

**Indiana State Department of Health
Food Protection Program**

Guide to Producing Safe Cider



**Recommendations for
Good Manufacturing Practices
and Plant Sanitation in
Retail Apple Cider Press Operations**

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Recommendations for Good Manufacturing Practices and Plant Sanitation in Retail Apple Cider Press Operations

Cider is a natural apple product which relies on its acidity and refrigeration to control the potential for bacterial growth. Despite cider's acidity, foodborne illnesses have been linked to contaminated cider and cider is considered a high risk food. To reduce the potential for serious illnesses, the U.S. Food & Drug Administration (FDA) requires apple cider processors to provide a Hazard Analysis Critical Control Point (HACCP) plan for all **wholesale** juice and apple cider as of January 20, 2004. The HACCP plan must demonstrate a 5-log pathogen reduction (99.999%) treatment of the juice or cider. Retail producers of juice or cider are exempt from the HACCP regulation, but are required to have a **warning statement as part of the labeling**. The warning statement information is in 21 Code of Federal Regulations (CFR), Part 101 Food Labeling. It states that any beverage containing juice that has not been processed in a manner that will produce a 5-log reduction of the pertinent microorganism shall have a **warning statement**. This does not preclude a retail juice operation from having a HACCP plan and treating the cider by pasteurization, ultraviolet light or ozonation.

The following recommendations are written primarily to assist the retail processor in producing a safe cider product. A farm-to-table approach of offering safe, wholesome cider is taken with these recommendations which incorporate the FDA's Good Manufacturing Practices (GMP's) and Good Agricultural Practices (GAP's). In addition to following the general requirements set forth in the FDA's "Current Good Manufacturing Practices for Manufacturing, Packing or Holding Human Food" regulations, the specific processing recommendations provided in this document should reduce the likelihood of cider being implicated in foodborne illness. Retail cider operations in Indiana must comply with the 410 IAC 7-24, Retail Food Establishment Sanitation Requirements and are under the inspection of the local health departments.

Retail apple cider processors can sell cider to consumers directly from their own establishment, over the internet, as a vendor at a farmer's market, roadside stand or similar type of market or fair. Retail cider processors may also press apples for consumers who bring in their own apples and use the cider only for their own personal consumption. It is recommended that a letter of agreement between the parties be used that states the cider is only for personal use.

Retail cider processors who conduct tours and demonstrations for school age children are strongly encouraged to serve only treated (pasteurized) juice to the children. Children, especially those nine (9) years and younger, are more susceptible to illness, and untreated cider has a greater likelihood of disease-causing contamination.

ORCHARDS & HARVEST

For growers who harvest apples for cider, growing and harvesting procedures should be evaluated for sources of contamination. Proper harvesting is the first step in reducing the potential for bacterial contamination.

1. If manure is used as a fertilizer, it should be composted or treated to kill pathogens before being used as a fertilizer. Manure fertilizer should not be spread in the orchard 120 days prior to harvest.
2. Livestock should not be allowed to graze in the orchard during the growing season.
3. Pesticides should be applied only as needed and according to label directions. A fungicide should be used to control mold growth, especially if the growing season is wet.
4. A toilet facility with a hand sink should be available to employees in the orchard. Portable toilets and handwash facilities may be used. The recommended travel distance to these facilities should not exceed ¼ mile.
5. Apples that have dropped to the ground (“drops”) should not be used. These apples are easily contaminated with organisms present in the soil.
6. Pickers should be trained on what fruit is of a good, sound condition for use. Apples with bird droppings, or evidence of worms, infestation or damage should not be picked and packed with good fruit.
7. Train the pickers and all others who handle fruit to use good hygiene, i.e., proper hand washing, avoiding touching the rungs on ladders where feet have been, etc. Apples may become contaminated from many sources during picking and remain contaminated during processing.

RAW PRODUCE

Using good quality fruit is important in producing a quality cider product. Fruit should be handled and stored properly prior to pressing.

1. If apples are purchased, the purchaser may inquire of the seller their harvesting and cleaning procedures of the fruit. The purchaser may wish a Letter of Guarantee or Statement of Quality stating that the GAP's are followed in growing, harvesting and transporting of fruit.
2. Use only firm, ripe, wholesome apples. Wormy, decayed or damaged fruit should be discarded if the damaged sections cannot be removed. The use of rotten or wormy fruit is prohibited.
3. Apples waiting to be processed should be stored in clean containers and not outside. Apples stored outside cannot be fully protected against the environment such as weather, vermin, livestock and pets.
4. Store apples under refrigeration if they will not be pressed within 24 hours. Lower temperatures extend shelf life and slow bacterial growth. A temperature of 32 degrees Fahrenheit is ideal, but for best quality, the refrigerator temperature should not exceed 41 degrees Fahrenheit.
5. Apples stored for extended periods of time may need to be treated with a fungicide to control growth of mold. Some molds produce patulin, a mycotoxin regulated by the FDA, that is not destroyed by heat and cannot exceed 50 parts per billion (ppb) in cider. This mycotoxin has been shown to produce adverse health effects if consumed over an extended period.

