

**WEST VIRGINIA
SUGAR OPERATION REVIEW
PREPAREDNESS MANUAL
&
REGULATORY GUIDELINES**

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MAPLE SYRUP: MAKE IT SWEET & MAKE IT SAFE

A WEST VIRGINIA GUIDE TO SUGAR HOUSE REVIEW AND REGULATIONS

This binder is a set of guidelines for making sure that your syrup making facility, be it a sugar camp, sugar house or sugar shack, is appropriate for the production of a food product. West Virginia maple producers all strive to make the best maple syrup that we can, and we all know that properly made maple syrup is a safe food product. The purpose of these guidelines is to walk us through a series of questions you might not have given deliberate thought to. We call them guidelines because they present examples of ways to get to the desired endpoint of a food safe facility.

The first part of this book is a set of guidelines that follow the West Virginia Department of Agriculture's *Sugaring Operations Inspection Checklist*. The checklist is what is on the clipboard of the state compliance officer should you ever get or need a WVDA review certificate. This part presents the review checklist, and then has subsections corresponding to each major component of the review criteria. The tabbed sub-sections address specific components of the criteria with some background and examples of ways the criteria could be met. These subsections also, when necessary, have space for you to explain how your maple syrup operation is meeting the required standards. Whether or not an inspection is in your future, working through the checklist criteria will assure you that your operation is "up to snuff" in the food safety world.

The second part of this book presents a Decision Tree and Regulatory Matrix that you can follow to help you comply with state and federal regulation that apply to your production and sale of maple syrup. In each instance, the decision tree or matrix cell provides you with a link to the regulation and/or the specific form you may need to submit to be in compliance with the specific regulatory requirement.

Finally, this book is designed to be yours. By adding material specific to your sugaring operation, it becomes your record of what you are doing and how you are doing it to assure retailers, customers, or yourself that your operation is a safe food processing facility. So, start by filing in the Farm Information page, and then work your way through the checklist and corresponding sections, adding information specific to your operation. Work your way through the Decision Tree as many times as you need to cover all sales options and follow the links or submit the forms to the required regulatory agency. When you close the back cover you'll know that you have "covered all your bases" and are proudly ready to sell your syrup as West Virginia's finest.

HOW TO USE THIS MANUAL

This manual is meant to be a working document that can be customized and adapted for your specific operation. It was also designed to be West Virginia specific. This does not mean that out of state operations cannot use the manual as a guide, but we would encourage the producer to familiarize themselves with their state's laws and regulations.

SETTING-UP THE MANUAL:

This document is intended to be printed and placed into a three-ring binder. Using tab dividers, each section can be divided, and different documents added as needed. The hard copy of this document can be an easy reference book in your sugar shack for yourself and inspectors. All important documents, however, should have either a hard copy or a digital copy stored in a safe place outside of the sugar shack. The warm and humid environment can degrade paper documents over time.



FARM INFORMATION

Farm Name: _____

Farm Address: _____

Farm Website: _____

Farm Email Address: _____

Owner: _____

Cell: _____

Home Phone: _____

Email: _____

Employee List:

_____	Phone: _____
_____	Phone: _____
_____	Phone: _____
_____	Phone: _____
_____	Phone: _____
_____	Phone: _____

Important Phone Numbers:

Local Law Enforcement: _____

Local Fire Department: _____

Local Health Department: _____

Local Ag. Service Provider: _____

Electric Provider: _____

Gas Provider: _____

Farm Emergency Contact: _____

(Who to contact in case of emergency besides the owner.)



West Virginia Department of Agriculture

1900 Kanawha Blvd E
Charleston, WV 25305

304-558-2210/ www.wvagriculture.org

SUGARING OPERATIONS INSPECTION CHECKLIST

Business Name: _____	<table border="1"> <tr> <th style="text-align: center;">Number of Taps</th> </tr> <tr> <td style="height: 60px;"></td> </tr> </table>	Number of Taps	
Number of Taps			
Address: _____			
Phone: _____			
Contact Person: _____			
Email: _____			

In order to receive a successful review certificate, the operation must not have any critical area “no” designations. This is only for sugaring operations. Operations for value-added products (i.e.: maple sugar, maple cream, maple candy, dressing, salsas, etc.) must adhere to the rules and regulations set forth and administered by the West Virginia Bureau of Public Health and West Virginia Department of Agriculture which may including registration as a Commercial Food Manufacturing facility.

<p>LEAD</p> <p>If the operation uses any lead-containing equipment which contacts sap or syrup, such as lead soldered pans, galvanized buckets or storage tanks, the inspector will open a randomly selected container (barrel or retail unit) and take a sample for analysis.</p> <p>The cost of analysis will be between \$20 and \$50 and will be paid by the producer. If the results are less than 250ppb, no critical findings will be reported; <u>if the results exceed the limit of 250ppb, the operation cannot be certified as inspected and any sap sugared cannot be sold wholesale, retail or commercially.</u></p>		
DOES OPERATION USE ANY LEAD-CONTAINING EQUIPMENT?	SAMPLE RESULTS, PPB	COMMENTS
Yes <input type="checkbox"/> No <input type="checkbox"/>		

SEE SECTION 1 - LEAD

BUILDINGS*(including those used for sap storage, pumping, reverse osmosis, boiling, and canning)*

DESCRIPTION	Yes	No	COMMENTS
All light bulbs over sap or syrup, including over tanks, releasers, boiling pans, filters, and canning equipment, are protected by shields or slip on tubes to prevent broken glass from falling into food contact equipment, sap or syrup.	<input type="checkbox"/>	<input type="checkbox"/>	
The exhaust from vacuum pump(s) or other equipment producing petroleum fumes is located in a way to prevent contamination of sap or syrup with fumes.	<input type="checkbox"/>	<input type="checkbox"/>	
The interior of the buildings are neat and clean.	<input type="checkbox"/>	<input type="checkbox"/>	
There is protection to prevent loose debris (flaking paint, etc.) from falling into a tank, pan, or other container that will contact sap or syrup.	<input type="checkbox"/>	<input type="checkbox"/>	
Birds and bats must be excluded from these buildings.	<input type="checkbox"/>	<input type="checkbox"/>	
All surfaces in these buildings which could contact sap or syrup are clean and free from dirt, mold, debris or evidence of pests at the time of use.	<input type="checkbox"/>	<input type="checkbox"/>	
The producer will document the startup cleaning procedures used for tanks, pans, and all food-contact equipment.	<input type="checkbox"/>	<input type="checkbox"/>	
The building(s) used for reverse osmosis, boiling, and/or canning must have floors that can drain and are washable. Dirt floors are prohibited.	<input type="checkbox"/>	<input type="checkbox"/>	
A check valve is present between the vacuum pump and releaser.	<input type="checkbox"/>	<input type="checkbox"/>	

SEE SECTION 2 - BUILDINGS

FOOD CONTACT MATERIALS

The producer and inspector will confirm that sap or syrup does not contact any non-food-grade materials, including but not limited to the following:

DESCRIPTION	Yes	No	COMMENTS
Rusty metal tanks or buckets.	<input type="checkbox"/>	<input type="checkbox"/>	
Buckets, tanks or other containers that were originally made for a non-food product.	<input type="checkbox"/>	<input type="checkbox"/>	
Nonfood-grade diatomaceous earth.	<input type="checkbox"/>	<input type="checkbox"/>	
Compressor without a settling bowl.	<input type="checkbox"/>	<input type="checkbox"/>	
Nonfood-grade tubing or pipe used for sap or syrup transfer.	<input type="checkbox"/>	<input type="checkbox"/>	
Sap transfer pump also used for pumping non-maple liquids other than clean water.	<input type="checkbox"/>	<input type="checkbox"/>	
Bronze gear pump used for sap transfer.	<input type="checkbox"/>	<input type="checkbox"/>	
Tanks or buckets with painted interiors.	<input type="checkbox"/>	<input type="checkbox"/>	

SEE SECTION 3 - FOOD CONTACT MATERIALS

FILTERS

The producer will confirm the following:

DESCRIPTION	Yes	No	COMMENTS
Sap filters are clean at the time of use with no evidence of mold or unsuitable odors.	<input type="checkbox"/>	<input type="checkbox"/>	
Pool filters, if used for sap filtration, use clean sand or food-grade diatomaceous earth.	<input type="checkbox"/>	<input type="checkbox"/>	
Filter press and filter papers are clean with no evidence of mold or unsuitable odors.	<input type="checkbox"/>	<input type="checkbox"/>	
Only food grade lubricant is used in the filter press pump.	<input type="checkbox"/>	<input type="checkbox"/>	
Any diatomaceous earth used is food grade and is kept in its original bag, which when opened, should be placed in a clean dry container with a lid.	<input type="checkbox"/>	<input type="checkbox"/>	

