evidence of documented magnesium deficiency.	As with many substances in this list, the operator will need to prove their soil is deficient in magnesium (from soil or tissue tests) before they may apply magnesium sulphate. Magnesium sulphates are commonly mined, as they are naturally occurring.

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
Magnesium sulphate - Allowed for use with a documented magnesium deficiency. Mined as kieserite or epsom salts (see also <i>Mined minerals and unprocessed mined minerals</i>) or synthetically produced epsom salts.	See guidance for <i>Magnesium sulphate, mined</i> .
Manganese products - Manganous oxide and manganese sulphate may be used to correct documented manganese deficiencies. See <i>Trace elements (micronutrients)</i> .	These substances are typically derived from manganese ores.
Manure, composted - See <i>Compost</i> .	
Manure, non-organic manure source - See conditions in par. 5.5 of CAN/CGSB 32.310, <i>Organic Production Systems – General Principles and Management Standards</i>	
Mica - See <i>Mined minerals and unprocessed mined minerals</i> .	Mica includes a group of extremely common minerals (constituent of granite, for example).
Microbial products - Allowable microbial products include rhizobium bacteria, mycorrhizal fungi, azolla, yeast and other micro-organisms on compost, plants, seeds, soils and other components of the organic operation. Ionizing radiation is allowed for use on peat moss carrier only, before the addition of microbial inoculants. Radiation is otherwise prohibited.	These products are used for inoculating legumes before seeding (rhizobium bacteria), as soil amendments (mycorrhizal fungi), inoculating compost (yeast and effective micro-organisms) and other uses. This substance allows for the use of any micro-organisms in organic farming. See the guidance to inoculants.
Micronutrients, synthetic - See <i>Trace elements (micronutrients)</i> .	
Milk	Milk used as a soil amendment does not have to be organic, but it must comply with Paragraph 1.4.1 of the CAN/CGSB 32.310, <i>Organic Production Systems – General Principles and Management Standards</i>
Mined minerals and unprocessed mined minerals - A mined mineral shall not have undergone any change in its molecular structure through heating or by combining with other substances. Acceptable if the substance is not processed or fortified with synthetic chemicals. Mined minerals are regarded as supplements to a balanced, organic soil-building program. Some of the minerals that are mined can also be made synthetically or are by-products of industry; investigate the source of any new substance. Sodium nitrate is prohibited.	This group of substances substance allows for the use of any mined mineral that has not been further processed through heating or chemical reactions, and has not been combined with synthetic chemicals. Mined minerals included in the PSL: <ul style="list-style-type: none"> • Bentonite • Clay • Feldspar • Greensand • Kieserite • Langbeinite • Magnesium compounds • Mica • Potassium sulphate • Phosphate rock • Rock dusts • Sulphate of potash • Zeolite This list is not exclusive—this paragraph allows for any mined mineral that complies with the annotation; not just those listed in the Permitted Substances Lists. Note that sodium nitrate (also called Chilean nitrate) is specifically prohibited.
Molasses - Shall be organic molasses unless not commercially available.	Molasses is sometimes used as an ingredient in compost tea. See the definition and guidance for ‘commercially available’ in Section 3 of CAN/CGSB 32.310, <i>Organic Production Systems – General Principles and Management Standards</i>

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
<p>Molybdenum products - To correct documented molybdenum deficiencies. See also <i>Trace elements (micronutrients)</i>.</p>	<p>The word ‘documented’ in this paragraph refers to the need for soil or tissue analysis.</p>
<p>Mulch - Organic plant residue: Is permitted for mulching. Where organic materials are not readily available, non-organic straw, leaves, grass clippings or hay that are not the products of genetic engineering may be used. Substances prohibited by par. 1.4.1 of CAN/CGSB-32.310, <i>Organic Production Systems – General Principles and Management Standards</i>, shall not have been used on these materials for at least 60 days before harvest.</p> <p>Sawdust, wood chips and shavings: From natural sources or that derive from natural substances are permitted for mulching if they are from wood, trees or logs that have not been treated with paint or substances prohibited by par. 1.4.1 of CAN/CGSB-32.310, <i>Organic Production Systems – General Principles and Management Standards</i>.</p> <p>Newspaper mulch: Glossy paper and coloured ink are prohibited.</p> <p>Paper: Glossy paper and coloured ink and prohibited.</p> <p>Plastic mulches: Non-biodegradable and semi-biodegradable materials shall not be incorporated into the soil or left in field to decompose; shall be removed at the end of the growing season. Plastic mulches in perennial crops may be left for more than one season but shall be removed before the plastic decomposes. Use of polyvinyl chloride as plastic mulch or row cover is prohibited.</p> <p>Fully biodegradable films: Are permitted without removal if they do not contain substances prohibited by par. 1.4.1 of CAN/CGSB-32.310, <i>Organic Production Systems – General Principles and Management Standards</i>.</p>	<p>Any organic plant matter is allowed. The simplest way to ensure nonorganic mulch sources are free of pesticides is to have complete knowledge of where they came from. Do not use nonorganic mulch from any source where there is risk of contamination from pesticides or other prohibited materials.</p> <p>The simplest way to ensure straw is uncontaminated would be to purchase organic straw. If organic straw is not available, then purchasing nonorganic straw from the producer, and having an attestation from that person that the grain (the straw it came from) was not treated with pesticides or other prohibited products. Synthetic fertiliser applied to the soil before the grain was planted would not contaminate the straw. Beware of grass clippings that have been treated with ‘weed and feed’ products, which are both fertilisers and pesticides.</p> <p>Any type of newspaper mulch is allowed, provided it is not made from coloured paper. Commercial sources of newspaper mulch do not separate the coloured paper, making them not compliant with this standard.</p> <p>See above.</p> <p>Certifying bodies should ensure that plastic mulch on annual crops is removed after the growing season, not left over the winter.</p> <p>Some biodegradable films may be found to contain plastic components. If there are plastic binders in the film, it is considered to be semi-biodegradable and must be picked up at the end of the season.</p>
<p>Mushroom compost - See <i>Compost</i>.</p>	<p>Often referred to as spent mushroom substrate, mushroom compost is the growing medium left over from mushroom growing. Mushroom compost is made from agricultural materials, such as hay, straw, straw horse bedding, poultry litter, cottonseed meal, cocoa shells and gypsum. Sphagnum</p>

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
	peat moss is often added to the substrate. Mushroom compost may also contain pesticide residues, particularly organochlorides used against the fungus gnat. Chemicals may also have been used to treat the straw, and also to sterilise the compost. Operators should thoroughly investigate the source of any mushroom compost they intend to use in their organic production. Certifying bodies should require an attestation from the supplier that the product complies with this standard.
Naturally occurring biological organisms (e.g. worms) and their products – See <i>Worm castings</i> .	
Oilseed meals - Use organic sources unless not commercially available. Shall not be from genetically engineered oilseeds	As organic oilseed meals are generally available commercially in most parts of Canada, operators can avoid genetically engineered oilseed meals by using only organic materials. Some common oilseed meals include soybean meals (soybeans are often genetically engineered), canola meal (most canola is genetically engineered), cottonseed meal (cotton is often genetically engineered), coconut meal, crambe meal, flaxseed meal, linseed meal, mustard meal, peanut meal, safflower and sunflower meals. Note that nonorganic oilseed meals often contain anti-caking agents, most of which are not allowed under this standard. See the definition and guidance for 'commercially available' in Section 3 of CAN/CGSB-32.310-2006.
Oyster shell lime - Ground shells from oysters. See also <i>Limestone</i> .	
Peat moss - Shall not contain synthetic wetting agents.	Peat moss prepared without the addition of synthetic wetting agents is commercially available. Operators should request this from their suppliers.
Perlite	Perlite is a volcanic glass with high water content, typically formed by the hydration of obsidian. It occurs naturally and expands when heated. It is used as a soil amendment and is added to growing (potting) mixes to prevent compaction of the growing medium.
Phosphate rock - Shall not be fortified or processed with synthetic chemicals. Cadmium shall not exceed 90 mg/kg P ₂ O ₅ .	The annotation regarding cadmium content means that operators will require an attestation from their supplier (of the cadmium limits) before they can use this product.
<p>Plants and plants by-products - Includes plant preparations of aquatic or terrestrial plants or parts of plants, such as cover crops, green manures, crop wastes, hay, leaves and straw. Parts of plants used as soil amendments and foliar feeds are permitted. Wastes from crops that have been treated or produced with substances prohibited by par. 1.4.1 of CAN/CGSB-32.310, <i>Organic Production Systems – General Principles and Management Standards</i> are prohibited. Only substances listed in par. 6.3 and 6.6 may be used in the processing of plant by-products. Plant by-products not meeting this restriction may be used as composting feedstocks.</p> <p>Sawdust, wood chips and shavings: From natural sources or that derive from natural substances are permitted for mulching if they are from wood, trees or logs that have not been treated with paint or substances prohibited by par. 1.4.1 of CAN/CGSB-32.310, <i>Organic Production Systems –</i></p>	This substance allows for the use of nonorganic plants and plant by-products (as soil amendments) provided those products do not contain substances listed in par 1.4.1 including: genetically modified organisms, synthetic pesticides, fertilizers, sewage sludge, synthetic growth regulators, synthetic allopathic veterinary drugs, synthetic processing aids or have been irradiated or packaged in fungicide treated containers.

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
<i>General Principles and Management Standards.</i>	
Pomaces - Feedstocks shall be from organically grown fruits or vegetables, or the material shall be aerobically composted before use.	Pomace is the pulp, peel, seeds and stalks of fruit or vegetables after the oil, water, or other liquid has been pressed out.
Potassium chloride (muriate of potash and rock potash) - Mined potassium salts (e.g. sylvinite and kainite). Shall not cause build-up of 'salts' in soil over repeated applications.	Potassium chloride occurs naturally as sylvite, and it can be extracted from sylvinite. Note that the mined form only is allowed, as potash can also be synthesised. As this product is a salt, overuse can result in salt build-up, especially in low rainfall areas—this is less of an issue in higher rainfall regions.
Potassium rock powders - Includes basalt, biotite, mica, feldspars, granite and greensand.	See guidance for the individual substances.
Potassium sulphate - Only if from langbeinite or other natural sources. See also <i>Mined minerals and unprocessed mined minerals</i> .	Used as soil amendment as a source for potassium and sulphur.
Potassium sulphate magnesia - Langbeinite.	See guidance for <i>Langbeinite</i> .
Potting soil - Shall not contain synthetic wetting agents or synthetic fertilizers.	All the ingredients in potting soil (commercial or farmer-made) must comply with this standard. Standard potting soil mixes may include: <ul style="list-style-type: none"> • soil (must be organic) • peat moss (see peat moss) • sand (see sand) • compost (see compost) • bark (see plants and plants by-products) • alfalfa (see alfalfa) • sawdust (see sawdust) • clay (see clay) • Perlite (see perlite) • Pumice (see pumice) • Vermiculite (see vermiculite) • limestone or dolomite (see limestone) • coir (see plants and plants by-products)
Pumice	Pumice is a generic term for a volcanic rock that is solidified frothy lava. Granular sized pumice is used as a soil amendment for potting soils. Pumice sand is used as a propagation media.
Rock dusts (stone meal), unprocessed - See <i>Mined minerals and unprocessed mined minerals</i> .	Rock dust refers to pulverised (powdered) rock that can be used as a soil amendment.
Sand	Sand from any source is allowed. Ensure it is not contaminated with substance listed in Paragraph 1.4.1.
Seaweed and seaweed products - Aquatic plant products are prohibited if they contain other synthetic preservatives, such as formaldehyde, or are fortified with other prohibited plant nutrients. See also <i>Aquatic plant products</i> .	There are many seaweed-based fertiliser products on the market – many are also compliant with this standard. Operators should assure themselves that they are using products that are not fortified and do not contain preservatives.
Shells from aquatic animals	This substance includes oyster shells, clam shells, mussel shells, crab shells – any shell from a marine mollusc.
Soil - From organic sources in accordance with this standard for 36 months.	From organic sources always means certified organic sources – organic is controlled by the <i>Organic Products Regulation</i> , which requires certification of all organic claims.
Sphagnum moss - Shall not contain synthetic wetting agents.	Wetting agents (surfactants) lower the surface tension of peat moss, allowing water to penetrate the substance, instead of running off. See <i>Surfactants</i> in Paragraph 4.3. Allowed potting soils contain natural wetting agents such as yucca extract.
Stillage and stillage extract - Ammonium stillage is	Thin stillage and distillers' grains are by-products remaining

