2020/21 EDITION

SAFE 4 MARKET

A QUALITY AND FOOD SAFETY GUIDE FOR PRIMARY PRODUCERS, PROCESSORS AND STORAGE FACILITIES PART III

Supporting access to new markets by enhancing the food safety knowledge and skills of agriculture producers and agri-food or beverage processors in Nova Scotia.

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MARCH 2021

INTRODUCTION

We hope you enjoyed the first and second guides in this series. The 2018/19 issue covered the importance of food safety, food safety hazards and the basics of prerequisite programs, including premises, equipment, sanitation, recall and traceability, transportation and storage, purchasing/receiving/shipping, personnel, pest control, allergens and food additives. It also introduced the concept of Hazard Analysis and Critical Control Points (HACCP) and how to develop a HACCP plan.

The 2019/20 second issue expanded and built on the first issue while introducing new topics such as the Safe Food for Canadians Act and Regulations, Canadian food labelling, food safety culture, food fraud and food defence, approved supplier programs, basic importing and exporting requirements and third-party food safety certification.

If you have not yet read the first two issues, we strongly encourage you to do so before beginning this guide. To obtain a physical copy of the first and second issues, please contact one of Perennia's Quality and Food Safety Specialists.

For the 2020/21 issue, the third and final issue in this series, our team aims to explain frequently asked questions regarding quality and food safety topics such as crisis management, how to become third-party certified, developing an environmental monitoring program, metal detection, closing corrective action requests, hold and release best practices, how to measure continuous improvement as well as food safety considerations for product development.

We hope readers benefit from this issue and enhance their knowledge of food safety. The resources mentioned throughout this issue can be found on Perennia's website under Quality & Food Safety/Food Safety Resources. If you have any questions, please feel free to contact us. We are here to help.

Perennia's Quality and Food Safety Team
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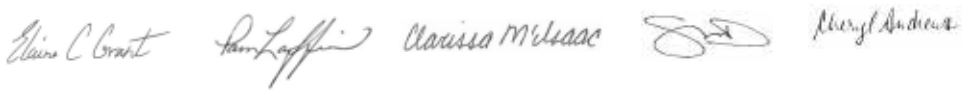

GET IN TOUCH
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CRISIS MANAGEMENT: LEARNING FROM A PANDEMIC

2020 has been the year to adapt and re-evaluate how things have historically been done in the food business. Since mid-March 2020, Perennia's Quality and Food Safety team have heard from several local producers and processors experiencing all sorts of challenges and disruptions to their operations. This includes everything from supply disruptions to securing PPE (personal protective equipment) to keeping up to date and compliant with the ever-changing local Public Health requirements. This is admittedly a full-time job, not to mention, all while keeping customers happy and producing a safe, quality product that customers have come to expect. Farmers' markets, farms and small businesses moved to online sales, where previously farm gate and storefronts were their only options to sell products. This demonstrates just one-way Nova Scotians rose to the challenge.

As we look forward to 2021, we reflect on what we have learned from the pandemic and what we would do differently regarding food safety and quality. Here are some lessons learned so far from enduring this pandemic and adapting to Public Health guidelines.

APPROVED SUPPLIER PROGRAM

In some cases, supply disruptions for key components such as packaging and cleaning supplies left manufacturers unable to secure these items for production and packaging operations. This resulted in companies having to search for acceptable substitutions they may have never previously considered. New suppliers were sourced and used, resulting in changes to how their products looked and tasted. The operations that had contingency plans in place prior to the COVID-19 outbreak found themselves far ahead of others in their ability to source quality materials and have them available. Having an Approved Supplier Program enabled these operations to have the flexibility they needed in a crisis situation. An Approved Supplier Program typically includes having back up suppliers and access to technical information about a material that the companies could relay to new suppliers to ensure that product and packaging consistency could be best matched or substituted as needed.

LESSON LEARNED

As a best practice, have an Approved Supplier Program, which includes more than one supplier for all items, to help with costing and in-shortage situations.

ADAPTING TO CHANGE

Sales fluctuations have been experienced among local producers and processors. Retailers and restaurants scaled back orders due to Public Health ordered shutdowns and/or decreases in customer volumes. People were following the "stay the blazes home" directive from the province. This caused potential FIFO (First In, First Out) issues at facilities with both finished products and their components. Sales at the farm gate and at farm markets were reduced in certain cases due to travel restrictions and capacity limits. Some farm markets and businesses shifted quickly to online sales, contactless pick-up and delivery options, which increased demand for certain items. Some had an increase in sales due to the strong desire and demand to support local. This buy local movement transpired in part due to concerns about an accessible global food supply. This created demands on production as well as panic buying that is not normally experienced in the Maritimes. For some seasonal commodities, this created uncertainty on how to plan for the upcoming season and issues in obtaining supplies to keep up with the demand. This has stretched into 2021. To circumvent this, some businesses shared resources, offered shared pick-up points and delivery and community organizations stepped up to offer free delivery. Flexibility was key in moving with the demand and, in some cases, created a whole new opportunity to reach new customers and support.

LESSON LEARNED

Be flexible in turning problems into opportunities.

BUSINESS CONTINUITY

Early on, shutdowns occurred across the province as well as nationally and internationally to try and prevent community spread of COVID-19. This shutdown not only involved businesses, but schools and childcare centres closed, impacting staffing levels, with some employees choosing or being forced to receive CERB (Canada Emergency Response Benefit) due to many different situations and obligations. However, food manufacturing was determined to be an essential service and was permitted to operate. As a result, there was, and still is, a strain on retaining staffing levels to continue to safely produce and package products. In some circumstances, staffing levels were modified and shifts adjusted. This allowed for an increase in production, social distancing between employees, additional support for employee screening and sanitation tasks, including replenishment of sanitizer and PPE supplies.

Purchasing PPE became a challenge across the Maritimes with added and inflated costs as well as the ability to find good quality sanitizers, wipes and masks that were approved by Health Canada. Some local companies were innovative and able to modify production to begin producing masks and sanitizer, which was a diversion from their normal clothing and alcoholic beverage products they typically made. However, sourcing the correct technical grade alcohol and materials as well as employees to make these products occasionally created some supply issues for these companies.

Some office and management staff worked remotely to limit the number of people onsite or worked modified hours to avoid peak personnel gathering times. Smaller businesses were able to include their employees in their planning and created small work bubbles to keep the possibility of transmission down. Temporary Foreign Workers had a delayed entry into Canada, and businesses needed to ensure the employees had a place to self-isolate for 14 days upon their arrival. The uncertainty of staffing and finding workers to assist in producing and packaging product delayed some seasonal businesses' start dates, and in some cases, acreages that normally would be in production were scaled back. This ability to transition to the new changes was not without its challenges due to evolving Public Health guidelines and directives.

Many businesses found that contractors, inspectors and auditors were unable to come onsite due to travel restrictions and even business closures. This added new complexity to an already challenging situation. Contracted services such as pest control, maintenance and food safety were unable to be present in the facility to carry out their routine duties at the peak of the pandemic. This quickly raised the potential for food safety risks to occur when it became the responsibility of internal or onsite employees to perform these inspections, tasks and repairs without experience or training. In a number of cases, food safety certifications have been extended, and local auditors have been secured, while others unable to secure a local auditor are on a long waitlist. The continued inability to secure audits and inspections is still occurring and is likely to continue into the near future. Some certification bodies facilitated remote audits using new technologies with mixed reviews. The main challenges being that reliable internet is not available in all areas, as well as the know-how and cost of technology that is required to conduct these audits efficiently.

LESSONS LEARNED

A combination of Management Commitment and Business Continuity Plans enabled employers to support their employees through scheduling flexibility and leaves of absence where needed while continuing to meet regulations and requirements and produce and package product for their customers.

In addition to the lessons learned around having an Approved Supplier Program, Adapting to Change, Business Continuity and Management Commitment, other key components of a Crisis Management Plan are:

- Ensuring the plan takes into consideration any potential crisis situations applicable to the business, i.e., pandemic, adverse weather events, extended power outages, etc.
- Measures in place for coping with the crisis while meeting quality, food safety and customer requirements
- Having a Crisis Management Team consisting of a primary decision maker for the company and team leads for key positions
- Having a hold and release program (see the Hold and Release Best Practices section in this booklet)
- Having current and up-to-date contact lists for team members, inspectors, customers, suppliers, legal advice, etc.

Having these tools and measures in place and routinely testing the crisis management plan enables a business to be more prepared and adapt to disruptions and challenges faster. One thing is for certain, trying to navigate the new normal moving forward will require continued flexibility and thinking outside of the box to keep both employees and products safe

WHAT'S IN YOUR QUALITY AND FOOD SAFETY TOOL KIT?

Although each facility is unique, some of the tools used in food production for quality and food safety are similar. This section outlines the most common tools used and what to consider when sourcing and installing tools and equipment.