SEE SECTION 4 - FILTERS

SANITATION			
<i>The inspector will confirm the following:</i>			
DESCRIPTION	Yes	No	COMMENTS
A hand washing station consisting of potable flowing water, liquid soap, disposable towels and gray water containment is present.	<input type="checkbox"/>	<input type="checkbox"/>	
Toilet facilities are available to employees and staff with acceptable waste procedures (i.e. approved composting, chemical or commercial portable service)	<input type="checkbox"/>	<input type="checkbox"/>	
Toilet facilities that are open to the public and have approved septic systems to handle sewage. (If applicable)	<input type="checkbox"/>	<input type="checkbox"/>	
A sign indicating that all employees must wash hands after using restroom facilities is present	<input type="checkbox"/>	<input type="checkbox"/>	
Domestic animals are not allowed in the rooms where sap and syrup are being collected, boiled, packed or otherwise processed.	<input type="checkbox"/>	<input type="checkbox"/>	
The availability of a clean water source for cleaning equipment (a well, municipal water, or condensate from a clean source). No pond or brook water is used for cleaning equipment. <i>Note: It is encouraged, but not necessary, that a coliform test be conducted on your water source annually.</i>	<input type="checkbox"/>	<input type="checkbox"/>	
All interior trash containers are kept clean and emptied regularly.	<input type="checkbox"/>	<input type="checkbox"/>	
Disposal of gray water follows state established guidelines.	<input type="checkbox"/>	<input type="checkbox"/>	

SEE SECTION 5 - SANITATION

PRODUCT CODING			
<i>The inspector will confirm the following:</i>			
DESCRIPTION	Yes	No	COMMENTS
All filled drums and containers are coded and the producer has kept production records for both bulk and retail that relate the code on the container to the date and batch number.	<input type="checkbox"/>	<input type="checkbox"/>	

SEE SECTION 6 - PRODUCT CODING

FOOD ALLERGENS			
<i>The producer will confirm the following:</i>			
DESCRIPTION	Yes	No	COMMENTS
Steps have been taken to prevent contamination of sap or syrup by allergens (milk, eggs, peanuts, tree nuts, soy, wheat, fish, crustacean/shellfish) by prohibiting such practices as using a container containing a food allergen residue, using a defoamer that contains an allergen such as dairy, heating foodstuffs such as eggs or hotdogs in or over the evaporator, and/or not washing hands between eating food allergens and handling equipment that contacts sap or syrup.	<input type="checkbox"/>	<input type="checkbox"/>	

SEE SECTION 7 - FOOD ALLERGENS

PESTICIDES, HERBICIDES, AND PETROLEUM PRODUCTS

The inspector will confirm the following:

DESCRIPTION	Yes	No	COMMENTS
Pesticides and herbicides not kept in any room where sap or syrup is present	<input type="checkbox"/>	<input type="checkbox"/>	
Any motor or tool using a petroleum product is located a suitable distance away from sap or syrup and any equipment that does or will in the future contain sap or syrup.	<input type="checkbox"/>	<input type="checkbox"/>	
Any motor or tool using a petroleum product must have secondary containment to avoid a petroleum spill if it is located in the same room as sap or syrup.	<input type="checkbox"/>	<input type="checkbox"/>	

SEE SECTION 8 - PESTICIDES, HERBICIDES, & PETROLEUM PRODUCTS

CONTAINERS – BULK & RETAIL

The inspector will confirm the following:

DESCRIPTION	Yes	No	COMMENTS
Drums and other bulk containers are stored and treated in a manner to prevent contamination with petroleum containing products and other chemicals. This includes the prohibition of placing petroleum containing equipment, containers of cleaners, pesticides, herbicides, tools, etc. on top of empty or full drums.	<input type="checkbox"/>	<input type="checkbox"/>	
Drums and other bulk containers not actively being filled are protected from debris and pests via sealed bungs or other means.	<input type="checkbox"/>	<input type="checkbox"/>	
All retail containers used for syrup packaging are stored in a manner that will prevent contamination, with debris, animals, or other sources, prior to filling.	<input type="checkbox"/>	<input type="checkbox"/>	
Any epoxy-lined drums used for syrup storage are in good condition with no evidence of the epoxy lining flaking off.	<input type="checkbox"/>	<input type="checkbox"/>	

The producer will verbally describe the packing process used for drums and retail containers.	<input type="checkbox"/>	<input type="checkbox"/>	
<i>The producer will confirm the following</i>			
All bulk syrup containers are cleaned and inspected for foreign debris, rust, and unsuitable odors prior to filling.	<input type="checkbox"/>	<input type="checkbox"/>	
All syrup in retail containers is packed at a minimum of 180°F.	<input type="checkbox"/>	<input type="checkbox"/>	
All retail containers are inspected for foreign debris and/or inverted prior to filling.	<input type="checkbox"/>	<input type="checkbox"/>	

SEE SECTION 9 - CONTAINERS

MAPLE EQUIPMENT CLEANING CHEMICALS			
<i>The inspector will confirm the following:</i>			
DESCRIPTION	Yes	No	COMMENTS
All chemicals are in their original containers with the label intact.	<input type="checkbox"/>	<input type="checkbox"/>	
All chemicals used for cleaning equipment are stored in a secure space and properly separated by type, such as acids separated from bases.	<input type="checkbox"/>	<input type="checkbox"/>	
A Material Safety Data Sheet (MSDS) is present for every chemical used in the maple operation, including but not limited to cleaners for tubing, pans, and reverse osmosis membranes.	<input type="checkbox"/>	<input type="checkbox"/>	
Personal protective equipment consisting of a minimum of impervious gloves and apron, goggles or face shield, and eye wash must be present in the area where equipment cleaning chemicals are used.	<input type="checkbox"/>	<input type="checkbox"/>	
There are appropriate methods and equipment for neutralizing and disposing of waste water solutions resulting from cleaning maple equipment.	<input type="checkbox"/>	<input type="checkbox"/>	

<i>The producer will demonstrate the following:</i>			
For each equipment cleaning chemical used there is at least one designated individual who is responsible for using, storing and disposing of the chemical, as well as instructing anyone else who might use that chemical.	<input type="checkbox"/>	<input type="checkbox"/>	
The responsible individual for each chemical must be familiar with the basic safety information listed on the MSDS, and be able to explain it to the inspector	<input type="checkbox"/>	<input type="checkbox"/>	

SEE SECTION 10 - MAPLE EQUIPMENT CLEANING CHEMICALS

Compliance With FDA Food Facility Registration Regulations & Labeling			
<i>The inspector will confirm the following:</i>			
DESCRIPTION	Yes	No	COMMENTS
Firm has evidence of current registration with the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Registration of Food Facilities) ; if needed http://www.fda.gov/food/guidanceregulation/foodfacilityregistration/default.htm	<input type="checkbox"/>	<input type="checkbox"/>	
If the maple syrup operation is selling pure maple syrup (liquid form), confirm that the product has label review approval from the West Virginia Department of Agriculture. (Attach labels or photos)	<input type="checkbox"/>	<input type="checkbox"/>	

SEE SECTION 11 - COMPLIANCE WITH FDA FOOD FACILITY REGISTRATION, REGULATIONS & LABELING

Critical Control Points*			
<i>The reviewer will confirm the following:</i>			
DESCRIPTION	Yes	No	COMMENTS
Based on manufacturer guidelines and correct measurement procedures, two representative samples of syrup yielded a reading of ≥66% (66°Brix/35.6°Baume). OR a reading of 66% on a variable scale refractometer.	<input type="checkbox"/>	<input type="checkbox"/>	
Verification of bottling temperature (at least 180 degrees F) and initialed on production records.	<input type="checkbox"/>	<input type="checkbox"/>	

*Non-compliance with this item will mean no certificate to sell will be issued

SEE SECTION 12 - CRITICAL CONTROL POINTS

<i>Issues, compliance steps and follow up</i>		
Issues		
Recommended Steps		
Timeline		

Reviewed BY:
DATE:
Facility Number:
Certificate Issued:
Shared with Supervisor (initial and date):

SECTION I

LEAD

ATOMIC SYMBOL **Pb**

Lead poisoning is a serious matter. It's one of the "critical control points" in assuring that your syrup is safe. Syrup containing lead is **not safe**.

Older evaporators were made with English tin, which is not a problem, but they are often put together and repaired with lead solder. Older sap buckets were often galvanized, in which a layer of zinc, often including lead as an impurity, is applied to the steel. Once again, when they started to leak, they were often repaired with lead solder. The same holds true for galvanized stock tanks used for sap collection. Brass valves, brass rotors in pumps, brass fittings in plumbing are all an alloy of copper and zinc, and that zinc can contain up to 8% lead as an impurity (See Appendix A for more information).

The problem for the maple business is that lead leaches out of all the aforementioned sources in an acidic environment, and sour sap is acidic. Sap left in a bucket too long, boiled in a tin evaporator or left standing in a galvanized collection tank can turn acidic and result in unacceptable levels of lead in the maple syrup made.