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
prohibited.	after alcohol distillation from a fermented cereal grain mash. This substance allows the use of stillage as a soil amendment from any source, provided it complies with Paragraph 1.4.1. Note that ammonium stillage is prohibited.
<p>Sulphate of potash magnesia - From langbeinite. See also <i>Mined minerals and unprocessed mined minerals</i>.</p> <p>Natural substances or those derived from natural substances, without the addition of chemically synthesized substances or chemical treatment.</p>	Natural, in this case means that only the unprocessed form of Sulphate of potash magnesia is allowed. In the fertilizer industry, anti-caking, binding agents and dust control agents are often added in small amounts to improve the flowability, handling and blending characteristics of fertilizers, to ensure that they can be applied uniformly at the correct rate.
<p>Sulphates of zinc or iron - May be used only to correct for deficiencies determined by soil or plant tissue testing. Sulphates produced using sulphuric acid are prohibited. See also <i>Iron products</i>.</p>	A soil or tissue test confirming the need for these substances is required before adding them to soil.
<p>Sulphur, elemental - Sulphur may be used as a soil amendment where more buffered sources of sulphur are not appropriate, and as a foliar application. Natural substances or those derived from natural substances without the addition of chemically synthesized substances or chemical treatment.</p>	Elemental sulphur is readily available from most suppliers.
<p>Trace elements (micronutrients) - Includes micronutrients from natural sources that are unchelated or chelated by substances listed as allowed. To be used when soil and plant deficiencies are documented by soil and plant testing.</p>	A soil or tissue test confirming the need for these substances is required before adding them to soil.
<p>Vermicasts - See <i>Worm castings</i>.</p>	
<p>Vermiculite</p>	Vermiculite is a natural mineral that expands with the application of heat. Vermiculite is formed by hydration of certain basaltic minerals. It is commonly used as an addition to potting soil in order to moderate fluctuations in soil moisture.
<p>Vitamins - Non-synthetic sources of all vitamins and synthetic sources of vitamins B₁, C and E may be used in organic crop production.</p>	Nonsynthetic vitamins are derived directly from plants or other materials. Synthetic vitamins are made from synthesised chemicals. Check with the vitamin supplier to determine whether it is synthetically manufactured or naturally produced.
<p>Wood ash - See <i>Ash</i>.</p>	
<p>Worm castings - Worm castings (also called vermicompost, worm compost, vermicast, worm humus or worm manure) are the end product of the breakdown of organic matter and compounds by some species of earthworm. Feedstocks for these earthworms shall meet the criteria for <i>Composting feedstocks</i>. Whether produced on the farm or obtained from off-farm sources, the operator shall be able to demonstrate that the worm castings produced on the farm and obtained from off-farm sources meet the limits for acceptable levels (MPN/g total solids) of human pathogens specified in the Canadian Council of Ministers of the Environment publication <i>Guidelines for Compost Quality</i> OR that the best practices known to eliminate human pathogens during vermicomposting have been used. See <i>Microbial products</i> for information compost starters.</p>	See guidance for <i>Compost</i> .
<p>Yeast - See <i>Microbial products</i>.</p>	
<p>Zeolite - See <i>Mined minerals and unprocessed mined minerals</i>.</p>	Zeolite is a generic term for the more than 150 hydrated aluminosilicate minerals that have a micro-porous structure. In agriculture Zeolite is used as a soil amendment. It is purported to be able to trap soil nutrients and release them when needed by plants.

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
Zinc products - Zinc oxide and zinc sulphate may be used to correct a documented zinc deficiency.	Zinc oxide occurs in nature as the mineral zincite. Zinc oxide is produced through an industrial chemical process. It is added to many breakfast cereals, as a source of zinc; a necessary nutrient. Zinc sulphate is used to supply zinc in animal feeds, fertilizers, and agricultural sprays. It is produced through a chemical process. A soil or tissue test confirming the need for these substances is required before using them as soil amendments.
4.3 Crop Production Aids and Materials – Unless specified otherwise in the annotation, substances listed in the following table shall not contain substances prohibited by par. 1.4.1 of CAN/CGSB-32.310, <i>Organic Production Systems – General Principles and Management Standards</i> , or not permitted by this standard.	Crop Production Aids and Materials are substances used for the management of diseases, insects, and other pests of plants.
Acetic acid - As an adjuvant and pH regulator	Acetic acid is an organic chemical compound, giving vinegar its sour taste and pungent smell. Both synthetic and biologically produced forms of acetic acid are allowed as adjuvants or pH regulators. Biologically produced (by fermentation) acetic acid is usually called vinegar.
Adhesives for sticky traps and barriers	This substance allows for the use of insect sticky traps to control problem insects.
Alcohol - Non-synthetic ethyl alcohols are allowed as solvent to extract botanical insecticides.	This substance allows for the use of nonorganic alcohol (if derived from grain, not from ethylene) as solvents in the production of botanical insecticides.
Amino acids, non-synthetic - Amino acids produced by plants, animals and micro-organisms that are not from genetic engineering and that are extracted or isolated by hydrolysis or by physical or other non-chemical means are considered non-synthetic. Non-synthetic amino acids may be used as plant growth regulators or chelating agents.	Amino acids (molecules) are the building blocks of proteins and are present in all forms of life. They are used as chelating agents and other uses in the chemical industry. There are 20 ‘standard’ amino acids (there are many nonstandard or unspecified amino acids) and most can be produced synthetically. Operators do not need to be chemists to use this list—check with your supplier to ensure you are using nonsynthetic amino acids.
Ammonium carbonate - As an attractant in insect traps.	This substance is what is known as smelling salts—can only be used in insect traps.
Arthropod pathogens - See <i>Biological organisms</i> .	Arthropods include insects, spiders, crustaceans and some other creepy-crawlies. This substance refers to organisms that attack arthropods.
Arthropod predators and parasitoids - See <i>Biological organisms</i> .	See <i>Arthropod pathogens</i> .
Arthropods - See <i>Biological organisms</i> .	This substance means that operators are allowed to use any type of arthropod in their crop production. Predatory insects can be purchased for release to control pest insects. Examples include ladybugs, lacewings, soldier beetles and parasitoids such as trichogramma wasps.
Ascorbic acid - Non-synthetic sources only may be used as a pH regulator and for promoting natural growth	Nonsynthetic ascorbic acid would be plant-based products, such as a product made from Rose-hips. Vitamin C is not plant-based; it is produced through a fermentation process.
Baits for rodent traps - Baits shall not contain synthetic substances.	See the definition of <i>Synthetic substance</i> in CAN/CGSB-32.310, <i>Organic Production Systems – General Principles and Management Standards</i> .
Bentonite - See <i>Mined minerals and unprocessed mined minerals</i> .	Bentonite is a general name for a number of impure clays, such as sodium bentonite, and calcium bentonite. They are allowed for use as crop production aids.

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
Biodynamic preparations for compost - Chamomile (Prep 503), dandelion (Prep 506), oak bark (Prep 505), stinging nettle (Prep 504), valerian (Prep 507) and yarrow flowers (Prep 502).	This list, along with the two preparations listed in Paragraph 4.2, completes the list of biodynamic preparations. All biodynamic preparations are allowed for use.
Biological organisms - Living organisms that benefit plant production by reducing pest populations, such as <i>Bacillus thuringiensis</i> , spinosad, granulosis (e.g. viruses, bacteria, protozoa, fungi, insects and nematodes). No organisms from genetic engineering.	This substance allows the use of any biological organisms as a crop production aid so long as they are not products of genetic engineering.
Borate - Sodium tetraborate and octaborate may be used as wood preservatives. Only mined sources acceptable.	Most borates are from mined sources—check with the supplier. Note that these products can only be used a wood preservatives.
Boric acid - May be used for structural pest control (i.e. ants). No direct contact with organic food or crops is allowed.	Boric acid, also called boracic acid or orthoboric acid or Acidum Boricum, is a mild acid often used as an insecticide. Boric acid is produced mainly from borate minerals by the reaction with sulphuric acid.
Botanical pesticides - Botanical pesticides shall be used in conjunction with a biorational pest management program but shall not be the primary method of pest control in the farm plan. The least toxic botanicals shall be used in the least ecologically disruptive way possible. All label restrictions and directions shall be followed including restrictions concerning crops, livestock, target pests, safety precautions, pre-harvest intervals and worker re-entry.	This substance refers to pesticides derived from plants, such as pyrethrum. The term ‘biorational’ refers to the development of a production plan which results in using the least toxic form of pest control. Production plans should include crop rotation, companion planting, and other crop management practices which reduce the need for reliance on botanical pesticides.
Calcium chloride - Natural sources and food-grade quality only. May be used to adjust nutrient deficiencies and physiological disorders.	Natural sources of calcium chloride are those derived from limestone. Prohibited sources of calcium chloride are those derived from the ammonia-soda process (the Solvay process). Operators wishing to use calcium chloride will need to obtain documentation that the product they are using has been derived from limestone. Operators should check with their supplier to ensure they are using food grade calcium chloride in their crop production program. Nutrient (calcium) deficiency and physiological disorders may be observed by forward rolling and scorching of the leaves of some plants (particularly brassicas).
Calcium lignin sulphonate - See <i>Lignin sulphonates</i> .	
Calcium polysulphide - See <i>Lime sulphur</i> .	
Carbon dioxide - For soil and greenhouse use and for controlled atmosphere storage.	Carbon dioxide is a by-product of many industrial processes. Any source is allowed for the purposes stated in the annotation.
Chelates - Natural chelates and synthetic chelates specifically included for that purpose in this standard are allowed. See <i>Lignin sulphonates</i> .	Chelates are organic molecules that can trap certain highly reactive trace metal cations. Chelates incorporate metal ions into a soluble but bound form, to make them available to plants.
Cholecalciferol (vitamin D3) – May be used outdoors and inside greenhouses for rodent control when methods described in par. 5.6.1 of CAN/CGSB-32.310, <i>Organic Production Systems – General Principles and Management Standards</i> , have failed. Not allowed inside on-farm food processing and food storage facilities.	Cholecalciferol is a form of Vitamin D, also called vitamin D3. It is toxic to rodents by affecting calcium and phosphate homeostasis in the body. Vitamin D is essential in minute quantities, and like most fat soluble vitamins, is toxic in larger doses, causing hypervitaminosis. If the poisoning is severe enough, it leads to death.
Citric acid - Non-synthetic and synthetic sources may be used as a chelating agent and a pH adjuster.	Most citric acid is not made from oranges. It is produced industrially in cultures of <i>aspergillus niger</i> , which are fed on a sucrose or glucose-containing medium to produce citric acid. The source of sugar is corn steep liquor, molasses, hydrolyzed

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
<p>Copper products - These include copper hydroxide for use as a wood preservative or for disease control; copper sulphates for use as a fungicide; Bordeaux mix, and copper oxychloride, fungicides or wood treatments, for fruits and vegetables.</p> <p>These products shall be used in a manner that prevents excessive copper accumulation in the soil. Buildup of copper in soil may prohibit future use. Use with caution. No visible residue shall be allowed on harvested crops. Basic copper sulphate, copper oxide, copper sulphate and copper oxysulphate may be used to correct documented copper deficiencies. Copper ammonia base, copper ammonium carbonate, copper nitrate and cuprous chloride are prohibited as sources of copper for plant nutrients.</p>	<p>corn starch or other inexpensive sugary solutions. Citric acid is an approved chelating agent.</p> <p>The best way to avoid excessive copper accumulation in the soil is to use copper products sparingly. Certifying bodies should ensure that operators have thoroughly assessed their need to use copper products before they are applied—that operators are not just using this substance because their neighbours are using it.</p> <p>The annotation lists several allowed uses for copper; as a fungicide, as wood preservative, and as a crop aid (to correct nutritional deficiencies in plants). One of the most common uses is Copper Chromium Arsenate on treated fence posts (this is prohibited except where noted in 32.310, 5.2.2).</p> <p>Documented copper deficiencies means that a soil or tissue test must indicate the need for copper.</p> <p>As a fungicide, copper has remained a common treatment to control late blight in potatoes. Another use is to apply one spray post-harvest to apricots and peaches to prevent coreyneum blight.</p>
<p>Cytokinins - See <i>Growth regulators for plants</i>.</p>	<p>Cytokinins are a class of plant growth substances (plant hormones) that promote cell division. The substance:</p> <ul style="list-style-type: none"> • Stimulates morphogenesis (shoot initiation/bud formation) in tissue culture. • Stimulates the growth of lateral buds-release of apical dominance. • Stimulates leaf expansion resulting from cell enlargement. • May enhance stomatal opening in some species. • Promotes the conversion of etioplasts into chloroplasts via stimulation of chlorophyll synthesis.
<p>Diatomaceous earth - Only non-heated forms may be used. Make sure no synthetic pesticides or synergists are added.</p>	<p>Diatomaceous earth consists of fossilized remains of diatoms, a type of hard-shelled algae. Diatomite is also used as an insecticide, due to its physico-sorptive properties. The fine powder absorbs lipids from the waxy outer layer of insects' exoskeletons, causing them to dehydrate. Arthropods die as a result of the water pressure deficiency, based on Fick's law of diffusion. This also works against gastropods and is commonly employed in gardening to defeat slugs. However, since slugs inhabit humid environments, efficacy is very low. Operators should check with their supplier to ensure they are not using heated DE (DE produced for pool filters is treated with heat) and that no pesticides or synergists have been added.</p>
<p>Dormant oils - Allowed for use as a dormant spray on woody plants only.</p>	<p>Oils kill exposed insects and mites by either suffocating them (covering up breathing tubes) or by directly penetrating the outside cuticle and destroying internal cells. Most dormant oils are refined from crude oil. All types are allowed.</p>
<p>Ferric phosphate (iron orthophosphate, iron phosphate) - Permitted as molluscicide. To be used in such a way as to prevent runoff into water bodies. Shall not be in contact with crops.</p>	<p>Ferric phosphate is accepted as a bait for slugs only. It is already permitted as a trace mineral soil amendment (see s. 4.1) to correct iron deficiency and as a component of mineral supplements for livestock (see s. 5.2). Ferric phosphate must not be used in a way that it causes run-off into rivers, lakes or ponds or used in a way that it has contact with crops.</p>

