Applying PrimusGFS to a Mushroom Growing System

Used in conjunction with the PrimusGFS v3.1

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Module 1 - Food Safety Management System

The purpose of this document is to provide assistance to auditors and producers in how to apply the requirements of the PrimusGFS audit scheme to the growing systems typically employed for mushroom production. The document is meant to augment the current v3.1 interpretation guidelines (edition 1.0, Sept. 16, 2019) only and does not replace any of the requirements found in those guidelines. In as much as mushroom production can involve somewhat unique production techniques and systems the notes found herein are designed to make more clear how PrimusGFS may be implemented for these commodities.

Supplier Monitoring/Control - For mushroom growers, **Suppliers** may typically include (where applicable) - suppliers of compost and/or growing substrate (for non-compost, wood colonizing mushrooms) raw materials, spawn, supplement and casing inoculum suppliers. In some cases growers purchase compost that has completed one or more phases of conditioning, pasteurization or even phase III (completed spawn run) compost. Additional suppliers include those who supply casing materials, such as peat, lime or other casing materials that may be used. Suppliers could also include services such as pest control, filling, spawning, casing and sometimes harvesting; again where these services are supplied by outside entities. This is not an exhaustive list. Consideration must also be given to outsourced suppliers; those that may provide services such as management or services that directly involve handling of the product - perhaps freezing or packaging the product that is then returned for shipping to customers, for example.

No specific notes related to questions that are not listed in this document. Would be assessed and answered in line with the current audit guidelines.

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Management System	1.01.06	Where specific industry guidelines or best practices exist for the crop and/or product, does the operation have a current copy of the document?	Records and test results should be reviewed and signed off by a designated person(s) responsible for the food safety program within a reasonable timeframe. The sign off should not be done by the same person who carried out the monitoring activities. The review should include that the records are complete as applicable to the monitoring activity performed, and if any issues were detected the corrective actions were addressed in a reasonable timeframe and recorded. Examples of monitoring records may include composting records, CCPs, sanitizer, pH, water turbidity cleaning and sanitation, etc. Reference: https://www.fda.gov/food/food-safety-modernization-act-fsma/fsma-final-rule-produce-safety https://www.fda.gov/Food/GuidanceRegulation/FSMA/ucm253380.htm#guidance https://producesafetyalliance.cornell.edu/sites/producesafetyalliance.cornell.edu/files/shared/documents/Records-Required-by-the-FSMA-PSR.pdf	For 1.01.06 growing operations should have access to the Mushroom GAP Guidelines available through the American Mushroom Institute at: https://www.americanmushroom.org/grower/implementing-mgap/.
Control of Documents and Records	1.02.05	Are all records and test results that can have an impact on the food safety program reviewed and signed off by a person responsible for the food safety program?	Records and test results should be reviewed and signed off by a designated person(s) responsible for the food safety program within a reasonable timeframe. The sign off should not be done by the same person who carried out the monitoring activities. The review should include that the records are complete as applicable to the monitoring activity performed, and if any issues were detected the corrective actions were addressed in a reasonable timeframe and recorded. Examples of monitoring records may include composting records, CCPs, sanitizer, pH, water turbidity cleaning and sanitation, etc. Reference: https://www.fda.gov/food/food-safety-modernization-act-fsma/fsma-final-rule-produce-safety https://www.fda.gov/Food/GuidanceRegulation/FSMA/ucm253380.htm#guidance https://producesafetyalliance.cornell.edu/sites/producesafetyalliance.cornell.edu/files/shared/documents/Records-Required-by-the-FSMA-PSR.pdf	For those operations that develop their own compost or growing substrate verification of records associated with these operations would be included in the scope of question 1.02.05. This would include substrate preparation for non-Agaricus species. Verification of additional records is required in line with the guidelines for 1.02.05.

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Internal and external inspections	1.04.01	Is there a documented procedure for how internal audits are to be performed at the operations, including frequency and covering all processes impacting food safety and the related documents and records?	Self-auditing (self-diagnostics) is a key part of an operation's food safety program. A written procedure for internal audits should be created for each operation (farm, indoor agriculture, harvest crew, or facility) in order to proactively ensure safe food production. The internal audits procedure should include the checklist used for the internal audits, cover the inspection of sites, the practices in place, the related documents required, the records generated, the frequency of the internal audits, and identification of the person(s) or position(s) responsible for conducting the internal audits. If the current PrimusGFS checklist is not utilized in the internal audit program the self-audit should still include the requirements applicable to the operation type from the PrimusGFS normative documents. Procedure should include the verification of the practices and the related documents and any corrective actions taken. Self-audits should be fully documented even if No Change are located. If issues are found, there should be detailed corrective action records. Audit records should include the date, personnel involved, areas that were checked, findings and corrective actions (where necessary). Recording systems for food safety related topics should be audited at least quarterly (frequency could increase or decrease depending in production seasonality.) to ensure that they are being completed properly (e.g., using the correct log, correct frequencies, recording results correctly, recording corrective actions, etc.). This does not include the food safety management system every 12 months, see 1.01.05. The internal audit records are assessed in each module.	If the growing operation is year round or greater than 8 months, internal audits covering growing and harvesting operations should be conducted on a minimum quarterly frequency. Mushroom packinghouse and processing operations should follow the current guidelines with respect to frequency and scope.

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Internal and external inspections	1.04.04	Are there documented calibration and/or accuracy verification procedures for measuring and monitoring devices used in the operations that are related to the safety of the product?	The equipment used should be identified (i.e. catalog, roster, list) and there are documented procedures for the calibration for measuring and monitoring devices used in the operation. Regular calibration ensures correct and accurate operation. Equipment used for measuring and monitoring processes related to food safety and/or verification of label requirements (e.g. for weight or volume). Scales/weight or volume measuring devices should have verification of accuracy and/or calibration regularly to ensure correct and accurate operation where relevant to food safety. For GAP, this covers items such as fertilizer and pesticide application equipment, pesticide measuring equipment (e.g. scales), ORP and pH meters, and other equipment related to the safety of the product. For GMP, this includes equipment used for measuring and monitoring processes (hand held and automated) related to food safety e.g. ATP testing systems, thermometers, metal detectors, ORP meters, flow meters and pH meters. Equipment is calibrated regularly to ensure correct and accurate operation. Calibration procedures should describe the frequency of testing, the testing method and the acceptable range of variation. Procedures should require that all test solutions/strips are within date code, appropriate for the concentrations used and stored correctly (especially light and temperature sensitive materials). Corrective actions should be detailed when applicable. Legal requirements, manufacturer recommendations, best practice and experience of equipment drift help to determine the frequency. Both internal (where the company checks the equipment for themselves) and external (where equipment is sent away, or an outside specialist company comes on site and checks the equipment in situ) calibrations should be documented and on file. Proof of calibration includes records, invoices and on machines labels. Hand application of fertilizers is not recommended as it is difficult to assure an even distribution of fertilizer or crop protection product. If done however, it is important to choose a pace that is easy to maintain and duplicate.	For mushrooms growing on either compost or wood based substrate, calibration/accuracy check records of pasteurization (or sterilization) temperature monitoring equipment/devices should be available. The frequency should be established based upon the stability of the equipment; i.e. thermocouples associated with data loggers are inherently more stable vs manual, probe type thermometers (not generally used for phase II pasteurization). The following is a useful reference for calibration and calibration frequency: http://www.epa.gov/ttnemc01/cam/sec4-5.pdf (pages 4-16 & 4-17). The document states a calibration frequency of 1 year if there are no moving parts; 6 months if there are. The auditee should reference the type of system used and provide a validation or technical reference (such as included here) for the temperature monitoring and control system in use. A greater frequency should be implemented if there is indication the system is not stable (year to year drift/re-calibration is consistently required). The procedure(s) should also state the accepted accuracy; i.e. +/- X degrees for thermometers. Procedures should also be available to verify the concentration/rate of application for any pesticides in use. For instruments or devices where accuracy verification and calibration is necessary for product safety or verification of label claim (such as weight) in packinghouses or processing operations should follow the current guidelines.

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Internal and external inspections	1.04.05	Are calibration and/or accuracy verification records maintained and are they consistent with the requirements outlined in the SOP(s) for instruments and measuring devices requiring calibration?	Calibration and/or accuracy verification records should be available for all applicable equipment and show frequency of testing, the testing method and the acceptable range of variation. Corrective actions should be recorded.	Follow the guidelines as indicated for records of calibration and/or accuracy checks.
Rejection and Release of Product	1.05.01	Is there a written procedure for handling on hold and rejected items?	A documented procedure exists that explains how products (including raw materials, packaging, work in progress, finished product, etc.) that have either been rejected or placed on hold should be handled, including the release of the on hold/rejected items. Procedure should explain how returned items and items for donation are handled (where relevant). For harvested product in the field and the facility, the procedure should identify who (position/title) is authorized to determine the disposition of materials that are placed on hold and include details on how the affected item(s) is/are separated from other lots in terms of tagging systems (e.g., date showing when the item was placed on hold/rejected, the reason for being on hold/rejected and the name of the person who put the item on hold (details may be recorded electronically as long as products are clearly tagged)) and any other physical separation needed to ensure that affected items are not commingled with other goods in such a way that their disposition is not clear. For the pre-harvest materials, procedures should include how the affected product is indicated in the field (e.g., cordoned off, any buffer zones used, how these details are recorded, etc.). Procedure requires authorized personnel should sign (with date and time) a “release” for any item placed on hold or rejected, detailing actions taken (e.g., disposition, re-work, food bank, tilled back into the ground, etc.).	For mushrooms, this would typically be applicable to the growing room/house where there could be conditions or issues that result in the growing area that present a food safety concern (such as a broken light bulb). For mushrooms grown on compost this may result in an area of the bed being "quarantined" or a zone cordoned off - similarly, this could also apply to mushrooms grown on wood based substrate in bags or "logs". As a result there should be a procedure in place that outlines how this is done and who is authorized to determine the disposition of product in this area and/or if released. For mushroom packing or processing facilities the guidelines should be followed as with any facility packing or processing food products. Note: the scope of this question also includes packaging material that, due to a contamination issue may need to be placed on hold.

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Rejection and Release of Product	1.05.02	Are there records of the handling of on hold and rejected items kept on file?	Records of items placed on hold or rejected (e.g. an on hold/disposition log) should be available for review should be kept to provide information about of any item (raw materials, packaging, work in progress, finished product, etc.) that is rejected or put on hold. Records should show date when the item was placed on hold/rejected, the reason for being on hold/rejected, the name of the person who put the product on hold and any other actions taken to ensure that affected product is not commingled with other goods in such a way that their disposition is not clear. Authorized personnel should sign (with date and time) a “release” for any item placed on hold or rejected, detailing actions taken e.g. disposition, re-work, food bank, tilled back into the ground, etc. Disposition records for products placed on hold or rejected should be maintained and available for review where applicable. Where required by law, certificates of destruction should be kept for review.	Follow the current guidelines regarding information that should be included in the hold record(s). The record(s) should include the disposition information for any items that have been placed on hold including the disposition authorization consistent with the procedure outlined under 1.05.01. There should be a hold record form available with the space to include the required information even if there have not been any actual holds.
Rejection and Release of Product	1.05.05	Is there a documented procedure for dealing with customer and buyer food safety complaints/feedback, along with records and company responses, including corrective actions?	There is a documented procedure detailing how to handle food safety and food quality complaints and feedback. Food quality issues are relevant if they have the potential to also be food safety issues. It is important to keep the complaints and feedback related records on file to support company procedure. The procedure and records should include (where applicable): • Date/Time of complaint/rejection, • Who made the complaint/gave feedback, • Contact information, • Product description, • Where the product was purchased, • Amount of product, • Product code/date, • Nature of complaint/feedback, • Corrective actions, • Corrective actions taken to prevent reoccurrence. Where appropriate, a trend analysis of food safety feedback should be performed to assist with the development of corrective actions. Complaints and feedback information, along with any corrective actions that are taken	Follow the guidelines as indicated. If the auditee only has growing operations, but all mushrooms grown and harvested are shipped/transported to a separate or independent packinghouse/processing operation there still should be a procedure for managing complaints that originate or could have originated from the growing operation. This is an example of a mushroom operation that is dedicated to growing and harvesting where their only customer is the packinghouse or processing operation that in turn has direct sales to "outside" buyers or customers. This type of operation should still have a customer complaint procedure following the current guidelines and consistent with the scope of the relationship with their own customer(s).

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			or associated with the operation should be available for review. For example, a blue colored Band Aid in a product could have come from either a facility or a harvest crew so details of the issue(s) should be sent to both facility and harvesting company. Ideally (not part of the audit scoring) foreign material issues should include photographs of the issue found (where possible). Other examples of issues that are viewed as potentially food safety related include tainting, sickness and sometimes decay issues. Where there are many (e.g. more than 5 in a month) complaints, a degree of analysis and review is expected to determine if trends are present. If a corporate office/sales department or other parties handle the incoming food safety related complaints, then these should be communicated to relevant personnel. Where the auditee claims to have received no complaints/rejections, the auditor should verify that a complaint recording system is in place and has the necessary elements listed above.	
Supplier Control	1.06.01	Is there a list of approved suppliers and service providers?	There is a list of approved suppliers of materials and services. All incoming agricultural inputs, ingredients, products, materials (including packaging) and services that relate to food safety (e.g., contract crop protection sprayers, pest control, chemical suppliers, water and waste utilities, RPC rental, transport, laboratory testing, maintenance and sanitation services) are purchased from &/or provided by approved suppliers. Where exceptions are made (e.g., market conditions, emergency situations), approval from management is justified and documented.	Refer to the guidelines and the above note for the types of materials and services typically utilized for growing mushrooms. The suppliers of all these materials and services should be included on the approved supplier list. The list should also include a review and/or version date which should indicate it is current (dated at least within last 12 months).

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Supplier Control	1.06.02	Are there current written food safety related specifications for all incoming products, ingredients, materials (including primary packaging), services provided on-site, and outsourced services?	A specification is an explicit set of food safety requirements or criteria to be met (e.g., indicating what an item is made of, contract details). Specifications are accurate, acceptable and ensure conformance with relevant customer and legislative requirements. There are written, detailed, up-to-date specifications for all incoming products, ingredients, materials (including primary packaging), services provided on-site, and outsourced services (including when exceptions will be allowed) that have an effect on food safety, addressing the required Good Agricultural and/or Good Manufacturing Practices.	Depending upon the type of operation being audited there could be an extensive list of materials and services that specifications should be available for. If a growing operation, a list of compost/growing substrate components, casing components, supplements, spawn and services that are provided by outside entities should be provided. The list of approved suppliers (see 1.06.01) should also provide this information. The list should essentially serve as a "bill" of materials. Specifications, even general specs. should be available for each material and service purchased. Specifications may be developed by the operation itself or be provided by the supplier; either is acceptable. If substrate for growing operations is purchased, the specifications should identify all components of the substrate and the requirements for thermal treatment of the substrate. This would include pasteurization requirements for animal based compost for Agaricus compost and possibly sterilization requirements for wood colonizing species of mushrooms.