Modern syrup making equipment is made of stainless steel. You should replace any lead bearing metal that comes in contact with your sap with stainless steel.

Starting in 2015 the EPA has been restricting the use of lead in the maple industry by size of the sugaring operation, with successively restrictive regulations on smaller and smaller operations.

As of October 2020, anyone producing maple syrup for sale must be using lead free equipment from tree to bottle.

If a compliance officer finds any of the equipment in the table below, they can require a lead test of your syrup.

Categories of Lead Containing Equipment:
Exhibit A Equipment: Spiles, Buckets and Pails, Sap Storage Tanks, Collection Tubing
Exhibit B Equipment: Valves, Connectors, Joints and Level Controls, Pre-heaters, Piggy Backs, and Steam-Away, Syrup Pumps (Sap and Syrup), Finishing Stoves & Tanks
Exhibit C Equipment: Sap Pumps, Filling Units, Filter Tanks, Filter Units

If you have had a lead test of your syrup, punch holes and insert your lab test results in this section. Maple syrup can be tested at Endyne Inc. Appendix B

<https://www.endynelabs.com/wp-content/uploads/2019/11/Maple-Syrup-Lead-Analysis.pdf>

SECTION 2

BUILDINGS

1. Shielded Lights - Anywhere you have lights that could break, with the potential for dropping glass shards into your product, they must have safety shields. Inexpensive cages for incandescent lights, and protective safety shields for fluorescent lights are readily available. LED tube lights with plastic covered bulbs can also be installed.

Resource: Options for Shielding Light Bulbs in Maple Operations – Vermont Maple
www.vermontmaple.org/client_media/files/Options-for-Shielding-Light-Bulbs-in-Maple-Operations.pdf

A copy can also be found in Appendix C

2. Exhaust Fumes Vented - This only applies if you are running a gas-fired vacuum pump. If so, indicate on the map where the pump is located in your facility and that it is vented outdoors.

3. Building Neat and Tidy - Consider the amount of storage space you will need to reduce the amount of bottles, barrels, and other materials scattered throughout the sugar shack.

4. Loose Paint/Debris - In general, the inside of sugar houses should not be painted. Unpainted wood or baked enamel metal roofing will not flake off paint. It is good practice to brush off the rafters, sweep the corners of cobwebs and other off-season accumulated debris *before* the start of the maple syrup season.

Note: Paint before 1978 can be a source of lead in a sugar shack.

5. Birds and Bats – Assuming you are not evaporating in the great outdoors, screening to keep out flying critters is a good idea.

6. Sanitary Counters - A periodic cleaning of counters that are used to process food products, along with sanitation using a weak bleach solution (20:1 water to bleach) is a good idea. Make sure your counters are washable and wipeable.

7. Startup Procedures – *You need to have a written document stating how you clean your equipment prior to making maple syrup.* Included in this section is an example Starting Standard Operating Procedure. Your start-up procedures might look quite similar to this, but they should be yours. Once you have them written out, replace this example with your start-up procedures.

8. Washable Floors – Dirt is not acceptable. Focus specifically around the area in which you are drawing off syrup and bottling. The idea is to make sure there is no point syrup can come in contact with flooring that is un-washable.

9. CV Between Vacuum Pump and Releaser – Adding a check valve (CV) between your vacuum pump and releaser will help control vacuum surges in the sugarbush. This will stop contaminated sap from flowing back into the trees.

Resource: Current Good Manufacturing Practice – FDA

www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/CFRSearch.cfm?CFRPart=1110&showFR=1

Example: Starting Standard Operating Procedure

Doc. No.

Title: **Start-up cleaning procedures used for tanks, pans, and all food contact surfaces**

Collection Containers, Finished Syrup Containers and Large Food Contact Surfaces:

1. Examine the condition of containers at the start of the season.
2. Discard any containers if they cannot be properly cleaned or repaired.
3. Flush containers with potable water.
4. Fill containers with potable water and add sanitizer (chlorine) to 50ppm allow contact time of a minimum three minutes.
5. Drain containers.
6. Allow containers to air dry.

Evaporator Pan:

1. Fill evaporator/pans with water until they are half filled.
2. Build a small fire to where the water is warm (do not boil the water).
3. Wearing the appropriate personal protective equipment (rubber gloves and protective eye wear), add 1 gallon of pan cleaner for every 50 gallons of water.
4. Simmer in warm water for 10 minutes.
5. Scrub evaporator/pans with brushes.
6. Once cleaned, allow fire to go out and slack temperature to be below 300 degrees.
7. Drain evaporator/pan.
8. Fill evaporator/pans back up with water until they are half filled.
9. Add 2 boxes of baking soda for every gallon of pan cleaner used.
10. Build a small fire to warm the water again (do not boil the water).
11. Brush evaporator/pans to clean pan.
12. Once cleaned, allow fire to go out and stack temperature to be below 300 degrees.
13. Drain evaporator/pans.
14. Fill evaporator/pans with water a third time to completely rinse them out.

REMOVE THIS PAGE AND

INSERT YOUR OWN START-UP OPERATING PROCEDURES HERE.

USE THIS PAGE AS A GUIDE.

Property Map: *This can be a drawn map or a labeled satellite image.*

<p>Your property map should show...</p> <p>Buildings Maple Stands Roads Water Features.</p>	<p><i>Label your maple stands and keep records of how long you have tapped each stand, when your tubing system was installed, and any significant maintenance done.</i></p>
--	---

**REMOVE THIS PAGE AND
INSERT YOUR PROPERTY MAP HERE**

Building Maps: *These can be hand drawn or computer-generated floor plans.*

<p>Your building map should show...</p> <p>Power/Water Connects Fuse Boxes Chemical Storage Areas Lunch Areas Restrooms/Sinks All Maple Equipment Location of Food Grade DE Motors/Petroleum Product Storage Location of PPE Location of Exhaust vents Exits</p> <p><i>*This is not a comprehensive list. Add whatever is unique to your operation.</i></p>	<p><i>Draw your packing line. Show where raw sap comes into your building, the path it follows as it is processed, where it is drawn off as syrup, where it is bottled, where it is stored, and where it exits the building.</i></p> <p>Include coolers, storage areas, and break/rest areas</p>
--	--

**REMOVE THIS PAGE AND
INSERT YOUR SUGAR SHACK LAYOUT HERE**

SECTION 3

FOOD CONTACT MATERIALS



1. **Rust** – Any container used in sap collection or syrup storage should be discarded if rusty.

2. **Non-food Grade Containers** - Anything purchased from a maple syrup supply distributor can be assumed to be made of food safe materials. Anything else should be checked. Five-gallon plastic buckets should be labeled food grade. If you are getting them for free from a bakery or other bulk food supplier document where they came from. Non-

food grade buckets use a dye and mold release compound that is not food safe. Assume that plastic garbage cans and stock watering troughs are not food safe. Using a hose to transfer sap? Make sure it is labeled food safe. Non-food grade hoses can leach lead into the sap. Example documentation for food grade containers is provided in this section. After completing your documentation, remove it and replace it with your own.

3. **Diatomaceous Earth** - Those of you using a filter press will be using food grade diatomaceous earth (DE) as a filter aid. Food grade DE should be stored in a covered container, like a new garbage can with a tight lid. Make a note on your map where it is stored. Non-food grade DE, used in swimming pool filters, should not be kept in the sugar shack.

4. **Compressor Settling Bowl** – You should have a settling bowl for any gas air compressors in your sugar shack.

5. **Non-food Grade Pipes or Tubes** - Water pipes are made of food grade materials, as would be any tubing you buy from a maple syrup supply house. If you use a hose, make sure it's food grade. If you have copper pipe installed before 1986 (the date the Clean Water Act was amended, and high lead solder disallowed) it most likely has lead soldered joints. Replace it.

6. **Use of Sap Transfer Pump** – Only use sap transfer pumps to move sap or clean water.

7. **Bronze Gear Pumps** - Need to be replaced because of the lead in the bronze.

8. **Painted Buckets or Tanks** - You should not be using sap collection buckets or storage tanks that are painted on the inside. There is no way of knowing if it is a lead-based paint (pre 1978), and paint flakes off into the sap. Also, epoxy lined steel barrels should not be used to store syrup. The epoxy flakes off the inside, and it is said that they degrade the flavor of the syrup.

Example:

YOUR FARM NAME HERE

Doc. No.

Title: **Verification of Food Grade Containers (buckets, tanks or other containers) And Grade Tubing/Pipe (for sap to syrup transfer)**

WOODLOT #1 ITEMS USED FOR SAP TRANSFER:

Submersible well pump used to transfer sap water from Woodlot #1 holding tank to transport vehicle

Manufacture: Dayuan
Model: 100QJD3-25/4/0.37
MDF: DSJ20150817SS
*Product Details Attached

Sap puller (vacuum pump)

Manufacture: Sap Puller 100 E
Oriental Motor Model: VH1590A2-GVR
Oriental Gear Box Model: GVR5G2S
*Catalog Description Attached, Maple Industry Specific

Approx 500' Pipe

1" 160 psi

Plastic Drums

Manufacture: Eagle Manufacturing
*Statement Attached

500-gallon tank

WOODLOT #2 ITEMS USED FOR SAP TRANSFER:

White Buckets

Manufacture: Letica Inc.
*Spec Sheet Attached.