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
Fibre row covers - Shall not be incorporated into the soil or left in the field to decompose; shall be removed at the end of the growing season.	Also called ‘garden fleece’, this material is generally spread over garden plants to increase solarisation and to keep out insects.
Formulants - Formulants can only be used in conjunction with substances listed in par. 4.3. Only formulants that are classified by the Pest Management Regulatory Agency (PMRA) in Regulatory Note REG2007-04 as List 4A or 4B or are non-synthetic may be used with substances in par. 4.3 that are applied directly to crops. Formulants classified as List 3 in PMRA Regulatory Note REG2007-04 may be used with passive pheromone dispensers. Formulants classified as List 1 or List 2 in PMRA Regulatory Note REG2007-04 are prohibited.	A formulants is any substance or group of substances other than the active ingredient that is intentionally added to a pest control product to improve its physical characteristics (e.g., sprayability, solubility, spreadability or stability). Contrary to active ingredients, formulants which are contained in the composition of an end-use product are not mentioned on the product label.
Gibberellic acid - Acceptable if made from a fermentation process. Fermentation process shall not use organisms from genetic engineering. See also <i>Growth regulators for plants</i> .	Gibberellic acid is a hormone found in plants. It affects decomposition of plants and helps plants grow if used in small amounts, but eventually plants develop tolerance for it. Gibberellins have a number of effects on plant development. The substance: <ul style="list-style-type: none"> • stimulate rapid stem growth, • induce mitotic division in the leaves of some plants, • increase seed germination rate. Gibberellic acid is sometimes used in laboratory and greenhouse settings to trigger germination in seeds that would otherwise remain dormant. It is also widely used in the grape-growing industry as a hormone to induce the production of larger bundles and bigger grapes, especially Thompson seedless grapes, and in the Okanagan it is used in the cherry industry as a growth regulator. Operators should check with their supplier to ensure Gibberellic acid is manufactured from a fermentation process.
Growth regulators for plants - Natural plant hormones, such as gibberellic acid, indoleacetic acid and cytokinins, are allowed. See also <i>Gibberellic acid</i> .	Note that only natural forms of growth regulators are allowed. There is no definition for ‘natural’ in this standard (though it is used extensively). Operators who wish to have some understanding of what is meant by natural should look to the definition for ‘non-synthetic’, which provides some guidance in this area.
Hormones - See <i>Growth regulators for plants</i> .	
Hydrated lime - As a plant disease control only.	Also called calcium hydroxide—traditionally called slaked lime, or pickling lime. This is a synthetic substance that cannot be used as a soil amendment, but can be used as a foliar spray to treat physiological disorders related to calcium uptake.
Hydrogen peroxide - Hydrogen peroxide is not allowed in maple syrup production. Allowed for use as a fungicide.	Hydrogen peroxide is a weak acid. It has strong oxidizing properties and is therefore a powerful bleaching agent that is mostly used for bleaching paper, but has also found use as a disinfectant, as an oxidizer, as an antiseptic.
Indoleacetic acid - See <i>Growth regulators for plants</i> .	Indoleacetic acid is an auxin plant hormone. Indole acetic acid (IAA) stimulates the growth of the main stem (apical dominance). Indole acetic acid is also involved in helping cuttings generate new roots.
Kaolin clay	Kaolinite is one of the most common minerals; it is mined, as kaolin, in many parts of the world. Rocks that are rich in kaolinite are known as china clay or kaolin. One use of kaolin is an ingredient in a pest control product. Kaolin forms a

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
	nontoxic particle film that places a barrier between the pest and its host plant. The product is sprayed on as a liquid, which evaporates, leaving a protective powdery film on the surfaces of leaves, stems, and fruit.
Lignin sulphonates - Lignosulphonic acid, calcium lignosulphate and sodium lignosulphate. Allowed as a chelating agent, as a formulant ingredient and as a dust suppressant. Ammonium lignosulphate is prohibited.	Lignin is a complex chemical compound most commonly derived from wood and an integral part of the cell walls of plants. Lignin sulphonates are dust suppression agent for roads and additives in specialty oil field applications and agricultural chemicals. They can also be used a chelating agents.
Lime sulphur (calcium polysulphide) - Allowed as fungicide, insecticide and acaricide (mite control) on plants.	Calcium sulphide and calcium polysulphide are also known as lime sulphur. They are sulphur- and lime-based chemical compounds. Lime sulphur is only allowed for the uses mentioned in the annotation.
Magnesium chloride - Natural sources only.	Hydrated magnesium chloride can be extracted from brine or sea water. Magnesium chloride as the natural mineral is also extracted (solution mining) out of ancient sea beds. Anhydrous magnesium chloride is manufactured industrially, and is the synthetic version of this substance.
<p>Mulches - Organic plant residue: Is permitted for mulching. Where organic materials are not readily available, non-organic straw, leaves, grass clippings or hay that are not the products of genetic engineering may be used. Substances prohibited by par. 1.4.1 of CAN/CGSB-32.310, <i>Organic Production Systems – General Principles and Management Standards</i>, shall not have been used on these materials for at least 60 days before harvest.</p> <p>Sawdust, wood chips and shavings: From natural sources or that derive from natural substances are permitted for mulching if they are from wood, trees or logs that have not been treated with paint or substances prohibited by par. 1.4.1 of CAN/CGSB-32.310, <i>Organic Production Systems – General Principles and Management Standards</i>.</p> <p>Newspaper mulch: Glossy paper and coloured ink are prohibited.</p> <p>Paper: Glossy paper and coloured ink and prohibited.</p> <p>Plastic mulches: Non-biodegradable and semi-biodegradable materials shall not be incorporated into the soil or left in field to decompose; shall be removed at the end of the growing season. Plastic mulches in perennial crops may be left for more than one season but shall be removed before the plastic decomposes. Use of polyvinyl chloride as plastic mulch or row cover is prohibited.</p> <p>Fully biodegradable films: Are permitted without removal if they do not contain substances prohibited by par. 1.4.1 of CAN/CGSB-32.310, <i>Organic Production Systems – General Principles and Management Standards</i>.</p>	<p>Any organic plant matter is allowed. The simplest way to ensure nonorganic mulch sources are free of pesticides is to have complete knowledge of where they came from. Do not use nonorganic mulch from any source where there is risk of contamination from pesticides or other prohibited materials.</p> <p>The simplest way to ensure straw is uncontaminated would be to purchase organic straw. If organic straw is not available, then purchasing nonorganic straw from the producer, and having an attestation from that person that the grain (the straw it came from) was not treated with pesticides or other prohibited products. Synthetic fertiliser applied to the soil before the grain was planted would not contaminate the straw. Beware of grass clippings that have been treated with ‘weed and feed’ products, which are both fertilisers and pesticides.</p> <p>Any type of newspaper mulch is allowed, provided it is not made from coloured paper. Commercial sources of newspaper mulch do not separate the coloured paper, making them not compliant with this standard.</p> <p>See above.</p> <p>Certifying bodies should ensure that plastic mulch on annual crops is removed after the growing season, not left over the winter.</p> <p>Some biodegradable films may be found to contain plastic components. If there are plastic binders in the film, it is considered to be semi-biodegradable and must be picked up at the end of the season.</p>
Nitrogen - For controlled atmosphere storage.	Controlled atmosphere storage is a nonchemical process. Oxygen levels in sealed rooms are reduced, usually by the

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
	infusion of nitrogen gas. Temperatures are kept at a constant 32 to 36 degrees Fahrenheit. Humidity is maintained at 95 percent and carbon dioxide levels are also controlled. Exact conditions in the rooms are set according to the product being stored.
Oxygen - For controlled atmosphere storage.	See guidance for <i>Nitrogen</i> .
Peracetic acid - For use in controlling fire blight bacteria - For use in disinfecting seed and asexually propagated planting material	Peracetic acid is a chemical in the organic peroxide family. It is an ideal antimicrobial agent due to its high oxidising potential. Peracetic acid kills microorganisms by oxidation and subsequent disruption of their cell membrane. Any source of this product is allowed.
pH buffers - Shall be from a natural source, such as citric acid or vinegar. Lye and sulphuric acid are prohibited.	pH buffers can be either the weak acid or weak base that would comprise a buffer solution. Buffering agents are usually added to water to form buffer solutions. As pH managers, they are important in many chemical applications, including agriculture, food processing, medicine and photography. Operators should look to the definition of 'non-synthetic' for some guidance on what a natural source would be.
Pheromones and other semiochemicals - Allowed for use in pheromone traps or dispensers. Both synthetic and non-synthetic pheromones and semiochemicals may be used for pest control.	A pheromone is a chemical that triggers a natural behavioural response in another member of the same species. They are used as lures in insect traps and as mating disruptors. Mating disruption involves the utilization of synthesized sex pheromones to disrupt the reproductive cycle of insects. A semiochemical is a generic term used for a chemical substance or mixture that carries a message. It is usually used in the field of chemical ecology to encompass pheromones, allomones, kairomones, attractants and repellents.
Plant extracts, oils and preparations - Allowed for use as production aids unless otherwise specifically restricted or prohibited. Allowed extractants include cocoa butter, lanolin, animal fats, alcohols and water. Allowed for disease and pest control. Extraction with synthetic solvents is prohibited except for potassium hydroxide or sodium hydroxide, provided the amount of solvent used does not exceed the amount necessary for extraction. Of the two products, potassium hydroxide is the preferred choice; the manufacturer shall prove the need to use sodium hydroxide.	This substance allows for the use of any plant extracts and oils (as crop production aids) provided such products comply with the annotation.
Plant protectants, natural - Substances that protect plants from harsh environmental conditions such as frost and sunburn, infection, the build up of dirt on leaf surfaces, or injury by a pest. Natural substances are allowed, including diatomaceous earth, kaolin clay, pine oil, pine resin and yucca. White wash is allowed for use on trees to protect against sunburn and southwest disease.	Any natural material that can be used as plant protectant is allowed.
Plastic for row covers and solarisation - Shall not be incorporated into the soil or left in the field to decompose; shall be removed at the end of the growing season. Use of polyvinyl chloride plastic is prohibited.	Operators should check with their supplier to ensure plastic mulch is not made from polyvinyl chloride.
Potassium bicarbonate - Allowed for pest and disease control in greenhouses and other crops.	Potassium bicarbonate is an effective fungicide against powdery mildew and early blight on cucurbits and tomatoes respectively. Any source is allowed.
Pyrethrum - May only be combined with acceptable formulants listed in par. 4.3 of this Standard. See also <i>Botanical pesticides</i> for restrictions.	Pyrethrum is an insecticide made from the dried flower heads of chrysanthemum. Note that pyrethrum should not be applied to flowering plants when bees are in the field as pyrethrums

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
	are toxic to bees.
Quick lime - Also known as calcium oxide. Prohibited as a fertilizer or soil amendment.	Calcium oxide can only be used as a crop production aid. It is used to make lime sulphur sprays, an antifungal agent used in the production of tree fruits.
Repellents - Acceptable if derived from a natural source, such as sterilized blood meal, rotten eggs, hair or predator scents, provided synthetic additives are not used.	Repellents are chemical mixtures that are supposed to deter animal pests.
Rotenone - Shall not be combined with unacceptable formulants. See also <i>Botanical pesticides</i> for restrictions.	Rotenone is an odourless chemical that is used as a broad-spectrum insecticide, piscicide, and pesticide. It occurs naturally in the roots and stems of several plants. It is mildly toxic to humans and other mammals, but extremely toxic to insects and aquatic life including fish. Unacceptable formulants would be those not listed in Lists 4A and 4B of Regulatory Note REG2007-04 of the Pest Management Regulatory Agency (part of Health Canada), or are deemed 'non-synthetic' by this standard. Note that Rotenone has been removed by the Pest Management Regulatory Agency, cannot be purchased since December 2008 and cannot be used as a pest control product after December 2010.
Seaweed and seaweed products - Aquatic plant products are prohibited if they contain other synthetic preservatives such as formaldehyde or are fortified with prohibited plant nutrients. See also Aquatic plant products in par. 4.2.	Operators should check with their supplier to ensure seaweed products do not contain synthetic preservatives or are fortified with (prohibited) nutrients.
Seed treatments - Microbial products, kelp, yucca, gypsum, clays, botanicals, and any substances and formulants that appear in Table 4.3 with consistent origin and usage permitted for use as treatments on organic seed.	A variety of organic-approved seed treatments are commercially available, which claim to offer developmental advantages to germinating crop seeds and young plants. Seeds are also treated as in pelleted seed and as inoculated seed. Note that this standard applies to all types of seed (forage, as well as vegetable). Vegetable or grain seeds treated with fungicides are not permitted. Operators should check with their supplier to ensure all seed complies with this standard.
Soaps - Soaps (including insecticidal soaps) consisting of fatty acids derived from animal or vegetable oils are allowed.	Insecticidal soap causes insects to dehydrate by physically breaking down the insect's outer protective layer (cuticle). Soap is composed of sodium (soda ash) or potassium (potash) salts of fatty acids derived by reacting fat (animal or vegetable) with lye in a process known as saponification. The fats are hydrolyzed by the base, yielding glycerol and crude soap. Many cleaning agents today are technically not soaps, but detergents, which are less expensive and easier to manufacture. Note that this substance allows for the use of any soap (as a crop production aid) provided is derived from animal or vegetable oil. Detergents are not allowed.
Soaps, ammonium - As an animal repellent; no contact with soil or edible portion of crop allowed.	Operators using this product for an animal repellent must ensure it doesn't contact the soil.
Sodium bicarbonate - Allowed for pest and disease control in greenhouses and other crops	This salt is known as baking soda. It can be used as a fungicide to control powdery mildew, botrytis, and alternaria leaf-spot.
Sodium silicate - For tree fruit and fibre processing.	Sodium silicate is also known as water glass or liquid glass. It is not allowed as a soil amendment or to be used on plants or fruit.
Sterile insects - See <i>Biological organisms</i> .	Sterile males mate with fertile females who then lay sterile eggs, thus depleting the (problem) insect population.
Sugar - Organic sugar may be used as an ingredient in a	