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Supplier Control	1.06.03	Is there a written procedure detailing how suppliers and service providers are evaluated, approved, and include the ongoing verification activities including monitoring? *Note that supply chain preventive controls and supply-chain-applied controls are also mentioned in Module 7.*	There is a written procedure detailing how service providers and suppliers (e.g. raw materials, propagation materials, fertilizers, crop protection products, ingredients, processing aids, primary packaging items) are evaluated, approved and monitored. The procedure for evaluation, approval and on-going verification, including monitoring of suppliers, on-site service providers and outsourced service providers should include the indicators to be considered for decision making (including food safety hazards), exceptions and the elements the providers should comply with to make sure they meet the defined specifications. This procedure should include monitoring requirements in order to remain approved, and methods for suspending and un-approving suppliers and service providers. The procedure should also detail what is needed (minimum requirements) in the case of working with a supplier in an emergency situation that has not yet been approved. U.S. Importers under the FDA's Rule Foreign Supplier Verification Programs rule should ensure requirements of rule are included in this procedure. As a minimum, the procedure should detail the following where relevant: • Agreed specifications • Letters of guarantee • Methods of evaluating approved suppliers and service providers (including second or third party audits where relevant, at least for raw materials and primary packaging) • Methods of approving approved suppliers and service providers • Methods and frequency of monitoring approved suppliers and service providers • Methods of reviewing approved supplier and service providers performance and status (including removal of approved status)	This question refers to the procedure an organization develops to outline the expectations or requirements they have developed for their suppliers to be considered for approval. The minimum requirements are shown in the guidelines and would be no different for suppliers of materials and/or services in the mushroom industry. If the operation is purchasing mushrooms there should be a letter of guarantee (dated within last 12 months or stated as "continuing") and a third-party food safety certification requirement included in the procedure. If the operation is purchasing primary packaging or food contact, re-usable containers, a current letter of guarantee and a current third-party food safety certification. For some materials, such as for compost or growing substrate raw materials there would not be any applicable third party audit system. For example, wheat straw, saw dust or peat moss. For these items a third party audit would not be applicable, however there should be a specification (see 1.06.02) and a letter of guarantee (updated annually). For suppliers of services the procedure should require a contract, agreement or similar document that outlines the terms of the services provided.
Supplier Control	1.06.04	Does the organization have documented evidence to ensure that all incoming products, ingredients, materials, services provided on-site, and outsourced service suppliers comply with the approval requirements and that all supplier verification activities (including monitoring) are being followed, as defined in the supplier approval procedure?	The organization has relevant information from approved suppliers/service providers to ensure that they are complying with the established approval procedures, contracts, specifications, customer and regulatory requirements and best practice guidelines. This applies to agricultural inputs, raw material, primary packaging, processing aids and other ingredient suppliers, products and services suppliers. The evidence should demonstrate the verification activities (including monitoring) detailed in 1.06.03 are being met.	The expectations for this question are essentially verification documents consistent with the requirements of the supplier approval procedure. For example, if mushrooms are purchased the supplier should have provided a current letter of guarantee and a current third-party food safety related certification. The same documents are required for primary packaging components and any food contact, re-usable container(s) used. It is important that third-party certifications be food safety focused. For example, ISO 9001 is not a standard related

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			The evidence may include (as applicable): • Verification that packaging material is suitable for its intended purpose. e.g., current 3rd party audit certificate (ideally GFSI standard or equivalent) for all primary/food contact packaging by the manufacture. Ideally, a tests/analysis confirming no chemical migration to food contents if there is history of past occurrences. • Current (within last 12 months) second and/or third party audit certificates that includes the scope of certification for suppliers of product and ingredients. • Letters of guarantee for agricultural inputs, product raw material, processing aids, and other ingredients and service suppliers that are purchased. Letters of guarantee (also certificate of conformance) should indicate that the items supplied meet any and all legal standards, best practice guidelines and agreed specifications. Letters of guarantee should be current (within last 12 months) or indicate they are “on-going”. Letters of guarantee for products are not required if own product e.g. “in-house grown” is being packed, although certificates for auditing are worth noting. • U.S. Importers under the FDA’s Rule Foreign Supplier Verification Programs should have documented evidence that foreign suppliers follow requirements to verify that imported food meets U.S. safety standards. Note that contracted auditee operations such as co-packers, harvest crews, etc., that use materials or services that are supplied and/or selected by their customers, i.e. not purchased by the auditee should still have copies of the documents noted in this question, for example, third party audits. For example, in the case of a harvest crew company that has some or all of their packaging provided by their contracting customer, the harvest crew should obtain copies of the relevant packaging supplier documents such as third-party audits from their contracting customer.	to a quality management system and is not a food safety certification. ISO 22000 or FSSC 22000 standards are food safety related. Documents may also include results of testing if testing is a requirement of the organization. An example may be pathogen testing results required of the supplier for mushroom (animal based) growing substrate or heavy metals testing results. For mushrooms there may be a requirement for pesticide residue. If the organization is importing mushrooms or primary/food contact packaging there should be information to verify whether the organization is an FSVP importer. If so, the organization should be able to verify they are in compliance with the Foreign Supplier Verification Rule. Auditors are not required to verify the level of compliance against the rule, however the organization should be able to demonstrate they have an FSVP program that includes the materials they are importing. Note: with respect to purchase of mushrooms, primary packaging or food contact, re-usable containers these verification documents should be obtained from the actual grower or manufacturer.

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Supplier Control	1.06.05	Where food safety related testing is being performed by external laboratory service providers, are these licensed and/or accredited laboratories (e.g., ISO 17025 or equivalent, national and local regulations, etc.)?	All food safety relevant tests and/or analyses that are performed by external laboratories (e.g., water, pesticide residue and microbial should be done by laboratories with current licenses and/or accreditations for the methods used). These can be ISO 17025 or equivalent, National Regulations or State Department approvals in the country of production. Documented evidence of these licenses and/or accreditations should be available indicating the scope of the license/accreditation/what analyses the laboratory is accredited to perform, what standard/code it is accredited to, who accredited the laboratory and date of expiration. Auditor should confirm that the laboratory has the appropriate licenses and/or accreditations for the analyses being done i.e. product testing, water testing, pesticide residue testing, etc. Letters of guarantee from the laboratory are not acceptable and proficiency testing (while useful supporting information) does not replace the requirement for laboratory licensing and/or accreditation.	Auditors and mushroom operation staff will also need to ensure the laboratory is accredited for heavy metals testing should that be required based upon applicable requirements of Module 3, Agricultural Inputs.
Traceability and Recall	1.07.01	Is there a documented account that indicates how the company product tracking system works, thereby enabling trace back and trace forward to occur in the event of a potential recall issue?	The tracking system is shown in writing or in the form of a flow diagram and demonstrates the product tracking system that is used by the operation. The system should be able to show that it can trace back to the supplier(s) of materials, packaging, ingredients, processing aids, work-in-progress, etc., and show that the system can trace forward and indicate which customer(s) received products. This is usually accomplished by lot coding materials throughout a process and recording these lot codes at different points in the process. The traceability system should be in evidence when touring the operation and also when checking paperwork. For facilities only, the auditor should choose a finished product lot code to test the traceability system and have the auditee demonstrate how the code traces back to raw material supplier(s) and traces forward to the customer(s). The system being used in the production facility should match the written traceability system. The traceability system should include any product, ingredient, packaging and/or service related to the food	The grower should have a tracking system in place that includes compost/growing substrate components forward through the growing process and through harvest. It is typical and common for there to be several separate tracking systems in place. For example, for compost development a set of records that details what components were used, the amounts and when introduced as well as a compost "crop" or lot number of some convention. This may be similar to substrate that is not based on compost. This lot number would then be carried forward to the growing system which may be separate, but links back to the compost. Growing houses or rooms are typically numbered. Auditors should ask for a written outline of the system in place and then examine records throughout the conduct of the audit to determine if the system outlined is indeed being used and also if the overall system successfully links each step as well as the operations of each step. This is the objective of the test that is to be conducted during the audit. The system should include an explanation of how harvested

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			safety that is outsourced. The written traceability system should match the system that is being used in the field or production facility (as applicable). Recording batches of packaging is required for some products where packaging recalls might occur e.g. modified atmosphere packaging, juice bottles, etc. Recording packaging batches is not required for packaging that is not usually the cause of recall e.g. cardboard boxes. Cooling/Cold Storage & Storage and Distribution auditees that operate in a third-party capacity for their clients might have their own traceability system, or have adopted their client(s'). Growers may have access to customer traceback system or create their own tracking seed/transplant to field/block code, input dates (water, fertilizer, pesticides) to harvest dates and onto facility. While either route is acceptable, if the individual client(s') traceability systems are used then the auditor will check each individual traceability system on site. Cooling/Cold Storage & Storage and Distribution operations should have a system that can traceback from outgoing lots back through their process to the incoming lots. The tracking system must meet the requirements for "one step back, one step forward" as per the FDA requirements. Any national, local or importing country legal requirements should be considered. http://www.fda.gov/Food/GuidanceRegulation/FSMA/ucm247548.htm#SEC201	product is labeled on the day of harvest to ensure tracing/tracking at the next step (packing/processing) as well as where the harvested product is shipped or transferred to. Packaging and processing operations should be able to demonstrate how product is able to be tracked through the process and linked to customers at the time of shipping.

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Traceability and Recall	1.07.02	Does the organization have a documented recall program including procedures, recall team roles and contact details, external contact listings, requirement for recall effectiveness checks, explanation of different recall classes and handling of recalled product?	To facilitate an efficient recall there should be a written procedure describing how to perform a product recall, recall team details (contact details, alternates, roles and responsibilities), referral to customer and supplier contact details, explanations of relevant laws e.g. product withdrawal, class of recalls (if USA is production or destination country), etc. Documentation should include basic procedures and responsibilities, current facility contact listing with alternates and out of hour's numbers. Contact listings for customers and suppliers should also be part of the recall program, although these might be viewed as confidential (if so, then these listings must at least be referred to in the recall program). Listings should be reviewed regularly. An explanation of recall classes (Classes I, II, and III in the USA) should be in the recall program. Ideally contact details for the Certification Body, attorneys, media specialists (for getting the recall information to the various press outlets), local enforcement officials e.g. State and City Health Boards are a good idea (these are optional and should not cause a down score if missing). Auditees that operate in a third-party capacity e.g. contract copacker, storage operations, might not have supplier and customer contact details, but they should have their client(s) details as part of their recall program. Auditees that operate in a third-party capacity have the option of creating their own recall program or using those provided by their clients. If latter option is used, then the auditor will check each individual recall program on site. Growers may create their own recall program or be using their customer's recall system. If the latter option is used, then the auditor will check each individual recall program on site. Potentially useful websites: FDA Industry Guidance for Recalls: https://www.fda.gov/safety/recalls-market-withdrawals-safety-alerts/industry-guidance-recalls	If the organization is exclusively a growing and harvesting operation, the recall program should at least cover the components of the guidelines that relate to growing and harvesting operations. For example, if a recall conducted by the packing/processing operation (even if a different organization) determines the food safety issue originated at the grower's site(s) the grower's recall program should detail who is notified, what is done, how other product (even if not yet harvested) may be controlled and how all relevant details are recorded. See also the guideline regarding grower's using their customer or shippers recall system. If the operation includes packing/processing or if the operation is a packing or processing facility follow the current guidelines.

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Traceability and Recall	1.07.03	Is testing of recall procedures (including trace back) performed and documented at least every six months and the company can demonstrate the ability to trace materials (one step forward, one step back) effectively?	Testing of recall procedures should be performed at least every six months. (For short season crops where the operation runs 6 months or less throughout the year, only one mock recall is required.) Where two mock recalls per year are required, one of the mock recalls should include the primary packaging as part of the exercise. The steps taken to conduct the mock recall, as well as the records utilized to demonstrate the program, is effective and should be consistent with the scenario identified. Documentation should indicate the date and time the mock recall was initiated, the product or material chosen, the scenario, amount of product produced, affected lot ID's (date code(s), lot code(s), etc.), amount located, percent located, time product was located and time mock recall was completed. Scenario should be varied to provide experience in a range of conditions; some examples include customer complaints for foreign materials, test results (buyer, government, in-house) detecting issues such as pathogens, pesticide residues, etc. Mock recall documentation should include copies of documentation that support the traceback scenario from the affected finished good lot through to the production run(s) affected and therefore showing if other lots are affected and which other customers might have received affected lot(s). Checks should be carried out to ensure that contact details exist for the affected customers. Documentation should also include any "lessons learned" from the mock recall process. GAP related organizations (e.g. (farm and crew)) operations may create a mock scenario where they receive information from a client indicating there is a problem that warrants a recall, another alternation GAP mock scenario is that the grower is informed of a problem with an input that may warrant a recall e.g. some form of crop contamination. They should show how they know which lots were affected and the associated records of agricultural inputs, they should also be able to show who the field was harvested by and where the harvest crops were sent to. If an Organization (e.g. a grower) opts to use a customer's recall program to meet the requirements of this question then the Organization can also use a valid mock recall from the	Refer to the guidelines regarding requirements for all operations as they may relate to the specific scope of the operations; i.e restricted to growing vs growing through packaging or processing. Since most mushroom operations are year round or nearly so, it is likely one mock recall at a minimum will need to be conducted each 6 months. If the growing operation is also the final packing operation (such as harvesting directly into boxes and boxes are not final "packed" in a packinghouse) one of the mock recalls at a minimum will also need to include tracking/tracing details of the primary packaging (such as the boxes). Otherwise, including the tracking/tracing details of the primary packaging material would be a responsibility of the packinghouse or processing operation.

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			customer that shows that the recall system has been properly tested. This mock recall would only cover the relationship between the Organization and the customer who has provided the mock recall example. Documentation should state "Mock Recall", especially the document that shows the scenario, so that at a later date, no one is confused as to whether this was a mock or a real recall. Auditors should remember that mock traceback and recall will vary considerably depending on the scenario chosen. Recalls should be completed within two hours with 100% of chosen product located. Mock recalls might note that product had been culled and rejected in some situations. Auditees are not expected to call or otherwise contact any suppliers or customers when carrying out mock recalls. If a live (real) recall has occurred in the last year, then this can be used to meet the requirements of this question, but the documentation details noted above should be in place.	
Food Defense	1.08.02	Does the company have a documented food defense plan based on the risks associated with the operation?	The operation should have a documented food defense plan that outlines the organization's security controls based on the risk associated with the operations. This plan should include Good Agricultural Practices and/or Good Manufacturing Practices, as well as a written risk/vulnerability assessment, and controls for the identified risks. The plan should be reviewed at least once every 12 months. The document should include relevant food defense risks such as personnel, visitors, contractors, raw material receipt (raw materials, product and packaging), trucks (incoming and outbound), etc. There may also be a requirement to ensure that suppliers have proper food defense programs. The food defense plan creation should also meet any national or local regulations (including management oversight and approval). Documented operational risk management (ORM) systems are acceptable if they show the controls that have been implemented for the food defense risks that have been identified. Risk/vulnerability assessment templates can be found at: https://www.fsis.usda.gov/shared/PDF/Self_Assessment_Checklist_Food_Security.pdf	The development of the food defense plan is required to be based upon a written food defense risk assessment. Food defense mitigations should in turn be based upon the food defense risks that are identified in the risk assessment. If the growing operation is developing their own compost or growing substrate the scope of the food defense plan should include these operations; including phase II; if conducted on a separate site or facility from growing houses/rooms. The security of fresh water sources should be included. For example, some operations have multiple wells and if mushroom compost is produced on site there may be a surface water collection system and reservoir for use in phase I composting. These sources of water should be included in the risk assessment and food defense plan; depending upon the risk factors identified.

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Food Defense	1.08.04	Is there a current list of emergency contact phone numbers for management, law enforcement and appropriate regulatory agencies?	The operation should have a current list of emergency contact phone numbers available for management, law enforcement and appropriate regulatory agencies. This information may be found as part of the recall plan.	There would not be any specific notes related to mushrooms. If the operation utilizes an outside consultant for growing operation food safety the contact information for that individual should be listed. In addition, the certification body contact information should also be identified.