Plastic Drums

Manufacture: Eagle Manufacturing
*Statement Attached.

SUGAR SHACK ITEMS USED FOR SAP TRANSFER:

Gas pump used to transfer sap water from transport vehicle to storage tanks

Manufacture: Wel-bilt
Model Number Gas Engine: 1E36FN
Water Pump: 999362
*Info Attached

Submersible pump used to pump sap water from basement to above holding tank:

Manufacture: Utilitech Submersible Sump Pump
Model: 0079356: PPSP33

Plastic Drums

Manufacture: Eagle Manufacturing
*Statement Attached

250 Gallon Tank

Milk Tank

Approx 100" Pipe

1 ¼" 160 psi

REMOVE THIS PAGE & INSERT YOUR OWN VERIFICATION OF FOOD GRADE MATERIALS HERE. SAVE & INCLUDE ALL SUPPORTING DOCUMENTATION & MSDS SHEETS IN THE BACK OF THIS BOOK. USE THIS PAGE AS A GUIDE.

SECTION 4

FILTERS

1. Syrup and Sap Filters - Orlon, or in the old days wool, are used to filter sap coming into your collection tank and syrup. When filtering syrup, you should also use an inserted and replaceable pre-filter. If not cleaned and dried regularly (never with soap, just rinsed), these filters will mold. They will smell moldy and can impart a moldy taste to your syrup. Particularly at the end of the season, they need to be cleaned and thoroughly dried before storage. (See Standard operating procedures (SOPs) in this section.) Replace the example SOPs with the standard operating procedure(s) for the filter system(s) you use.

2. Pool Filters - Some producers use a sand pool filter to clean their sap before boiling. If used, they need to be used with clean sand and food grade diatomaceous earth, not the DE sold with the filter for use with swimming pools.

3. Filter Press – Clean filter presses thoroughly between boiling sessions and at the end of the season. (See SOP in this section.)

4. Food Grade Lubricants - All lubrication of equipment that comes in contact with sap or syrup must be food grade. Have a container of food grade grease available for use in your sugar house.

5. Diatomaceous Earth – See Section 3 point 3 (pg. 29)

Standard Operating Procedure

Doc. No.:

Title: **Filter Use SOPs**

Wool Filters:

1. Examine the condition of filters at the start of the season.
2. Discard any filters if they have evidence of mold or cannot be properly cleaned.
3. Soak filters in hot potable water prior to first use.
4. After using, rinse with hot potable water. Turn filters inside out and rinse with water until the water runs clean.
5. Handle filters gently, squeeze excess water out and allow to air dry.

Filter Press Filters:

Liner for filter press are a one-time use material.

Cleaning of Filter Press:

1. Place the filter press outlet hose into hot water.
2. With the filter intake in the cleaning source, start the filter press pump.
3. Run the filter press pump until the discharge is clear.
4. Drain hoses then reconnect them to normal operating positions.
5. Prior to use, examine the condition of the filter press. Ensure all areas are clean.
6. Insert new filter papers.

**REMOVE THIS PAGE AND
INSERT YOUR OWN FILTER USE PROTOCOL HERE. USE THIS
PAGE AS A GUIDE.**

SECTION 5

SANITATION

- 1. Hand Washing Station** - You need a hand washing station in your sugar house. A bathroom or sugar house sink with running water is just fine. If you don't have either of these, a cooler with spigot, a bottle of liquid soap, paper towels and a catch basin for the gray water will do. Given COVID concerns hand sanitizer for anyone coming into your sugarhouse is highly recommended. (See Appendix D for a cheap hand washing station solution.)
- 2. Employee Toilet Facilities** - Toilet facilities for workers (including yourself) are necessary in any food processing facility. These can be in your sugar camp, or in an adjacent home. Portable facilities are also acceptable. Keep a check list showing when your bathroom facilities are being serviced, preferably around once a week. (This is not necessary for home bathrooms.) The inspectors will ask where the sewage is going or what company you are using for portable bathrooms.
- 3. Public Toilet Facilities** - If you are inviting the public into your sugar camp (i.e. Mt. State Maple Days) you should consider having a septic system to handle the volume of waste. Though it is not a law to provide a public bathroom, if you are doing agritourism, it is suggested that you do.
- 4. Hand Washing Sign** - Needs to be posted at your hand washing station. An example suitable for posting is included in Appendix E.
- 5. Dogs and Cats** - Fine in the woods, keep them out of your syrup processing facilities.
- 6. Clean Water Source** - Municipal water source, wells, and condensate from an evaporator hood or steam-a-way are good sources. *If you are on a municipal water source obtain a Water Quality report like the example in this section. Replace this Washington Pike PSD report with one from your water provider.*

An annual coliform test is a good idea for wells and springs. Insert your test results in this section. The WV Health Department can run water tests for you.

Resource Link: <https://dhhr.wv.gov/ols/labs/Pages/EnvironmentalMicrobiology.aspx>

You can also use a private lab. Check the price differences on testing. To locate a lab with the capability to test water visit the website below.

Resource Link: <https://www.google.com/maps/d/u/0/viewer?mid=1C8KHM6jJszj9auYQttUb-VtPKtb4eEBSJ&ll=36.13794427869934%2C-113.76776455000002&z=3>

7. Trash Containers – Line with a plastic trash bag and empty frequently.

8. Disposal of Grey Water – See next page for example Grey Water Disposal SOP.
Permeate has a neutral pH, but should otherwise be treated like grey water.

Disposal of Grey Water: Example SOPs

1. Wash water sanitizers need to be used and disposed of according to their labels.
2. Neutralize the pH of any acidic or basic water before disposal.

Wash Water Neutralization Ratios		
Cleaner	Ratio of Baking Soda to Cleaner Necessary for Neutralization	Resulting pH (approximate)
Acids		
Citric Acid	1:1	6.5
Roby Acid (Hydrochloric Acid)	1:1	6 to 6.5
HDA 1000	1:1	6.5 to 7
Oakite 84 M	1:1	6.5
Bases (caustics or "soaps")		
Ultrasil 10	2:1	9
Sodium Hydroxide	2:1	9
Bio Membrane	2:1	9
Sani Membrane	8:1	9

3. Avoid dumping cleaning water straight into surface water.
4. If sanitizers do not include disposal instructions, avoid sanitizers entering surface water.
5. If ground is frozen, consider storing your wash water until the ground thaws to avoid run-off.
6. Apply grey water to large grass/sod areas with deep soil ideally. Areas like this will provide enough absorption and nutrient uptake to avoid any negative impacts on surrounding surface water.

**REMOVE THIS PAGE AND
INSERT YOUR OWN GREY WATER DISPOSAL PROTOCOL
HERE. USE THIS PAGE AS A GUIDE.**

Annual Drinking Water Quality Report 2015
WASHINGTON PIKE PSD
890 Washington Pike
Wellsburg, WV 26070
PWS#WV3300515
April 15, 2016

Why am I receiving this report?

In compliance with the Safe Drinking Water Act Amendments, the Washington Pike PSD is providing its customers with this annual water quality report. This report explains where your water comes from, what it contains, and how it compares to standards set by regulatory agencies. The information in this report shows the results of our monitoring for the period of January 1st to December 31st, 2015 or earlier if not on a yearly schedule.

If you have any questions concerning this report, you may contact Terry Stewart, General Manager, 304-737-2811. If you have any further questions, comments, or suggestions, please attend any of our regularly scheduled water board meetings held on the 4th Tuesday of each month at 5:00PM in the Washington Pike PSD office, 890 Washington Pike Wellsburg, WV.

INSERT YOUR SUGARHOUSE WATER TEST RESULTS HERE.

Where does my water come from?

Your drinking water source is purchased from the Follansbee Municipal Water Department which uses surface water from the Ohio River.

We also purchase your drinking water from the Follansbee Municipal Water Department and City of Wellsburg which use ground water from wells.

Source Water Assessment

A Source Water Assessment was conducted by the West Virginia Bureau for Public Health (WVBPH). The intake that supplies drinking water to the Follansbee Municipal Water Department has a higher susceptibility to contamination, due to the sensitive nature of surface water supplies and the potential contaminant sources identified within the area. This does not mean that this intake will become contaminated only that conditions are such that the surface water could be impacted by a potential contaminant source. Future contamination may be avoided by implementing protective measures. The source water assessment report which contains more information is available for review or a copy will be provided to you at our office during business hours or from the WVBPH 304-558-2981.