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
crop production aid	
Sulphur (smoke bombs) - Sulphur smoke bombs used for rodent control shall be used in conjunction with other methods and only when a full pest control program is maintained but temporarily overwhelmed.	Certifying bodies should ensure that operators have a reasonable pest control program and that the program is implemented before allowing the use of sulphur smoke bombs.
Sulphur, elemental - Allowed for foliar use only.	Elemental sulphur is readily available from most suppliers. Operators should refer to Paragraph 4.2 if they wish to use sulphur as a soil amendment.
Summer oils - Allowed for use in organic production as suffocating or stilet oils on foliage	Summer oils are lighter petroleum oils that contain fewer of the impurities that make dormant oils toxic to growing plants. Stilet-Oil is a Technical Grade White Mineral Oil used as a fungicide, insecticide and for plant virus control.
Surfactants - See <i>Soaps</i> .	Surfactants are wetting agents that lower the surface tension of a liquid, allowing easier spreading, and lower the interfacial tension between two liquids. Soaps are one type of surfactant, but there are many more (sodium laureth sulphate being one). Soaps and vegetable oils are allowed for use as surfactants.
Transplant and potting media - Shall be composed entirely of allowed substances.	See guidance for <i>Potting soil</i> .
Treated seed, non-synthetic agents - Seed treated with naturally occurring biological management agents are allowed. Organisms from genetic engineering are prohibited. Seed pelletized with clay, gypsum, rhizobial bacteria or other non-synthetic coating is allowed. Plastic polymer pelletization of seed is prohibited. See also <i>Seed treatments</i> .	See guidance for <i>Seed treatments</i> .
Tree seals - Plant or milk-based paints may be used. Other petroleum substances may be used if there is no alternative. Shall not be combined with fungicides or other synthetic chemicals.	There are many products that can be used as tree or grafting seals. Operators should ensure any product they use complies with this standard.
Vegetable oils - Spreader-stickers, surfactants and carriers. Plant oils shall not contain synthetic pesticides.	Any vegetable oil is allowed, provided it complies with Paragraph 1.4.1. Note that some vegetable oils are made from products of genetic engineering e.g. canola oil.
Vinegar - See <i>Acetic acid</i> .	Vinegar is a liquid processed from the fermentation of ethanol in a process that yields its key ingredient, ethanoic acid, (also called acetic acid) which may also come in a diluted form. Natural vinegars also contain small amounts of tartaric acid, citric acid, and other acids.
Virus sprays - Shall be evaluated on a product specific basis. Codling moth granulosis virus is acceptable. No viruses from genetic engineering are allowed.	Virus sprays are used to infect pests, thereby reducing pressure on organic crops. This standard requires Certifying bodies to determine which virus sprays are allowed as crop production aids.
Water	
Water, reclaimed - Reclaimed water shall be used only on non-edible parts of food crops and on crops not for human consumption. Use on edible plant parts and root crops is prohibited.	Rinse water from the milk house on organic dairy farms can be added to the manure and spread on field crops. Reclaimed water from industrial or municipal sources would have to be free of 1.4.1 prohibited substances.
Wetting agents - Natural wetting agents, including saponins and microbial wetting agents, are allowed. See also <i>Soaps</i> .	Wetting agents (surfactants) lower the surface tension of a substance (usually soil or peat moss), allowing water to penetrate the substance, instead of running off. Saponins are a class of chemical compounds, found in natural sources, with saponins found in particular abundance in various plant species. Commercial formulations of plant-derived saponins—e.g., from the soap bark (or soapbark) tree, and

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
	<p>from other sources—are available via a controlled manufacturing processes. Saponins are allowed from any source, as long as they comply with Paragraph 1.4.1. Natural wetting agents (also called biosurfactants) are amphiphilic compounds produced on living surfaces that reduce surface tension and interfacial tension between individual molecules at the surface and interface respectively. The oils and fats derived from plants are used for the manufacture of biosurfactants. Microbial wetting agents are allowed from any source as long as they comply with Paragraph 1.4.1. See also surfactants. Note that detergents are not allowed as wetting agents.</p>
<p>4.4 Weed Management - Unless specified otherwise in the annotation, substances listed in the following table shall not contain substances prohibited by par. 1.4.1 of CAN/CGSB-32.310, <i>Organic Production Systems – General Principles and Management Standards</i>, or not permitted by this standard.</p>	
<p>Biological organisms - Living organisms that benefit plant production by reducing pest populations (e.g. viruses, bacteria, protozoa, fungi, insects, nematodes, nematode-repelling cover crops and animals). No organisms from genetic engineering.</p>	<p>Biological weed control, known as biocontrol, is a method of controlling undesirable, introduced plants by exposing them to their natural enemies. All biocontrols are allowed, provided they are not products of genetic engineering.</p>
<p>Mulches - Organic plant residue: Is permitted for mulching. Where organic materials are not readily available, non-organic straw, leaves, grass clippings or hay that are not the products of genetic engineering may be used. Substances prohibited by par. 1.4.1 of CAN/CGSB-32.310, <i>Organic Production Systems – General Principles and Management Standards</i>, shall not have been used on these materials for at least 60 days before harvest.</p> <p>Sawdust, wood chips and shavings: From natural sources or that derive from natural substances are permitted for mulching if they are from wood, trees or logs that have not been treated with paint or substances prohibited by par. 1.4.1 of CAN/CGSB-32.310, <i>Organic Production Systems – General Principles and Management Standards</i>.</p> <p>Newspaper mulch: Glossy paper and coloured ink are prohibited.</p> <p>Paper: Glossy paper and coloured ink and prohibited.</p> <p>Plastic mulches: Non-biodegradable and semi-biodegradable materials shall not be incorporated into the soil or left in field to decompose; shall be removed at the end of the growing season. Plastic mulches in perennial crops may be left for</p>	<p>Any organic plant matter is allowed. Producers can ensure that nonorganic mulches are free of pesticides by having a complete knowledge of their source. Nonorganic mulch from any source where there is risk of contamination from pesticides or other prohibited materials must not be used.</p> <p>The simplest way to ensure straw is uncontaminated would be to purchase organic straw. If organic straw was not available, then purchasing nonorganic straw from the producer, and having an attestation from that person that the grain (the straw came from) was not treated with pesticides or other prohibited products. Synthetic fertiliser applied to the soil before the grain was planted would not contaminate the straw. Certifying bodies should require such an attestation from any operator using nonorganic straw. If the straw is obtained from a third party, such an attestation may not be possible, or reliable. In this case, the straw would not be allowed. Straw which has been killed down with herbicides within 60 days of harvest would be contaminated with herbicide residues.</p> <p>Newspaper mulch is allowed, provided it is not made from coloured paper. Commercial sources of newspaper mulch do not separate the coloured paper, making them not compliant with this standard.</p> <p>See above.</p> <p>Certifying bodies should ensure that plastic mulch on annual crops is removed after the growing season, not left over the winter.</p>

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
<p>more than one season but shall be removed before the plastic decomposes. Use of polyvinyl chloride as plastic mulch or row cover is prohibited.</p> <p>Fully biodegradable films: Are permitted without removal if they do not contain substances prohibited by par. 1.4.1 of CAN/CGSB-32.310, <i>Organic Production Systems – General Principles and Management Standards</i>.</p>	<p>Some biodegradable films may be found to contain plastic components. If there are plastic binders in the film, it is considered to be semi-biodegradable and must be picked up at the end of the season.</p>
Plant extracts	<p>Plant extracts refers to compounds that are prepared from whole plants, usually be infusing the plants in a solvent, such as alcohol or hexane. The solvent is evaporated, the plant parts removed, leaving the plant extract. All sources of plant extracts are allowed for weed control, provided they comply with Paragraph 1.4.1</p>
Plant oils	<p>Plant oils are derived from plants and are composed of triglycerides. There are hundreds of plants that are capable of providing plant oil. Although many different parts of plants may yield oil, in commercial practice oil is extracted primarily from the seeds of oilseed plants. Most commercial vegetable oils are obtained through chemical extraction. The most common solvent is petroleum-derived hexane. This technique is used for most of the industrial oils such as soybean and corn oils. Some oils are refined through mechanical extraction, which does not use solvent extracts. Any source of plant oil is allowed for weed control provided it complies with Paragraph 1.4.1. Note that some plant oils are made from products of genetic engineering e.g. canola oil.</p>
Vinegar (acetic acid) - Non-synthetic sources unless commercially unavailable.	<p>Although acetic acid is the primary constituent of vinegar aside from water, acetic acid is not vinegar. Vinegar contains compounds not found in acetic acid. Most acetic acid is produced industrially through a synthetic process (methanol carbonylation). Vinegar is produced through a fermentation process using alcohol (derived either from grain or from ethylene). The Canadian Food and Drug Regulations specify that “<i>Vinegar shall be the liquid obtained by the acetous fermentation of an alcoholic liquid and shall contain not less than 4.1 per cent and not more than 12.3 per cent acetic acid</i>”. The intent of this standard is that the product called vinegar in Canada is nonsynthetic and the product called acetic acid is synthetic. It would be difficult to argue that sources of nonsynthetic vinegar are commercially unavailable.</p>
<p>5. PERMITTED SUBSTANCES LISTS FOR LIVESTOCK PRODUCTION</p> <p>5.1 Classification – Livestock production substances are classified according to the following uses and applications:</p> <p>a. Feed, Feed Additives and Feed Supplements</p> <p>b. Health Care Products and Production Aids – Health care products include medications, remedies, parasiticides and other substances used to maintain or restore the well being of an animal. Production aids include all other substances used on animals and their living areas, such as bedding and dips.</p>	
5.2 Feed, Feed Additives and Feed Supplement	

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
<p><i>Note: In Canada, livestock feed must meet the compositional and labelling standards of the Feeds Regulations. Ingredients used in livestock feed must be approved and listed in Schedule IV or V of the Feeds Regulations. Some ingredients and products require registration (e.g. enzymes and milk replacers).</i></p>	
<p>Amino acids - Non-synthetic sources only. Exception granted for use of synthetic DL-methionine, DL-Methionine—hydroxy analog, and DL-Methionine—hydroxy analog calcium until October 1, 2010.</p>	
<p>Antioxidants - Non-synthetic sources only. Water, alcohol, acid and base extracts permitted by this standard only.</p>	
<p>Diatomaceous earth - Approved as an anti-caking agent in feed to a maximum of 2% of the total diet.</p>	<p>Diatomaceous earth consists of fossilized remains of diatoms, a type of hard-shelled algae. Any form of DE may be used as an anti-caking agent in organic feed.</p>
<p>Forage concentrates (grains) and roughages (hay, silage, fodder, straw) and energy feeds - Shall be obtained from organic sources and may include silage preservation products (e.g. bacterial or enzymatic additives derived from bacteria, fungi and plants and food by-products (e.g. molasses and whey). Note that if weather conditions are unfavourable to fermentation, lactic, propionic and formic acid may be used.</p>	<p>Anhydrous ammonia is not allowed as a silage preservation agent as it is a synthetically derived substance that conflicts with Paragraph 1.4.1. Operators should check with their supplier to ensure forage inoculants are not products of genetic engineering.</p>
<p>Micro-organisms and yeasts</p>	
<p>Milk replacer - From organic sources when commercially available. Only without antibiotics and animal fats, by-products, and for emergency use only.</p>	<p>When searching for allowed sources of nonorganic milk replacer operators should look for products that include all-milk protein (soy-based products are assumed to be derived from genetically engineered soy). Ensure the product does not contain Animal Plasma Protein (a blood by-product). Animal fats (tallow, lard—these are not allowed) are common in milk replacer but coconut oil is also used. Ensure that the product is nonmedicated. All of this information (the actual source of the ingredients) is generally not on the label and must be obtained from the manufacturer. Note that milk replacers are for emergency use only. Certifying bodies should ensure that milk replacer (whether organic or otherwise) is not used as a general part of the feeding regimen. The intent of this standard is that young mammals are to be fed mother's milk (see CAN/CGSB-32.310-2006, Paragraph 6.4.3); milk replacer is to be used only in an emergency (such as the death of the dam). Operators should have provisions for providing natural milk to orphan animals (nurse mothers, adoption, saving and freezing milk). At the same time, it is understood that birthing emergencies are not uncommon and that the welfare of young animals is the most important issue.</p>
<p>Molasses - May be used as a flavouring agent; shall be organic unless commercially unavailable.</p>	<p>Organic molasses is generally available.</p>
<p>Pre-mixes - Concentrated mixture of minerals and vitamins; all ingredients shall be organically sourced, where applicable, and shall be essential for animal nutrition.</p>	<p>Pre-mixes will often include calcium, phosphorus, and salt and trace minerals (including selenium) along with vitamins. They can also include probiotics. The ingredients that would need to be organically sourced would be any added agricultural ingredients. Pre-mixes must not contain prohibited ingredients such as ethoxyquin (for preservation) or antibiotics. Medicated pre-mixes are not allowed. Note that synthetic amino acids are</p>