Module 3 - Indoor Agriculture

The purpose of this document is to provide assistance to auditors and producers in how to apply the requirements of the PrimusGFS audit scheme to the growing systems typically employed for mushroom production. The document is meant to augment the current v3.1 interpretation guidelines (edition 1.0, Sept. 16, 2019) only and does not replace any of the requirements found in those guidelines. In as much as mushroom production can involve somewhat unique production techniques and systems the notes found herein are designed to make more clear how PrimusGFS may be implemented for these commodities.

Agricultural Water Use. Subsection 3.10 - Should be evaluated and answered consistent with the scheme guidelines as for any fruit or vegetable crop operation. The scope of these questions principally apply to all water sources for post-phase II operations for Agaricus mushrooms and for post substrate sterilization, watering and soaking (if applicable) for non-Agaricus, wood colonizing types. For phase I compost production (Agaricus operations) the questions related to microbiological testing do not apply. Apply the questions in this subsection consistent with the water source. It is important to note that all questions are applicable to all water sources. This means that the guidelines for testing frequency, microbiological testing guidelines, microbiological standards and corrective actions (if applicable) apply to all water sources.

Pesticide Usage. Subsection 3.11 - Would be evaluated and answered as would be any growing operation. There are some items that are noteworthy, however as they relate to mushrooms and follow.

No specific notes related to questions that are not listed in this document. Would be assessed and answered in line with the current audit guidelines.

Section	Q#	Question	v3.1 Guidelines (Rev.0 Sept 16, 2019)	v3.1 Mushroom Notes v1.0
Site	3.02.02	Is the growing area(s) adequately identified or coded to enable trace back and trace forward in the event of a recall?	Coding details (e.g. location name or reference code, blocks of the growing area(s), indoor growing area/building code or number(s)) should be in sufficient detail to enable trace back and trace forward through the distribution system. There should be maps or other documentation available demonstrating the coding details. Coding should link to the record keeping system (e.g., pesticide, fertilizer records, microbiological testing reports, etc.).	There should be a system in place for tracking compost or substrate, whether produced in-house or purchased. In addition, there should be a system in place for tracking mushroom crops by growing house and/or room; i.e. the growing area. The convention for tracking should be clearly evident and being followed in the growing records to link applications of water and/or pesticides. The convention for tracking should also be followed in Harvest records.
Site	3.02.03 & 3.02.03 a	Has a documented risk assessment been conducted at least annually for the operation?	A documented risk assessment of the growing area and surrounding areas should be performed and documented annually, and when any changes are made to the growing area, and adjacent land. This should detail known or reasonable foreseeable risks/hazards, the specific microbial, chemical and physical risks and their severity and likelihood of occurring in the following areas: previous use of the growing area, adjacent land use (e.g., CAFO), water sources (chemical hazards e.g. heavy metals, perchlorate, etc., and microbial hazards e.g. pathogenic E. coli), water use, fertilizers, crop protection chemicals, worker health and hygiene, equipment and tools used for harvest, storage, transportation, topography of the land for runoff, prevailing weather conditions or weather events and any other applicable areas. Farms and indoor agriculture operations following the CA or AZ LGMA should have a buffer zone of approximately 1,200 ft. (365m) for CAFO's with >1,000 head or 1 mile (1609m) for 80,000 head CAFO, which may increase or decrease after assessing the risks, determining, and deploying mitigation measures. A detailed risk assessment should have been conducted and documented. One approach: i) Identify hazards. ii) Determine who may be harmed and how iii) Evaluate the risks and decide on actions to control the risks iv) Document findings and implement actions v) Review and update assessment as necessary http://www.fsc.go.jp/sonota/foodsafety_riskanalysis.pdf http://www.p2pays.org/ref%5C05/04874.pdf http://water.epa.gov/infrastructure/watersecurity/	The guidelines for adjacent animal operations still apply to mushroom growing operations. There is no exemption for indoor agriculture and the presence of any animal based operation should appear in the operation's risk assessment. The risk assessment should be reflective of the entire growing area/site, all buildings, storage areas and composting area ("wharf") - if conducted as well as water source(s), water storage and waste water disposal. It is common that several to many buildings be involved on a growing site. If the scope includes non-Agaricus mushrooms and substrate is prepared, the risk assessment should also include receiving, storage of substrate components and preparation area(s) for this type of substrate.

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			https://www.epa.gov/sustainable-water-infrastructure	
Site	3.02.05	Are workers issued non-reproducible identification (e.g., badges, company ID cards, etc.)?	The operation must have a worker access security system in place that could include ID cards (with photo), biometrics, unique assigned passcodes or key fobs (not an exhaustive list). The system employed must provide a unique link between the worker and site/facility access, be revocable upon termination from the company with controls to limit duplication. Agency labor should also have ID cards (such as agency ID's that are checked on arrival). The ID cards, if worn on the outer garments, should be firmly attached so as not to be a food safety hazard. If stored on one's person, this is also acceptable i.e. the ID card can be provided if challenged (if stored in pockets, etc., hand sanitation would be required after showing the ID card, prior to handling product). Companies with less than 20 workers are not expected to have an ID system. Information Gathering Question.	Note: this is an information gathering question. Auditors should ensure to fully describe the system in place in the audit report.
Site	3.02.07	Are control measures being implemented for the outside storage of equipment, pallets, tires etc. (i.e. out of the mud, stacked to prevent pest harborage, away from the building perimeter)?	Incorrectly stored pallets and equipment can provide areas for pest harborage and/or cross contamination. Equipment should be stored at least 4" (10 cm) off the ground. Workers should check the stored equipment (e.g., irrigation pipes) periodically to ensure that it has not become a pest harborage area or dirty due to rains. Inventory checks should occur in order to ensure that these storage areas do not become full of unnecessary items.	The expectations outlined in the guidelines include building area(s) adjacent to outdoor operations such as, a mushroom composting wharf or other substrate preparation areas.
Site	3.02.08	Is the area around the dumpster/cull truck/trash area clean?	The dumpster/cull truck/trash area should be located away from facility entrances, where traffic flow may be a source of cross contamination. The area around the dumpster/cull truck/trash area should be maintained in a clean condition. There should not be any spillage on the ground. There should not be any standing water or liquid seepage around the dumpster/cull truck/trash area and there should not be any foul odor present. The dumpster/cull truck/trash area should be cleaned on a regular basis.	This would include the trimmed stems of harvested mushrooms (sometimes referred to as "stumps") that may be stored outside awaiting disposal.

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Site	3.02.09	Are outside garbage receptacles and dumpsters kept covered or closed?	All dumpsters and garbage receptacles should have a cover and be kept covered to prevent the attraction of insects, rodents and other pests. Fine mesh lids are acceptable. Just having the lids is not acceptable i.e. when not in use, the dumpsters and garbage receptacles should be closed. Dumpsters that are only used for dry non-food waste (e.g., paper, cardboard, etc.) are exempt from this requirement.	This would include the trimmed stems of harvested mushrooms (sometimes referred to as "stumps") that may be stored outside awaiting disposal.
Site	3.02.10	Where soil, substrates or fertilizer (e.g., compost) are stored or handled, are measures in place to ensure seepage and runoff is collected or diverted and does not reach growing areas, product, or any of the water sources? A ZERO POINT DOWN SCORE IN THIS QUESTION RESULTS IN AN AUTOMATIC FAILURE OF THE AUDIT.	Soil, substrates and fertilizer (e.g., compost, compost teas, fish emulsions, fish meal, blood meal, bio-fertilizers, etc.) are stored in a manner to prevent contamination to the growing areas, product, or water sources. Containers should be structurally sound and not a source of runoff or contamination. There should be appropriate and effective barriers, coverings, soil berms, pits or lagoons to divert or collect potential run-off or threats from wind, as applicable.	This is applicable to sites where composting is conducted or non-compost based substrate is prepared. Raw materials for composting/substrate preparation should be stored in a manner that prevents cross contact with post phase II (composting) or sterilization materials; including food product, food packaging materials or other crop inputs. With respect to the composting area(s) the storm water should be collected and either used/re-used on the compost or disposed of through a properly permitted waste water disposal system.
Pest Control	3.03.01	Is there a written policy prohibiting animals in the facility, including the growing areas and any packaging or equipment storage areas?	Domestic and wild animals, including birds, are not permitted in the facility, including packaging and storage areas. There should be a written policy in place to affirm this.	This is an expectation for all indoor agriculture operations; including mushroom operations.
Pest Control	3.03.02	Is there an effective pest control program in place? ANY DOWN SCORE IN THIS QUESTION RESULTS IN AN AUTOMATIC FAILURE OF THE AUDIT.	There should be an effective, proactive pest control program (in-house or contracted) to control rodents (also insects, reptiles and birds where necessary) and prevent infestation. Potentially useful website: National Pest Management Standards, Pest Management Standards for Food Plants http://npmapestworld.org/default/assets/File/2016%20Pest%20Management%20Standards%20for%20Food%20Processing-Electronic.pdf	Mushroom growing operations are expected to demonstrate there is an effective and proactive pest control program in place.

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Pest Control	3.03.03	Is there a documented pest control program, detailing the scope of the program, target pests and frequency of checks, including a copy of the contract with the extermination company (if used), Pest Control Operator license(s)/training (if baits are used), and insurance documents?	There should be a documented pest control program in place detailing the scope of the program, target pests and frequency of checks. If performed in-house, the pest-control operators or equivalent should be registered, licensed or have documented formal training (if regulation does not require certification or registration). As applicable, the person's training and/or license should specify structural pest control or equivalent, or have documentation to show that the license includes structural pest control training if not specified on license. Any substitute operator's license credentials should also be on file. If the service is contracted, the pest control contract service/company should be licensed in structural pest control, insured and the contract should be documented (quoting the scope of the program, types of pests it covers and frequency of visits). When licensing legislation does not apply (e.g., in certain countries), there should be evidence of on-going training. Auditors should check documentation for expiry dates.	No specific notes for mushroom operations. With respect to in-house programs or a combination of in-house and contracted services, there remains an expectation that in-house staff receive training and obtain the appropriate (consistent with regulations in that area) license, if required by regulation. If licensing or registration is not required for the scope of pest control work conducted by in-house staff, this staff should still have pest control (structural) training that is verified through written record(s). The record(s) should also identify the type or scope of the training.
Pest Control	3.03.04	Is there a schematic drawing/plan of the facility (indoor agriculture operation), showing numbered locations of all pest monitoring devices (e.g., rodent traps, bait stations, insect light traps, etc.) both inside and outside the facility?	A schematic drawing or trap map is on file, current and details internal and external traps. All devices (e.g., tin cats, Ketch-Alls, bait stations, glue boards, insect light traps, electronic fly killer units, etc.) should be numbered and clearly identified on the map. The numbers should match what is in operation). The document should be accurate, dated and should show the type of device.	With respect to mushrooms, insect light traps refer to those devices that are used for flying insect control and not insect light traps that are used for monitoring. In the case of the later, these devices may be re-located on a frequent basis as a means to identify and quantify flies that are specifically associated with mushrooms related to mushroom diseases.
Pest Control	3.03.06	Are all entry points to growing areas, storage and packaging areas protected to prevent entry of rodents or birds?	All doors, walls, vents, windows and screens to the outside should be designed and properly fitted out to prevent the ingress of rodents and insects into the facility. Doors should have no gaps greater than approximately 1/8 inch (3 mm). If doors have screens, the openings should be no greater than 1/8 inch (3 mm). Gaps are often at the bottom of doors and also at the top of roller doors. Air curtains are acceptable, provided they are operating properly. Worker doors to the outside should be loaded so that they close properly. As a guide, if you can see daylight gaps, then further investigation is required. If doors, walls, vents, windows and/or screens are maintained open during production with no protection (e.g., air curtain, screen, etc.), they cannot be considered pest proof (scored in	For mushroom growing operations this includes air exchange ventilation systems.

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			3.05.10). Special attention should be given to the maintenance of weather strips. Air curtains and self-closing devices where used, should be operating properly.	
Pest Control	3.03.07 - 3.03.07 b	Is the audited area free from animal presence and/or animal activity (wild or domestic)? If Yes, go to 3.03.08	Animals can represent potential contamination to the growing area, to the crop, to the field equipment, etc., and therefore, should not be present in the operations. Evidence of animal presence can include tracks, fecal matter, feathers, etc. Note: This includes any packaging or storage areas. (e.g., equipment, agronomic inputs, chemicals). Pests of Homes, Structures, People, Pets - UC Pest Notes, http://www.ipm.ucdavis.edu/PMG/menu.house.html National Pest Management Standards, Pest Management Standards for Food Plants http://npmapestworld.org/default/assets/File/2016%20Pest%20Management%20Standards%20for%20Food%20Processing-Electronic.pdf	The scope of this question includes reptiles that can sometimes be a challenge in some areas where mushrooms are grown. The daughter questions (if applicable) should be assessed as stated in the guidelines.
Pest Control	3.03.08	Is the area outside the facility free of evidence of pest activity?	All areas should be free of recurring/existing external pest activity. Specifically, there should be: • No recurring/existing rodent or animal (e.g. dogs, birds, etc.) activity/spoors (significant burrows, trails, feces, tracks) in active areas within operation's property perimeter e.g. storage (packaging, bone yards), outbuildings (e.g. shade structures), etc. • No bird nesting/activity observed around the exterior perimeter of the operation or external storage/outbuildings e.g. pallets, trailers/containers, bone yards, etc. • No decomposed rodent(s) or other animals (frogs, lizards, etc.) in bait stations or along perimeter. There should be no down scores attributed to finding a few (three or less) "fresh" rodents and/or evidence of rodent feeding in the external traps.	The scope of this question includes evidence of bird roosting that can sometimes be a challenge with piping, conduit or structural components of mushroom houses/growing rooms. Evidence of frequent bird roosting may be in the form of droppings on a building or on the ground adjacent to the building. The concern is related to handling of mushroom compost, substrate, packaging material or harvested mushrooms outside of the mushroom house or growing room.
Pest Control	3.03.09	Are pest control devices located away from exposed raw materials (e.g., seeds, transplants, soil, media), finished goods and packaging, and poisonous bait traps are not used within the facility?	· If used, insect light traps (ILTs), electrical fly killers (EFKs) or pheromone traps should be regularly cleaned out (kept free from a build-up of insects and debris). Sticky type ILTs should be monitored at least monthly and the sticky board replaced if ineffective. ILTs that use sticking as opposed to zapping methods (EFKs) are preferred. ***See balance of guidelines that are not represented here.***	With respect to insect light traps this refers to those devices utilized for control of flying insects and those used to monitor populations of mushroom or phorid flies. The expectation is consistent with effective management of these devices so they remain free of excessive buildup of insects and possibly other debris as well as ensuring the devices remain effective. There are no specific notes for mushroom growing operations relative to the balance of the guidelines.

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General Chemicals	3.04.03	Are all cleaning and maintenance chemicals (pesticides, sanitizers, detergents, lubricants, etc.) stored securely, safely and are they labeled correctly?	Chemicals are stored in a designated (with a sign), dedicated, secure (locked) area, away from food and packaging materials and separated from the growing areas. Access to chemicals needs to be controlled, so that only workers who understand the risks involved and have been trained properly are allowed to access these chemicals.	Mushroom crop protection materials (such as fungicides) and those materials used for watering Agaricus crops (calcium hypochlorite, for example) should also be stored clearly separated from one another and from cleaning and sanitizing chemicals.
General Chemicals	3.04.04	Are "food grade" and "non-food grade" chemicals used appropriately, according to the label and stored in a controlled manner?	Food grade chemicals, including lubricants, greases, etc., are used in all product/packaging contact areas. All chemicals applied should be approved by the prevailing authority (e.g., US: EPA/FDA, Canada: CFIA/Environment Canada, Chile: SAG/Ministerio de Salud, Mexico: COFEPRIS) for their designated use and used according to label instructions. Only food grade lubricants should be used anywhere near product and packaging materials. Food grade chemicals should be stored apart from non-food grade items to eliminate confusion between types, and adequately labeled. Non-food grade chemicals also include cleaning chemicals and paint, for example use of domestic polishes which are not intended for food contact surfaces and have strong fragrances should not be used on food contact surfaces; office cleaning materials, restroom cleaning material should be stored separately from production cleaning materials. Grease guns and containers should indicate which are for food grade greases and which are for non-food grade use. Non-food grade material use, where required should not be used in food contact areas and be entrusted to workers who know how to use the chemicals to avoid contamination issues. Non-food grade materials should not be found in the growing/storage areas (unless stored securely, with access to entrusted workers only). Chemicals should be used according to label instructions e.g. following correct dilutions, H1 designation on lubricants, etc. Any chlorine bleach that is used for making a sanitizing solution, must be of sufficient purity to be categorized as a “food grade” substance. Some commercially available household chlorine bleaches contain fragrances, thickeners and/or other additives not approved for food use. These products are not suitable for making sanitizing solutions. If any	See also comment above under 3.04.03 relative to chemicals used when watering Agaricus mushrooms.