A few key factors to consider when sourcing equipment are that devices are durable, easily cleaned, lightweight and easy to carry or transport. They should be user-friendly and able to be calibrated or verified (i.e. thermometers, scales, refractometers and pH meters). If the device has a screen, the display should be easy to read in various lighting conditions. Consider if the device is rechargeable, or if it uses batteries and what type of batteries are required, as regular batteries are the easiest to source and replace. If you need dilutions for specific analysis, make sure they are the proper concentration and have not exceeded the expiration date if applicable.

Equipment must be capable of delivering the requirements of the process. It is the businesses' responsibility to research and contact the providers to determine what equipment is the best fit for the businesses' needs. It is good practice to get at least two quotes for costing purposes, however more expensive does not always mean superior equipment: always check reviews. Equipment must never pose a risk of contamination to the product.

When installing equipment, ensure electrical sources are available to prevent plugs from becoming a trip hazard. Equipment must be installed to permit proper drainage and ventilation and be accessible for cleaning, inspection and maintenance.

Employees responsible for using the tools or equipment must be properly trained and qualified. These individuals should be familiar with the operating, service procedures and safe handling practices.

Below is a list of common tools and supplies used for product testing, inspections and sampling and a brief description of a few key items. To supplement this information, Perennia's Quality and Food Safety team released several "How To" videos on our **website** and **YouTube** channel to demonstrate how to use the tools and equipment needed in your quality and food safety tool kit. Although specific equipment brands are used in these videos, this is only for demonstration purposes. We do not endorse these products.

TOOLS AND SUPPLIES FOR PRODUCT TESTING, INSPECTIONS AND SAMPLING

- ATP Meter
- Light Meter
- Scales
- Thermometers – infrared, handheld, thermocouples
- Refractometer
- Water micro & chemical sampling containers
- Metal Detector
- Metal Detector test pieces (Stainless Steel, Ferrous, Non-Ferrous)
- Magnets (Tesla or Gauss meter)
- PPE (Personal Protective Equipment)
- Flashlight
- Shatterproof inspection mirror
- Sanitizer verification analysis (i.e. test strips or kit)
- Walkie talkie
- Lock-Out Tag-Out
- 3M micro plates
- Stopwatch
- Measuring tape (i.e. stuffing emulsions)
- Salometer
- pH meter
- Colour chart
- Drying oven/ microwave
- Blender/emulsifier
- Fat analysis supplies (Babcock method)
- Salt analysis supplies
- Butter Fat automatic analyzer
- Incubator
- White paper towel
- Pocket magnet

PPE (Personal Protective Equipment)

This can include designated footwear for designated areas or colour-coded smocks per department (ready-to-eat vs raw), hairnets/beard nets, bump cap or hardhat, face shields, goggles, hearing protection, gloves, safety glasses, freezer suit, sanitation wear, cleaning wipes, metal detectable pen, freezer-friendly ink and a clipboard. For additional information, please refer to our videos on:

- **How to Properly Enter and Exit a Food Production Area**
- **How to Properly Wash Your Hands**

ATP OR ALLERGEN SWABS

These swabs are used to detect the presence of ATP or allergen proteins on surfaces throughout the facility (e.g. equipment, tables, drains, etc.). Shoulder or neck-straps are helpful when using these; usually, you will have your hands full with checklists, new swabs and used swabs. Make sure your device is user friendly for your ATP swab and allergen sampling needs. Consider the following about the device: How long is the count down of analysis between samples, is it rechargeable? How many samples will it test before it needs to be charged, or does it run on batteries? If it runs on batteries, are they common or a specialty? For more information, please refer to our videos on:

- **How to do ATP Swabbing Using Hygiena System Sure Plus & Ultra Snap Swabs**
- **How to use Hygiena Aller Snap Rapid Protein Residue Test Swabs**

LIGHT METER OR SMARTPHONE APP

A light meter is used to measure light intensity throughout the facility. Different areas throughout the facility require different light intensities, i.e. 110 Lux for storage areas and warehouses, 220 Lux in processing and packaging areas and 540 Lux for inspection areas. Another lighting consideration is the Colour Rendering Index (CRI). Some commodities have specific requirements. Lighting in production and storage areas should be protected to prevent breakage and physical contamination of the product. For more information, please refer to our video on:

- **How to Test Light Intensity**

SCALES

There are different types of scales to consider. Floor scales are used for very heavy large items (e.g. combo bins, wharf tubs, finished product pallets). There should be a known weight that reflects the weight being measured. For example, if using a scale to measure 50-200 kg, the known weight should not be 5 kg. When using a smaller lab or tabletop scales, the test weights should also be of appropriate size and may need to be certified (scales used for trade). Ask the provider what type and size are best for your needs. Scales are required to be calibrated annually. For additional information, please refer to our video on:

- **How to do a Scale Accuracy Check**

METAL DETECTOR

Usually, there are two functions of a metal detector: detecting metal and the rejection mechanism. Size and capability will be determined based on your product. If the metal detector is fed by a conveyer (small individual packets or large bulk cartons) or is for products such as purees, the metal detector may be inline. This would require a diversion to separate possible contaminated product. For additional information, please refer to our video on:

- **How to Set Up and Calibrate a Metal Detector**

MAGNETS

Magnets are used to remove tramp metal or metal filings. Metal can be introduced either from wear of equipment in grinding, cutting, emulsifying, or even normal wear. Metal can also be introduced from incoming materials. For additional information, please refer to our video on:

- **How to Verify Magnet Strength**

REFRACTOMETERS

Refractometers are used to determine a concentration of a particular substance within a given solution. They are used by various industries such as maple, lobster pounds, breweries, beverage manufacturers, wine, jams, jellies, etc. For additional information, please refer to our video on:

- **How to Calibrate a Refractometer**

SALOMETER (brine-hydrometer), SALINOMETER, SALIMETER

These devices are used for measuring salt content. If using a glass device, it should be stored and transported in its protective case. (Video coming soon).

THERMOMETERS

A certified thermometer should be on hand to verify any other thermometer that is not certified. Depending on the application, if using infrared (IR), probes, thermocouples, talk to the supplier to make sure the temperature range is appropriate for the process (i.e., measuring low temperatures or measuring high temperatures). A common problem with thermometers is that the device may lose accuracy over time. If out of compliance, these will need to be replaced. For additional information, please refer to our video on:

- **How to Calibrate a Thermometer**

pH METER

Monitoring the pH of foods may be a critical control step and is vital in producing a safe, quality product. It is very important to choose an appropriate pH meter and be properly trained on its use, service and care. (Video coming soon).

WATER SAMPLING EQUIPMENT

Equipment used to collect water for micro samples includes alcohol spray or wipes and a sample bottle (with precipitate). When collecting air or ice samples, use a Whirl-Pak® bag or sterile container. Collect enough ice to allow for an adequate sample size after melting. When collecting water samples for chemical analysis and composition, check with the lab to determine the correct size container for the samples required. Laboratories shall be accredited for the analysis required. Water used for processing must meet Health Canada's Guidelines for Canadian Drinking Water Quality. Remember to keep copies of requisitions for all samples and record the sampling location. Clean ice packs and coolers may be required for transporting samples. For additional information, please refer to our video on:

- **How to Collect a Water Sample for Micro Analysis**

FLASHLIGHT

A flashlight may be used for pre-op inspections, inspecting hard to see and reach areas of equipment, inspecting truck trailers and the back corner of a warehouse where additional lighting may be needed.

SHATTERPROOF INSPECTION MIRROR

This tool is great for pre-op and post-op inspections by QA, sanitation and maintenance when looking inside, under or on top of equipment or viewing other hard to reach areas like inspecting palletized product from below.

WALKIE TALKIE

Communication is key, particularly during pre-op inspections, especially if the facility is large. This tool can be used to contact supervisors, maintenance and/or sanitation if a problem is identified. Communication devices shall be kept in a clean and sanitary manner.

LOCK-OUT TAG-OUT

This procedure is important for safeguarding employees against accidental start-up when performing maintenance, sanitation or inspection activities. Lockout devices hold powered equipment in a safe or off position. Lockout Tagout (LOTO) or Hazardous Energy Control (HEC), is regulated in Nova Scotia under the Occupational Health & Safety Act (SNS 1996, c. 7) and the Occupational Safety General Regulations (NSS Reg. 44/99).

FOOD SAFETY CERTIFICATION: A STEP BY STEP PROCESS TO ACHIEVING YOUR GOAL

You have achieved the farm gate or front door, farm market, online sales you had hoped for, but now you are ready to move onto retail sales. Retailers are requesting inspection reports, audit reports or even HACCP certification. To determine what is being asked, follow the decision tree below.

** For details on how to secure a CFIA license, visit CFIA's **website.**

*** CFIA SFCR Gap Assessment**

CFIA Definitions (as per CFIA):

A **unique identifier** refers to a code that you use to identify a defined quantity of food to allow it to be traced. Unique identifiers may include a lot code, best before date, purchase order number or bill of lading number.