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
	not allowed in organic feeds. See guidance for <i>'race minerals'</i> .
Probiotics	
Protein feeds - Shall be from organic sources.	Protein feeds include oilseed meals, alfalfa pellets, and corn products. Fish products would be allowed if they were from organic sources—currently none available. See Paragraph 6.4 of CAN/CGSB-32.310-2006, <i>Organic Production Systems – General Principles and Management Standards</i> for more detail on feeds. Note that mammalian and avian by-products (whether organic or otherwise) are prohibited.
Seaweed meal	Seaweed meal should not contain any added ingredients or preservatives.
Trace minerals, elements (mineral products) - Non-synthetic chelated or sulphated minerals. Synthetic nutrient minerals may be used when non-synthetic sources are unavailable. Minerals may not be used to stimulate growth or production. Minerals from any source are allowed for medical use.	The most common trace minerals are iron, copper, zinc, manganese, cobalt, iodine and selenium. Given the definition of 'synthetic' in CAN/CGSB-32.310-2006, <i>Organic Production Systems – General Principles and Management Standards</i> nonsynthetic minerals would be from naturally occurring sources (such as mined salt), while synthetic minerals would be chemically manufactured. Operators should show that they have searched for nonsynthetic trace minerals before using synthetic sources.
Vitamins - Used for enrichment or fortification of livestock feed. Synthetic vitamins may be used if non-synthetic sources are not commercially available.	Nonsynthetic (natural) vitamins are derived directly from plants or other materials. Synthetic vitamins are made from synthesised chemicals. Check with the vitamin supplier to determine whether it is synthetically manufactured or derived directly from plants or other materials.
5.3 Health Care Products and Production Aids	
Acetylsalicylic acid - Aspirin.	Aspirin, or acetylsalicylic acid (A.S.A.), is a salicylate drug, often used as an analgesic to relieve minor aches and pains. Any source is allowed for livestock health care.
Activated charcoal – Plant sources only.	
Alcohol, ethyl (ethanol) - Allowed as a disinfectant and sanitizer only.	Also known as 'grain' or 'drinking' alcohol.
Alcohol, isopropyl - Allowed as a disinfectant only.	Also called 'rubbing' alcohol.
Antibiotics - Refer to par. 6.7 of CAN/CGSB-32.310 for conditions on antibiotic use in livestock. <i>See also</i> Antibiotics, oxytetracycline.	See guidance in Paragraph 6.7 of CAN/CGSB 32.310, <i>Organic Production Systems – General Principles and Management Standards</i> .
Antibiotics, oxytetracycline - For emergency use for bees. The equipment shall be destroyed, in accordance with par. 7.1.14.7 of CAN/CGSB-32.310, but the bees need not be destroyed if they are taken out of organic production and treated with oxytetracycline.	See guidance for 7.1.14.7 in CAN/CGSB 32.310, <i>Organic Production Systems – General Principles and Management Standards</i> .
Anti-inflammatories - For health care use, to reduce inflammation. Preference shall be given to natural alternatives	Anti-inflammatory refers to the property of a substance or treatment that reduces inflammation. Anti-inflammatory drugs make up about half of analgesics, alleviating pain by reducing inflammation as opposed to opioids which affect the brain (steroids). Many steroids, specifically glucocorticoids, reduce inflammation or swelling by binding to cortisol receptors. These drugs are often referred to as corticosteroids. Some common examples of nonsteroid anti-inflammatory drugs are aspirin, ibuprofen, and naproxen. In addition to medical drugs, many herbs are reported to have anti-inflammatory qualities.

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
Biologics, including vaccines - Organisms from genetic engineering or their products (e.g. recombinant gene technology) are not allowed.	See the definition of ‘Veterinary Biologic’ in Section 3 of CAN/CGSB-32.310-2006, <i>Organic Production Systems – General Principles and Management Standards</i> , for justification). For general purposes, biologics are medicines obtained from animal or plant tissue. The Canadian Health of Animals Regulations stipulates that, “veterinary biologic does not include an antibiotic except when it is used as a preservative or when it is an integral part of the veterinary biologic.” It is understood that some vaccines contain trace amounts of antibiotics as preservatives. The intent of this standard is to allow the use of all vaccines, until such time as vaccines without antibiotics become available.
Botanical compounds - Botanical preparations according to label specifications	Botanical compounds are derived from plants. All sources are allowed for livestock health care, provided they comply with Paragraph 1.4.1 (i.e., they are not derived from products of genetic engineering and do not contain synthetic materials).
Calcium borogluconate - For milk fever. No withdrawal period required.	
Chlorohexidine - For surgical procedures conducted by a veterinarian. Allowed for use as a post-milking teat dip when alternative germicidal agents and physical barriers have lost their effectiveness	This is a chemical antiseptic. It is included in a number of products of different brands.
Colostrum whey - Probiotic.	Also called colostrum whey, this product is derived from cow colostrum. As the annotation suggests, it is considered a probiotic.
Colostrum - Shall be organic unless commercially unavailable.	This substance does not include colostrum replacer – it only references pure colostrum.
Copper sulphate - For use as an essential nutrient (source of copper and sulphur) and for topical use (foot baths). Sulphates produced using sulphuric acids are prohibited.	Also called bluestone, operators should check with their supplier to ensure the product they wish to use was not produced using sulphuric acid.
Diatomaceous earth - For use in control of external parasites	Diatomaceous earth consists of fossilized remains of diatoms, a type of hard-shelled algae. External parasite control is achieved by dusting the animals and the litter or bedding area. It is best to <u>guard against inhaling the DE dust when applying.</u>
Electrolyte solutions - With no added active ingredients.	Operators should distinguish between ‘ electrolyte solutions ’ which are used to treat illness, and ‘ electrolyte supplements ’, which are added to livestock drinking water to prevent illness (usually in times of stress, such as shipping). Most electrolyte solutions contain sodium, chloride and potassium as well as glycine, dextrose, glucose and alkalinizing agent (bicarbonate, citrate, lactate, acetate or propionate). Many electrolyte solutions also include direct-fed microbials. These are bacteria that are meant to re-establish the correct ratios of gut microflora. Usually these probiotics consist of lactobacillus and bifidobacterium species, both of which work against E. coli and are beneficial to the intestinal environment. Such microbials are allowed, provided they are not products of genetic engineering. The added active ingredient (not allowed) is a protein concentrate to promote the uptake of electrolytes in the small intestine.

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
Electrolytes - Without antibiotics.	See guidance for <i>Electrolyte solutions</i> .
Formic acid - For apicultural use to control parasitic mites. This substance may be used after the last honey harvest of the season and shall be discontinued 30 days before the addition of honey supers.	Formic acid is the simplest carboxylic acid. It occurs naturally, most notably in the venom of bee and ant stings. It is prepared commercially though a chemical process. See Paragraph 7.1.14.6 of CAN/CGSB-32.310-2006.
Glucose	Glucose is a monosaccharide (or simple sugar); also known as grape sugar. Glucose is produced commercially via the enzymatic hydrolysis of starch. Corn, rice, wheat, potato, cassava, arrowroot, and sago are all used (as the source of starch) in various parts of the world. Glucose is used to treat ketosis (pregnancy toxemia), among other livestock symptoms and diseases.
Glycerine - For use as a livestock teat dip; shall be produced through the hydrolysis of fats or oils.	Glycerine (glycerol) is a sugar alcohol. Glycerol is a 10% by-product of biodiesel production (via the transesterification of vegetable oils).
Homeopathic and biotherapies	<p>Homeopathic therapy involves treatments that can produce, in a healthy animal, symptoms similar to those of the illness. According to homeopaths, serial dilution, with shaking between each dilution, removes the toxic effects of the remedy while the qualities of the substance are retained by the diluent (water, sugar, or alcohol).</p> <p>One definition of ‘Biotherapy’ is a generic term for a number of alternative medicinal practices (herbal medicine, bio-energy treatment). Biotherapy is also described as the use of living animals for medical treatment (e.g. maggots) or as an adjunct to medical diagnosis. Biotherapy is also a term used in cancer research to develop targeted cancer therapies using biological agents. Regardless of the confusion surrounding what homeopathy and biotherapy actually are, there is general agreement that these diagnostic approaches and treatments are generally regarded as safe. Whether they are effective is a matter for the operator to determine.</p>
Honey - Organic honey is allowed.	
<p>Hydrogen peroxide - External use (disinfectant): pharmaceutical grade.</p> <p>Internal use (e.g. livestock drinking water): food grade.</p>	There are many grades of hydrogen peroxide. Pharmaceutical (or cosmetic) grade (3% - drug store variety) hydrogen peroxide is used as antimicrobial agent for treating wounds and as a sanitizing agent. Food Grade Hydrogen Peroxide is either 35% or 50%. Note that the food grade label does not mean this product can be ingested. Food grade hydrogen peroxide is used as an antiseptic in food handling and preparation. The Chicken Farmers of Canada recommend (Safe, Safer, Safest) 40-80ml (35% hydrogen peroxide) in 10 litres of water or 40-75 ml in 1200 litres of water. Follow product instructions when handling food grade hydrogen peroxide—this is a highly reactive product.
Iodine - For use as a topical disinfectant. Sources include potassium iodide and elemental iodine. As a cleaning agent, shall be followed by a hot-water rinse. Non-elemental only; not to exceed 5% solution by volume (e.g. iodophors).	Tincture of iodine is 10% elemental iodine in ethanol base. Iodophor iodine is alcohol free, and may only used in a 5% solution as a topical disinfectant.
Iron products - May be supplied by ferric phosphate, ferric pyrophosphate, ferrous lactate, ferrous sulphate, iron carbonate, iron gluconate, iron oxide, iron phosphate, iron sulphate or reduced iron.	This list includes all the possible sources for iron.

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
Lime, hydrated - Not permitted to cauterize physical alterations or deodorize animal wastes.	This is also called slaked lime (Calcium hydroxide) and is not quicklime. Can be used as an astringent compound; topically in solution or lotions.
Local anaesthetics - Use requires a withdrawal period of 90 days after administering to livestock intended for slaughter, and 7 days after administering to dairy animals. Preference shall be given to natural alternatives.	Cold (ice) is a proven natural anaesthetic. Acupuncture is reported to be a natural anaesthetic, as well as many plant species (e.g. cloves, oregano, aloe vera, echinacea, garlic oil, tarragon, lavender) and bee propolis.
Magnesium sulphate - Mined sources only. A source of magnesium and sulphur. Sulphates produced using sulphuric acid are prohibited.	This is epsom salts. This substance can be used as a laxative and for treating hypomagnesaemia (grass staggers). It can be used as a mild astringent to remove splinters and treat infections.
Mineral oil - For external use only.	Mineral oil or liquid petrolatum is a by-product in the distillation of petroleum to produce gasoline.
Oxalic acid - For the control of mites in honeybee colonies.	This is strong organic acid, being about 10,000 times stronger than acetic acid. This substance can be used either by the vapourizer method or the acid-sugar syrup solution drip method. The BC Ministry of Agriculture and Lands has an excellent factsheet on the use of this substance. See Paragraph 7.1.14.6 of CAN/CGSB-32.310-2006.
Oxytocin - For post parturition therapeutic use only. Meat from treated animals will not lose its organic status. See par. 6.7.6.d. of CAN/CGSB 32.310, <i>Organic Production Systems – General Principles and Management Standards</i> , for conditions regarding the use of internal parasiticides.	Oxytocin is a mammalian hormone, best known for its roles in female reproduction. It can stimulate placenta cleaning and milk let-down.
Parasiticides and anti-microbials - See par. 6.7 of CAN/CGSB 32.310, <i>Organic Production Systems – General Principles and Management Standards</i> for conditions regarding the use of internal parasiticides.	Parasiticides are pesticides for the control of internal and external parasites. Antimicrobials are natural or synthetic drugs which inhibit or kill bacteria. There are 15 different classes of antimicrobials including pesticides, antiseptics, disinfectants and sterilisers.
Plant oils - To control external parasites.	Use of plant oils must comply with Paragraph 1.4.1. Ensure that any product used is not a product of genetic engineering and does not contain added pesticides. See the definition of 'plant oils' in Paragraph 4.4.
Rotenone - For external parasites, rotenone shall not be combined with unacceptable formulants. See also <i>Botanical pesticides</i> in par. 4.3 for restrictions	See guidance for <i>Rotenone</i> in Paragraph 4.3.
Selenium products - May be derived from sodium selenate or sodium selenite. See Trace minerals, elements (mineral products). May be used where documented deficiencies in the stock, soils or feed supplies exist.	Selenium is an essential element for most animals. May be used in this case as a nutritional supplement; but the operator would need to show that their farm soil, feed, or animals are deficient in selenium. This could be accomplished from soil or plant analysis or recommendations from a veterinarian.
Sulfur - For control of external parasites.	
Trace minerals, elements (mineral products) - Non-synthetic chelated or sulphated minerals that are registered for use in livestock feed. Synthetic nutrient minerals may be used when non-synthetic sources are unavailable. Minerals may not be used to stimulate growth or production. Minerals from any source are allowed for medical use.	See guidance for <i>Trace minerals</i> in Paragraph 5.2
Vaccines - See <i>Biologics, including vaccines</i> .	
Vitamins - Used for enrichment or fortification. Synthetic vitamins may be used if non-synthetic sources are not commercially available. Vitamins from any source are allowed for medical use.	See guidance for <i>Vitamins</i> in Paragraph 5.2.
6. PERMITTED SUBSTANCES LISTS FOR	All items are subject to the restrictions outlined in The Federal