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			chemicals are used to alter or buffer the pH of a sanitizing solution these should also be "food grade." NSF International: Nonfood Compounds http://info.nsf.org/USDA/PSNCListings.asp http://www.ceecis.org/iodine/07_legislation/00_mainpage/codex_food_grade_salt.pdf http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-963/FAPC-116web.pdf	
General Chemicals	3.04.05	Does the operation use the appropriate test strips, test kits or test probes for verifying the concentrations of anti-microbial chemicals (e.g., dip stations, etc.) being used, are they in operational condition and are they being used correctly?	The strength of anti-microbial chemicals (product and cleaning) should be checked using an appropriate method for the anti-microbial in use (e.g., chemical reaction-based test, test probe, ORP meter or as recommended by disinfectant supplier). Any water treatment at source (e.g., well, canal) should be monitored. Solutions that are too weak will be ineffective, while those too strong may be harmful to workers or product. Where necessary, pH of solutions should also be checked. Methods include dip sticks, test strip papers, conductivity meters, titration, color comparison methods e.g. tintometers, etc. All test solutions/strips should be within date code, appropriate for the concentrations used and stored correctly (especially light and temperature sensitive materials). If the ORP meter controls the pumps that are injecting the anti-microbial and/or buffer, there should be an independent calibrated ORP probe or other method (e.g., test trip papers, titration) in order to verify injector readings. Probe sensors need periodic cleaning and calibration and may become temporarily saturated by over-injection of anti-microbial or buffer. The auditor should have the auditee check the strength of anti-microbial chemicals while touring the facility. Potentially useful websites: http://postharvest.ucdavis.edu/files/260798.pdf http://anrcatalog.ucanr.edu/pdf/8149.pdf http://ucfoodsafety.ucdavis.edu/files/26414.pdf http://postharvest.tfrec.wsu.edu/pages/J4I1B	For mushroom growing this would typically apply for water source treatment systems, sanitizers used during sanitation activity and in some cases where an anti-microbial is used in log soaking operations for mushrooms such as Shiitake. These are examples, there may be others.
Production Facility	3.05.01	Is there a written cleaning schedule (Master Sanitation Schedule) that shows what and where is to be cleaned and how often?	The company should have a master sanitation program that covers the entire growing areas including equipment (food contact and non-food contact), pallet jacks, fork lifts, carts, floor scrubbers, cooling	For mushroom growing operations this would also include air handling systems, growing houses/rooms and for Agaricus operations would include casing and compost handling and filling equipment as well as spawning equipment. For non-Agaricus

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			equipment (evaporators, cooling coils, drip pans, etc.), lift trucks and company owned trailers, etc. The master sanitation program should reflect the type of indoor growing operation. (i.e. mushroom production, hydroponic, aeroponic, vertical growing). The schedule should state what is to be cleaned and when (how often). Areas should include where applicable, maintenance areas, waste areas, restrooms, storage areas, and break areas. Within these listings there should be details like floors, walls, light covers, pipes, ceilings, evaporators, cooling coils, drip pans, drains, drain lines and reservoirs, named equipment and equipment parts and surfaces; including internal transport vehicles (forklifts, Bobcats, floor cleaners, pallet jacks, etc.). In-house delivery and shuttle trucks should be included in sanitation schedules, have SSOPs and cleaning records. Infrequent schedules i.e. weekly and above, are usually created for several reasons e.g. cleaning areas and equipment that are not cleaned daily, using a different cleaning technique/chemical than what is used on a daily schedule and/or doing a more “in depth” clean on equipment. Note that all cleaning mentioned on the schedule should be covered somewhere in the cleaning procedures and also on the sanitation logs. Schedule should be kept on file in an easily retrievable manner. Master sanitation schedule should include what is to be cleaned and when, i.e.: • List of areas, equipment, internal transport vehicles, in-house delivery trucks, etc. • Frequency of cleaning (daily, weekly, monthly, quarterly, annually, etc.)	operations that produce their own substrate would include substrate mixing and inoculation equipment.

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Production Facility	3.05.03	Are cleaning and sanitation logs on file that show what was done, when and by who?	The company has sanitation logs that cover all areas (e.g., production areas, storage areas, break areas, restrooms, maintenance, etc.), detailing walls, floors, overhead and all equipment (e.g., production equipment (food contact and non-food contact), pallet jacks, forklifts, carts, floor scrubbers, cooling equipment, lift trucks, company owned trailers, etc.). Logs are kept on file in an easily retrievable manner. The logs should be cross-checked against the master sanitation program (3.05.01). Logs of infrequent cleaning should be checked. Logs should include and be applicable to the type of indoor growing production: • Date • List of areas/equipment that were cleaned and sanitized • The individual accountable who signed-off for each task • Verification of task completed • Any deviations against the set SSOPs	Would only be assessed if 2.07.03 is answered “Yes”; otherwise are N/A.
Production Facility	3.05.04	Are there records showing filters in air conditioning, ventilation and air filtration units are regularly cleaned and replaced?	Records should be made available to verify that filters in air conditioning, ventilation and air filtration units are regularly cleaned and replaced. Records might include in-house sanitation records, maintenance records and/or contractor records/invoices. Non-applicable if air conditioning, ventilation and air filtration units are not used in the operation.	This question is most often applicable to mushroom operations as there are air handling systems typically employed to maintain positive pressure in growing houses/rooms, to control growing area temperature and/or control relative humidity and carbon dioxide concentration. If cooling coils are integrated into the units (which is frequently the case) the records of cleaning would be assessed and scored here and not under 3.05.05.
Production Facility	3.05.05	Are there records showing cooling units are maintenance serviced and cleaned at least every 12 months or more frequently as required?	Records should be available to verify that the cooling units are serviced and cleaned on a scheduled basis. Records might include in-house sanitation records, maintenance records and/or contractor records/invoices. Note contracts, invoices etc., must clearly state the services provided as per any other record. A cleaning and servicing at least once in the last 12 months is a minimum requirement, but usually frequency is higher, especially in high humidity and also with chiller units that are known to become dirty at a faster rate than others, e.g. next to open doors. Non-applicable if cooling units are not used in the operation.	Cooling coils and/or stand alone cooling units may be used for temperature control in mushroom growing operations. This is somewhat repetitive with 3.05.04, however if the cooling units are stand-alone units the cleaning of these would be assessed and scored here. For example, there are occasions when stand-alone cooling units are used to supplement the capacity of the permanently installed units.

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Production Facility	3.05.07	Is there a documented glass and brittle plastic management procedure (including company glass and brittle plastic policy, glass breakage procedure and where necessary a glass register)?	There should be a written glass and brittle plastic policy and procedure, which should state: • Where glass is prohibited and where glass is allowed. • Policy should state how workers should report missing or broken spectacles or contact lenses and to whom they report the issue. • If certain glass items are allowed, then a glass register should exist describing each item, location and quantity. The glass register should only list items that could not be replaced with a less dangerous material. The glass register should not be abused by allowing glass items on site that are usually viewed as poor GMP e.g. allowing glass drinking bottles into production areas, unprotected glass light bulbs. Glass register items should be checked on a routine basis (at least monthly) to ensure they are not damaged/cracked etc. Checks should be documented. • Glass breakage procedure including requiring recording what happened, recording what happens to potentially affected product, recording future preventative actions and especially where to record the incident details e.g. in the NUOCA log. • Clean-up procedure after glass breakage should indicate what equipment to use and include boot and tool checks/decontamination procedures to ensure broken glass is not unintentionally transported out of the area. • A no glass policy in production, storage or maintenance areas should be the target.	Of note, for Agaricus mushroom growing operations there may be glass or brittle plastic thermometers used to manually monitor the temperature of compost (the "bed temperature) throughout the growing process once fruiting mushrooms are present on the beds. There may also be an air temp. thermometer placed in a bed as well. These thermometers should be protected in some manner with a coating or included on a routine (frequency of at least weekly) inspection program to ensure integrity. In these situations bed and air temperature monitoring thermometers are read typically on a daily basis which increases the probability of breakage. See also the notes under 3.05.08.

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Production Facility	3.05.08	Has the operation eliminated or adequately controlled any potential metal, glass or hard plastic contamination issues?	No metal, glass or plastic issues noted (excluding issues noted under specific questions already noted within this audit). This question is designed to allow the auditor to underline potential foreign material contaminants to the auditee that are not covered by other more specific questions within the audit. Examples include: pins in sign boards within the facility, using “snappable” blades instead of one-piece blades, noting broken and brittle plastic issues on re-useable totes and finding uncontrolled glass items like coffee pots, computer screens, clock faces, eye glasses, office window glass, hard plastic from any source, staples, etc. in production areas. Plastic coated shatterproof light bulbs are also acceptable without further protection. Auditors should take precaution not to bring glass items into the facility during inspections. If a glass item cannot be replaced immediately or glass is necessary, e.g. a high-pressure gauge, then use of a glass register might be considered, see question in 3.05.07.	For mushroom operations this may also include flying insect monitoring light traps. If lamps are not shatterproof or otherwise equipped with shatterproofing measures (such as sleeves) these lamps should be included under the guidelines and notes identified for 3.05.07. See also the notes for 3.05.07 regarding manual bed and air temperature monitoring thermometers. If they are protected (such as coated) auditors should identify this here, under 3.05.08. If not protected, but are included under a glass/brittle plastic register and routine (at least weekly) inspection program, auditors should identify, score and comment under 3.05.07.
Production Facility	3.05.09	Are all lights in the facility that could potentially contaminate raw materials (e.g. seeds, transplants, soil, media), product, equipment or packaging shielded, coated or otherwise shatter resistant to protect product from contamination in the event of a breakage?	All glass lights in the facility that can potentially contaminate finished products, raw materials, equipment, or packaging should be shielded, coated or manufactured of shatter-resistant materials to protect from product contamination in the event of a breakage. This includes, but is not limited to items such as light bulbs, emergency lights, truck loading lights (dock lamps), insect light trap lights, forklift lights, lights in bathrooms or maintenance shops that open into the production area, etc. End piece fittings on tube lights should be secure. Precautions should be taken to prevent glass contamination in the event of glass breakage. Windows and computer monitors in production areas should be covered with a plastic film to prevent shatter. Inside light covers should be clean, free of algae, insects and excessive dirt.	For Agaricus operations that are a tray based growing system this question also applies to the casing operation and the lights utilized on those lines. Lights in growing houses/rooms are also included in the scope of this question.

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Production Facility	3.05.10	Is the storage area completely enclosed?	To protect the product and packaging materials from the elements and pests, it is necessary to keep the storage area enclosed and pest proof. Main doors should be kept closed unless in use. Food contact packaging should not be stored outside. Non-food contact packaging e.g. cardboard outers should be stored inside if possible. If some non-food contact packaging is stored outside, then this outside storage area should be included in the pest control program. Outside stored, non-food materials should be covered with a waterproof and dust proof shroud (often made of plastic material). Yards or dock areas where product passes through (e.g., to and from a hydrocooler) are exempt, as long as the product is being transferred and is not actually being stored. Auditor discretion applies.	This does not apply to phase I mushroom composting operations or pre-sterilization preparation of substrate for non-Agaricus operations; if conducted at the site that is within the scope of the audit. There is not an expectation that these operations be conducted within an enclosed area.
Production Facility	3.05.11	Are raw materials (e.g. seeds, transplants, soil, media), finished goods and food contact packaging within accepted tolerances for spoilage and free from adulteration? ANY DOWN SCORE IN THIS QUESTION RESULTS IN AN AUTOMATIC FAILURE OF THE AUDIT.	Raw materials (e.g. seeds, transplants, soil, media), finished goods, food contact packaging and food contact surfaces should be free from spoilage, adulteration and/or gross contamination (21 CFR 110.3g). If legislation exists, then the contamination should be viewed against this legislation (e.g., USDA Grading Standards often include decay tolerances). Spoilage and adulteration would include any physical, chemical or biological contamination including blood and bodily fluids. Measures should be taken to prevent any known or reasonably foreseeable hazard (e.g., Clostridium botulinum in mushrooms). This question is designed to allow an auditor to halt an audit when finding gross contamination issues (note pests are covered by 3.03.06). Examples might include glass, trash/litter, motor oil in products, etc. Where an issue is observed by an operator in the normal process, auditor should observe the actions of the operator before scoring. Auditors should use their discretion and decide whether the frequency of the contamination warrants an automatic failure. Examples include pieces of glass, one piece of rodent bait, paint on product or packaging, flakes of rust, etc. Is the issue systematic or a one-off issue?	The scope of this question could apply to any materials used in composting operations (including compost ingredients) or materials used in non-Agaricus substrate preparation. For example, biological contaminants do not present a significant risk in phase I composting operations, however chemical contaminants may result in a significant risk. In most cases chemical contaminants in phase I composting operations will also compromise (or even prevent) growth of mushrooms, but that is not an absolute. There are many other food contact materials that may become adulterated in mushroom operations throughout the growing process. Operations and auditors should follow the current guidelines relative to any adulteration issue and determining the corrective action response.

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Production Facility	3.05.12	Are materials (commodities, processing aids, work in progress, etc.) properly marked with rotation codes (receipt dates, manufacture dates, etc.)?	All materials should be properly marked with receipt dates and/or tracking information (lot numbers, code dating) for traceability/recall and stock rotation purposes. Finished product coding should consider any specific customer requirements (e.g., as per customer specifications, customer expectation requirements). This coding should be understood by all workers, in order to ensure FIFO and effective traceback/recall procedures. Coding on raw and finished product should also consider any local or national laws where they exist.	This applies to post phase II materials in operations that are producing compost or post-sterilization materials in non-Agaricus operations. Whereas FIFO is always a good basic practice to follow there are many reasons why this may not be appropriate for phase I composting materials or materials used pre-sterilization in non-Agaricus operations. As a result, it would not be expected that these materials be marked with rotation codes unless it is the established practice of the operation, in which case the practice should be followed.
Production Facility	3.05.13	Are materials (commodities, processing aids, work in progress, etc.) rotated using FIFO policy?	All materials should be rotated using FIFO (First In First Out) policy to ensure items are used in the correct order they are received and within their allocated shelf-life. Materials should be clearly marked or labeled with some kind of rotation coding that is understood by all workers, in order to ensure FIFO and effective traceback/recall procedures. Packaging rotation might be affected by market forces. Having a “Just In Time” ordering policy and thereby having very limited stock volumes, is acceptable as a replacement for FIFO if it can be proven e.g. the auditor can see that hardly any stock is maintained. “Just In Time” ordering policy does not replace the need to tag materials as per question 3.05.12.	See also comment above under 3.05.12 relative to pre-phase I or pre-sterilization materials.
Production Facility	3.05.15	Are all exposed materials (product, packaging, etc.) protected from overhead contamination (e.g. ladders, motors, condensation, lubricants, walkways, loose panels, degrading insulation, etc.)?	Ceilings and/or any overhead fixtures above storage are free from condensation or dust. Ladders or walkways (catwalks) above exposed product or packaging material have kick plates at least 3.5 inches high and are covered in some way that protects the product underneath. Drips or condensate (e.g., from roof, fixtures, ducts, pipes, etc.) should not contaminate food, food contact surfaces or packaging material. Adequate measures should be in place to protect from condensate. OSHA: CFR 29 Part 1910k(1)(iii) https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9721	The scope of this question is intended to be related to storage areas, however the principle of overhead protection should also apply to equipment applying casing soil in Agaricus operations or final substrate preparation for non-Agaricus operations since fruiting mushrooms will develop through these surfaces.