A **lot code** refers to a type of code that you use to identify a quantity of food that was manufactured, prepared, produced, stored, graded, packaged or labelled under the same conditions. It can contain numbers, letters or both numbers and letters.

A Universal Product Code (UPC) or Price Look-Up (PLU) code is not considered a unique identifier since it does not identify a defined quantity of a food that is provided to another person.

Did you know that a PCP (preventative control plan) and PC's (process controls) have similar components to any Food Safety Program? You do not need two separate programs to be CFIA and third party audited. However, it is your responsibility to review the requirements for both and fill in any gaps to ensure you meet both if this is a requirement for your operation. You can incorporate both requirements into your food safety program to make it easier to manage.

YOUR CUSTOMER HAS ASKED YOU TO:

BE FEDERALLY (CFIA) LICENSED

Visit the CFIA website to review the Timeline that applies to you, to determine what you need to do to be compliant with licensing, preventive controls, preventive control plan and traceability requirements.

***These requirements vary by food, activity and size of the food business.**

Do you need a license?

YES

- Create an account in My CFIA **
- Determine your License Structure.
- Complete a License Application.
- Receive your License.

NO

However, your customer requires you to have traceability.

Do you need a PCP?

YES

- Bring together a Food Safety Team at your operation. A cross functional team is recommended and must include management representation.
- To assist you in developing a PCP and or PC's, use the CFIA Gap Assessment template * to conduct a gap assessment to the requirements. This can be done internally or with the help of a consultant. Remember to include commodity specific requirements.
- Develop a draft of your PCP and or PCs as per the requirements.
- Work to close and correct the gaps, that have been identified, with your team.
- Review the written program with the team. Make any corrections or updates as they are identified.
- Implement the program, make any updates or corrections as they are identified.
- Complete a self assessment of the regulatory requirements you must follow. This will help identify any gaps prior to a CFIA inspection. Close those gaps as soon as you are able.

Congratulations! You are CFIA inspection ready.

NO

Do you need PC's?

YES

- If you do not currently use a lot code or a unique identifier on your product (PLU does not count), then you will need to decide on a format and how you will apply it. *** see CFIA definitions below. This should be a team decision.
- Draft a Traceability Program. Review the draft written program and records with the team. Make any corrections or updates as they are identified.
- Implement the program, make any updates or corrections as they are identified.
- Test your traceability program by conducting a traceability exercise with your team.
- Can you trace your product one step back, one step forward? Was the test successful?

YES

Congratulations! You can notify your customer to tell them that you have a documented and tested traceability program in place. They may ask you to supply proof.

NO

Do you need Traceability?

YES

- However, your customer requires you to have traceability.

NO

HAVE A 3RD PARTY CERTIFICATION

Are they asking for a GFSI certification (such as Canada Gap, SQF or BRCGS etc.)

YES

- Review the requirements for the standard of your choice. As well as do research into which certification body works best for your operation. Remember to ask for a local auditor.

NO

- Contact certification body such as NSF, SAI Global, bQb Cert to see what 3rd party options are available, ask if they have local auditors.
- Choose your certification such as a HACCP certification or Supplier Verification audit.

- Bring together a Food Safety Team at your operation. A cross functional team is recommended and must include management representation.
- Conduct your own or hire an outside consultant to complete a Gap Assessment to the requirements.
- Develop a draft of your food safety program as per the requirements.
- Review the written program with the team. Make any corrections or updates as they are identified.
- Work to close and correct the gaps, that have been identified, with your team.
- Implement the program, make any updates or corrections as they are identified.
- Now may be the time to contact your certification body of choice to book an audit. You need to have full program documentation and anywhere between 2- and 6-months worth of records to be audited in most cases. So, keep that in mind when you are booking an audit date.
- Complete a self assessment or pre audit assessment to help identify any gaps prior to an audit. Make sure this is completed well before an audit, no later than 1 month before so you have time to close those gaps before your audit .

Congratulations you are audit ready! Dependent on your certification type and if you receive any non conformances you may have to close those and submit them before you receive your certification.

HOW TO DEVELOP A BASIC ENVIRONMENTAL MONITORING PROGRAM

An Environmental Monitoring Program is implemented by food manufacturers of open and ready-to-eat (RTE) products (e.g. dairy, RTE meats, fresh-cut fruits and vegetables, etc.) as part of their Quality and Food Safety program. This helps to monitor the overall effectiveness of good manufacturing practices, preventive controls and sanitation within their processes and facility.

When implemented effectively – pathogens, food spoilage organisms, allergens and sanitation deficiencies can be monitored and controlled by the presence/absence of indicator proteins or microorganisms in the environment. Environmental Monitoring can indicate a failure in one or more co-existing preventive controls in place, e.g. allergen control, cleaning and sanitation, pest control, sanitary maintenance, etc. It can also indicate a state of control within the processes and facility.

Many different indicator tests can be used to monitor your environment:

1. ATP (adenosine triphosphate) swabbing and protein-based rapid testing can be used to determine whether a surface is clean or if it needs to be cleaned more effectively before processing. These tests are beneficial in determining the presence/absence of soils. However, they cannot determine what the soil is, e.g. microbiological or something else and allow us to correct a sanitation issue immediately.
2. Allergen swabbing and allergen-specific rapid testing can be used to determine whether a surface contains the presence of an allergen or not. These tests are beneficial in determining whether a sanitation procedure was completed effectively to eliminate an allergen's presence and avoid cross-contact between allergen-containing and non-allergen containing products that are produced on the same line or in close proximity. This allows us to correct a sanitation issue immediately.
3. Microbiological determination of indicator organisms (e.g. total plate count, coliforms, *Enterobacteriaceae*) can be used to determine the cleanliness of equipment, validate a sanitation process, or determine if there is a microbiological population present in a specific area. Testing for the microbiological presence of indicator organisms does not determine the presence of pathogens but can indicate a state of control in the absence of indicator organisms.
4. Testing for food spoilage organisms (e.g. yeast and moulds, bacteria) can be used to determine the cleanliness of equipment and the surrounding environment. The use of total plate count, air sampling, or settle plates for determination of yeast and moulds is beneficial to identify contamination sources of spoilage organisms that could affect your finished product's shelf life.
5. Pathogen testing can be used to determine the presence or absence and quantities of foodborne pathogens (e.g. *Listeria, Salmonella, E. coli*) within the process and facility environments. Testing for specific pathogens within the process and facility environments helps to proactively identify sources of pathogens to avoid contamination of your finished product and verify your pathogen control measures.

Monitoring considers all areas of the process, production area and facility. These areas are classified into zones:

Zone	Definition
Zone 1	Direct food contact surfaces post lethal processing, e.g. fillers, knives, screens, food contact conveyors, hoppers, food contact utensils, etc.
Zone 2	Non-food contact surfaces adjacent to food and food contact surfaces, e.g. production equipment, non-food contact conveyors, utility tables, control panels, aprons, etc.
Zone 3	Non-food contact surfaces located in or near the production area, e.g. floors, walls, drains, doors, hoses, carts, etc.
Zone 4	Non-food contact surfaces located remotely outside of the production areas, e.g. cafeteria, warehouse areas, maintenance areas, locker room, office areas, etc.

By considering all areas, all daily activities that have the potential to introduce environmental contaminants into the production area and finished product are considered, which enables identification and resolution of any issues.

STEPS TO IMPLEMENTING A BASIC ENVIRONMENTAL MONITORING PROGRAM

1. **Assemble a cross-functional team** – This includes representatives from each department that impact the success of your Environmental Monitoring Program, such as Quality Control, Sanitation, Production, Maintenance and Management.

2. **Gather information** – Are there testing or monitoring programs already in place that you can use the information/data from? Are you familiar with the equipment used? Have food safety programs been developed and validated to assist with the development of your Environmental Monitoring Program? (e.g. sanitation, allergen management)

3. **Identify requirements** (e.g. regulatory, customer) – Is there specific testing or environmental monitoring that must be performed by your facility to meet regulatory or customer requirements for your commodity? e.g. Ready-to-eat foods are subject to the provisions of Health Canada's Policy on Listeria monocytogenes (April 1, 2011). Therefore, RTE food manufacturers must have effective good agricultural/manufacturing practices, preventive controls and a preventive control plan, including an Environmental Monitoring Program developed and implemented.

4. **Hazard identification** – Complete an onsite review of the facility, creating a list of sample sites for each area and the Zone the site would be included in. If there is uncertainty on which Zone a site falls under, complete a risk analysis taking into account the risk level of the Zone (Zone 1 – High, Zone 2 and 3 – Medium, Zone 4 – Low) and the cleanability of the site/area (Easy to clean – Low, Harder to clean – Medium, Difficult to clean – High) to help determine which Zone the site falls under. A visual risk matrix can be developed to assist with this.