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
<p>PROCESSING</p> <p>6.1 Classification – Processing substances are classified according to the following uses and applications:</p> <p>a. Non-organic Ingredients (NOI) are in most cases considered non-agricultural, although some of the fundamental ingredients may have originated from agricultural-based commodities. Non-organic ingredients may be used only when an acceptable alternative, non-synthetic ingredient is commercially unavailable.</p> <p>a. Food Additives – See the definition of food additive in Section 3 of CAN/CGSB-32.310, <i>Organic Production Systems – General Principles and Management Standards</i>.</p> <p>b. Other Non-organic Ingredients – These non-organic ingredients are not considered food additives.</p> <p>b. Substances Permitted in Products Whose Contents Are 70% or more, and Less Than 95% Organic Ingredients.</p>	<p>Food and Drug Regulations.</p> <p>NOIs can be present in a “95% or more” product, but can only account for up to 5% of the final profile. There are two types of NOIs. Most NOIs are classified as not being plant or animal based and can be used if listed on the Permitted Substances Lists. If the NOI is considered agricultural (nonsynthetic), the nonorganic form can only be used if the organic form is not available. Availability must be verified annually. NOIs cannot be the products of genetic engineering, or subject to ionizing radiation, or be the products of cloned farm animals.</p> <p>A food additive is any substance that becomes a component of food (exceptions are listed in the Food and Drug Regulation), or otherwise affects the characteristic of food.</p> <p>These “Other Non-organic Ingredients” listed in Paragraph 6.4 can be used in a “95% or more” product, but must be accounted for within the 5% allowance; and cannot be the products of genetic engineering, or subject to ionizing radiation, or be the products of cloned farm animals.</p> <p>Operators should be aware of the implications of whether an ingredient is of agricultural origin or not. Currently nonagricultural substances include any substance that is not a product of agriculture, such as a mineral or a bacterial culture, but also includes substances that are extracted from, isolated from or are a fraction of an agricultural product, and hence unrecognizable in the extracted, isolate or fractioned such as gums, natural colours, citric acid or some pectin. In most cases, agricultural ingredients must be organic, unless they are specifically listed in the Permitted Substances Lists. For instance, Corn Starch (an agricultural ingredient) is listed as a nonorganic ingredient (in the 5% category for organic claims). This means that nonorganic corn starch is allowed to be used. If corn starch was not listed, then only organic corn starch could be used. Additionally, Paragraph 8.2.3 of CAN/CGSB-32.310 says that for products using the organic claim, nonorganic ingredients (of agricultural origin or otherwise) may only make up less than 5% of the total, and the nonorganic ingredients may only be used if they are not commercially available in an organic form. This means that nonorganic corn starch (for example, see above) may only be used if it is not commercially available in an organic form.</p>
<p>6.2 Other Categories of Substances – Other categories of substances are classified according to the following uses and applications:</p> <p>a. Processing Aids are substances or ingredients that are added to a product for a technological effect during processing. They are not present in the finished product or are present at insignificant or non-functional levels.</p> <p>b. Pest Control Substances are used to disinfect or prevent infestation of stored commodities, prevent postharvest decay, and control losses from insects, diseases, rodents and other organisms.</p>	<p>a. See guidance to Paragraphs 8.3.2 and 8.3.3 of CAN/CGSB-32.310-2006.</p> <p>b. Use of Pest Control Substances must only be considered once good manufacturing practices have been proven ineffective.</p>

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
6.3 Non-organic Ingredients Classified as Food Additives	
Acids - Including a) alginic, b) citric – produced by microbial fermentation of carbohydrate substances, and c) lactic.	See individual acid listings.
Agar - Water, alcohol, acid and base extracts which are permitted by this standard only.	A gelatinous substance derived from red seaweed. Often used as emulsifying, gelling, stabilizing or thickening agent in the two product groups specified.
Alginates (alginic acid, sodium alginate, potassium alginate)	Viscous gums produced by brown seaweed used as emulsifying, gelling, stabilizing or thickening agents. Alginates are effective at far lower concentrations than commonly used animal derived gelatine products.
Ammonium bicarbonate - For use as a leavening agent only.	Often used for cookies, crackers and cream puff-type pastries; items which are small, thin or porous, needing a fast gas release. Does not leave an alkaline after taste and there is a faint ammonia smell during baking which quickly dissipates.
Ammonium carbonate - For use as a leavening agent only.	
Argon	
Ascorbic acid, non-synthetic	Often used as a bleaching, maturing and dough conditioning agent as well as a preservative (colour and flavour). Common sources of natural ascorbic acid include various fruits and vegetables.
Ascorbic acid, synthetic - Synthetic form is allowed in fruits and vegetables only if the natural form is not available.	Only permitted in fruit and vegetables products and can be used if nonsynthetic is not available. Synthetic forms are derived from various chemicals such as Ascorbyl palmitate, Calcium ascorbate, Magnesium ascorbate, Niacinamide ascorbate/Nicotinamide ascorbate, Potassium ascorbate, Sodium ascorbate.
Calcium carbonate - Prohibited as a colouring agent.	Often used as an emulsifying, gelling, stabilizing, thickening, creaming, fixing, filling, carrying, and pH adjusting agent in various products, plus as yeast food for bread.
Calcium chloride - Milk products / fat products / fruits and vegetables / soybean products	May be used as a firming agent (among other uses) for the product groups listed here.
Calcium citrate	Often used as emulsifying, gelling, stabilizing or thickening agent in processed fruits and vegetable products and certain types of cheese.
Calcium phosphates (monobasic, dibasic, and tribasic forms)	The monobasic form is typically used as a leavening agent, firming agent for canned fruits and vegetables, pH adjuster for various foods, and as sequestering agent for some dairy products. The dibasic as a dough conditioner, a stabilizer, emulsifier, gelling or thickening agent for various cheese products and the tribasic as a conditioning agent and a yeast food in bread, an emulsifier, or anti-caking agent in dry powders (e.g. spices), as well a thickener, stabilizer, and a sequestering agent for some dairy products
Calcium sulphate - From mined sources only. Sulphates produced using sulphuric acid are prohibited.	
Carageenan (Irish moss) - Water, alcohol, acid and base extracts permitted by this standard only.	Extracted from Irish Moss red algae and commonly used to thicken and stabilize.
Carbon dioxide	Commonly used to carbonate liquids, and as a propellant to dispense food
Citric acid - From fruit and vegetable products.	Mainly used as a pH adjuster (making food taste acidic or sour), or as an antioxidant to preserve food. Common commercial sources are produced by culturing particular moulds and filtering off the citric acid, but this standard

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
	requires citric acid be concentrated from such fruit as lemons, limes, blackberries, raspberries and tomatoes.
Ferrous sulphate - For iron enrichment or fortification of products when recommended or required by regulation. Sulphates produced using sulphuric acid are prohibited.	An astringent iron salt added to replace iron lost in processing.
Glycerides (mono and diglycerides) - For use only in drum drying of products. Organisms from genetic engineering are excluded. Documentation is required. Shall be produced from organic sources unless not commercially available.	Commonly used to blend together certain ingredients, such as oil and water, which would not otherwise blend well. Can be derived from plants (oils from corn, peanuts or soybeans) or animals (cows and hogs).
Glycerine - Shall be produced by hydrolysis of natural (vegetable or animal) fats and oils.	Commonly used a flavour carrier, but is also used to help retain moisture in a product or in some cases to help a product to appear shiny.
Gums - Water-extracted only (includes arabic, guar, karaya, tragacanth, locust bean and carob bean). For milk products: fat, confectionery, canned meat and egg products. For canned meat: gelatine, agar and carrageen.	Plant based gums are commonly used to emulsify, gel, stabilize or thicken in the product groups specified. Shall be produced from organic sources unless not commercially available (see par. 8.3.2 in CAN/CGSB-32.310-2006, <i>Organic Production Systems – General Principles and Management Standards</i> , for justification).
Kelp and kelp products - For use only as a thickener and dietary supplement.	The ash from large seaweeds belonging to the brown algae group. Shall be produced from organic sources unless not commercially available (see par. 8.3.2 in CAN/CGSB-32.310-2006, <i>Organic Production Systems – General Principles and Management Standards</i> , for justification).
Lactic acid - For fermented vegetable products or in sausage casings.	Commonly known as milk acid but most commercial sources are created by bacteria fermenting a carbohydrate like cornstarch, potatoes or molasses. Main function is to adjust pH which can affect microbiological activity, cooking results and textures.
Lecithin - Bleached form is allowed when unbleached form is not suitable. From organic sources only.	Lecithin is used as a source of choline, as a releasing agent (lubricant), an emulsifier and as an antioxidant. It is most commonly prepared from soybeans or eggs. Both bleached and unbleached lecithin are allowed. Non organic lecithin is only allowed where organic sources are commercially unavailable. Non organic lecithin must comply with Paragraph 1.4.1.
Magnesium chloride (nigari) - Derived from seawater, for soybean products.	An important tofu coagulant. In Japan it is sold as <i>nigari</i> (means "bitter"), a white powder produced from seawater after the sodium chloride has been removed, and the water evaporated.
Magnesium sulphate - From non-synthetic sources only. Sulphates produced using sulphuric acids are prohibited.	Mined food grade sources are available. Mainly used as a starch firming agent.
Malic acid	An acidity regulator that is the distinctive tartness in such things as green apples and grapes.
Ozone	Ozone is a highly reactive form of oxygen. It is a potent oxidant/disinfectant that quickly decomposes to diatomic oxygen (O ₂), while reacting with targeted organic matter or microorganisms. Commercial applications of ozone include purification of drinking water, sterilization of containers for aseptic packaging, decontamination of fresh produce, and food preservation in cold storage. Ozone also is useful in deodorizing air and water.
Pectin (low-methoxy)	Most commercial pectin is made from fruit (specifically citrus rind) and vegetables. Pectin is an important stabilizer, thickener, binder and texturizer. Low methoxy pectin is activated by calcium and does not require sugar to gel, or

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
	acidity or high solids content.
Pectin (high-methoxy)	Gelation usually takes place at a pH of below 3.5 and total solids content of above 55%, typical of most jam making. High methoxy pectin gels slower than low methoxy types. Shall be produced from organic sources unless not commercially available (see par. 8.3.2 in CAN/CGSB-32.310-2006, <i>Organic Production Systems – General Principles and Management Standards</i> , for justification).
Potassium acid tartrate (potassium hydrogen tartrate)	Also known as potassium bitartrate and cream of tartar and is a by product of winemaking. Is used to adjust the pH of various foods which affects the microbiological activity, cooking results and textures. Commonly found in baking powder.
Potassium carbonate	Prepared commercially by the electrolysis of potassium chloride. Can be used to adjust pH in the specified food products.
Potassium chloride	Is manufactured in multiple industrial fashions including extraction from salt water. Used to stabilize or thicken products.
Potassium citrate	Commonly used to adjust the pH of various foods which affects the microbiological activity, cooking results, textures and stability.
Potassium tartrate made from tartaric acid - For cereals, cakes and confectionery. Allowed as a food additive in cider and several dairy products.	Occurs naturally in many plants, particularly grapes, bananas, and tamarinds, and is one of the main acids found in wine. Usually added to foods to partake a sour taste, and is used to slow down or prevent oxidation.
Potassium metabisulphite – See <i>Sulphurous Acid</i> .	A common wine or must additive that produces sulphur dioxide gas (SO ₂). SO ₂ prevents most wild microorganisms from growing, and acts as a potent antioxidant, protecting both the colour, and flavours in wine. Can be used as an alternative to sulphur wicks and bottled SO ₂ as it is safer and more readily available, and easier to handle in smaller quantities.
Sodium acid pyrophosphate - For use as a leavening agent only.	
Silicon dioxide	Primarily used as a flow agent (anti-caking) in powdered foods, or as a desiccant. Be sure to use a food grade.
Sodium bicarbonate (baking soda) - Non-synthetic sources only.	Also known as Sodium hydrogen carbonate and Bicarbonate of soda. Commonly a component of baking powder regulating pH, acting as a raising agent, as well as an anti-caking agent and a product stabilizer helping to maintain the appearance and consistency of foods.
Sodium carbonate - Non-synthetic sources only.	Synthesized from table salt and can be used as an acidity regulator, anti-caking agent, raising agent and stabilizer in the specified categories.
Sodium chloride	Common table salt.
Sodium citrate - For sausages and milk products.	Possesses a saline, or mildly tart, flavour and also works as buffering agent, stabilizer, antioxidant / preservative. Restricted to two classes of food products.
Sodium hydroxide (lye or caustic soda)	Also known as lye or caustic soda. Made through the electrolysis of an aqueous solution of sodium chloride. Extensive uses as a food additive (pH buffering agent, carbonating agent, heat stabilizer, softener and thickener) and as a processing aid. See Paragraphs 6.6 Processing Aids for restrictions on sodium hydroxide use.
Sodium phosphates - For use in dairy products only.	Works as an emulsifier to prevent fat separation.