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Production Facility	3.05.16	Does the facility layout ensure separation of raw materials (e.g. seeds, transplants, soil, media), products and packaging?	All raw materials, products and packaging should be stored off the ground (i.e. on racks, pallets, shelves, etc.). Materials should be properly protected during storage to prevent contamination (e.g., away from chemicals, battery chargers, etc.). Raw materials, finished product and packaging materials should be stored in separate areas to prevent cross contamination. When separate room storage is not possible, the auditor should assess the risks, especially with respect to cross contamination. Raw materials should not be able to contaminate packaged items. Packaging storage, especially dust from cardboard storage should not contaminate produce items.	Process flow and separation of pre and post thermal treatment of substrate are extremely important in mushroom operations in order to ensure substrate does not become contaminated and render the substrate unusable for growing. This has an added benefit for food safety of the product. Food contact materials such as for packaging, chemicals, utensils/tools and material handling equipment should not also contribute to cross contact issues that can jeopardize the safety of the product.
Production Facility	3.05.19	Are re-usable containers cleanable or used with a liner and clearly designated for the specific purpose (finished product, trash, etc.) such that cross contamination is prevented?	All re-usable containers should be able to be cleaned or used with a clean liner to protect against contamination. Cleaning type and frequency should be determined based on the products and processes involved. Bins, boxes, hoppers, barrels, baskets, etc. used for the storage of raw materials (e.g., seeds, transplants, soil, media), finished goods or packaging should be kept in a clean state. The storage of these items should ensure that they remain clean and uncontaminated (e.g., covered clean). In-house re-usable containers should be labeled or color-coded (visually or in the language understood by the workers) so that their designated purpose can be easily identified. Returnable plastic containers (RPCs) (e.g., CHEP, IFCO) should be treated like single service containers and only used for product (score in 3.05.18). If the trash container is the only re-used container on site and is a specific and unique design, so that it cannot be mistaken for another use, then it should not be down scored. Non-applicable if re-usable containers are not used in the operation.	Various re-usable containers may be used in a mushroom growing operation. For Agaricus operations that utilize a tray based growing system the trays are large and typically wood. The use of wood for mushroom growing systems of this type is acceptable. These trays are expected to free from visible contaminants - such as a chemical contaminant. They also may be stored outside the facility between uses which is also acceptable. Growing trays are subjected to both pasteurization temperatures during phase II and sterilization temperatures during post-crop operations. The balance of the current guidelines should be applied to mushroom operations as stated.

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Production Facility	3.05.21	Do floor drains flow in a manner that prevents contamination (e.g., from high to low risk areas, from high risk directly to drain system), are they covered, appear clean, free from odors and are well maintained?	All facility floor drains, including covers and internal channels are clean, and free of decayed/old material. All facility floor drains are free of odors. There is no overflow or excessive standing water in the floor drains. Drains should have smooth walls and bases that allow free flow of water without catching debris, and also aid in the cleaning of the drains. Water from refrigeration drip pans is drained and disposed of away from product and product contact surfaces. Where possible, auditor should request floor drain covers to be removed for inspection. Use a flashlight to illuminate the bottom of deep drains. Non-applicable if floor drains are not present or used in the operation.	These guidelines are also applicable to the growing houses/rooms.
Production Facility	3.05.22	Are internal transport vehicles (e.g., forklifts, bobcats, pallet jacks, carts, floor cleaners, etc.), clean, do not emit toxic fumes and are being used in a sanitary manner?	• Vehicles and equipment used for moving raw materials, packaged products, and packaging throughout and within the facility are clean, well maintained, and do not transport goods outside the facility (unless cleaned and sanitized before re-entering). Open dock areas are accepted as being within the facility in this instance. • Internal transport vehicles (forklifts, bobcats (or similar type vehicle), pallet jacks, carts, floor cleaners, etc.) used to transport food are in a good state of repair, clean, odor free, free of rodents and insects. • Internal transport vehicles (forklifts, bobcats (or similar type vehicle), pallet jacks, carts, floor cleaners, etc.) used in food areas should not be gasoline or diesel powered; propane (LPG) powered vehicles are permitted although electric powered are ideal. Trucks and forklifts should not be left idling in enclosed spaces or during loading or unloading of products to reduce health risk and possible tainting of foods. • A sanitation program for internal transport vehicles is established to assure proper sanitation levels. • Internal transport vehicles should not be mobile “break areas” i.e. food and drink should not be stored on the vehicles. • Floor cleaners should be kept in good condition and cleaned in order to prevent cross contamination. Where relevant, the brushes and fixtures on the floor cleaner might need to be changed or cleaned when moving from one risk area to another. Non-applicable if internal transport vehicles are not used in the operation.	For mushroom operations this would be applicable to internal transport vehicles that transport packaging, substrate and other materials utilized in the growing operation.

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Inspection	3.06.01	Is there documented evidence of the internal audits performed, detailing findings and corrective actions?	There should be records of the internal audits performed at each operation, with the frequency defined in the internal audit program. Frequency depends on the type and size of the operation. The records should include the date of the audit, name of the internal auditor, justification for the answers, detail any deficiencies found and the corrective action(s) taken. An audit checklist (ideally PrimusGFS) should be used that covers all areas of the PrimusGFS audit, including growing area, storage area, worker amenities, external areas, worker practices, etc. No down score if another audit checklist is used, as long as all areas are covered. See 1.04 regarding internal audit schedule.	To review 1.04.01; year round or nearly year round mushroom operations should have an internal audit frequency of a minimum of quarterly. Under 3.06.01 records should be available consistent with the guidelines represented here.
Inspection	3.06.02	Is there a daily inspection log, including but not limited to, checking worker hygiene, housekeeping of bathrooms, break area, growing area, and storage area?	Operations are inspected daily. This should be a start-up check of all potential issues. The daily inspection should include: • General housekeeping of storage areas, growing areas, break areas and bathrooms. • Checking personnel meet the hygiene requirements • Corrective actions in case of non-compliance.	This is essentially a requirement for a pre-operation inspection. This does not replace the similar requirement in the Harvest Crew module (module 4) if harvesting is included in the scope of the overall audit, however the elements represented in the guidelines here in 3.06.02 could be included in the same inspection; i.e. a single inspection and record thereof is acceptable provided all points are covered as represented in the guidelines.
Training	3.07.01	Is there a food safety hygiene training program covering new and existing workers and are there records of these training events?	There should be a formal training program to inform all workers (including planting and weeding crews) of the current policies and requirements of the company regarding hygiene. Trainings should be in the language understood by the workers, and training type and intensity should reflect the risks associated with the products/processes. Frequency should be at the start of the season and then some topics covered at least quarterly, but ideally monthly. Full annual food safety refresher training sessions are encouraged but do not replace the ongoing more frequent training. Training material covering the content of the company policies and requirements regarding food safety and hygiene should be available. These trainings should cover food safety and hygiene, the importance of detecting food safety and/or hygiene issues with co-workers and visitors, and all food safety or hygiene issues in which they are responsible. Training logs should have a clearly defined topic(s) covered,	For mushroom operations the minimum ongoing food safety training frequency would be quarterly which can include a comprehensive annual food safety refresher. The comprehensive annual training to cover all food safety related policies established for the operation whereas the quarterly trainings can cover individual topics that may, for example be necessary to reinforce. By "formal training program" is meant that the training program is written; describes what is covered, the language(s) training is delivered in and training materials used.

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			trainer(s) and material(s) used/given. Food safety training should cover at least the basic topics such as toilet use, hand washing, protective clothing (where applicable), recognizing and reporting injury and illness, blood and other bodily fluids, jewelry, dropped product, animal intrusion, food consumption/taking breaks, foreign material requirements, food defense, etc. There should be records of workers who have attended each session.	
Training	3.07.02	Is there a documented training program with training logs for the sanitation workers, including best practices and chemical use details?	Sanitation training should ensure that the workers understand the importance of proper sanitation, cleaning efficacy, how to use the cleaning chemicals and how to understand Sanitation Standard Operating Procedures. Unless sanitation workers attend regular food safety trainings, sanitation training should also include elements of food safety training pertinent to sanitation operations (e.g., hand washing, restroom use, foreign material, etc.). Training logs should have a clearly defined topic(s) covered, trainer(s) and material(s) used/given. Training would also ideally include worker safety issues (e.g., use of personal protective equipment, accident prevention, what to do in case of an accident, procedures for avoiding electrical hazards when cleaning, etc.). Recorded training should occur at least on a 12-month basis.	Depending upon the type of mushrooms grown and the growing system employed this could relate to several areas and/or departments. Anyone involved in sanitation should be receiving this training.
Worker Hygiene	3.08.05	Are secondary hand sanitation stations (e.g., touch-free dispensers) adequate in number and location, and are the stations properly maintained?	Secondary hand sanitation is required for items that may be “ready-to-eat” (e.g., herbs, stone fruit, tomatoes, citrus, edible flowers, etc.). Secondary hand sanitation (hand dips, gels or sprays) does not replace hand washing requirements (lack surfactant qualities). Secondary hand sanitation stations should be unscented/non-perfumed, have 60% to 95% ethanol or isopropanol and conveniently located in traffic zones but should not be obstructive. Hand dips (if used) should contain a USDA approved food grade sanitizer at a determined concentration. Refer to hand sanitizer manufacturer label for dilutions. Hand dips should be regularly monitored (recorded anti-microbial strength checks) to ensure their effectiveness with corrective actions recorded (e.g. dip solution replenishment and anti-microbial additions). Hand gel and spray stations should be well stocked with a sanitizer approved for direct hand to food contact (e.g. USDA	The availability of secondary hand sanitizers would not be necessary for mushroom operations in work areas prior to when fruiting mushrooms are present; unless the operation requires them to be present (i.e. optional in these areas). These typically are compost or substrate production areas, phase II, spawning or casing operations in Agaricus mushroom operations. Once there are fruiting mushrooms present staff working with or in areas of fruiting mushrooms should have the availability of secondary hand sanitizers in close proximity to the work area.

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			approved or national equivalent) and regularly monitored (recorded checks) to ensure availability with corrective actions recorded (e.g. pack replenishment); use of a refill alert type dispenser is ideal practice. The auditor should check that gel pack type stations are stocked and have the auditee check the strength of anti-microbial chemicals in hand dips while touring the facility. http://www.qualityassurancemag.com/qa0612-proper-hand-sanitation-practices.aspx https://www.cdc.gov/handwashing/index.html https://nelsonjameson.com/learn/sanitation-maintenance/hand-hygiene/ http://www.hi-tm.com/Documents/Handwash-FL99.html https://www.fda.gov/food/guidanceregulation/retailfoodprotection/industryandregulatoryassistanceandtrainingresources/ucm113827.htm	
Worker Hygiene	3.08.06	Are foot baths, foamers or dry powdered sanitizing stations provided at entrances to growing areas (where appropriate), and are the stations maintained properly?	Foot (boot) stations (foot dip mats, baths, sprays) should be located in areas when crossing into a “clean” zone from an area of potential contamination (e.g., from outside into the growing area, from growing areas into storage areas, from bathrooms into growing areas, etc.) for some crops (e.g., mushrooms, aeroponics). Foot dips should contain a food grade sanitizer at a determined concentration. Refer to sanitizer manufacturer label for dilutions. Foot dips should be regularly monitored for volume and concentration (recorded anti-microbial strength checks) and the dip solution regularly changed to ensure their effectiveness with corrective actions recorded (e.g. dip solution replenishment and anti-microbial additions). Dry products should be EPA registered and applied as per the label instructions (label dosage directions should be followed for EPA registered floor sanitizers) and regular renewal should be monitored. The auditor should have the auditee check the strength of anti-microbial chemicals while touring the facility. This question should be scored based on auditor discretion, considering the risk of the products/processes. N/A where there are no foot baths, foamers or dry powdered sanitizing stations when it is not a requirement for the operation. http://www.foodsafetymagazine.com/magazine-archive1/december-2004january-2005/the-dos-and-	Foot baths are utilized in many mushroom growing operations. These are principally used to prevent cross contamination and transfer of mushroom related diseases and pests from growing area to growing area. At the same time, these foot baths have an additional benefit to help control potential cross contamination of human pathogens that may exist in the environment. If used, these foot wear sanitizing systems are expected to be appropriately maintained with anti-microbial at sufficient concentrations to be effective. Auditors are expected to request concentration testing during the audit and records maintained and available for review.

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			donts-of-food-plant-personal-hygiene-practices/ http://www.foodsafetymagazine.com/magazine-archive1/augustseptember-2011/sanitizers-and-disinfectants-the-chemicals-of-prevention/ http://www.foodqualityandsafety.com/article/dry-floor-products-wont-slip-up/2/ 21 CFR 178.1010: https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/CFRSearch.cfm?fr=178.1010	
Worker Hygiene	3.08.10	Are all workers wearing protective outer garments suitable for the operation (e.g. appropriate clean clothes, smocks, aprons, sleeves and non-latex gloves)?	If the operation has taken a decision to establish an outer garment policy based on risks this should consider the following: customer requirements, national and local legal requirements, potential cross contamination and foreign material risks, etc. Outer garments include where applicable: smocks, aprons, sleeves, gloves, etc. Suitable clothing is required for workers handling products that are potentially ready-to-eat (e.g., tomatoes, leafy greens, etc.). Items should be laundered in-house or by contract laundering agency. Individual workers should not take protective outer garments home for cleaning. Where items are laundered in-house the auditee should have documented SOP and GAP rules about how these garments are cleaned. Glove policy should be clear to workers – auditors will establish policy before making scoring decisions and note this policy for the audit report. Gloves are not allowed to replace hand-washing requirements. Gloves should be changed after break periods, using toilet facilities, any activity other than handling of food items or when gloves are soiled, torn or otherwise contaminated. If re-useable gloves are used, then they should be made of material that can be readily cleaned and sanitized, clean gloves should be issued at least daily and as needed throughout the day and stored properly in-between uses. Gloves should not be taken home for cleaning. Where gloves are used they should be non-latex (e.g. vinyl, nitrile, etc.). This includes gloves in first-aid kits. Where dedicated protective clothing is not required/worn, it must be clear that outer street clothes are clean and not a potential source of contamination. Workers should not wear personal clothes with sequins, pom-poms, fur, etc. No sleeveless tops without an over garment.	For mushroom operations this may include a policy for workers to wear gloves as well as protective clothing over street clothes. For the purpose of Module 3 this applies to workers assigned to growing operations, but may also include harvest workers (Module 4 scope). The policy in place should clearly identify what protective clothing is required, the staff and areas of the site the policy applies to.