5. **Determine the type of sampling and testing to be completed** – Take into consideration the target organisms for the site/area to be sampled. What organisms could be present in your environment? What organisms are a risk to your finished product? Determine which type of sampling and testing will indicate whether the site/area is satisfactory or a risk. Determine if your samples will be tested in-house or sent to an accredited third-party laboratory.

6. **Complete a baseline assessment** – To learn your facility's current environmental status, perform multiple tests for your target organisms using the list of sample sites you determined for each area and Zone. The baseline assessment will also assist with setting limits for pass/fail sampling completed during routine production and assist in determining the frequency in which sampling should take place (e.g. if the baseline assessment indicates control or satisfactory results, sampling could take place on a monthly frequency, if the baseline assessment indicates unsatisfactory results the sampling should be completed on a more frequent basis along with a corrective action plan).

7. **Set a frequency for sampling and testing** – Frequency of sampling is essential to be adequate to manage risk to the consumer/customer. This may or may not be set by regulatory, third parties or customers. Include reasons and supporting documentation for frequencies set, include the information gathered from your baseline assessment.

8. **Develop your written Environmental Monitoring Program** – Develop the SOP (Standard Operating Procedure). Include your list of sample sites, target organisms, sampling procedures, testing procedures, frequencies, how records will be documented and kept, steps for corrective and preventive actions and verification procedures.

9. **Training** – Ensure sample collectors (and their alternates) are trained on the sampling methods, SOP, record keeping, and to perform verification that analytical equipment is working properly.

10. **Record keeping** – Keep a record of all environmental monitoring results, actions taken, etc. Ensure results are communicated as appropriate, evaluated as satisfactory or unsatisfactory and monitored. See example record below.

11. **Perform a trend analysis for results regularly** – Assists in visually identifying increases in indicators that an issue is arising, trends for certain areas/fillers/zones, seasonal trends, etc.

12. **Corrective actions** – Implement a corrective action plan for non-conforming test results (e.g. complete root cause analysis, including immediate and preventative measures).

13. **Reassessment** – Schedule and complete a regular review of your Environmental Monitoring Program at a minimum of annually or when there are:
    - **a.** Product failures (e.g. product with positive results)
    - **b.** Failures to identify and address significant issues (e.g. results identifying positive results which the site program did not, re-occurring and unresolved positive results)
    - **c.** Changes in production and sanitation conditions, process flow, new equipment
    - **d.** Changes in regulatory or third-party requirements
    - **e.** New developments in scientific information
    - **f.** Consistently negative results (Consider whether the correct parts of the facility are being tested? Is the testing being completed correctly? Is the appropriate test being performed?)

Note: Rotate sample site schedules at a minimum annually to ensure the environmental conditions are captured throughout different seasons (e.g. summer, winter, high and low production volumes, etc.) to help identify and manage any risks that may go unidentified.

It is important to implement an effective Environmental Monitoring Program to be proactive, monitor and control pathogens, food spoilage organisms and allergens and sanitation deficiencies. What is unknown could have a negative impact on the food safety of your finished product and the health of your consumers.

It is a requirement for most products under the Safe Food for Canadians Regulations and a component for most third-party certifications to implement an effective Environmental Monitoring Program. However, if you have validated controls in place, you may find yourself in a position to justify completing a risk assessment in support of potentially not implementing an Environmental Monitoring Program. This involves identifying the risk and risk factors in detail and how the risk is mitigated within your facility. Validation of the control of the risk and support for the risk being low and under control is essential. To do this, you may find useful information and resources from commodity groups or find scientific studies relating to your product to support your risk assessment and validations. For example, "**Food Safety Standards and Guidelines**" on the CFIA website.

SAMPLE RECORDS

ENVIRONMENTAL MONITORING SCHEDULE AND RESULTS													
Area	Zone	Frequency	Sample Location	Target Organism	Sampling Method	Date	Testing Method	Acceptable Limit	Results	Satisfactory (S) / Unsatisfactory (U)	Corrective Action	Verified by	Date

SAMPLE RECORDS

ENVIRONMENTAL MONITORING SCHEDULE AND RESULTS					
Date			**Employee**		
Time	**Sample Location**	**ID #**	**Testing Method**	**Results**	**Corrective Action**
Verified by			**Date**		

REFERENCES

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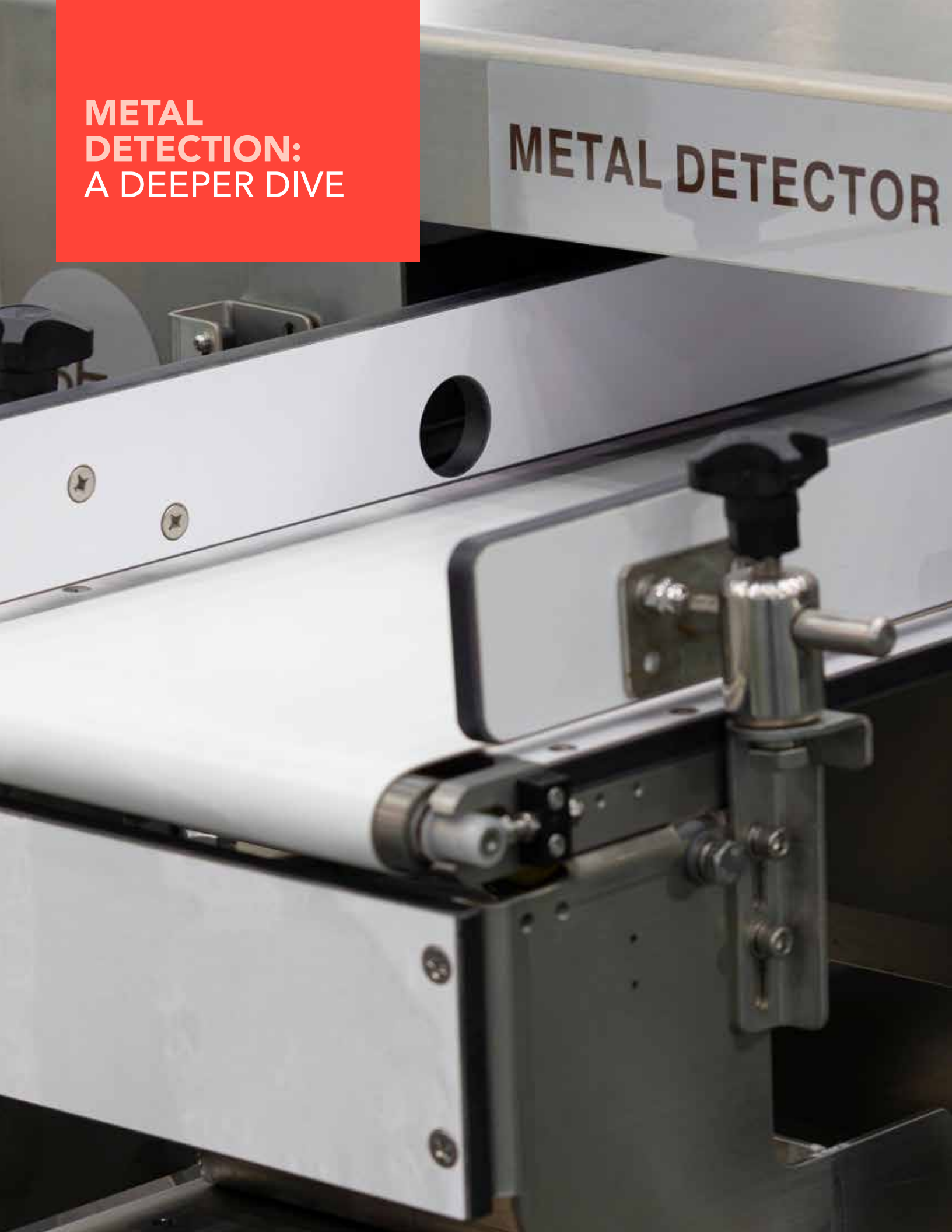
METAL DETECTION: A DEEPER DIVE



Metal detectors are most often seen in large manufacturing facilities. However, they are now commonly being used in smaller, medium-sized facilities. This is mainly because these companies are working to sell at retail, and the food safety standards they must adhere to require some form of foreign matter detection. Metal detection is one option that can be used.

HOW IT WORKS

Metal Detectors have what is called a Balanced Coil System. They contain three sets of coils wrapped around a rectangular or round aperture, which is the opening where product passes through the metal detector. Two coils on the outer edges of the aperture are called receiver coils. These coils are wrapped in opposite directions, with a transmitter coil in between them. Metal Detectors normally consist of a metal enclosure to protect the coils. However, the aperture where the products pass through, is typically covered with a plastic that enables the detector to be cleaned and protects the internal components from debris. In addition to the metal detector itself, there will be controls that are either mounted to the side of the head or are located remotely.