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
<p>Sulphurous acid - For use as a preservative only in alcoholic beverages made from grapes or other fruit; minimum use of sulphur dioxide (SO²) is recommended. The maximum allowable level of SO² in alcoholic beverages with less than 5% residual sugar is 100 parts per million and 30 parts per million for total sulphites and free sulphites, respectively; in alcoholic beverages with 5% or more and less than 10% residual sugar, 150 parts per million and 35 parts per million respectively; and in alcoholic beverages with 10% or more residual sugar, 250 parts per million and 45 parts per million respectively. The use of sulphites from SO² bottled gas, as liquid sulphur dioxide, or liberated from the ignition of asbestos-free sulphur wicks is acceptable.</p>	<p>As wine yeast produces sulphur dioxide (SO²) during the fermentation process, it is almost impossible to make a sulphite-free wine; wines with no added sulphite usually contain from 6 to 40 ppm of sulphite.</p> <p>Free SO², the portion that is not bound with aldehydes which are natural byproducts of fermented and unfermented sugars or other oxidizable substances in the wine, is what protects the wine from oxidation and microbial activity. Free SO² will disappear over time into a wine, binding with the above-mentioned substrates, while simultaneously increasing the chance of spoilage as well.</p> <p>Higher levels of total and free sulphites are permitted in wines with higher sugar levels as it is not possible to produce them using the same rates of SO₂ as table wines, because until all the binding partners (aldehydes) are saturated, there is no free sulphur available to protect the dessert wine from oxidization or bacterial spoilage.</p>
<p>Tocopherols and mixed natural concentrates - Derived from vegetable oil when rosemary extracts are not a suitable alternative.</p>	<p>A type of vitamin E which is most abundant in various vegetable oils, nuts, sea buckthorn, kiwi, and wheat germ. Commonly added to food as an antioxidant.</p>
<p>Xanthan gum - Water extracts, for fat products, fruit and vegetables, cakes and biscuits, and salads.</p>	<p>A polysaccharide gelling agent created by the <i>Xanthomonas campestris</i> bacterium when it ferments simple sugars.</p>
<p>6.4 Non-organic Ingredients Not Classified as Food Additives</p>	
<p>Colouring, natural - From non-synthetic sources only and shall not be produced using synthetic solvents and carrier systems or any artificial preservative.</p>	<p>Usually highly purified extracts from various fruits and vegetables. Multiple reasons that they are used include: helps ensure product duplicability; offsets loss due to light, air, extremes of temperature, moisture, and storage conditions; provides identity to foods; and in some situations protects flavours and vitamins from damage by light.</p>
<p>Cornstarch - Not from sources from genetic engineering or products derived from genetic engineering, with no added chemosynthetic substance.</p>	<p>Commonly used as a binder thickener. Available in two distinctive forms modified (synthetic) and native (unmodified / nonsynthetic). Modified cornstarch has been chemically treated to isolate the starch molecule; modified cornstarch is not allowed.</p> <p>Native starch is the granular starch component recovered from the original plant source by typical milling and has not undergone any additional treatment or modification.</p> <p>Unmodified (native/nonsynthetic) cornstarch may be used in both 'organic' and 'contains xx% organic ingredients' processed goods as long as it has been substantiated as in compliance with CAN/CGSB-32.310-2006, Paragraph 8.2.6 and in the 'organic' case has been substantiated as not being available in an organic form.</p>
<p>Dairy cultures - May not be products of recombinant DNA technology.</p>	<p>Microorganisms especially selected and developed for their functionalities in dairy manufacturing including bacteria, yeasts and moulds. May not be products of recombinant DNA technology or from cloned animals.</p>
<p>Enzymes - Enzymes: Any preparations of enzymes normally used in food processing derived from edible, non-toxic</p>	<p>Biomolecules that when present increase the rate of a chemical reaction. Almost all enzymes are proteins and those used in</p>

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
<p>plants, non-pathogenic fungi, or non-pathogenic bacteria.</p> <p>Animal enzymes: Rennet—animals derived; Catalase—bovine liver; Animal lipase; Pancreatin; Pepsin; and Trypsin. Animal-derived enzymes shall be guaranteed free of specified risk materials including the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord) of ruminants aged 30 months or older; and the distal ileum (portion of the small intestine) of ruminants of all ages. Shall be from an organic source unless not commercially available.</p> <p>Egg white lysozyme.</p> <p>All enzymes shall be water, alcohol, acid and base extracts permitted by this standard only and shall not contain substances prohibited by par. 1.4.1 of CAN/CGSB-32.310, <i>Organic Production Systems — General Principles and Management Standards</i>, or not permitted by this standard.</p>	<p>food processing are derived from bacteria, fungi, higher plants, and animals.</p>
<p>Flavours - From non-synthetic sources only; shall not be produced using synthetic solvents and carrier systems or any artificial preservative. No propylene glycol carrier or any artificial preservatives, and shall not be hexane extracted.</p>	<p>All of the flavour constituents present in a natural flavour must be concentrated from natural sources (fruit, leaf, stem, bark, fungi, yeast, meat products, poultry products, dairy product, fermented product etc) and cannot be chemically modified in a way that makes them different from their natural chemical state. Most are water or alcohol extracted or generated through distillation or fractionation. Flavours are added to help ensure product replication, provide identity to foods, and to offset loss due to light, air, extremes of temperature, moisture, and storage conditions.</p>
<p>Micro-organisms, (processing derivatives) - Including any preparations of micro-organisms normally used in product processing, excepting micro-organisms from genetic engineering or enzymes derived from genetic engineering, with no added chemosynthetic substance.</p>	<p>Bacteria, fungi and other microbes used in brewing, winemaking, baking, pickling and in the production of various dairy products such as yogurt and cheese. Not only can they add characteristic flavours and aromas, but in some cases inhibit undesirable organisms.</p>
<p>Nitrogen - Food-grade quality only.</p>	<p>Improves spreadability of certain cheese products and margarine. Also used as a pressure dispensing agent.</p>
<p>Oxygen</p>	
<p>Potassium iodide, natural - Permitted only when legally required.</p>	<p>Normally added to table salt in small quantities to make it "iodized." Can be extracted from salt brine. Kelp contains from 0.4 to 1.3 % of iodine in the form of iodide salts (e.g. potassium iodide).</p>
<p>Salt – Also see <i>Sodium chloride</i> in par. 6.3.</p>	
<p>Smoke flavour - See <i>Yeast</i>.</p>	
<p>Vitamins and minerals - Minerals (including trace elements), vitamins and similar isolated ingredients shall not be used except where legally required or a dietary or nutritional deficiency can be demonstrated and shall be documented. Vitamins shall not be derived from organisms from genetic engineering.</p>	<p>A vitamin is an organic compound required as a nutrient in tiny amounts which cannot be synthesized in sufficient quantities by an organism, and must be obtained from the diet.</p> <p>A mineral refers to inorganic compounds necessary for life and good nutrition. These can be naturally occurring in food or added in elemental or mineral form to food.</p>
<p>Waxes - Non-synthetic only: a) carnauba wax and b) wood resin (processing product of resin component).</p>	<p>Carnauba comes from the leaves of a Brazilian palm. Makes confectionary shiny and creates a glaze that could reduce spoilage (slows down moisture loss).</p>

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
	Wood resin also known as glycerol ester of wood rosin, the remaining viscous substance created after pine pitch resin is heated and the volatiles are removed. Density adjusting agent for citrus-flavoured or spruce-flavoured beverages.
<p>Yeast - Non-synthetic only: a) autolysate, b) bakers' (may contain lecithin, obtained without the use of bleaches and organic solvents), c) brewers', d) nutritional, and e) smoked. Non-synthetic smoke flavouring process shall be documented.</p> <p>Growth on petrochemical substrate and sulphite waste liquor are prohibited.</p>	<p>Yeast - Various single-cell fungi that mainly replicate through budding and are able to ferment carbohydrate substrates.</p> <ol style="list-style-type: none"> Autolysate Yeast – intense and distinctive extracts used to manufacture certain food products. Created by adding salt to a yeast suspension causing the yeast cells to thrive further using its own enzymes to break down its proteins into simpler compounds; a process of self-destruction (autolysis). The dying yeast cells are then heated to complete their breakdown, after which the husks (yeast with thick cell walls which would give poor texture) are separated. Baker's yeast - the common name for the strains used as a leavening agent in baking bread and related products, where it converts the fermentable sugars present in the dough into carbon dioxide and ethanol. Brewers yeast (also known as brewer's yeast or brewing yeast) – can mean any live yeast used in brewing. Nutritional yeast - similar in appearance to brewer's yeast but has a nutty, cheesy, creamy flavour and is a dried by-product of brewing. Used as a dietary supplement for its B vitamin content. Smoked yeast - also known as bacon yeast or hickory-smoked yeast is yeast that has been smoked, giving it a bacon-like flavour and is used to flavour other dishes.
<p>6.5 Substances Permitted in Products Whose Contents Are 70% or More, and Less Than 95% Organic Ingredients</p>	
<p>Magnesium carbonate - As an anti-caking agent in non-standardized dry mixes (e.g. seasonings) used in meat products</p>	Mined sources are possible, but in most cases would be chemically prepared.
<p>Magnesium stearate</p>	Also called octadecanoic acid or magnesium salt. Used as a lubricant, as an anti-caking agent and as a binder in hard candies and supplements. Commonly sourced from bovine, but vegetable sources are possible.
<p>Potassium iodide, synthetic</p>	Potassium iodide is added to table salt in small quantities to make it "iodized."
<p>Potassium phosphate</p>	Potassium phosphate is a generic term for the salts of potassium and phosphate ions including: Monopotassium phosphate & Dipotassium phosphate both of which can be used as buffers, neutralizing agents, sequestrants, and as yeast food.
<p>6.6 Processing Aids</p>	
<p>Activated charcoal - Shall be of plant origin. Prohibited for use in processing maple syrup</p>	Also called activated carbon or activated coal. A form of carbon that has been processed to make it extremely porous and an effective filter. Commonly used to filter organic impurities out of alcohol. If left these impurities could affect the colour, taste, and odour. Also used in the decolourization process used in sugar refining.
<p>Alcohol, ethyl (ethanol)</p>	Also called pure alcohol, grain alcohol, or drinking alcohol. Is

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
	a volatile, flammable, colourless liquid miscible in water; therefore a good solvent (i.e., carrier) for flavours, colours and tinctures.
Argon	
Bentonite	A type of clay used as a filtering medium as it is able to adsorb large amounts of protein molecules out of aqueous solutions.
Calcium Carbonate	Commonly used in flour bleaching and cocoa processing.
Calcium hydroxide (Lime)	<p>Commonly used to produce corn flour (masa) through a nixtamalization process. Nixtamalization is the soaking and cooking of whole corn grains in a lime solution resulting in the separation of the outer hull from the inner grain. The resulting grain can then be effectively dried and ground increasing the protein and vitamin content availability.</p> <p>The production of sugar from both sugar cane and sugar beets requires the addition of calcium hydroxide, as the raw juices from both are low pH and contain dissolved impurities. Hydrated lime is added to the juice to raise the pH and to react with the impurities to form insoluble calcium organic compounds that can be removed.</p>
Calcium sulphate, (gypsum) - As a carrier for cakes and biscuits, soybean products and bakers' yeast. Sulphates produced using sulphuric acid are prohibited.	Also used as a neutral filler for baking powder.
Carrageenan (Irish moss) - Water, alcohol, acid and base extracts permitted by this standard only.	
Carbon dioxide	Commonly used in modified atmosphere packaging to displace oxygen, lower the pH and inhibit bacterial growth. Liquid carbon dioxide can be used in the decaffeination process of coffee beans.
Casein - Shall be from organic sources unless not commercially available	A milk protein also known as caseinogen. Commonly used as a binding agent as it is not susceptible to denaturing when exposed to high heat or acid.
Cellulose - As a filtering aid (non-chlorine bleached) and for use in inedible regenerative sausage casings.	Plant fibres.
Diatomaceous earth - As a food filtering aid or as a clarifying agent only.	Also called DE, TSS, diatomite, diahydro, kieselguhr, kieselgur and celite. Consists of fossilized remains of diatoms, a type of hard-shelled algae.
Egg white - Albumen and albumin, as a clarifying agent; a non-organic source may be used if an organic source is not available.	Helps flocculate solids (impurities) out of liquid suspensions.
Ethylene - For postharvest ripening of tropical fruit and degreening of citrus only.	A plant hormone that influences multiple plant responses including fruit ripening. Synthetic ethylene is used in this postharvest treatment.
Gelatine - Permitted only if guaranteed free of specified risk materials including the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord) of cattle aged 30 months or older; and the distal ileum (portion of the small intestine) of cattle of all ages. Shall be from an organic source unless not commercially available	Also spelt 'gelatine which is produced by partial hydrolysis of collagen isolated from animal skin and bones. Can also be extracted from fish skins. Only to be used as a clarifying agent.
Isinglass - As a fining agent (fish-based).	Derived from the swim bladder of fishes. An excellent source of high-class collagen (protein). Commonly used to precipitate excess phenolics (undesirable flavour compounds) out of the wine and juices without inflicting any damage on the colour.

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
Kaolin - As a clarifying agent.	A type of clay commonly used to remove solid matter causing cloudiness in a liquid.
Nitrogen - Food-grade quality only	Commonly used in modified atmosphere packaging to extend the shelf life and sustain the quality of various foods. Flushing an impermeable package with an inert gas such as nitrogen lowers the oxygen concentration, slowing down the growth of aerobic life forms and the speed of oxidation reactions.
Oxygen	Oxygen levels are modified and controlled in modified atmosphere packaging and storage.
Ozone	See listing in Paragraph 6.3
Perlite - For use as a filter aid in food processing only.	A generic name for naturally occurring siliceous volcanic rock that expands up to 20 times its original volume when it is heated to its softening range. Perlite filter aids do not impart taste, colour, or odour to liquids being filtered.
Potassium carbonate	
Potassium hydroxide (caustic potash) - For pH adjustment only. Prohibited for use in lye peeling of fruits and vegetables.	Potassium hydroxide and Sodium hydroxide are often used interchangeably, but the sodium form tends to be less costly and hence preferred. Commonly used in chocolate and cocoa processing, caramel colour production, and soft drink processing.
Sodium hydroxide (lye or caustic soda) - Prohibited for use in lye peeling of fruits and vegetables.	Commonly used in olive production. See caustic potash listing for more information.
Silicon dioxide	
Talc - As a filtering agent.	Also known as hydrated magnesium silicate. Commonly used a filtering aid for olive oil.
Vegetable oil - Obtained without the use of synthetic solvents. May be used as a sprayed-on greasing agent only	Any source is allowed, if used as a processing aid. Note that it must still comply with CAN/CGSB-32.310-2006, Paragraph 1.4.1.
Waxes - Non-synthetic only: a) carnauba wax and b) wood resin (processing product of resin component).	See <i>Waxes</i> in Paragraph 6.4.
6.7 Pest Control Substances	
Ammonium carbonate - As an attractant in insect traps.	Also known as smelling salts.
Boric Acid - May be used for structural pest control (e.g. ants). No direct contact with organic food or crops is allowed.	Boric acid is produced mainly from borate minerals by the reaction with sulphuric acid. Boric acid can be used as an insecticide for control of cockroaches, termites, fire ants, fleas, silverfish, and many other insects. It acts as a stomach poison affecting the insects' metabolism, and the dry powder is abrasive to the insects' exoskeleton.
Carbon dioxide	
Cholecalciferol (vitamin D3) - Not allowed inside organic food processing and food storage facilities.	See guidance in Paragraph 4.3.
Diatomaceous earth	See guidance in Paragraph 4.3.
Pyrethrins - Without piperonyl butoxide as a carrier.	See guidance in Paragraph 4.3.
Neem oil	Neem oil is extracted from the fruit and nuts of the neem tree. There are currently no neem products currently registered for pest control in Canada. Neem oil has been added to the PSL in order to facilitate acceptance of foreign products.
Soaps, ammonium - As an animal repellent; no contact with soil or edible portion of crop allowed.	A product from reaction of a fatty acid with ammonium hydroxide.
7. Permitted Substances Lists for Cleaners, Disinfectants and Sanitizers	
7.1 Classification – Cleaners, disinfectants and sanitizers are	