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Agronomic Inputs	3.09.01	Refer to questions 3.09.01 to 3.09.01f for more details regarding the use of sewage sludge as an agronomic input.	Information gathering question. Human sewage sludge (biosolids), which are by-products of waste water treatment, should not to be used in the growing cycle for indoor growing operations, and also where specifically prohibited under best management practices (e.g., LGMA, T-GAPs). https://toxics.usgs.gov/regional/emc/municipal_biosolids.html	It would be very uncommon and rare for sewage sludge to be used in mushroom production. It would be very important for the growing operation to verify that this was a permitted input within the country, region, state of production and be able to provide the verification in written form.
Agronomic Inputs	3.09.02	Is animal based compost being used as an input for this operation?	This question is specifically targeting compost produced from raw animal manures, as opposed to green waste.	This is almost always answered Yes for Agricus growing operations; not common for non-Agaricus operations and would likely be answered No. It would be unlikely that animal based compost would be prohibited in the country, region, state of the operation location.
Agronomic Inputs	3.09.02 b	Are there fertilizer use records available for each growing area, including application records?	Records should be legible and at least detail the date of application, type of fertilizer, amount, method of application (drip, bulk, etc.), where it was applied and operator name. There should be sufficient identification information in the records that would make it possible to trace an application back to the site if needed. There should be an interval between application and harvest of at least 45 days for non-synthetic crop treatments and compost, and an interval of at least 120 days (but ideally 9 months) for untreated animal manure. A shorter interval is possible if the fertilizer has been through a physical/chemical/biological process to inactivate human pathogens and the auditee has validation study documentation that shows that the material is safe. Validation studies must be applicable to the situation at hand and care should be taken not to over extrapolate. There should be confirmation that monitoring records of the validation study's key requirements are being kept and that these monitoring records are being verified.	The use of animal based compost as a growing medium is common in the mushroom industry. Developing this compost includes two thermal treatments; phase I and phase II. In some (Agaricus) mushroom growing systems there are 45 days between the initial incorporation of animal manure in the compost at phase I and harvest of mushrooms. For those systems where there is not 45 days the phase II pasteurization process should be validated for the specific type of pasteurization process that is being implemented. Auditors are expected to review the pasteurization validation evidence available at the operation as well as the records of pasteurization for phase II to verify the process has met the established criteria of the validated process. For non-Agaricus mushroom production animal manure is not typically used as these mushrooms do not grow on compost. See also 3.09.02e.
Agronomic Inputs	3.09.02 c	Are applications incorporated into the soil prior to planting or bud burst for tree crops and not applied during the growing season?	If used, the applications should be incorporated into the soil prior to planting or bud burst for tree crops.	This is not applicable to mushrooms. Auditors would answer N/A.

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Agronomic Inputs	3.09.02 d	Are there Certificate(s) of Analysis (CoA), specifications, product label or other documents available for review provided by the supplier stating the components of the material?	Certificate(s) of Analysis (CoA), letters of guarantee or other formal documentation from the fertilizer manufacturer's or supplier(s) should be current and state any inert or active ingredient substances used as "fillers" (e.g., clay pellets, granular limestone). Concerns are for heavy metals that may affect human health (e.g., Cadmium (Cd) Arsenic (As), Chromium (Cr), Lead (Pb), Mercury (Hg), Nickel (Ni), and Vanadium (V).). There should be sufficient identification information that would make it possible to trace back to the source if needed, therefore, only approved suppliers should be used limited to those firms demonstrating consistent compliance with prevailing national/local standards and guidelines.	The auditee should provide a list of raw materials utilized to develop the compost (Agaricus operations) and provide evidence that they are able to track each raw material to the source and identify the source of each raw material for each "lot" (however that is defined by the operation) of compost that is developed. Suppliers of the raw products should also be subject to the auditee's supplier approval program. If the auditee purchases either completed phase I or phase II compost the supplier is expected to provide a COA or letter of guarantee that states the components of the compost.
Agronomic Inputs	3.09.02 e	Are there Certificate(s) of Analysis (CoA) from the supplier(s) that cover pathogen testing (plus any other legally/best practice required testing) and does the grower have relevant letters of guarantee regarding supplier SOPs and logs?	There should be evidence that each laboratory test result (certificate of analysis) provided is traceable to each material used. (e.g., CoA is traced to each lot of crop treatment used). Tests should include microbiological analyses. At minimum, for non-synthetic crop treatments (e.g., compost teas, fish emulsions, fish meal, blood meal, "bio fertilizers") and for animal based compost microbial testing should include Salmonella spp., E. coli O157:H7, and Listeria monocytogenes at Negative or <DL and include fecal coliforms/gram at < 1000 MPN of total solids and any other pathogens appropriate for the source of material using approved sampling and testing methods (e.g., AOAC and an accredited laboratory). All local and national legislation should also be followed. Where legally allowed, a reduced sampling rate is possible if the material is produced by the auditee (e.g. mushroom growing operations with in-house compost production) and has been through a validated physical/chemical/biological process to inactivate human pathogens (Salmonella spp., E. coli O157:H7, Listeria monocytogenes) and show fecal coliforms/gram <1000 MPN. The auditee has the test analyses that show that the material is safe and proper process control records (e.g., time/temperature records and calibration records, such as, temperature probe) are maintained and available during the audit. Validation studies used must be applicable to the situation at hand and care should be taken	Pathogen testing of compost is expected. Testing should include Salmonella, E. coli 0157:H7, Listeria monocytogenes and fecal Coliform. With respect to the frequency of sampling see the sampling plan options that follow. If the auditee purchases phase II completed compost from an outside supplier, the supplier would be expected to provide testing results based upon one of the two sampling plan options in this document. If the auditee purchases phase I completed compost the supplier would not be required to provide microbiological testing results as identified in these guidelines, however the auditee would be expected to conduct microbiological testing consistent with the guidelines identified here.

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			not to over extrapolate. The grower should have proof that compost suppliers have cross contamination SOPs and temperature/turning logs. Sampling Plan Options below may be used to determine the definition of lots produced. There should be an indication from the supplier/producer of how lots are determined (i.e. from the information here or from another method). The sampling plans below are taken from current regulations in the state of California (related to bio-solids) and recognized manure-based compost guidelines included under the Leafy Greens Marketing Agreement.	
Agronomic Inputs	3.09.02 f	Are there Certificate(s) of Analysis (CoA), letters of guarantee or other documents from the supplier(s) that cover heavy metal testing?	Certificate(s) of Analysis (CoA), letters of guarantee or some other documents from the supplier(s) that covers heavy metal testing should be available. Concerns are for heavy metals that may affect human health (e.g., Cadmium (Cd) Arsenic (As), Chromium (Cr), Lead (Pb), Mercury (Hg), Nickel (Ni), and Vanadium (V).). See Section 17868.2. Maximum Metal Concentrations for reference levels for an example of local State laws. All local and national legislation should also be followed. http://www.calrecycle.ca.gov/laws/Regulations/Title14/ch31a5.htm.	Heavy metals testing of compost is expected following these, current guidelines. The guidelines do not specify the frequency other than they should be "current" - meaning within the last 12 months. As a minimum, letters of guarantee or COAs (the guidelines permit either) should be based upon and provide heavy metals testing results from at least one sample annually. Testing or additional letters of guarantee should be available more frequently if the components/raw materials purchased for compost development are changed and/or there is a significant change in source (as in from a different region). Standard letters of guarantee should be re-newed annually.
Agronomic Inputs	3.09.03 - 3.09.03 f	Is the operation using untreated animal manure as an input? (e.g., raw manure &/or uncomposted, incompletely composted animal manure &/or green waste or non-thermally treated animal manure, etc.)	Information gathering question. Untreated animal manure refers to manure that is raw and has not gone through a treatment process. Examples include raw manure and/or uncomposted, incompletely composted animal manure and/or green waste or non-thermally treated animal manure. Untreated animal manure should not be used in indoor growing operations or where prohibited under best management practices.	This is N/A for mushrooms. All compost that is utliized in growing mushrooms requires thermal treatment to provide a growing medium that is free of competitor micro organisms.

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Agronomic Inputs	3.09.04	Is the operation using non-synthetic crop treatments as an input? (e.g., compost teas, fish emulsions, fish meal, blood meal, bio-fertilizers, etc.)	Examples include but are not limited to compost teas (also known as agricultural teas), fish emulsions, fish meal, blood meal, inoculants (beneficial microbes), and "bio fertilizers" that are produced from animal materials.	Other non-synthetic crop treatments may include the supplement (mushroom "fertilizer" added at spawning), spawn and casing inoculum (sometimes referred to as CAC, PAC or other trade names) that is added to the compost at casing. This question is typically applicable for Agaricus operations and should be assessed by auditors. Some commercial forms of spawn, supplements and casing inoculum contain ingredients of animal or other, non-synthetic origin. Supplements for non-Agaricus mushrooms will be different, casing inoculum is not used and spawn is provided in different forms. In many/most cases for non-Agaricus mushrooms this question will be answered "No".
Agronomic Inputs	3.09.04 a	Is fertilizer being used where the country regulations/guidelines ban the use of such materials (e.g., Californian Leafy Green Commodity Specific Guidelines)? ANY DOWN SCORE IN THIS QUESTION RESULTS IN AN AUTOMATIC FAILURE OF THE AUDIT.	Only fertilizer approved for that specific crop should be used. Some commodity specific guidelines have rules regarding the use of specific fertilizer types, e.g. Californian Leafy Green Commodity Specific Guidelines bans the use of biosolids and untreated animal manure.	Would be answered, "No". The non-synthetic treatments indicated above in the notes for 3.09.04 are typically in use throughout the mushroom industry.
Agronomic Inputs	3.09.04 b	Are there fertilizer use records available for each growing area, including application records?	Records should be legible and at least detail the date of application, type of fertilizer, amount, method of application (drip, bulk, etc.), where it was applied and operator name. There should be sufficient identification information in the records that would make it possible to trace an application back to the site if needed. There should be an interval between application and harvest of at least 45 days for non-synthetic crop treatments and compost, and an interval of at least 120 days (but ideally 9 months) for untreated animal manure. A shorter interval is possible, if the fertilizer has been through a physical/chemical/biological process to inactivate human pathogens and the auditee has validation study documentation that shows that the material is safe. Validation studies must be applicable to the situation at hand and care should be taken not to over extrapolate. There should be confirmation that monitoring records of the validation study's key requirements are being kept and that these monitoring records are being verified.	The guidelines stated relative to record keeping and tracing are applicable as written. The guideline relative to the time interval between use/application and harvest is not applicable for mushrooms, however the supplier(s) of spawn, supplements and casing inoculum should provide records of verification that address the thermal process these materials are subjected to that ensure they are free of human pathogens. Validation can typically be interpreted from the process information and verification records provided. The non-synthetic ingredients used in the manufacture of these materials require sterilization in order for the materials to be used in mushroom production.

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Agronomic Inputs	3.09.04 c	Is the material applied in a manner that does not contact the edible portions of the crop?	Non-synthetic treatments that contain animal products or animal manures should not be applied to the edible portions of crops.	This is N/A for mushrooms. The use of these materials is always prior to when fruiting mushrooms are present.
Agronomic Inputs	3.09.04 d	Are there Certificate(s) of Analysis (CoA), specifications, product label or other documents available for review provided by the supplier stating the components of the material?	Certificate(s) of Analysis (CoA), letters of guarantee or other formal documentation from the fertilizer manufacturer's or supplier(s) should be current and state any inert or active ingredient substances used as "fillers" (e.g., clay pellets, granular limestone). Concerns are for heavy metals that may affect human health (e.g., Cadmium (Cd) Arsenic (As), Chromium (Cr), Lead (Pb), Mercury (Hg), Nickel (Ni), and Vanadium (V).). There should be sufficient identification information that would make it possible to trace back to the source if needed, therefore, only approved suppliers should be used limited to those firms demonstrating consistent compliance with prevailing national/local standards and guidelines. https://apps1.cdfa.ca.gov/fertilizerproducts/ http://www.health.state.mn.us/divs/eh/risk/studies/metals.html http://library.state.or.us/repository/2007/200701251422434/index.pdf https://agr.wa.gov/pestfert/fertilizers/productdatabase.aspx	Suppliers of these materials should provide a list of non-synthetic materials utilized to develop spawn, supplement and/or casing inoculum and auditee's should provide evidence that they are able to track each of these materials to the source and identify the source of each raw material for each "lot" (however that is defined by the operation) of mushrooms that are grown. Suppliers should also be subject to the auditee's supplier approval program and be expected to provide a COA or letter of guarantee that identify the non-synthetic components.
Agronomic Inputs	3.09.04 e	Are there Certificate(s) of Analysis (CoA) from the supplier(s) that cover pathogen testing (plus any other legally/best practice required testing) and does the grower have relevant letters of guarantee regarding supplier SOPs and logs?	There should be evidence that each laboratory test result (certificate of analysis) provided is traceable to each material used. (e.g., CoA is traced to each lot of crop treatment used). Tests should include microbiological analyses. As minimum, for non-synthetic crop treatments (e.g., compost teas, fish emulsions, fish meal, blood meal, "bio fertilizers") and for animal based compost microbial testing should include Salmonella spp., E. coli O157:H7, and Listeria monocytogenes at Negative or <DL and include fecal coliforms/gram at < 1000 MPN of total solids and any other pathogens appropriate for the source of material using approved sampling and testing methods (e.g., AOAC and an accredited laboratory). All local and national legislation should also be followed. Where legally allowed, a reduced sampling rate is possible if the material is produced by the auditee (e.g. mushroom growing operations with in-house compost production) and has been through a validated physical/chemical/biological process to inactivate human pathogens (Salmonella spp., E. coli O157:H7, Listeria	Letters of guarantee or COAs are acceptable provided they are current (dated within the last 12 months), are applicable to the non-synthetic based material used (spawn, supplement and/or casing inoculum) and reference results of human pathogen testing. The sampling plans indicated below do not apply to these non-synthetic materials used in mushroom production since they are not considered compost, are not used as a component of the compost when produced and require a significant thermal treatment to be useful.

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			monocytogenes) and show fecal coliforms/gram <1000 MPN. The auditee has the test analyses that show that the material is safe and proper process control records (e.g., time/temperature records and calibration records, such as, temperature probe) are maintained and available during the audit. Validation studies used must be applicable to the situation at hand and care should be taken not to over extrapolate. The grower should have proof that compost suppliers have cross contamination SOPs and temperature/turning logs. Sampling Plan Options below may be used to determine the definition of lots produced. There should be an indication from the supplier/producer of how lots are determined (i.e. from the information here or from another method). The sampling plans below are taken from current regulations in the state of California (related to bio-solids) and recognized manure-based compost guidelines included under the Leafy Greens Marketing Agreement.	
Agronomic Inputs	3.09.04 f	Are there Certificate(s) of Analysis (CoA), letters of guarantee or other documents from the supplier(s) that cover heavy metal testing?	Certificate(s) of Analysis (CoA), letters of guarantee or some other documents from the non-synthetic crop treatment supplier(s) that covers heavy metal testing should be available. Concerns are for heavy metals that may affect human health (e.g., Cadmium (Cd) Arsenic (As), Chromium (Cr), Lead (Pb), Mercury (Hg), Nickel (Ni), and Vanadium (V).). See Section 17868.2. Maximum Metal Concentrations for reference levels for an example of local State laws. All local and national legislation should also be followed. http://www.calrecycle.ca.gov/laws/Regulations/Title14/ch31a5.htm.	Acceptable forms of verification for this question are a COA, Letter of Guarantee or actual test results. These documents must be specific to the non-synthetic material(s) in use and identify the results of heavy metals testing or provide actual test results. The documents and/or test results also should identify testing has been completed with acceptable results for the heavy metals indicated in these guidelines.
Agronomic Inputs	3.09.05	Is the operation using soil or substrate amendments as an input? (e.g., plant by-products, humates, seaweed, inoculants, and conditioner, etc.)	Information gathering question. This refers to soil or substrate amendments (except inorganic nutrients/fertilizers) used that do not contain animal products and/or animal manures. Examples include but are not limited to plant by-products (e.g., coir), humates (e.g., peat), seaweed, conditioners (e.g., vermiculite), etc.	This is applicable for both Agaricus and non-Agaricus mushroom production. For Agaricus production this typically includes peat moss and lime (ag lime, hydrated lime and/or sugar beet lime) for use in the casing "soil". For non-Agaricus production this includes pretty much all components of the substrate (a source of cellulose such as wood, a pH buffer, protein source and other ingredients).