Metal detectors may be installed on a fixed or variable speed conveyor or contained in a pipeline or a hopper feed system. Most conveyor metal detectors come with an automatic rejection system or are engineered and fitted with one on-site. These automatic rejection systems are fully enclosed between the metal detector head and the rejection bin. They have a lockable box for the rejected product, typically a light or other device to notify that contaminated products have been detected and rejected successfully. They also have an automatic belt stop failsafe system that helps prevent the potentially contaminated product from continuing into the product stream. This could happen if there were a malfunction of the rejection system, metal detector, or the reject bin is too full. Essentially there are two parts to the metal detector: the detection mechanism and the rejection mechanism. It is important to ensure both are working.

Metal contaminants fall into three categories:

- **Ferrous** – magnetic and conductive are the easiest to detect
- **Non-ferrous** – nonmagnetic, conductive (good to excellent) and is relatively detectable
- **Stainless steel** – comes in various grades and typically not magnetic, a poor conductor, and as a result, it is difficult to detect. Most food facilities use 304 (L) and 316 stainless.

If the product is wet, has a high salt content or is both wet and high in salt, then detectability is further hindered.

The size of the metal piece also plays a role in the detectability of the metal object. A small thin wire from a mesh screen or a metal sliver can be hard to detect depending on the orientation in the food product being detected. This identifies the importance of having proper foreign matter control procedures and preventative maintenance in place to identify any potential sources of metal contamination before it enters the product streams.

FACTORS LIMITING SENSITIVITY

As mentioned above, several factors can limit the sensitivity of metal detectors: a product's moisture, salt content, temperature, and additional parameters such as size, shape, density and product consistency. The product's orientation as it enters the metal detector can also hinder the detection of metal. The packaging material also plays a factor in limiting sensitivity or even false rejects such as those made from recycled components or foil type packaging.

Challenges with metal detection for some products are due to what is called Product Effect. This occurs when the type of product being inspected, and its properties cause some difficulties and hinder proper detection of the metal contaminants. This means that if a product can affect the metal detector to fool it into thinking it's a metal contaminant, then product effect is occurring. To try and circumvent this occurrence, products are classified as either wet or dry. Products with high moisture (wet) tend to be good conductors, and as a result, the metal detector will have trouble differentiating between the wet product and any potential contaminants. Also, there is a limiting ability for metal detectors to pick up small pieces of metal in wet products vs. dry products. As a result, many operators will decrease the sensitivity to prevent false rejects. In doing this, they are limiting the amount and size of metal that can be found. A product is considered to be dry when it does not affect the metal detector. In some cases, it means that they are low in moisture or it could be frozen product. To be considered dry, they need to be low in conductivity when they pass through the metal detector.

Products packed in metallized packaging are typically run through a metal detector immediately before they are packaged. If that is not possible due to the nature of the product and packaging, you may need to have a "ferrous in-foil" metal detector in place. These types of detectors overlook the aluminum foil or other non-ferrous metals used in the packaging. However, they will still detect other ferrous metals.

WHAT TO LOOK FOR

Metal detectors are not a low-cost investment. However, it is best to purchase a metal detector from a reputable company rather than getting a used one locally or from an unknown supplier. If you are on a budget and need to go the used route, here are some things to consider:

- Make sure the electrical is compatible with Canadian Safety Standards. If it is not, then you will have an added expense in rewiring it. All electrical products that plug into electrical outlets must comply with Canadian National Safety Standards and certified by an accredited certification body. You can determine this by looking at the certification markings such as CSA, cUL or cETL.
- Make sure the size of the unit fits your finished product size. Will the detector be used for individual packages or filled boxes? What future products might you produce?
- Be wary of counterfeit products. They are very dangerous and pose a fire hazard. To determine if your detector is legitimate, make sure the equipment you are buying does not fall into these categories:
  - » Quality is poor
  - » You are getting a great deal (inexpensive)
  - » Unusual spelling, fonts, grammar errors on the equipment or packaging
- Make sure you can find instructions (to include maintenance and sanitation) for the make and model you want to purchase in your preferred language before purchasing the equipment.
- Consider bringing in a technician that services the brand you plan to purchase. They can help you set it up, advise on what you need and perform preventative maintenance. If you purchase a commonly used brand in the province, you may be able to save on technician travel costs if there are no local technicians.

METAL DETECTOR SET-UP

To set up a metal detector, the sensitivity must be adjusted to match the product type and size it is currently running. If you change the product type or size during a production run, you will have to adjust the sensitivity and retest at the new setting. Ensure that there is confirmation of detection and rejection with the test pieces listed (typically Ferrous, Non-Ferrous and Stainless-Steel ranging in size from 0.3 mm to 8.0 mm.). New test packs (your product packaging with product) must be created each time you produce a product. These test packs must be tested first to ensure they do not have metal contamination and be well marked, so they are not accidentally packed and shipped with regular product. Place the test strip or card containing the metal piece at the leading edge of the package and then run it through again with the test piece located at the trailing edge of the pack, making sure each time the detector detects the metal and that the rejection mechanism works. This rejection mechanism may be an arm that pushes the product into a lockable bin, a conveyor that drops the product into a bin below or could be a stop mechanism on the belt or a combination of these options. Be sure the rejection mechanism's timing (either arm, off chute or belt stoppage) captures the product that the metal detector has detected.

PROPER METAL DETECTION PROCEDURE

Metal detector checks should be completed at the start of a shift prior to product being run, at minimum every two hours and at the end of a shift, or when there is a change in products. If the production line is down at the time of a scheduled check, make a note on the metal detector record and complete the check before restarting the line.

When completing each scheduled check, place a test piece on the clearly marked product (make it easy to identify by placing a large x on it or write 'test' on it) that has already cleared the metal detector. The test piece should be positioned on the leading edge or front of the product. For larger items, repeat the test and place the same test piece on the trailing edge. For smaller pack sizes, the test piece can be placed in the centre and run only once. Allow for normal product spacing on the belt.

Follow product through the metal detector; wait for the reject mechanism to activate (i.e. belt stop). Remove from the line, then test the next test piece. Record each check on a metal detector record as well as the exact time that the metal detector was tested. Metal detection is often a CCP (critical control point). Therefore, ensure each check is within the parameters, not over the two-hour intervals.

If work or repairs have been carried out on the line, i.e. downtime experienced, the metal detector must be checked before start-up.

Your metal detector record may look like the following:

Date					
Operator					
Product		**Size**			
Operator Check: Record the time of the check, add a checkmark if the metal detector and reject mechanism detect the test piece and operate as they should.					
Test Piece	**Start**				**End**
	Time	**Time**	**Time**	**Time**	**Time**
1.2 mm Fe					
1.2 mm N-Fe					
1.5 mm SS					
Initials					
Corrective Action/Comments:					
Verified by & Date:					

DEALING WITH SUSPECT AND REJECTED PRODUCT

If a metal detector fails to detect the test piece and reject the test sample; the line must be stopped and all product placed on hold since the last good check. This highlights the importance of recording the exact time of each metal detector check. Typically, QA and Maintenance or the Supervisor are notified. Corrective action must be taken and documented. The production line must not start back up until the problem is resolved.

CORRECTIVE ACTION REQUESTS (CAR): CLOSING YOUR CAR EFFECTIVELY

No food operation, small or large, is problem-free. It is quite common during the inspection or audit process that an inspector or auditor may leave you a list of deficiencies or non-conformances (NC) that will need to be followed up on within a specified timeframe. The inspector or auditor may have a specific process to file those corrective action requests (CAR) before receiving a certificate or renewal of a license. However, there is a common best practice in formatting a successful CAR submission.

It starts at the inspection/audit. If a deficiency is noted and you do not understand or do not agree with the observations, make sure you ask questions and respectfully challenge where appropriate. They will be able to explain how you are deficient. However, they will not be able to tell you how to correct the deficiency as they are not permitted to consult to avoid conflict of interest. Arguing with your inspector or auditor will not help the situation. However, there is nothing wrong with respectfully discussing the deficiency and defending how you meet the requirements or how that particular requirement does not apply to your operation. Ultimately the decision is with the inspector or auditor to determine if there is enough evidence (observations or written documentation) to support that you meet the requirements.

Once you are handed the deficiencies/non-conformances, the clock starts. If they state you have 30 days to complete, it starts from the time the auditor leaves. Do not delay responding or correcting the deficiencies. It takes time to correct and supply proof that the deficiency is corrected. Also, if it turns out you need to ask for an extension due to the inability to complete a corrective action such as building updates due to the contractor's availability and cost, it's best to ask for that early. There is no guarantee that you will be given the extension, so be prepared if you are not granted permission.

It's best to have a formal document such as a Corrective Action Report or a Deviation Report drafted to capture how you approach the deviation and the steps you have taken to correct and prevent it from happening again.