The wells that supply drinking water to the Follansbee Municipal Water Department and City of Wellsburg have a higher susceptibility to contamination, due to the sensitive nature of the aquifer in which the drinking water wells are located and the existing potential contaminant sources identified within the area. This does not mean that the wellfield will become contaminated; only that conditions are such that the ground water could be impacted by a potential contaminant source. Future contamination may be avoided by implementing protective measures. The source water assessment report which contains more information is available for review or a copy will be provided to you at our office during business hours or from the WVBPH 304-558-2981.

Why must water be treated?

All drinking water contains various amounts and kinds of contaminants. Federal and state regulations establish limits, controls, and treatment practices to minimize these contaminants and to reduce any subsequent health effects.

Contaminants in Water

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits of contaminants in bottled water which must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

The source of drinking water (both tap and bottled water) includes rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of land or through the ground, it dissolves naturally-occurring minerals, and, in some cases radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

SECTION 6

LABELING

Due to the high sugar content and the high temperature of the product when it is bottled, maple syrup is considered to be *non-potentially hazardous*. This, however, does not make it exempt for labeling requirements for sales to consumers either directly or wholesale. Required labels include:

1. Product label - See the following Labeling Guide for the 4 main components of a legal label
2. Date and batch coding for traceability, detailed in this section.

It is important to note a couple of considerations when deciding on your labeling process.

1. Product labeling is required by FDA and law to provide essential information to consumers and allow for trace back;
2. Batch/lot/date coding can be 3 separate systems within your sugar operation; however, most find it easier to integrate these items for simplicity;
3. Batch/lot/date coding provide critical information to consumers AND provide sugar makers with added layers of protection and minimize risks;
4. Despite maple syrup's classification of non-potentially hazardous, buyer requirements dictate that you document your production and distribution.

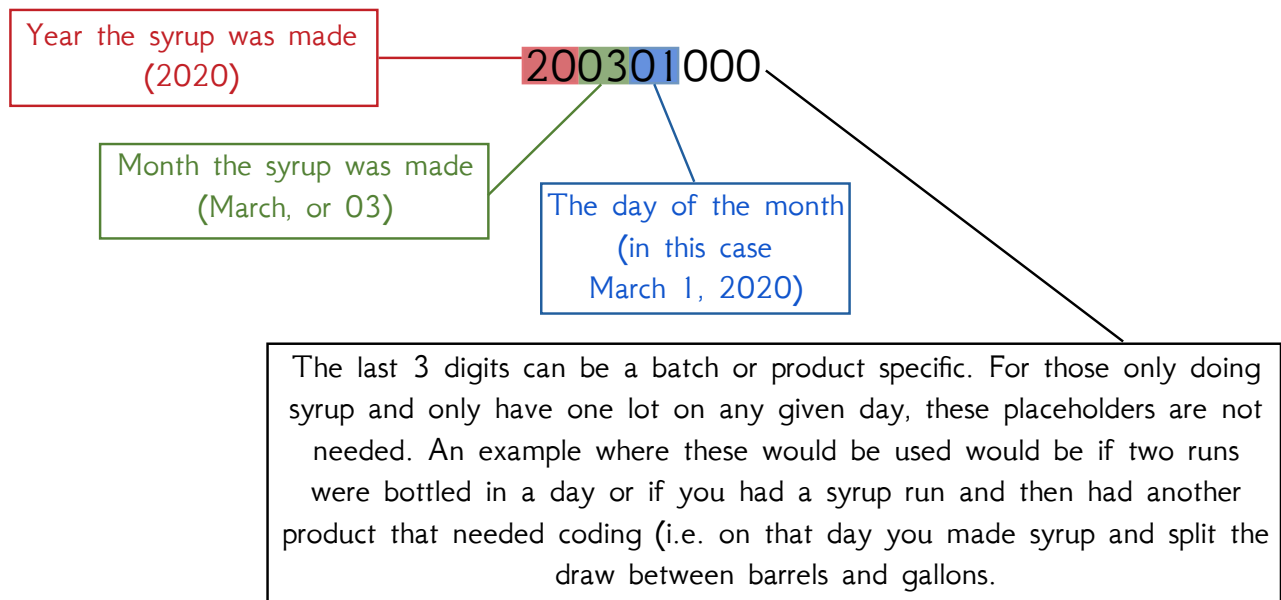
With the understanding that record-keeping and coding can go hand in hand, your next decision is to decide what is a "batch." The definition of batch is up to the producer. Most people define each boiling session as a separate batch. **Write your definition of a batch below.**

A batch is:

A further explanation of batch/lot/date coding is provided in an article from Dr. Gary Graham with Ohio State University in Appendix F.

The simplest way to do batch, lot and/or date coding is to tie it to your production records. If initially packing in bulk and then repackaging for individual unit sales, there is a seamless coding system for traceability.

1. Many ask what constitutes a batch or lot timeframe. The answer to this can be as simple as a date reference, cleaning interval or some other definitive beginning and end point in your boiling cycle. Each batch should have the corresponding sample for testing and tasting mentioned in the critical control section with a label.
Another way to think about batch intervals is the amount of risk you want to assume. If you, for example, use one code for the entire season, a recall would cause you to pull your entire inventory. If you chose, alternatively, to use a date specific code, any recalls or need to pull products would be limited to the date impacted not your entire season of production.
2. Using a date reference code for batching and lotting can also serve as a "Best by" date. "Best by" is the preferred way of coding maple syrup since it is shelf-stable and deemed non-potentially hazardous. Using a "Sold by" date means that the seller must remove all product from the shelves by the date indicated, where a "Best by" date does not.
3. Once you have decided how you want to code your syrup, be sure to go back and check your production records. You should have a column that indicates the code that each batch (and corresponding sample) will have on it.
4. Date/Batch coding can be placed on the finished product in a variety of ways. Use of a pricing gun (with enough digits to fulfill your coding scheme) is the most common way for syrup to be labeled while mechanical application and even handwriting are acceptable. Remember to use a permanent marker and check with your buyer to make sure that your coding and application process are acceptable.



Standard Operating Procedure

Doc. No.:

Title: **Forming Batch Codes**

Describe your process for formulating batch codes here (some retailers will ask for this information):

5. Here is an example code and the key that you would provide a retailer:

RECORDKEEPING

"My least favorite part of the process", "Takes too much time" and "I only do it because I'm required to" are often reasons used to not track your syrup operation.

The good news... Beyond the requirement stipulation, the reasons for keeping good records are numerous and advantageous. Consider that record keeping can:

- Help you identify trends and weak areas in your operation;
 - Provide information for future improvements and impact of new processes & procedures;
 - Limit your liability if used in combination with date/batch/lot coding;
 - Provide distribution information if called upon by a buyer or regulator;
 - Determine your level of profitability.
1. A West Virginia Maple Inspection requires an examination of the following records (required) for all bulk and retail containers:
 - a. All containers must be coded;
 - b. Contain codes must correlate with written records that indicate:
 - i. Date packed;
 - ii. Batch number
 - c. In order to establish the attainment of the critical control point, this code must also match with a representative sample for testing
 - d. All production records should have a column for initials and review
 2. For products that are retailed/sold to the consumer, a distribution record should be maintained (generally separate from Production Records,) however, date/lot codes, are used. These records should indicate the quantity of product distributed and/or container sizes and types (i.e. 2 cases of 12-count plastic pints) and buyer's contact information (name, address, phone and email). Be sure to check with your buyer to see if this is an acceptable practice.
 3. Other data/information. A sample form is included in this handbook, "Maple Production Log". Many maple suppliers have commercial maple "diaries" that track the information required above and provides an easy check list for other details such as production notes, weather conditions, gallons of sap gathered, gallons of sap after the RO, total boil time, staff, etc. For a printable copy of the Maple Production Log, see Appendix G
 4. If you are sourcing sap from another facility, you should note the lot code of that sap as product that is comingled with yours.
 5. One other note: consider the high humidity environment of the sugar house when using clipboards and paper records. Electronic records are acceptable as long as the information can be printed and presented on demand.