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Agronomic Inputs	3.09.05 a	Is fertilizer being used where the country regulations/guidelines ban the use of such materials (e.g., Californian Leafy Green Commodity Specific Guidelines)? ANY DOWN SCORE IN THIS QUESTION RESULTS IN AN AUTOMATIC FAILURE OF THE AUDIT.	Only fertilizer approved for that specific crop should be used. Some commodity specific guidelines have rules regarding the use of specific fertilizer types, e.g. Californian Leafy Green Commodity Specific Guidelines bans the use of biosolids and untreated animal manure.	All of these components typically used are common to the production of either Agaricus or non-Agaricus mushrooms.
Agronomic Inputs	3.09.05 c	Are there Certificate(s) of Analysis (CoA), specifications, product label or other documents available for review provided by the supplier stating the components of the material?	Certificate(s) of Analysis (CoA), letters of guarantee or other formal documentation from the fertilizer manufacturer's or supplier(s) should be current and state any inert or active ingredient substances used as "fillers" (e.g., clay pellets, granular limestone). Concerns are for heavy metals that may affect human health (e.g., Cadmium (Cd) Arsenic (As), Chromium (Cr), Lead (Pb), Mercury (Hg), Nickel (Ni), and Vanadium (V).). There should be sufficient identification information that would make it possible to trace back to the source if needed, therefore, only approved suppliers should be used limited to those firms demonstrating consistent compliance with prevailing national/local standards and guidelines. https://apps1.cdfa.ca.gov/fertilizerproducts/ http://www.health.state.mn.us/divs/eh/risk/studies/metals.html http://library.state.or.us/repository/2007/200701251422434/index.pdf https://agr.wa.gov/pestfert/fertilizers/productdatabase.aspx	Suppliers of these materials should provide verification of the identify of these materials and any inert materials used to produce them. Auditee's should provide evidence that they are able to track each of these materials to the source and identify the source of each material for each "lot" (however that is defined by the operation) of mushrooms that are grown. Suppliers should also be subject to the auditee's supplier approval program and be expected to provide a COA or letter of guarantee that reference the identify of these materials. Sources of pH buffers (typically lime or gypsum) should state whether they are from mined sources. If not from mined sources, heavy metals testing results should be referenced in the COAs or letter of guarantees to verify the hazards associated with heavy metals are within regulatory limits.
Agronomic Inputs	3.09.05 d	Are there Certificate(s) of Analysis (CoA) and/or letters of guarantee stating that the materials used are free from animal products and/or animal manures?	There should be Certificate(s) of Analysis (CoA) and/or letters of guarantee from the fertilizer supplier, stating that the materials they are supplying are free from animal products and/or animal manures. A statement of ingredients or letter from suppliers attesting this fact is acceptable. Auditor should match the names of the materials being used with the CoA's and/or letters of guarantee.	With respect to peat moss a supplier may provide E. coli and/or Coliform testing results or supply a letter of guarantee indicating that no animal based materials are added to the peat moss. Follow the balance of these guidelines as stated.
Agronomic Inputs	3.09.06	Is the operation using inorganic fertilizers as an input? (e.g., ammonium nitrate, ammonium sulfate, chemically synthesized urea, etc.)	Examples of manufactured inorganic fertilizers include ammonium nitrate, ammonium sulfate, chemically synthesized urea, etc. These are sometimes called synthetic fertilizers.	Some Agaricus mushroom operations utilize synthetic sources of nitrogen as an "ingredient" in the compost. It would not be typical for non-Agaricus mushroom operations to utilize inorganic fertilizers.

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Irrigation/ Water Use	3.10.07	Is there a documented assessment for each water source covering animal access, upstream contamination/runoff, proper well condition, water treatment, backflow, maintenance, cross contamination from leaching, recirculating water systems, etc., as applicable?	There should be a documented assessment for each water source used in the growing area. Prior to the first seasonal planting and at least annually and when any changes are made to the system, there should be a documented risk assessment for each water source covering potential physical, chemical and biological hazards from animal access, upstream contamination/runoff, proper well condition, water treatment, water capture, backflow, maintenance, cross contamination from leaching, cross connections, recirculating water systems, etc. If flood or furrow irrigation is used, there needs to be examples of how the operation is minimizing the risk.	The scope of this question should include an assessment of the controls in place associated with phase I water sources (including the collection and storage (for re-use) of excess and storm water from the composting area) to ensure this water does not present a potential source of contamination for post phase II water sources or post phase II materials (including packaging, chemicals, etc.). This note applies specifically to Agaricus operations that produce compost. Apply the rest of the guidelines as they are indicated.
Irrigation/ Water Use	3.10.08	Are there backflow prevention devices on all main lines, including where chemical, fertilizer and pesticide applications are made?	Water systems should be fitted with backflow prevention devices to prevent contamination of the water supply. Irrigation systems should utilize effective devices which can minimize the potential risk of accidentally allowing any injected chemical/fertilize to flow back into the irrigation well, surface water source, or to discharge onto the land where not intended. Main water lines should be fitted with back-flow protection for the incoming water (no matter what the source). Individual water lines should be fitted with backflow protection where practical.	For Agaricus mushroom operations that produce compost, phase I water sources should be clearly separated and protected from post phase II water sources. Follow the balance of these guidelines as stated.
Irrigation/ Water Use	3.10.09	If the operation stores water (tank, cistern, container), is the storage container well maintained?	Container should be structurally sound with no evidence of damage or rust, no vegetation growing on or in the container. The base of the container should be free from debris and weeds. Access lids are properly secured and any vents, overflow and drains are screened. Air gaps are present and should be at least twice the diameter of the water supply inlet and not be less than 25 mm (1 inch).	For Agaricus mushroom operations that produce compost, the scope of this question also applies to phase I water collection and re-use systems. Follow the balance of these guidelines as stated.
Pesticide Usage	3.11.01	Are there up-to-date records of all crop protection products applied during the growing cycle? A “NO” ANSWER TO THIS QUESTION RESULTS IN AUTOMATIC FAILURE OF THE AUDIT.	The growing operation should follow a crop protection products application record keeping program that at least includes the following: date of application, treated area, crop protection product trade name, amount applied (rate/dosage) and any other information required by local regulations. Ideally records should also include: applicator’s name, equipment used, crop, active ingredient, size of treatment area.	Watering of mushrooms may include a chlorine based material at several stages of growth. If the chlorine is being used as an anti-microbial its use should be recorded as specified by the criteria for this question and also consistent with the product label (evaluated under q.2.09.07b). Most growers will likely indicate that chlorine is used as a “whitening” agent only. Records of application would also be required for this use under this question, much the same as

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				would be expected for use of chlorine in flumes, washing systems or tool dips. It is also typical that growers will use a fungicide between second and third breaks (sometimes referred to as “flushes”) and also sometimes use an insecticide in the operation. These applications should all be recorded and evaluated under this question by the auditor. Since many of the fungicides used have 12 hour pre-harvest intervals the time of application should also be recorded. One additional pesticide sometimes used is a granular insecticide (Armor is one formulation; the AI is Cyromazine) used for fly control. If used it is applied into the compost or casing soil after phase II and used for Sciarid fly control. With respect to the use of sodium hypochlorite, the following reference may be useful in consideration of its use in pre-harvest operations: Calcium hypochlorite is exempted from the requirement of a tolerance when used pre-harvest or post harvest in solution on all fresh commodities (40 CFR 180.1054). Sodium hypochlorite has an exemption for all residues (40 CFR 180.1235). There is a tolerance exemption for both of these products for use on FCS food-processing equipment and utensils when “the end-use concentration of all hypochlorous acid chemicals in the solution is not to exceed 200 ppm determined as total available chlorine” (40 CFR Part 180.940).
Pesticide Usage	3.11.02	Do records show that pesticides and their use are in compliance with all requirements of label direction, national (e.g., EPA) registration and any federal, state or local regulations and guidelines? ANY DOWN SCORE IN THIS QUESTION RESULTS IN AN AUTOMATIC FAILURE OF THE AUDIT.	All pesticides must be registered for such use, as required by prevailing regulation, and used in accordance with label directions. N/A is allowed only when registration/authorization information does not exist for pesticides to be used on target crops in the country of production.	Self explanatory. Auditors should check to ensure all materials being used are properly registered for use on mushrooms. Labels should be examined to verify the materials in use include mushrooms. As with 3.11.01 labels (not just an MSDS document) should be available for all materials used showing registration for use on mushrooms.
Pesticide Usage	3.11.03	Where products are destined for export, do records show that only pesticides approved for use in destination market(s) are used and are in compliance with all requirements of label direction, national (e.g., EPA) registration and any federal, state or local regulations and guidelines? Corrective actions are required if a	All pesticides must be registered for such use in the destination market, as required by prevailing regulation, and used in accordance with label directions. (i.e. application rates, intended purpose, worker protection standards, personal protection equipment, container storage, disposal). The grower should provide documented evidence that they are complying with the expectations regarding crop	It is not common that mushrooms grown in the U.S. are exported, however there are growers outside the U.S. that import mushrooms to the U.S. In the case of U.S. foreign suppliers of mushrooms there should be evidence that any crop protection materials being used are registered (by EPA) for use on mushrooms in the U.S. and that applications meet the requirements of the U.S. label restrictions. If U.S. based growers

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		non-compliance. If corrective actions are not provided and acceptable by the certification body a failure of the audit is scored.	protection products of the country of origin and proof of those expectations. That evidence may be in the form of: chemical records, application methods, rates and dosage, compliance with pre-harvest intervals, or any other relevant information. This question is Not Applicable if the product is sold only in the country of production (domestic market).	are exporting mushrooms there should also be evidence that the crop protection materials being applied are registered/approved for the country of destination; including all applicable restrictions.
Pesticide Usage	3.11.04	Where products are destined for export, are there records showing that pre-harvest intervals and application rates are sufficient to meet MRL entry requirements of the country of export? Records show any non-compliant product is diverted to a market where it meets requirements. Corrective actions are required if a non-compliance. If corrective actions are not provided and acceptable by the certification body a failure of the audit is scored.	Maximum Residue Limits (MRL) tests should be performed. The auditor should review those to ensure it meets MRL entry requirements in the country of destination or the Codex Alimentarius Commission if the country of destination/market follows this MRL compliance. Records show that any non-compliant product is diverted to a market where it meets the requirements. This question is Not Applicable if the product is sold only in the country of production (domestic market). Reference: http://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/	As with 3.11.03, it is not common that mushrooms grown in the U.S. are exported, however there are growers outside the U.S. that import mushrooms to the U.S. In the case of U.S. foreign suppliers of mushrooms there should be evidence that any crop protection materials being used are registered (by EPA) for use on mushrooms in the U.S. and that applications meet the requirements of the U.S. label restrictions, in this case supported by MRL/pesticide residue testing and results thereof. If U.S. based growers are exporting mushrooms there should also be evidence that the crop protection materials being applied are registered/approved for the country of destination and MRL/pesticide residue testing results are available.
Pesticide Usage	3.11.06	Where harvesting is restricted by pre-harvest intervals, are required pre-harvest intervals on product labels, national (e.g., EPA) registration and any federal, state or local regulations and guidelines being adhered to? ANY DOWN SCORE IN THIS QUESTION RESULTS IN AN AUTOMATIC FAILURE OF THE AUDIT.	Application and harvest records show pre-harvest intervals on product labels, national (e.g., EPA) registration and any federal, state or local regulations and guidelines are being adhered to. If this is not followed, an automatic failure will be scored.	Auditors should evaluate how the PHI is adhered to for any/all pesticides used. The growing operation should be able to demonstrate through pesticide application records when a chemical was applied and when that same growing area was harvested. Note that the PHI for some mushroom crop protection chemicals is measured in hours.
Pesticide Usage	3.11.12	Are pesticides stored without risk of contamination, in a locked, dedicated area with legible labels, and are empty pesticide containers held and disposed of according to their label and/or regulatory instructions?	Are pesticides stored without risk of contamination, in a locked, dedicated area with legible labels, and are empty pesticide containers held and disposed of according to their label and/or regulatory instructions?	Auditors need to evaluate the pesticide storage(s). Ensure that pesticides are not being stored with cleaners/disinfectants. Sometimes there are situations where the same anti-microbial is being used as a pesticide in the growing operation and also used in a cleaning & sanitizing operation for containers that would be used with product/mushrooms. In this case, there should be controls in place to ensure a material that is stored with fungicides/insecticides is not also being used in a cleaning & sanitizing operation for containers used with mushrooms (cross contamination risk).

Module 4 - Harvest Crew

The purpose of this document is to provide assistance to auditors and producers in how to apply the requirements of the PrimusGFS audit scheme to the growing systems typically employed for mushroom production. The document is meant to augment the current v3.1 interpretation guidelines (edition 1.0, Sept. 16, 2019) only and does not replace any of the requirements found in those guidelines. In as much as mushroom production can involve somewhat unique production techniques and systems the notes found herein are designed to make more clear how PrimusGFS may be implemented for these commodities.

No specific notes related to questions that are not listed in this document. Would be assessed and answered in line with the current audit guidelines.

Section	Q#	Question	v3.1 Guidelines (Rev.0 Sept 16, 2019)	v3.1 Mushroom Notes v1.0
Training	4.03.01	Is there a food safety hygiene training program covering new and existing workers and are records of these training events?	There should be a formal training program to inform all workers of the current policies and procedures and requirements of the company regarding hygiene. Trainings should be in the language understood by the workers, and training type and intensity should reflect the risks associated with the products/processes. Frequency should be at the start of the season and then some topics covered at least quarterly, but ideally monthly. Full annual food safety refresher training sessions are encouraged but do not replace the ongoing more frequent training. Training material covering the content of the company policies and requirements regarding food safety and hygiene should be available. These trainings should cover food safety and hygiene, the importance of detecting food safety and/or hygiene issues with co-workers and visitors, and all food safety or hygiene issues in which they are responsible. Training logs should have a clearly defined topic(s) covered, trainer(s) and material(s) used/given. Food safety training should cover at least the basic topics such as toilet use, hand washing, protective clothing (where applicable), recognizing and reporting injury and illness, blood and other bodily fluids, jewelry, dropped product, animal intrusion, food consumption/taking breaks, foreign material requirements, food defense, etc. There should be records of workers who have attended each session.	With respect to frequency mushroom growing operations should provide an annual full food safety refresher training at least annually with at least quarterly training covering food safety topics to harvest workers. Training records should follow the guidelines as they are currently provided.
Harvest Worker Hygiene	4.05.07	Are secondary hand sanitation stations (e.g., hand dips, gels or spray stations) adequate in number and location, and are the stations maintained properly?	Secondary hand sanitation is required for items that may be “ready-to-eat” (e.g., herbs, stone fruit, tomatoes, citrus, edible flowers, etc.). Secondary hand sanitizers are optional for root vegetable crops or a commodity that requires cooking prior to eating. Secondary hand sanitation (hand dips, gels or sprays) does not replace hand washing requirements (lack surfactant qualities). Secondary hand sanitation stations should be non-perfumed/unscented, have 60% to 95% ethanol or isopropanol and should be located near hand washing and other easily accessible areas. Hand gel / spray stations should be well stocked and tested regularly to ensure they are at the required strength - checks should be recorded. Strength checks do not need to be performed for commercially purchased sanitizers that have been purchased already mixed.	There are some who do not consider mushrooms ready-to-eat (RTE), however closed veil Agaricus mushrooms (white or brown) are commonly consumed without cooking. They may be washed, however given washing is not considered an effective measure for control of human pathogens, these mushrooms should be considered RTE and as a result secondary hand sanitizers should be available consistent with the current guidelines.