Your report may look like the following:

Deviation Description

Reported By

Date Reported

Was product affected (circle one) **Yes** **No**

Was product safety compromised **Yes** **No**

Was product placed on hold? If so, list quantity and product description

Corrective Action Description (Immediate Corrective Action Taken) Describe the immediate corrective action

Person responsible for corrective action

Target date for completion

Actual date for completion

Preventative Actions Description Root cause of the deviation – ask why five times or use fishbone diagram or another method

Describe the root cause

Describe the preventative corrective action

Person responsible for preventative corrective action

Target date for completion

Actual date for completion

Follow Up/Effectiveness Check

Describe the method of follow up

Person responsible for follow up

Date of completion

Close Corrective and Preventive Action Plan if the actions were effective (sign and date

Signature (Verified by)

Date

Proper root cause determination and an effectiveness check will ensure that the deficiency is corrected and prevent its recurrence. By definition, a root cause is the underlying cause of a problem, which, if adequately addressed, will prevent a recurrence of that problem. To help visualize this, picture a stubborn weed in the lawn. The "symptom" is what you can see on the surface. The "root cause" of what is causing the weed to appear is something deeper in the ground. If only the visible flower and stem are removed, the weed will come back and perhaps multiply. However, by digging deep into the soil and removing it at the roots, the risk of recurrence is lower. Through a thorough root cause analysis, you are determining the missing or inadequately applied controls that will prevent a problem recurrence. Root cause analysis uncovers the real cause of a problem and deals with it rather than simply dealing with the problem on the surface (the Band-Aid approach).

It's important to check with your inspector or auditor and be clear on what is required to close out your non-conformance. Occasionally, the inspector may need to come back onsite to observe the corrective actions you put in place to ensure they effectively close out that non-conformance. You may be required to submit a corrective action report and copies of records, procedures, policies and or supply photographic/video evidence that the non-conformance has been adequately addressed. If you are required to submit a corrective action report, make sure it's filled out in full and that any of the evidence mentioned above is filed with it.

HOLD AND RELEASE BEST PRACTICES

Product, ingredient, packaging and equipment issues can happen. Having a proper hold and release program in place for finished product, ingredients, packaging, raw materials, work in process, product returns, equipment and positive release, in addition to effective transport and storage procedures, can help ensure non-conforming items are controlled upon detection and reduce the risk of incurring a recall in the process.

As soon as an issue is detected or something is determined to be non-conforming, the affected item should be segregated. Have HOLD tags readily available for employees so they can label non-conforming product, packaging, ingredients, equipment etc., as required.

Hold, release and reject tags for identifying item holds, and disposition should be simple and bold. Colour coding works well and makes them highly visible in storage. HOLD tags should contain the following information: hold date, name of item, item date/lot code, quantity, reason for the hold and the initials of who placed the item on hold. A reference to a corrective action report number (CAR #) is also recommended so that the issue can be easily tracked and followed-up on.

Items found to be rejected should be identified using a REJECT tag and disposed of immediately.

If equipment is found to be non-conforming, it should be identified using a HOLD tag until it is repaired or replaced.

All tags, once items are dispositioned (released or rejected), must be removed before shipping/use (or copied if you are returning a rejected item to a supplier) and kept on file with the corresponding corrective action report reference number (CAR #). These are important records that can act as a confirmation that an item has been properly dispositioned. For example, that an item was approved for shipping to leave your farm or facility.

Below are examples of Hold, Release and Reject Tags.

PLANNING FOR STORAGE/ WAREHOUSING AREAS

Although not mandatory when planning a storage area, it is best practice to set aside a location specifically where items placed on HOLD can be segregated to avoid shipping or use of non-conforming items. Label the area and prevent anything except items on HOLD from being stored in the area, even temporarily. Pre-planning will ensure you have the space you need to ensure non-conforming items are segregated and controlled upon detection and ensure everyone is familiar with the procedure.

WHAT ABOUT RETURNS?

Returns may be received for many different reasons and must also be clearly identified and segregated if you accept product returns. This is a good example of where having a designated area set up will help control any non-conforming products until they can be inspected and properly dispositioned, i.e., returned to inventory for shipping if no tampering is evident and the product still meets all finished product requirements, rejected if the product does not meet all finished product requirements and disposed of or reworked depending on the circumstances.

The practice of accepting returns can be risky when it comes to food safety. You cannot be certain what conditions the product endured once it left your control. It is a best practice to have your customer discard the product and supply proof that they did. If it is necessary to have the product returned to investigate an issue: document the receipt, inspect the product right away, take photos to keep with your records and dispose of the product as soon as your investigation is complete.

COMMUNICATION IS THE KEY

Remember, every great procedure, best practice or good agricultural manufacturing practice in place is only as good as the communication and training that happens. Revisit this communication every time a new employee is hired, and at least annually/ seasonally before your busy season. Effective training will ensure your customer receives the best possible product you produce and pack.

Company Name or Logo

HOLD

Do Not Use or Ship

Hold Date:
Item:
Date/Lot Code:
Quantity:
Reason for Hold:
Initials:
CAR #:

Company Name or Logo

REJECT

Do Not Use or Ship

Rejection Date:
Item:
Date/Lot Code:
Quantity:
Reason for Rejection:
Initials:
CAR #:

Company Name or Logo

RELEASED

Released Date:
Item:
Date/Lot Code:
Quantity:
Reason for Release:
Initials:
CAR #:

MEASURING CONTINUOUS IMPROVEMENT: KEY PERFORMANCE INDICATORS IN QUALITY AND FOOD SAFETY

Continuous improvement is an ongoing effort to improve products or processes. There are always opportunities for improvement in any quality and food safety system. The continuous improvement process aims to bring gradual but continual improvement to a product or process through constant review. One tool used to outline the process of continuous improvement is the DMAIC (**Define**, **Measure**, **Analyze**, **Improve**, and **Control**) model.

DEFINE

Continuous improvement begins by defining a problem or area of improvement in a process or product. One tool that can help to define the problem is root cause analysis. Once the root cause is identified, and the problem is defined, the next phase is to measure.

MEASURE

Measuring continuous improvement is accomplished by establishing Key Performance Indicators or KPIs. KPIs are defined as quantifiable measures used to evaluate an organization's success, employee, etc., in meeting objectives for performance. KPIs must be SMART:

- **Specific** – clear and directly related to the site's continuous improvement goals
- **Measurable** – enables the site to assess progress towards continuous improvement goals
- **Achievable** – targets must be challenging but realistic with sufficient resources available
- **Relevant** – targets aim to improve product quality and safety or processes
- **Time-bound** – a target timeline must be established, i.e. long-term or short-term. The timeline must allow the site to review progress and, if necessary, redefine the problem and solutions.

Below are some common examples of KPIs for quality and food safety. It is best to focus on one or two KPIs when beginning.

- Customer complaints
- Internal and external audit/inspection results (e.g. score, number and type of non-conformances)
- CCP deviation incidents
- Non-conforming product incidents
- Product recall or withdrawal incidents
- Number of product rejects and returns
- Amount of rework and waste
- Final product testing results
- Environmental monitoring results
- Pre-operational inspection results
- Pest control inspection findings
- Water quality results
- Sensory evaluation results
- Shelf life study results
- Label compliance
- Employee training completion (e.g. employees have received adequate training and annual refresher training and effectiveness checks are completed)
- Record keeping completion (e.g. records are filled in correctly and verified in a timely manner)
- Corrective/preventative action completion
- Non-conformance completion and closure

The measurement of current performance is critical since it serves as the reference point for improvement and as a visual for recognizing progress, milestones and completion of tasks. During the measure phase, data is collected to establish key performance measures and identify and monitor defects in the product or process. Once the KPIs have been identified and measured, the next phase is to analyze the data.

ANALYZE

The data can be analyzed through the use of statistics, charts, or graphs to view the data objectively and observe trends. This visualization will allow the site to compare the results with the baseline and the targeted goal.