MAPLE PRODUCTION LOG

BASIC INFO

OPERATION NAME:	
ANTI-FOAMER USED:	
FILTER USED:	

ITEM	CLEANER	DATE	INITIALS

DATE	2/15	200215001	172	2	4	66.5	2/15	180	6/8oz.	4/12oz.	1/32oz.	X	KSM	INITIALS
BATCH CODE														
GALLONS SAP														
SAP BRIX														
GALLONS SYRUP														
SYRUP BRIX														
DATE PACKAGED														
TEMP. PACKAGED														
NO./SIZE OF CONTAINERS														
NO./SIZE OF CONTAINERS														
NO./SIZE OF CONTAINERS														
CONTAINERS CHECKED?														
INITIALS														

NUTRITION LABELS & MAPLE SYRUP

1. Although nutritional labeling has been required on most foods since 1994, there are several exemptions, including food produced by small businesses (businesses packing fewer than 10,000 units per year). While most are exempt, if you choose to include nutritional information on your containers, they must follow the exact format required by law. (Free Nutrition Label Generator available at: <https://www.onlinelabels.com/tools>)
2. Maple syrup contains only 1 ingredient—maple sap—and therefore requires no ingredient list other than the product identification. Many syrup containers include nutrition facts that meet FDA requirements. If you are custom designing a label and wish to include a syrup nutrition panel (does not apply to any maple product with multiple ingredients), the International Maple Syrup Institute (IMSI) maintains universal graphics you can supply to your printer. Visit <http://www.internationalmaplesyrupinstitute.com/nutrition-labeling--grading.html>
3. Note: If nutrient content claims (i.e. low fat, salt free, etc.) or health claims (i.e. may reduce heart disease) are made, the product must bear all required nutritional information in the form of the Nutrition Facts panel. All labeling components are to comply with 21 CFR Part 101, food labeling. The FDA Food Labelling Guide is an excellent resource of the proper labeling of food products. The web address for the FDA Food Labelling Guide is: http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/uc_m2006828.htm
4. Based on the new FDA Nutrition Fact guidelines, this is the standard Nutrition information and format for maple syrup:

Nutrition Facts	
16 servings per container	
Serving size	1 Tbsp. (21g)
Amount per serving	
Calories	60
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 17g	6%
Dietary Fiber 0g	0%
Total Sugars 17g	34%[†]
Protein 0g	
Vitamin D 0mcg	0%
Calcium 0mg	0%
Iron 0mg	0%
Potassium 0mg	0%
<small>* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.</small>	
<small>[†] One serving adds 17g of sugar to your diet and represents 34% of the Daily Value for Added Sugars.</small>	

EXAMPLE OF BASIC LABELING COMPONENTS

Labels must comply with all applicable state and federal regulations. Labeling regulations for a maple syrup processor are the same as those applied to other food processors. All information on the label must be truthful and not misleading. *The label example below is just one way to present the required information.*



CFR - Code of Federal Regulations

FPLA - Fair Packaging & Labeling Act

PDP - Principal Display Panel, in the portion of the package that is most seen by the consumer when on a store shelf. The Product Identity and the Net Quantity of Contents must appear on the PDP.

Ingredient List: Most food products are required to have an ingredient list declaring all ingredients by common or usual name in descending order of predominance by weight. Maple syrup is often a single ingredient food; an ingredient list is not required EXCEPT when using the optional ingredients: salt and chemical preservatives.

Ref: CFR 21, Part 101.4

Statement of Identity: The *Statement of Identity* is the name of the food. The name shall be the common or usual name of the food and shall accurately identify or describe the basic nature of the food or its characterizing properties or ingredients. Foods that have a Standard of Identity must conform to all requirements of the standard.

Ref. CFR 21, Part 101.3

Statement of Responsibility

Shall include the:

Business Name
Street Address
City, State, Zip Code

All information in the *Statement of Responsibility* shall be continuous. If the business name is listed in the local telephone directory, the street address may be omitted. If the business name is listed in the local telephone directory, a Post Office Box may be used in place of the street address.

Telephone numbers, website addresses, and email addresses are permitted, but not required.

Ref: CFR 21, Part 101.5

Net Quantity of Contents: the term "Net" or "Net Contents" may be used when stating the *Net Quantity of Contents* in terms of volume. When expressing the net quantity of contents in terms of weight, the term "Net Weight" or "Net Wt" must be used. When the product is distributed off of the site of production the *Net Quantity of Contents* shall be declared in both the U.S. Customary System and the International, or Metric System. The metric declaration shall be stated in parenthetically.

The quantity of contents shall be placed on the principal display panel. It shall be within the bottom of the package as it is designed to be displayed.

Ref: CRF 21, Part 101.7; FPLA, Title 15 - Chapter 39, 1453(a)(2)

LABEL REVIEWS & THE WEST VIRGINIA GROWN PROGRAM

The West Virginia Department of Agriculture is the regulatory agency for most sugar houses in the state. For maple producers who have value-added maple products (i.e. candy, cotton candy, cream, marinades, BBQ sauce, etc.), inspection, recordkeeping and labeling requirements will vary and home kitchen inspection, FDA commercial kitchen, WV food processors license and other requirements will vary depending on the food form, stability and where you are selling your product.

It is recommended that you use the West Virginia Farmers' Vendor Market Guide (<http://www.wvfarmers.org/wp-content/uploads/2020/08/Vendor-Guide-5.2020.pdf>) for additional decision trees and contact information as you grow your maple product line. Discussing your upcoming plans with your West Virginia Department of Agriculture (WVDA) maple inspection at the time of your facilities review will also lend insight on how to grow your maple business.

WVDA currently offers a product label review service through their Business Development Division. Certain products require a label review, but the service is available to any producer who requests it, even if the product does not require it. Your label will be reviewed during a sugar house inspection for the elements listed in Section 6.

For questions on product labels and review, contact productlabeling@wvda.us
A free marketing tool that is available to WV maple producers is the WV Grown® program. Participation guidelines, application and logo authorization information can be found at: <https://agriculture.wv.gov/wp-content/uploads/2020/09/WV-Grown-Packet-F.pdf>



SECTION 7

FOOD ALLERGENS

Fifty million Americans suffer from some kind of food allergy. Food allergies are caused by an overreaction of the human immune system to a particular type of food.

While an individual can have an allergic reaction to any type of food, the following foods are the cause of 90% of allergic reactions.

Eggs	Tree nuts	Wheat
Milk	Fish	Soy
Peanuts	Shellfish	

The most common symptoms of a food allergy are:

Vomiting and/or stomach cramps	Tight, hoarse throat; trouble swallowing
Hives	Swelling of the tongue, affecting the ability to talk or breathe
Shortness of breath	Weak pulse
Wheezing	Pale or blue coloring of skin
Repetitive cough	Dizziness or feeling faint
Shock or circulatory collapse	

Anaphylaxis, a potentially life-threatening reaction that can impair breathing and send the body into shock. Reactions may simultaneously affect different parts of the body (for example, a stomach ache accompanied by a rash)

Maple syrup is not on that list of allergy causing foods, and although nuts are problematic, recent research has shown that walnut syrup does not contain the protein responsible for nut reactions.

If you are packaging items that have an ingredient listing other than just maple syrup, be careful that your added ingredients (and their subingredients) do not contain a food allergen. For example, if you are selling maple walnut fudge made with marshmallow cream and walnut pieces, you would declare tree nuts and eggs. (Many marshmallow creams are made with dried egg whites listed as a subingredient.)

Follow the standard operating procedures provided in this section to assure that your maple syrup has not become contaminated with a known allergy causing food.

Standard Operating Procedure

Doc. No.

Title: **Prevention of sap or syrup by allergens SOP**

No use and/or storage of the eight major allergens in sap or syrup collection, processing or storage areas. The eight major allergens include:

milk, eggs, fish, shellfish, tree nuts (almonds, walnuts, pecans), peanuts, wheat, and soybeans.

Operations used maple-specific defoamer. (MSDS sheet provided)

No food products are permitted to be warmed on, above or in evaporator pan

Handwashing after employee breaks is required to avoid cross contamination of any major allergen they may have consumed.

SECTION 8

PESTICIDES, HERBICIDES & PETROLEUM PRODUCTS

1. EPA Storage requirements for specific pesticides and herbicides are provided on the label. In general, these chemicals should not be allowed to freeze because freezing may change their chemical composition.
 - a. Herbicides and pesticides must be stored far away from any food products, including sap and syrup. If you are using herbicides and pesticides in your agricultural or forest management operations, it is best to keep them away from your sugaring operation.
 - b. Application of pesticides and herbicides should always be done in accordance with the label instructions.
 - c. Application of pesticides and herbicides may require an applicator license. Contact your county extension office (<https://extension.wvu.edu/offices>) or the Pesticide section of the WV Department of Agriculture Regulatory and Environmental Affairs Division at 304-558-2227. Additional information can be found at <https://agriculture.wv.gov/divisions/regulatory-and-environmental-affairs/pesticides/>
 - d. For the safety of firefighters (should you ever need one) chemical storage areas should be clearly marked with the sign included in this section.
 - e. Whether required under the Pesticide Applicator Law or not, it is strongly suggested that a log noting any application be maintained for Best Management Practices and Good Manufacturing practices. A sample log is included in Appendix H.

If you presently are, or are thinking of becoming certified organic, synthetic herbicide and pesticide use is not allowed in your sugarbush.

Downloadable Organic Guidelines Available: https://nofavt.org/sites/default/files/uploads/docs/2014_vof_maple_guidelines.pdf

2. Proper storage and identification of storage areas are particularly important for fuels. Signs included in Appendix I. Add a note on your facilities map where they are stored.
3. Secondary containment can be as simple as a tray under equipment to collect any spillage or leakage.