Section	Q#	Question	v3.1 Guidelines (Rev.0 Sept 16, 2019)	v3.1 Mushroom Notes v1.0
Harvest Worker Hygiene	4.05.13	Are workers wearing effective hair nets that contain all hair?	If the operation requires the use of hair nets, the harvest workers should be wearing appropriate hair nets that restrain all hair. Baseball caps and head coverings are allowed in the harvesting area only if they are clean and worn with a clearly visible hair net that restrains all hair (where operation requires use of hair nets).	Most mushroom harvesting operations require the use of hairnets and beard nets. Follow the current guidelines in this regard. If caps and/or other head coverings are accepted, auditors should insure these head coverings are visibly clean.
Harvest Worker Hygiene	4.05.14	Are all workers wearing protective outer garments suitable for the operation (e.g. appropriate clean clothes, smocks, aprons, sleeves and non-latex gloves)?	If the operation has taken a decision to establish an outer garment policy based on risks this should consider the following: customer requirements, national and local legal requirements, potential cross contamination and foreign material risks, etc. Outer garments include where applicable: smocks, aprons, sleeves, gloves, etc. Suitable clothing is required for workers handling products that are potentially ready-to-eat (e.g., tomatoes, leafy greens, etc.). Items should be laundered in-house or by contract laundering agency. Individual workers should not take protective outer garments home for cleaning. Where items are laundered in-house the auditee should have documented SOP and GAP rules about how these garments are cleaned. Glove policy should be clear to workers – auditors will establish policy before making scoring decisions and note this policy for the audit report. Gloves are not allowed to replace hand-washing requirements. Gloves should be changed after break periods, using toilet facilities, any activity other than handling of food items or when gloves are soiled, torn or otherwise contaminated. If re-useable gloves are used, then they should be made of material that can be readily cleaned and sanitized, clean gloves should be issued at least daily and as needed throughout the day and stored properly in-between uses. Gloves should not be taken home for cleaning. Where gloves are used they should be non-latex (e.g. vinyl, nitrile, etc.). This includes gloves in first-aid kits.	There is not a specific requirement for mushroom harvest workers for other than visibly clean, intact clothing that is free of "adornments" (such as pins, sequins, other attachments) and no sleeveless tops. If there is a requirement for gloves the operation should follow the current guidelines regarding use of gloves. There is not a requirement for wearing gloves within the scheme for mushroom harvesting.
Harvest Practices	4.06.03 & 4.06.03a	Are there written cleaning and sanitation procedures (Sanitation Standard Operating Procedures) for the harvesting equipment?	Harvesting equipment should be cleaned and sanitized on a regularly scheduled basis, based on written Sanitation Standard Operating Procedures (SSOPs). Procedures should detail: • Responsibility for cleaning with cleaning methods • Item/area to be cleaned • Frequency of cleaning • Safety precautions (worker safety with respect to chemicals, etc.) • Chemical (name, dilution and water temperature requirements, and utensils used). • Specific preparation procedures regarding dilution (unless purchased as ready-to-use) for the specific	Procedural requirements for specific harvesting equipment and tools are covered below. For example, under 4.06.12d there are requirements for a written cleaning program (with records) for knives and/or clippers. These tools (one or both) are used in mushroom harvesting operations and the cleaning procedure(s) applicable to these tools would be assessed by auditors under 4.06.12d and not under 4.06.03. The requirements for the content of the procedure(s), however should be consistent with the

Section	Q#	Question	v3.1 Guidelines (Rev.0 Sept 16, 2019)	v3.1 Mushroom Notes v1.0
			chemicals or sanitizers being used and verification testing instructions and records (where appropriate) • Detailed cleaning and sanitation methods, including solution temperature, water pressure, dwell times, any disassembly/reassembly instructions and cleaning verification procedures • Following the standard order: 1. Dry clean (note equipment used) 2. Rinse (note equipment used) 3. Clean (note equipment used 4. Rinse (note equipment used) 5. Sanitize (note equipment used and dwell time) 6. Rinse (if label requires) • Special instructions with respect to cleaning • Responsible person • Logs/records of cleaning and responsibility for verification • Verification procedures (visual, ATP, microbial) and acceptance criteria	current guidelines as stated under 4.06.03 and 4.06.03a.
Harvest Practices	4.06.04	Are all chemicals (pesticides, sanitizers, detergents, lubricants, etc.) stored securely, safely and are they labeled correctly?	Chemicals located on-site and used by the harvest operation(s) are required to be stored in a designated area. Access to chemicals needs to be controlled, so that only workers who understand the risks involved and have been trained properly are allowed to access these chemicals. The chemical storage area should be located away from any raw materials, packaging & finished food products. Spill controls should be in place for opened in use containers. All chemical containers should have legible labels of contents; this includes chemicals that have been decanted from master containers into smaller containers. Empty containers should be stored and disposed of safely.	In addition to the guidelines currently outlined, for mushrooms there may be a need to separate cleaning chemicals used for harvest related tools from cleaning chemicals used in the growing operation. Operators and auditors should consult with the chemical label to determine approved uses and any storage restrictions. Cleaning chemicals should also be stored segregated from pesticides (fungicides, miticides, insecticides, etc.).
Harvest Practices	4.06.05	Are "food grade" and "non-food grade" chemicals used appropriately, according to label and stored in a controlled manner?	All chemicals applied by the harvesting operation(s) should be approved by the prevailing authority (e.g., US: EPA/FDA, Canada: CFIA/Health Canada, Chile: SAG, Mexico: COFEPRIS) for their designated use and used according to label instructions. Only food grade lubricants should be used anywhere near product and packaging materials. "Food grade" and "non-food grade" materials should be stored in separate designated areas and adequately labeled. Grease guns and containers should be labeled adequately. Access to non-food grade materials should be limited to those entrusted with correct use of chemicals.	See also the notes above under 4.06.04. The reference to non-food grade chemicals is applicable to chemicals other than lubricants and may also apply to chemicals used in the mushroom operation with the example again being those used in the growing operation. For example, in some Agaricus farms using a tray-based growing system there are wood treatment chemicals sometimes used to improve the life of the tray. These chemicals should be considered non-food grade and should not be stored co-mingled with food grade labeled chemicals.

Section	Q#	Question	v3.1 Guidelines (Rev.0 Sept 16, 2019)	v3.1 Mushroom Notes v1.0
Harvest Practices	4.06.07	Is the product harvested and transported to a facility for additional handling and/or final packing?	This question refers to product that is harvested in the field and then taken to a facility for additional handling and/or packing. Note: non-scored, informational question.	Although many mushroom harvesting operations harvest directly into the final packaging in most cases (not all) the final packaging would involve additional steps (weighing, over-wrapping, bagging, etc.) that are conducted in an either on- or off-site packinghouse.
Harvest Practices	4.06.08	Is the product packed in the final packing unit in the field?	This question refers to product packed in the field that is in the final unit for shipping (i.e. clamshell, wrapped products, carton boxes, etc.), that usually bypasses any selection packing lines in a facility i.e. goes to a cooling process as opposed to a packing line. Note: non-scored, informational question.	Packing into the final packaging material is frequently the case during harvesting of mushrooms. In most cases, however the final packing activities are conducted in a packinghouse - see also the note for 4.06.07 above.
Harvest Practices	4.06.08b	Is packaging material inspected prior to use and free from handling contamination and exposure to ground?	Avoid stacking soiled bins on top of each other if the bottom of the bin has had direct contact with soil. Product and packing materials used in the harvesting process should be placed with protection underneath and handled in a manner to eliminate contamination from the ground or from inappropriate human handling, which includes commodities where it is industry practice to place the products on the ground after harvest (e.g., celery). Crops down scored for exposure to the ground do not include root crops that are grown underground (e.g., carrots, potatoes, onions, garlic, etc.) or crops that are grown on the ground. Handling contamination could also be caused using cloths or towels to remove dirt and/or debris from product. Measures should be taken to prevent any known or reasonably foreseeable hazard (such as for Clostridium botulinum in mushrooms). Automatic failure question 4.06.09 should be used when observing evidence of product or packaging foreign material, hazardous materials or adulteration issues.	Since cultivated mushrooms are not grown in soil consider the reference to the "ground" and "soil" in the question and guidelines synonymous with the floor in an indoor agriculture facility. Regardless of the construction and condition of the floor no packaging material should be direct contact with the floor at any time. Packaging should also not be stored or placed directly on mushroom growing beds.
Harvest Practices	4.06.08c	Is packing material left in the field unattended, stored secured and protected?	All containers, cartons, packing material should be stored in a protected area to reduce the risk of contamination and tampering that can occur if packing material is left in the field unattended.	This is generally not an issue for mushroom harvesting. Security for storage of mushroom packaging should be covered and considered under Food Defense.
Harvest Practices	4.06.08d	Are finished products coded (containers, cartons and unit packaging) for the day of harvest?	Finished product containers, cartons or other packing material should be lot coded in order to ensure an effective trace back and recall program and also for inventory control. If required by buyer or legal requirements, packaging labeling should include information about recommended storage conditions and usage.	If harvested mushrooms are not further packed in another operation or step outside of the harvest operation the final packaging material is expected to be coded consistent with the current guidelines outlined here.

Section	Q#	Question	v3.1 Guidelines (Rev.0 Sept 16, 2019)	v3.1 Mushroom Notes v1.0
Harvest Practices	4.06.10	Are grading and packing tables used?	This refers to food contact surfaces used to grade, inspect, re-pack, or pack product (e.g., picking carts, grading tables, etc.).	In some mushroom harvesting operations there are platforms used to elevate harvest workers in line with shelves or trays where the growing beds or shelves are. These platforms may also carry carts or racks that the packaging material is placed on. The 4.06.10 series of questions apply to this equipment. Although not direct food contact, in many cases (as with those that have shelves for packaging) there are components of the platforms or the carts on the platforms that are in close proximity to harvested product. Carts used to carry harvested product and the containers the product is placed in are also assessed and scored in this series of questions.
Harvest Practices	4.06.11	Use of re-usable containers.	This refers to any re-useable containers used in the harvesting operation (e.g., buckets, field totes, lugs, bins, gondolas, etc.) used in the harvesting operation.	Re-usable containers are most often used in mushroom harvesting operations. Follow the current guidelines as outlined for design, condition and the cleaning program. Re-usable containers should also be free from any handling contamination issues (including contact with the floor) as outlined in the guidelines for 4.06.11c.
Harvest Practices	4.06.12	Use of tools such as knives, clippers and/or scissors.	This refers to harvest tools (e.g. knives, clippers, scissors, etc.) used in harvesting.	Knives, clippers and/or scissors are used in almost all mushroom harvesting operations. These tools are expected to free from handling contamination issues such as carrying the tool outside of the harvest area by the worker to an eating area or restroom/toilet area. These tools should also not be placed on the growing bed in Agaricus operations, for example. There is an expectation of an accountability program to be in place that accounts for these tools to remain on-site and under direct control of the operation during non-harvesting operations. The accountability program or pre-operation inspection should also account for the physical condition of the tool for any wear/tear that may compromise product safety. Tool dips used to sanitize these tools should be maintained with an approved (for this use) sanitizer and maintained at a concentration consistent with the restrictions on the chemical label. Auditors are instructed to request check(s) of the concentration(s) during the course of the audit.

Section	Q#	Question	v3.1 Guidelines (Rev.0 Sept 16, 2019)	v3.1 Mushroom Notes v1.0
Harvest Practices	4.06.13	Is machinery used in the harvesting process?	This includes equipment with the potential to affect product (e.g., conveyor belts, mechanical harvesting units, field packing rigs, field packing buses, coring rigs and any “in-field” processing rigs). Please note that there are some more specific questions for coring rigs and any “in-field” processing rigs in a later section.	This series of questions is normally scored N/A - "Not Applicable" for mushrooms as they are typically harvested manually. There are a very few operations in existence that have automated harvest. In those operations this series of questions would be applicable and the operation and auditors should follow the currently outlined guidelines.
Harvest Practices	4.06.14	Use of water directly on product during harvest operations.	This refers to water that is used directly on product contact. Examples may include but are not limited to re-hydration, core in field.	This is not generally applicable to mushroom harvesting operations. Mushrooms may be washed prior or during packing operations, however this is generally not an activity conducted during or incorporated in harvesting operations.
Harvest Practices	4.06.15	"In-field processing or semi-processing"	"In-field processed" products are subject to all the questions in this audit and these extra requirements below. "In-field processed" usually refers to product having multiple cut surfaces created in the field (e.g., coring in field, topping & tailing, florets).	This is not generally applicable to mushroom harvesting operations. Mushrooms may be sliced, for example prior to or during packing operations, however this is generally not an activity conducted during or incorporated in harvesting operations.
Harvest Practices	4.06.16	Are transport vehicles (e.g., forklifts) clean, are not a source of contamination and are being used in a sanitary manner?	Transport vehicles (e.g., forklifts) should be part of the sanitation program, maintained clean and not allowed to be a vector of cross contamination.	For mushrooms this would be applicable to internal transport vehicles such as, forklifts or other powered equipment used to move harvested product, packaging or related items associated with harvesting operations. Follow current guidelines as outlined.
Harvest Practices	4.06.17	Post-harvest Treatments	This refers to any post-harvest treatments taking place in the field.	This is typically not applicable to mushrooms as there not treatments applied to mushrooms during harvesting operations.
Transportation and Tracking	4.07.01	Are the vehicles transporting fresh produce from field to facility limited to this function only, maintained in proper condition, and adequate for the purpose?	Vehicles transporting product should be limited to this function only and should be adequate for transporting produce. Vehicles should be in a good state of repair, clean, odor free, free from personal items, and free from chemical and microbiological contamination. If loads are tied down, tarps, belts, ropes, etc., should also be in good working order, without contamination risk to product.	For mushroom operations where there are multiple growing buildings or perhaps sites the transport equipment (typically trucks) would be assessed and scored under this question. Follow the current guidelines as outlined.

Section	Q#	Question	v3.1 Guidelines (Rev.0 Sept 16, 2019)	v3.1 Mushroom Notes v1.0
Transportation and Tracking	4.07.02	Is there a system in place to track product from the farm?	There should be a tracking system in place to ensure that product can be traced back to each exact growing location and harvest date (e.g., grower identification, farm identification, block, harvesting date, etc.).	No specific notes for harvesting of mushrooms. This applies to growing rooms within single indoor facilities or multiple, off-site growing facilities.
Transportation and Tracking	4.07.02a-4.07.02b	Direct packing at the time of harvest. Identification/coding of packing units.	There should be a tracking system in place to ensure that product can be traced back to each exact growing location and harvest date (e.g., grower identification, farm identification, block, harvesting date, etc.).	This is not applicable if further or final packaging is conducted at a packinghouse or processing operation. If it is applicable; i.e. no further handling or packing at succeeding operation(s), each level of packaging; i.e. each container and/or shipping case is expected to be coded or identified in line with the guidelines outlined.
On-Site Storage	4.08.01-4.08.04h	On-site storage series of questions.	This question refers to an on-site storage for items and/or equipment used in the harvesting process (e.g., packing material, cartons, clamshells, re-usable containers, disinfectants, grading/packing tables, RPCs, harvesting equipment, etc.).	No specific notes for harvesting of mushrooms. This applies to growing rooms within single indoor facilities or multiple, off-site growing facilities.