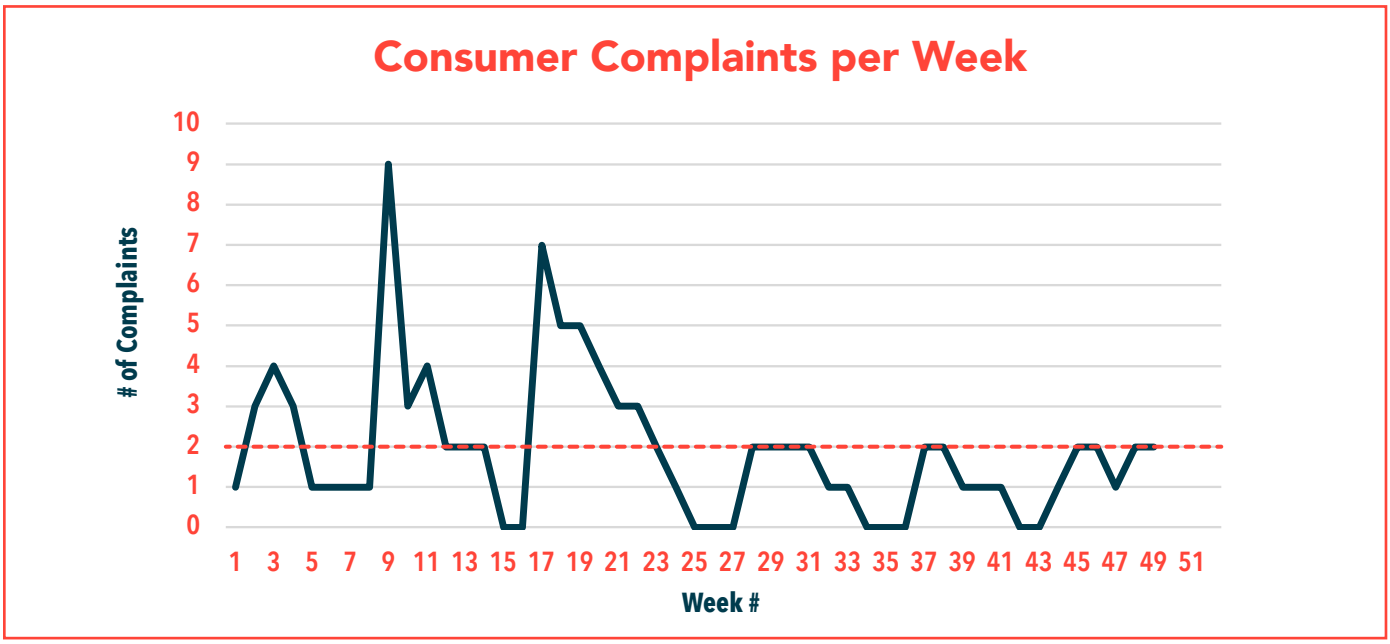
IMPROVE AND CONTROL

Once conclusions are drawn based on the data, solutions can be made to improve the process. Once the solution is implemented, it is critical to continue monitoring the performance to determine the effectiveness of the solution in achieving improvement. If not, the site may need to redefine the problem or KPI, reanalyze the data or determine a new solution.

Continuous improvement and KPIs should be reviewed by senior management at the appropriate frequency or at a minimum quarterly. The findings must be documented and communicated to all levels of staff and management.

EXAMPLE OF A CONTINUOUS IMPROVEMENT ACTION LOG AND GRAPH

Target	Date Initiated	KPI	Action To Be Taken	Responsibility	Target Date	Completed Date
2/week		Customer Complaints		Mr. Smith		



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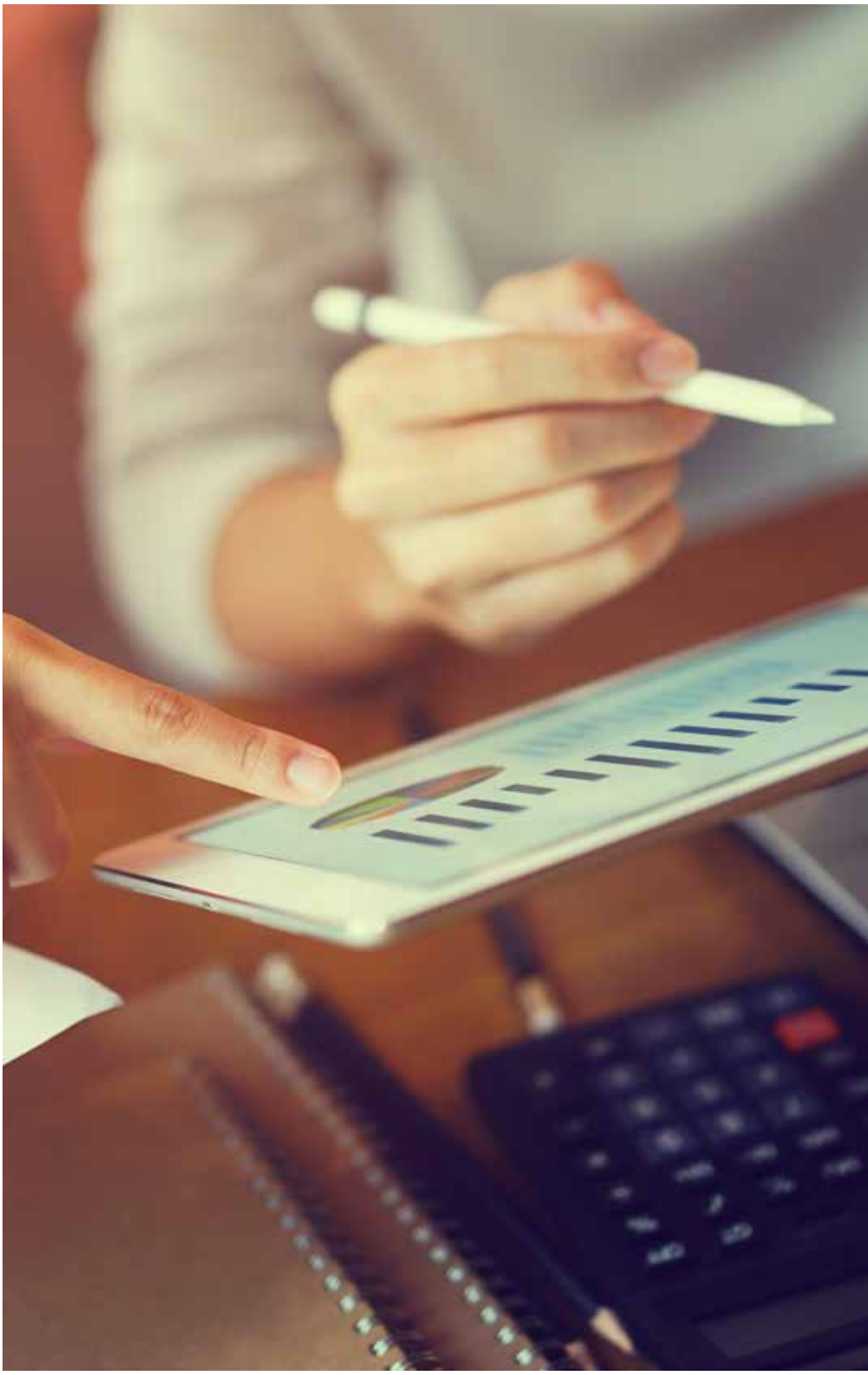
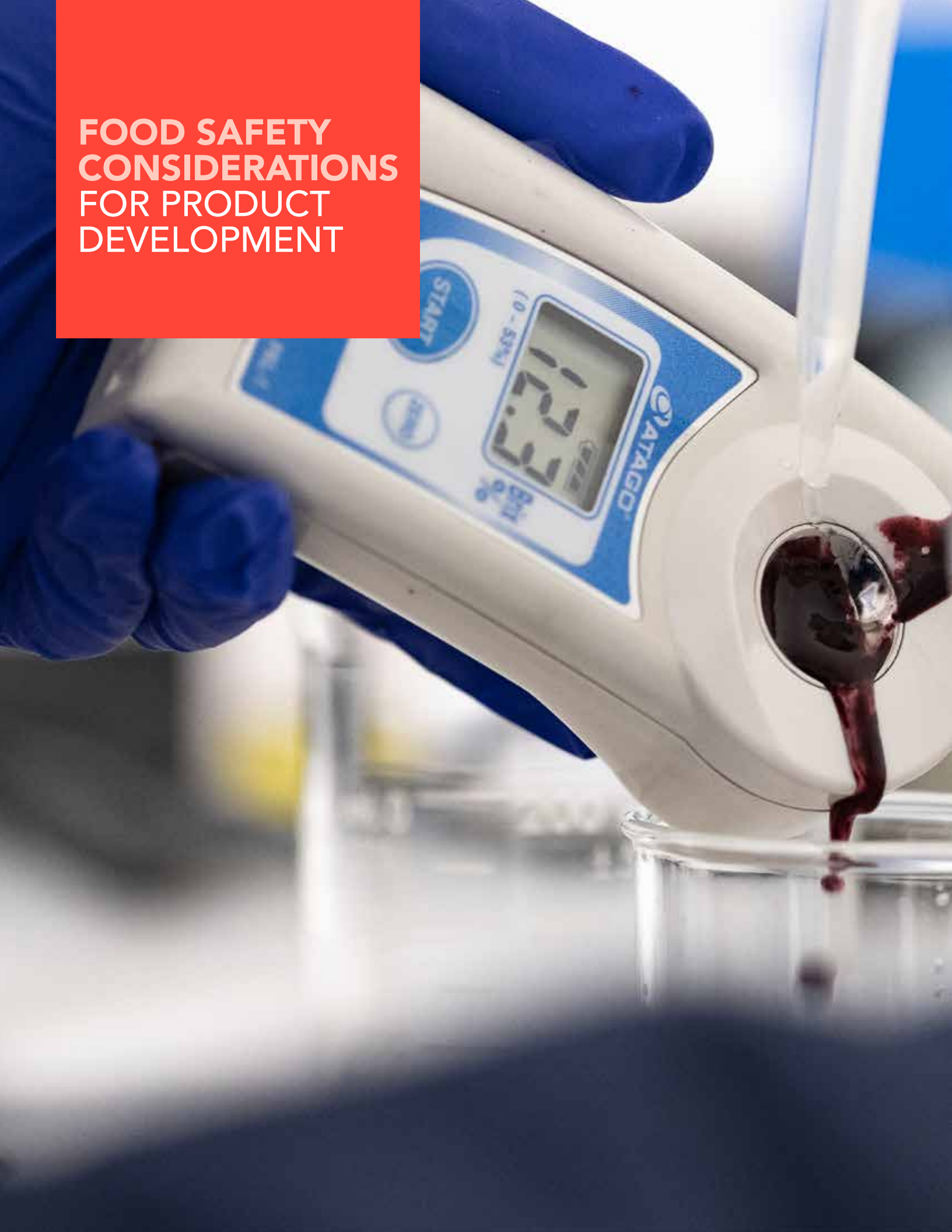