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
<p>used to remove dirt, filth and foreign matter from products and product-handling operations. These substances are also used to control micro-organisms that may contaminate products. They are classified as follows:</p> <ol style="list-style-type: none"> Food-grade cleaners, disinfectants and sanitizers that are allowed without a mandatory removal event. Cleaners, disinfectants and sanitizers allowed on food contact surfaces, equipment and in facilities provided that substances are removed from food contact surfaces prior to organic production. 	
<p>7.2 Section 7 does not apply to maple syrup production. The operator shall meet the specific requirements at different stages of production as described in Section 7.2 of CAN/CGSB 32.310, <i>Organic Production Systems – General Principles and Management Standards</i>.</p>	
<p>7.3 Food-Grade Cleaners, Disinfectants and Sanitizers that are Allowed Without a Mandatory Removal Event</p>	<p>Without a ‘mandatory removal event’ means that an operator is not required to wash the substance off after its use. The substance is allowed to dry on the surface.</p>
<p>Acetic acid - Non-synthetic and synthetic sources may be used on equipment. Non-synthetic sources only may be used on food and plants. Non-synthetic and synthetic sources may be used on equipment.</p>	<p>Most acetic acid is produced industrially through a synthetic process (methanol carbonylation). Nonsynthetic acetic acid (usually called vinegar) is produced through a fermentation process using alcohol (derived either from grain or from ethylene).</p>
<p>Alcohol, isopropyl - Non-synthetic and synthetic sources may be used on equipment.</p>	
<p>Ascorbic acid - Non-synthetic sources may be used on equipment.</p>	<p>Nonsynthetic ascorbic acid would be plant-based products—not vitamin C; as they are not the same substance.</p>
<p>Citric acid - Non-synthetic and synthetic sources may be used.</p>	<p>See guidance for <i>Citric acid</i> in Paragraph 4.3.</p>
<p>Alcohol, ethyl (ethanol) - Non-synthetic and synthetic sources may be used on equipment</p>	
<p>Hydrogen peroxide -</p>	<p>See guidance for <i>Hydrogen peroxide</i> in Paragraph 5.3. Hydrogen water would be a dilute hydrogen peroxide solution.</p>
<p>Peracetic (peroxyacetic) acid - For use in wash or rinse water for food or plants or on food contact surfaces.</p>	<p>Peracetic acid is a chemical in the organic peroxide family. It is good antimicrobial agent due to its high oxidising potential.</p>
<p>Potassium bicarbonate - On equipment.</p>	
<p>Sodium bicarbonate (baking soda) - Only non-synthetic sources may be used on food or food contact surfaces without a mandatory removal event.</p>	
<p>Sodium carbonate (soda ash) - Only non-synthetic sources may be used on food or food contact surfaces without a mandatory removal event.</p>	
<p>Vinegar - Organic or non-organic sources.</p>	<p>See guidance for <i>Vinegar</i> in Paragraph 4.4.</p>
<p>7.4 Cleaners, Disinfectants and Sanitizers Allowed on Food Contact Surfaces including Equipment Provided That Substances Are Removed From Food-Contact Surfaces Prior to Organic Production.</p>	<p>The restrictions outlined in this section do not apply to parts of a facility where there is no contact with food or food surfaces.</p> <p>Generally this entails rinsing with potable water or purging with an organic run after using these cleaning, disinfecting, or sanitising products.</p>
<p>Bleach - a) Calcium hypochlorite, b) chlorine dioxide, c) sodium hypochlorite, d) ozone, and e) hydrogen peroxide. Not to exceed 10% in solution by volume. Free chlorine levels for wash water in direct contact with crops or food, and in flush water from cleaning irrigation systems that is</p>	<p>This substance includes all forms of commercial bleach products. Chlorine is routinely added to municipal drinking water sources across the country, though drinking water guidelines vary by province. Chlorinated drinking water (in treated municipal water) is acceptable for washing organic</p>

Permitted Substances Lists (CAN/CGSB 32.311-2006)	Guidance
applied to crops or fields shall not exceed the maximum limits under the applicable regulations for safe drinking water.	produce and does not require rinsing. If chlorine is added to the drinking water, produce must be rinsed in drinking water prior to sale.
Chlorine - See <i>Bleach</i> .	
Detergents - Biodegradable only (whose biodegraded components are not more harmful than the original components). On equipment.	Detergent is defined in the negative, meaning a substance that is used for cleaning that is not soap. There are at least 20 different compounds that may be included in a product labelled detergent. The <i>Consumer Packaging and Labelling Act</i> covers 'biodegradable' claims on products and requires that, "the product must conform with any other claims made which may, for example, relate to its type, quality, performance, function, origin, or method of manufacture." This paragraph includes the claim 'biodegradable'. This means that any product claiming to be biodegradable must actually be so. See the definition of 'biodegradable' in Section 3 of CAN/CGSB-32.310-2006.
Iodine - On equipment. Non-elemental only and not to exceed 5% solution by volume (e.g. iodophors).	See guidance for <i>Iodine</i> in Paragraph 5.3.
Lime	Also known as calcium oxide, burnt lime, or quicklime. All sources are allowed for cleaning purposes as long as the material is rinsed away after use.
Phosphoric acid - On equipment in the dairy industry only.	
Potassium permanganate - Not to exceed 1% solution by volume.	This salt is also known as "permanganate of potash."
Sodium bicarbonate (baking soda)	
Sodium carbonate (soda ash)	
Soaps - Soaps consisting of fatty acids derived from animal or vegetable oils are allowed.	Soap is composed of sodium (soda ash) or potassium (potash) salts of fatty acids derived by reacting fat (animal or vegetable) with lye in a process known as saponification. The fats are hydrolyzed by the base, yielding glycerol and crude soap. Many cleaning agents today are technically not soaps, but detergents, which are less expensive and easier to manufacture.
Soap-based algacide/demossers - On equipment	An algacide or algicide is a substance used for killing and preventing the growth of algae. Numerous organic standards are the only documents in the world to refer to this substance as a 'demossers'. More properly the substance refers to 'moss killer' which (obviously) is used to kill moss. Any soap-based products are allowed provided they are not fortified with synthetic pesticides in the carrier (the carrier can make up 80% of the product). Operators should check with their supplier to determine if a product is applicable.
Sodium hydroxide - See <i>Lye</i> .	
Sodium borate	Also known as borax, sodium tetraborate, or disodium tetraborate.
Surfactants - See <i>Detergents; Soaps</i> .	
Wetting agents – Natural wetting agents, including saponins and microbial wetting agents, are allowed. See also <i>Detergents; Soaps</i> .	

B.1 Substance Description: _____

B.2 Known Alternatives & Relative Merits: _____

B.3 Canadian Regulatory Status: Unregulated Regulated Agency (ies) _____

B.4 Compliance Review

B.4.1 Would use of the substance be consistent with the General Principles of Organic Production as identified in CAN/CGSB-32.310-2006, Amended October 2008, Section 10.2.1 a? If NO, elaborate on any inconsistencies.

Yes No

Comment: _____

B.4.2 Would use of the substance be consistent with the prohibitions set out in CAN/CGSB-32.310-2006, Amended October 2008, Section 1.4.1? If NO, elaborate on any inconsistencies.

Yes No

Comment: _____

B.4.3 Is the substance found in nature?

Yes No

If Yes, has it undergone ONLY the following processes during production:

- a) Mechanical/physical (e.g. extraction, precipitation)
- b) Enzymatic
- c) Microbial (e.g. fermentation)?

Yes No

If NO, is the substance produced by chemical processes or processes that chemically alter the substance?

Yes No

If Yes, describe the process(es): _____

SECTION C – CROPS

C.1 Is the substance necessary for obtaining or maintaining soil fertility, for fulfilling specific requirements of crops, or for specific soil conditioning and rotational purposes that cannot be satisfied by the requirements and practices of this standard (CAN/CGSB-32.310-2006, Amended October 2008, Section 10.3.1)?

Yes No

Comment: _____

C.2 Is the substance necessary for management of diseases, insects, weeds and other pests of plants that cannot be managed by any other biological, physical or plant breeding alternative or effective management practice (CAN/CGSB-32.310-2006, Amended October 2008, 10.3.2)?

Yes No

Comment: _____

C.3 Is the substance of plant and animal origin and derived from crops and livestock produced in accordance with this standard (CAN/CGSB-32.310-2006, Amended October 2008, Section 10.4.1)?

Yes No

If NO:

Is a non-synthetic form of this substance available in sufficient quality or quantity? Yes No

C.4 Is the substance produced by chemical processes or processes that chemically alter the substance?

Yes No

SECTION D – LIVESTOCK

D.1 *If the substance is proposed for Table 5.2 Feed, Feed Additives and Feed Supplements*, is the substance necessary to correct documented essential nutrient deficiencies in the forage or feed ration given that other biological, cultural, or physical treatments are not available (CAN/CGSB-32.310-2006, Amended October 2008, Section 10.3.3.1)?

Yes No

Comment: _____

D.2 *If the substance is proposed for Table 5.2 Feed, Feed Additives and Feed Supplements*, is the substance necessary for ensuring and preserving product quality, given that other biological, cultural or physical treatments are not available (CAN/CGSB-32.310- 2006, Amended October 2008, Section 10.3.3.1)?

Yes No

Comment: _____

D.3 *If the substance is proposed for Table 5.2 Feed, Feed Additives and Feed Supplements*, is the substance obtained from organic sources or from sources occurring in nature, such as marine products or mineral origin (CAN/CGSB-32.310-2006, Amended October 2008, Section 10.4.2.1)?

Yes No

Comment: _____

If NO:

Is a non-synthetic form of this substance available in sufficient quality or quantity?

Yes No

Comment: _____

C.4 *If the substance is proposed for Table 5.3 Health Care Products and Production Aids, is the substance necessary for livestock health (CAN/CGSB-32.310-2006, Amended October 2008, Section 10.3.3.2)?*

Yes No

Are other organic treatments are not available?

Yes No

Comment: _____

SECTION E – PROCESSING

E.1 Is the substance:

a) Necessary to correct documented essential nutrient deficiencies of the product (i.e. vitamins and minerals) OR when required by regulations?

Yes No OR

b) Essential for ensuring the safety of the product?

Yes No OR

c) Used only when it is not feasible/practical to produce or store such products without having recourse to such ingredients and processing aids?

Yes No OR

d) Necessary to achieve a technological effect during processing (e.g. filtration) or an organoleptic effect in the final product (e.g. colouring and flavouring) while respecting the principle in CAN/CGSB-32.311, Amended October 2008, Section 10.2.1 vi?

Yes No

Comment: _____

E.2 Are organic sources available in sufficient quality or quantity?

Yes No

If NO, are other, non-synthetic sources of these substances available in sufficient quality or quantity?

Yes No

Comment: _____

E.3 What is the impact of the substances use and potential mis-use on:

a) Human health through both food and non-food exposure, including acute and chronic toxicity, allergenicity and metabolites;

b) Product quality, including nutrition, flavour, taste, appearance and storage, when applicable;

c) Consumer perception of the nature, substance and quality of a food product?

Comment: _____

SECTION F – CLEANING & SANITATION

F.1 In which area of organic production would this substance be proposed for use?

Crops Livestock Processing

F.2 Is the substance necessary and appropriate for the intended use?

Yes No

Comment: _____

F.3 Is a non-synthetic form of this substance available in sufficient quality or quantity?

Yes No

Comment: _____

SECTION G - IMPACTS

G.1 What is the impact of the substance’s manufacture, and disposal after use on the environment including impacts on ecology, surface and ground water and soil and air quality including substance persistence, degradation and concentration effects?

G.2 What is the impact on equivalency and harmonization of this standard with standards and regulations of other jurisdictions?

SECTION H – REFERENCES USED

Please cite all references used in the review of this substance:

SECTION I – COMPLIANCE SUMMARY

1.1. I.1 PSL Sub-Committee Recommendations Regarding Substance Request:

1.2. **Acceptance** **Rejection**

I.2 Rationale: _____

I.3 Substance Name as it should appear in CAN/CGSB-32.311: _____

I.4 Table Number in which it should appear in CAN/CGSB-32.311: _____

I.5 Annotation (if applicable): _____

I.6 If accepted on an exception basis, latest date by which the substance must be reviewed again: _____

SECTION J - REVIEWER ATTESTATION

Members of the working group reviewing this substance:

1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
8.	_____	_____	_____	_____
9.	_____	_____	_____	_____
10.	_____	_____	_____	_____
	Name	Credentials	Signature	Date

This document provides a summary of the discussions undertaken by the Working Group on this substance during the period (DD/MM/YY) from _____ to _____.