SECTION 9

CONTAINERS - BULK & RETAIL

Please refer to the webinar presentation by Glen Goodrich for a thorough understanding of the packaging and sale of bulk syrup. "Accessing New Markets in this Time of Uncertainty: A Free Webinar for Maple Producers PART 2"

www.youtube.com/watch?v=JyVZENurumw starting 1:23

- 1. Container Storage** – Make sure that containers in storage are free from debris and dust, at least 6 inches off the floor, and vermin proof. They should be in a safe, dry, and secure location.
- 2. Bulk Container Storage** – Bulk syrup containers are usually 40-gallon drums. Galvanized steel barrels are no longer acceptable. Plastic barrels are often not acceptable to packing houses because the syrup has a tendency to ferment. Epoxy lined barrels are single use for shipping to a packer who can't return the barrel. That leaves stainless steel barrels, which are expensive, expect to be returned when empty, and provide the best storage. Each barrel of syrup should have one or more corresponding 1 oz samples. One for your long-term batch storage and one so a buyer can taste your product without opening the barrel. Keep long term sample, which has not been hot packed, frozen.
- 3. Retail Container Storage** – All stored syrup should be neat, tidy and well organized.
- 4. Epoxy Lined Drums** - Epoxy lined steel drums are for one-time use. The epoxy tends to flake off with continued use. Packers have refused to take shipments of syrup with epoxy flakes floating on the surface.
- 5. Packing Syrup** – An example of syrup packaging standard operating procedures follows. Make modifications necessary to cover your operations and be prepared to verbally explain this process.
- 6. Cleaning Bulk Containers** - Barrels need to be thoroughly cleaned after use. Clean with very hot water, but no soap. The water should be so hot that you can't put your hand on the outside of the barrel when cleaning. Inspect cleaned barrels with a flashlight and by smell. Document the date of cleaning. (You can add your cleaning procedure to your Starting Operating Procedures in Section 2.)

7. Packing at 180 Degrees F. – All syrup should be hot packed between 180- and 190-degrees F. Above that temperature and you chance releasing more niter, the sandy substance that forms as the syrup boils, from the syrup, resulting in cloudy syrup. Packed jars and jugs should be turned on their side to sterilize the lid. If mold develops over time in your glass jars, you will need to heat the glass jars prior to filling. Cold jars can transfer heat from the syrup so quickly that the syrup is packed below 180 degrees F. This is especially prevalent in smaller volume glass jars. Document packing temperature.

8. Retail Container Inspection – Prior to filling retail glass jars and plastic jugs they should be stored in their shipped sealed boxes. Once opened, these containers should be stored upside down to prevent debris from falling in. Finally, give a quick inspection of glass jars while filling. Spider-infused maple is not a hot-selling, value-added product. Document inspection of containers.

Standard Operating Procedure

Doc. No.

Title: **Packing process used for drums and retail containers**










1. Inspect bulk and retail syrup containers for foreign debris, rust, and unsuitable odors prior to filling.
2. Ensure syrup is finished to 66-66.9 brix.
3. Heat syrup to a minimum of 180 degrees Fahrenheit.
4. Fill bulk and/or retail containers with heated syrup.
5. Label bulk and retail containers with designated batch code.
6. Label retail containers with appropriate label. (Reference labeling section.)

**REMOVE THIS PAGE AND
INSERT YOUR OWN DRUM AND RETAIL PACKING
PROCEDURES. USE THIS PAGE AS A GUIDE.**

SECTION 10

MAPLE EQUIPMENT CLEANING CHEMICALS

- 1. Chemicals** – Labels on chemical containers assure that workers and firemen have the information they need to stay safe when handling them. Labels are required to have one of 9 pictograms on the following page, a signal word (like RADIOACTIVE), a precaution statement, a product Identifier (the product's name), and a supplier ID. Keeping chemicals in their original containers makes sure that this information is available to anyone handling the container.
- 2. Chemical Storage** – Mixing an acid with a base will cause a chemical reaction that can give off heat, often resulting in an explosive splatter, and can produce toxic fumes. Keep chemicals separate from one another with little chance of any leakage or spillage mixing.
- 3. MSDS** – Material Safety Data Sheets (MSDS) are needed for all chemicals used in the sugaring facility, primarily for cleaning maple equipment. These sheets provide the physical and chemical properties of the chemical as well as information pertaining to fire, explosion and hazard. They can be obtained from the manufacturer or supplier. Some of the more common ones can be found in the appendix, but you should include the sheets specific to your operation.
- 4. Personal Protective Equipment (PPE)** - To assure safety in using cleaning chemicals you need to have on hand a set of rubber gloves, safety goggles, and a means of washing your eyes, which can also be your required hand washing station. PPE must be provided for any employee working with hazardous chemicals.
- 5. Cleaning Wastewater Disposal** – Covered in section 5.8. "Discharges from acid washing your RO or from acid cleaning of your evaporating equipment should be neutralized with baking soda to a pH of 7 before disposal. pH strips for testing are inexpensive and readily available."
- 6. Chemical Designated Individual** – As a maple syrup producer in your sugaring facility, this should be you.
- 7. Basic Safety Information** – It is recommended that you keep your MSDS sheets in this book, that way you know where they are. Check to make sure you have sheets for all the chemicals in your facility, and that you have a general knowledge of what is on those sheets.

		
<p>FLAME OVER CIRCLE—USED FOR THESE CLASSES :</p> <ul style="list-style-type: none"> ▪ Oxidizers 	<p>FLAME—USED FOR THESE CLASSES:</p> <ul style="list-style-type: none"> ▪ Flammables ▪ Self Reactives ▪ Pyrophorics ▪ Self-Heating ▪ Emits Flammable Gas ▪ Organic Peroxides 	<p>EXPLODING BOMB—USED FOR THESE CLASSES:</p> <ul style="list-style-type: none"> ▪ Explosives ▪ Self Reactives ▪ Organic Peroxides
		
<p>SKULL & CROSSBONES—USED FOR THESE CLASSES:</p> <ul style="list-style-type: none"> ▪ Acute toxicity (severe) 	<p>CORROSION—USED FOR THESE CLASSES:</p> <ul style="list-style-type: none"> ▪ Corrosives 	<p>GAS CYLINDER—USED FOR THESE CLASSES:</p> <ul style="list-style-type: none"> ▪ Gases Under Pressure
		
<p>HEALTH HAZARD—USED FOR THESE CLASSES:</p> <ul style="list-style-type: none"> ▪ Carcinogen ▪ Respiratory Sensitizer ▪ Reproductive Toxicity ▪ Target Organ Toxicity ▪ Mutagenicity ▪ Aspiration Toxicity 	<p>ENVIRONMENTAL HAZARD—USED FOR THESE CLASSES:</p> <ul style="list-style-type: none"> ▪ Environmental Toxicity 	<p>EXCLAMATION MARK—USED FOR THESE CLASSES:</p> <ul style="list-style-type: none"> ▪ Irritant ▪ Dermal Sensitizer ▪ Acute toxicity (harmful) ▪ Narcotic Effects ▪ Respiratory Tract Irritation

SECTION 11

COMPLIANCE WITH FDA FOOD FACILITY REGISTRATION, REGULATIONS, & LABELING

1. You must show current registration with the FDA (insert in this section) **OR** be able to explain why you are not subject to registration. For a guide to filling out the registration form, see Appendix J.

You **ARE** subject to DHHS/FDA Food Facility Registration if...

- You are not considered a farm.
- If any off-site packing or holding facilities are not farmer owned.
- Do more than the basic processing of maple sap.
- Sell more than \$1 million in product for year and have over 500 employees.

You are **NOT** subject to DHHS/FDA Food Facility Registration if...

- You sell the majority of your product direct to consumer.
- If you package and/or hold product off site, your farm is the major provider and the other location is farmer owned.
- Do not sell more than \$1 million in product for year and have under 500 employees, and only process low-risk food (such as maple syrup.)

The decision tools included in this section will help you determine what regulations you may be subject to, but for your inspection, you only need to know and comply to your DHHS/FDA Food Facilities Registration.

2. Have your labels reviewed by the WVDA and *add them to the end of this section.* (See Section 6: Labeling for more information.)

*This worksheet refers specifically to the Decision Tree on pg. 68. This sheet is meant to discuss the regulations you are **possibly** subject to.*

Please contact the indicated agencies for more information.

Before looking through the decision tree, please determine if you sell inter-state, intra-state, or both.