FOOD SAFETY CONSIDERATIONS FOR PRODUCT DEVELOPMENT



Whether a company is developing a new product or reformulating a current product, there are several factors to consider to ensure the production of a safe product. When developing or reformulating, it is critical to consider the following before a product is sent to customers:

HACCP PLAN / QUALITY AND FOOD SAFETY MANAGEMENT SYSTEM

- All new ingredients, water/ice/steam/air sources, packaging material and labels, products, processes and equipment must first be assessed and approved by the HACCP team. The HACCP team will determine if there are new hazards/allergens associated with the new ingredient, packaging material, product, process or piece of equipment and how the site will control the hazards. The HACCP team will determine if new process controls or critical control points will need to be established.

FORMULATION

- When developing or reformulating a product, consider whether new ingredients are being used and if they are a new allergen, food additive (e.g. sweeteners, preservatives, food colours, etc.) or processing aid.
- If allergens are introduced, the allergen management program will need to be updated, and new processes may need to be implemented to prevent cross-contamination between the non-allergen containing product(s) and the allergen-containing product(s).
- If food additives are used, they must be permitted for use in the food product in the country of origin, in the country of destination and be used according to the permitted levels.
- All ingredients must be sourced from approved trusted suppliers and accompanied by a specification sheet and a certificate of analysis or conformance or sampling/testing. If water is used as an ingredient, it must meet Health Canada's drinking water guidelines, and test results must be on file.
- The product recipe and a detailed procedure on preparing the product, including the ingredients, equipment used, mixing times, etc., must be on file.
- The finished product will need to be tested to establish specifications, composition and shelf life and to determine if conditions conducive to microbial growth have been created, such as pH or water activity. If this is the case, controls will need to be in place to reduce or prevent microbial growth to an acceptable level.
- Finished product specifications must be on file and, where applicable, include the following: pH level, water activity level, micro, chemical and physical limits, size/weight, ingredients, nutrition facts table, organoleptic criteria, packaging and coding, storage instructions and shelf life, preparation and cooking instructions, shipping instructions, allergen statement and any claims.

PACKAGING AND LABELS

- The product's packaging must be safe for food and approved for use by the appropriate regulatory agency. Packaging specifications and letters of guarantee, certificates of compliance or conformance, or a letter from the regulatory agency must be on file.
- The packaging must keep the food safe, maintain the product's quality and be suitable for the intended use. The oxygen, moisture and light permeability of the packaging must also be taken into consideration.
- If the packaging is a potential hazard (e.g. glass as a physical hazard), controls must be in place to eliminate or reduce the risk.
- The product must have an accurate label that outlines all the applicable requirements in the regulations of the country of origin and destination. This may include but is not limited to: common name, manufacturer's name and location, net quantity, date markings such as best before date or expiry date, list of ingredients, storage instructions, cooking/handling instructions, nutrition facts table, allergen statement, claims, country of origin, bilingual requirements, etc.

SHELF LIFE AND CONSUMER HANDLING

- If applicable, an initial shelf life study for the product will need to be conducted to establish and validate the product's shelf life (i.e. best before date), handling and preparation requirements, storage requirements and micro and chemical criteria to confirm the safety and quality of the product.
- If applicable, industry standards or the appropriate documentation must be on file to support the product's shelf life.
- If the product requires cooking, the cooking time and temperatures will need to be validated.

EQUIPMENT

- New equipment must be approved for use in food manufacturing, suitable for the intended use, smooth, non-corrosive, non-toxic, easily cleanable and maintained, free from pitting, cracks and crevices where food contact occurs and provide proper drainage and ventilation.

SCALING UP AND PROCESSING

- Once the product is ready to be scaled up, a trial must be performed at the site to ensure the product formula and the site's processes and equipment are capable of producing a safe product.
- Water, ice, steam or air used during the production of the new or reformulated product must not introduce hazards or become a source of contamination.
- If new processes or equipment are being used, they must be incorporated into the site's food safety program, and relevant employees must be trained on both.

When developing a new product, use the following checklist to ensure all new input materials, equipment, and processes have been assessed and are approved for use by the appropriate site personnel (e.g. HACCP Team, QA, Maintenance, Sanitation, Production, Senior Management, etc.).

Item		Complete Yes (√) / No (x)	Completion Date	Initials
HACCP Plan				
Does the new product or reformulation include a change to or new:	Ingredient?			
	Water/ice/ steam/air source?			
	Packaging material?			
	Label?			
	Piece of equipment?			
	Process flow or step?			
If yes to any of the above, the HACCP team reassessed the HACCP plan to ensure any new hazards/allergens are controlled.				
Formulation				
New allergens are assessed and incorporated into the allergen management program.				
Food additives used are permitted in the food product in the country of origin and destination and used in accordance with permitted levels.				
New ingredients are sourced from approved trusted suppliers.				
New ingredients have product specifications and certificates of analysis/conformance on file.				
The approved supplier program is updated to include any new ingredient suppliers.				
Water used as an ingredient meets Health Canada's drinking water guidelines and test results are on file.				
The product recipe and detailed procedure on how to prepare the product, including the ingredients, equipment used, mixing times, etc., are on file.				
Finished product specifications are on file and include, where applicable, pH, water activity, micro, chemical and physical limits, size/weight, ingredients, nutrition facts table, organoleptic criteria, packaging and coding, storage instructions and shelf life, preparation and cooking instructions, shipping instructions, allergen statement and any claims.				

Item		Complete Yes (√) / No (x)	Completion Date	Initials
Packaging and Labels				
Packaging is approved for use, and the appropriate documentation or packaging specifications are on file.				
The approved supplier program is updated to include any new packaging material suppliers.				
Packaging is suitable for the intended use and protects the food from contamination or deterioration.				
If packaging is a potential hazard (e.g. glass as a physical hazard), controls are in place to eliminate or reduce risk.				
Labels are legible, accurate and meet all applicable regulatory requirements of the country of origin and destination, including, but not limited to:	Common Name			
	Manufacturer's Name and Location			
	Net Quantity			
	Date Markings (BBD, expiry)			
	List of Ingredients			
	Nutrition Facts Table			
	Storage Instructions			
	Cooking/Handling Instructions			
	Allergen Statement			
	Claims			
	Country of Origin			
	Bilingual Requirements			
Shelf Life and Consumer Handling				
If applicable, a shelf life study is complete, and the product's shelf life, handling and preparation requirements, storage requirements and micro and chemical criteria are validated.				
If applicable, industry standards or the appropriate documentation is on file to support shelf life.				
If the product requires cooking, cooking time and temperatures are validated.				
Equipment				
New equipment is:	Approved for use in food manufacturing			
	Suitable for the intended use			
	Smooth, non-corrosive, non-toxic			
	Free from pitting, cracks, crevices where food contact occurs			
	Easily cleanable and maintained			
	Provides proper drainage and ventilation			
Scaling Up and Processing				
A trial is performed at the site to ensure the product formula and the site's processes and equipment are capable of producing a safe product.				
Water, ice, steam or air used during production does not introduce hazards or become a source of contamination.				
Relevant employees are trained on new processes and/or equipment.				
Verified By				
Date				

RESOURCES

Our Quality and Food Safety Team offer a variety of resources on our website at **www.perennia.ca**. We offer coaching, assessments, e-Learning, in-house customized and public training options covering a variety of topics. Our website has many publications, fact sheets, resource links and videos. We recently added a video to assist you with navigating our food safety resources. If you have any questions or would like to see a resource developed, please do not hesitate to contact one of our Quality and Food Safety Specialists. We are here to help you with your quality and food safety journey.

Perennia's Quality and Food Safety Team
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GET IN TOUCH
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NOTES

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SAFE 4 MARKET

Visit **perennia.ca/acceleratorprogram** to find out how to access funds to correct a technical issue that is preventing your Nova Scotian agri-based product from entering a new market or from achieving market success.

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