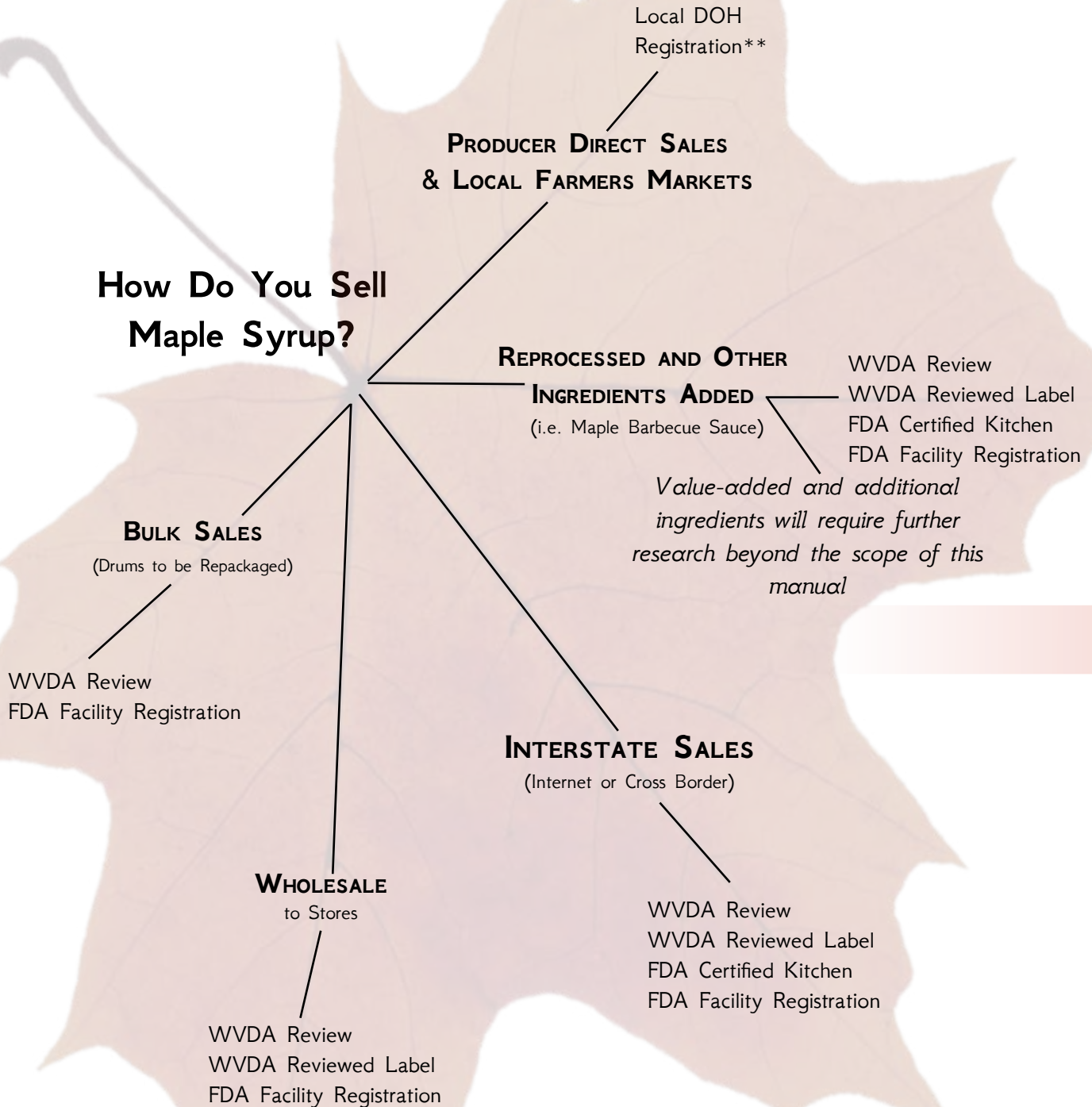
Intrastate Commerce:	Interstate Commerce
Business transactions (or transportation) that occur solely within a particular state's borders Example: Preston County maple producer sells syrup at the local farmers market <u>only</u>	Business transactions (or transportation) that occur between a seller located in one state and a buyer located in a different state Example: Preston County maple producer sells syrup at Buckwheat Festival <u>and</u> Highland County Maple Festival in VA.

WHAT COULD I NEED?

DECISION TREE

Follow through the decision tree and figure out which regulations **may** apply to you.

How Do You Sell Maple Syrup?



*These are possible regulatory involvement. Please contact the indicated agency.

**Local health department only needed if required to have a Temporary Food Service Establishment permit (i.e. farm to table dinners, events & festivals where outside the farm food is prepared and/or sold).

WVDA Inspection:

- This manual is a beginning guide to the process of creating best practices and effective sanitation. As of 2020, the WVDA is **not mandating** sugarhouse reviews. However, some retailers will require additional documentation from an on-site visit. Contact the WVDA if you need a review.

WVDA Reviewed Label:

- See Section 6 (pg. 43)

FDA Certified Kitchen:

- A good place to start is the article "How to Start a Food Business" on the FDA website. (<https://www.fda.gov/food/food-industry/how-start-food-business>) Another resource is your district sanitarian (<https://www.wvdhhr.org/phs/district.asp>) The WVDHHR provides a series of documents related to commercial kitchen requirements and resources on their Food Sanitation page. The page can be found at: <https://www.wvdhhr.org/phs/food/index.asp>. (Note: Disregard the WVU Process Authority checklists; they are no longer providing this service.)

Repeat the decision tree for each sales channel you use to sell syrup.

FDA Facility Registration:

- For the downloadable registration form. <https://www.fda.gov/media/71632/download> Appendix J has a guide to filling this out.

Local DOH Registration:

- Your local health department registration is only needed if required to have a Temporary Food Service Establishment permit (i.e. you are serving or sampling potentially hazardous food) If required to have a food handlers card, go to <https://www.statefoodsafety.com/> for online training or check with your local health department for class schedule. (<https://dhhr.wv.gov/localhealth/pages/map.aspx>)

WEST VIRGINIA MAPLE SYRUP SALES REGULATORY MATRIX*

	WVDA Inspection	WVDA Reviewed Label	FDA Certified Kitchen	FDA Facility Registration	Local DOH Registration
Bulk sales (drums to be repackaged)	X			X	
Producer direct sales & local farmers markets					X
Wholesale to stores	X	X		X	
Interstate sales (internet or cross border)	X	X	X	X	
Reprocessed and other ingredients added (ie. maple barbecue sauce)	X	X	X	X	

Key:

WVDA-West Virginia Department of Agriculture

(See decision tools for inter v. intrastate commerce; Potential Hazardous and Non-Potential Hazardous)

DOH-Local Department of Health

FDA-Federal Food & Drug Administration;

WV District Sanitarian <https://www.wvdhhr.org/phs/district.asp>

*"X" indicates possible regulatory involvement. Please contact the indicated agency.

**Local health department only needed if required to have a Temporary Food Service Establishment permit (i.e. you are serving or sampling potentially hazardous food).

If required to have a food handlers card, go to <https://www.statefoodsafety.com/> for online training or check with your local health department for class schedule

<https://dhhr.wv.gov/localhealth/pages/map.aspx>

INSERT YOUR **WVDA** APPROVED LABELS HERE.

SECTION 12

CRITICAL CONTROL POINTS

1. Syrup Brix of 66 Degrees or Higher – Maple syrup at 66 Brix or higher is a safe food, meaning that microbes that cause health problems can't live in it. 66 Brix Maple has a water activity rating of 0.87 to 0.88. The water activity scale goes from 0-1 (with zero being "bone dry,") and a food's water activity level controls what can grow. Maple syrup can still mold, which is why opened containers of maple syrup are kept in the refrigerator, but if it is at 66 degrees Brix or higher, it cannot support bacterial growth.

For more information on Brix: <https://en.wikipedia.org/wiki/Brix>

Water Activity of Selected Foods

Food Product	a_w
Fruits & Vegetables	0.97-1.00
Meats	0.95-1.00
Cheese	0.68-1.00
Jams & Jellies	0.75-0.94
Honey	0.54-0.75
Noodles	0.50
Dried Milk	0.20
Crackers	0.10

2. Bottled at 180 Degrees F. - Properly bottled maple syrup takes care of the other microbes; which are primarily xerophilic molds (meaning they can grow in dry places). These are not harmful, but a glob of mold floating in your syrup is certainly unsightly and, in enough quantity, can result in the syrup having a moldy, off-flavor.

See the Cornell paper "The Fungus in my Maple Syrup:"

<https://blog.mycology.cornell.edu/2007/03/20/the-fungus-in-my-maple-syrup/>

3. Documentation – **Make sure you document hitting these critical control points with every batch. Make sure this information is included in your production logs.** (See Section 6.) This is what compliance officers are looking for.

MATERIAL SAFETY DATA SHEETS (MSDS)

Material Safety Data Sheets are needed for all chemicals used in the sugaring facility, primarily for cleaning maple equipment. These sheets provide the physical and chemical properties of the chemical as well as information pertaining to fire, explosion and hazard. They can be obtained from the manufacturer or supplier (sometimes they come with the product). Some of the more common ones can be found in the appendix, but you should include all of the sheets specific to your operation.

**INSERT YOUR MATERIAL SAFETY DATA SHEETS
HERE.**