BUILDINGS & GROUNDS

1. Retail cider processing and other food processing must be located in a separate room or building from other non-food operations.
2. The food processing room should have impervious walls and ceilings, and the floors should be continuous concrete with adequate floor drains. Sealed concrete is recommended to reduce pitting and accumulation of water.
3. The doors and windows must be tight and the doors self closing (except dock doors) to exclude the entrance of vermin. If doors are open during processing, they must be screened. Open screened windows and doors may need to be closed during windy and dusty conditions to reduce the potential for airborne contamination.
4. Toilet facilities must be available, and conveniently located near the work area. A hand sink provided with hot and cold running water, soap and sanitary towels or hand drying device is required in the toilet facility. The waste container should be covered.
5. Cleaning chemicals, pesticides, solvents, detergents, sanitizers and other toxic materials must be stored in a separate area outside the processing area.
6. A pest control program should be developed that identifies pests commonly associated with the location and process. Preventive measures such as pest management devices and treatments like fly attractant lights, insecticides, rodent traps, and/or using a commercial pest control company, etc., should be put in place.
7. Buildings and grounds surrounding the cider operations must be free of conditions that may result in contamination of the product. This may include improperly stored equipment or chemicals, litter, waste, uncut weeds and grass, etc.
8. Animals, including livestock, cats and dogs, are potential sources of fecal contamination that should be controlled around the facility and in the orchard to reduce the potential of contamination of the apples, equipment or cider.

PERSONNEL

1. Employees must practice good personal hygiene while working in the processing area. This includes proper hand washing before beginning work, between operations and any other time hands become soiled. Employees must wear a haircovering, i.e., hats, scarves, hairnets, etc. No jewelry, except plain wedding bands, should be worn.
2. Most cider pressing operations involve significant manual labor with employees handling press cloths and press racks that frequently come in contact with their person. Therefore, it is important that clean garments be worn. These may include long gloves and water resistant aprons or full sleeve coats (disposable or cloth) and must be removed when leaving the processing room. If the garments are not disposable, they should be laundered in a separate load from the home laundry.
3. Eating, drinking, smoking, chewing gum and using tobacco is not allowed in areas where fruit or food is stored or processed.

PROCESSING ROOM & EQUIPMENT

1. Potable (drinkable) hot and cold running water under pressure must be available in the processing and filling area. A hand sink provided with hot and cold running water, soap and sanitary towels is required. If the firm is on a private water supply, a sample must be submitted annually for bacteriological analysis.
2. All equipment and surfaces that come in contact with apples and cider must be durable, smooth and easily cleanable and made of a food-grade wood, plastic, stainless steel or other similar metal that is corrosion resistant.
3. All equipment must be washed, rinsed, sanitized and air dried after every production day. Equipment must be disassembled to the point where sufficient cleaning and inspection can be conducted and reassembled using sanitary handling techniques. A high pressure washer is recommended for adequate cleaning of the equipment.
4. Press racks must be made of a food-grade wood (hardwood, nonporous) or plastic. Hardwood press racks must be coated with food-grade paraffin or other approved coating. Plastic press racks are preferred. Press racks should be washed, rinsed, sanitized, and air dried after each production day in a manner that precludes contamination. This may include hanging them on a drying rack or stacking on a food contact surface to dry. Press racks cannot be stored on the floor during drying or storage.
5. Filter cloths must be designed for fruit processing and stored in a sanitary manner between uses, after each production day and between seasons. Filter cloths must be washed, rinsed, sanitized and air dried after each production day. Air drying may include hanging or spreading on a clean screened rack. An automatic washer may be used, but filter cloths must be washed separately from household laundry. Filter cloths should be replaced as needed when they can no longer be thoroughly cleaned.
6. Tubing used in cider processing must be made of a material approved for food contact, and plastic tubing must be transparent. Tubing should be continuous if at all possible and be positioned so that it is self-draining. Couplings, clamps and connections must be disassembled daily for cleaning and sanitizing. Disassembled tubing must be stored off the floor.
7. Brass couplings, containers and spouts should not be used due to the potential for leaching.
8. Equipment should not be stored outside. If equipment is stored outside between uses or seasons, it must be completely cleaned and sanitized before use.
9. Lighting must be sufficient in all areas of processing. Portable lights may be needed to visually inspect the interior of bulk tanks.
10. Refrigeration equipment, including walk-in coolers, bulk tanks and refrigerators should be able to maintain recommended temperatures and maintained in good repair.

PROCESSING

1. Apples should be inspected before processing. Damaged, moldy fruit should be culled or trimmed to remove damaged portions. Some molds may contribute to high levels of patulin, a toxic substance.
2. Apples should be rinsed with water, brushed/scrubbed and washed with an approved sanitizer prior to pressing. Chlorination of the water is recommended and should have a measurable residual level (recommended 50 - 100 ppm). Single-pass water flow, where the water is not reused is preferred. If recirculating rinse water is used, it must contain a sanitizer approved for food contact at the proper concentration.

The concentration, affected by dirt and debris, must be closely monitored so that the chlorine or other sanitizer residual level is maintained. It is recommended that the wash water be approximately 10 degrees Fahrenheit warmer than the apples. Water that is colder than the apples may be drawn into the fruit by a temperature induced vacuum and not adequately clean the apples.

3. Cider, for the best quality, should be refrigerated as quickly as possible after pressing to less than 41 degrees Fahrenheit, preferably closer to 32 degrees Fahrenheit. This can be accomplished by a refrigerated holding tank prior to bottling, or immediately bottling the cider and placing it under refrigeration. Quick cooling extends shelf life and slows bacterial growth.
4. Individual containers and lids should be new and stored in a sanitary manner prior to filling. Containers must be filled in a sanitary manner. Mechanical filling and capping is preferred. If manual filling and capping is done, employees must use good hygiene and wear gloves or use some method to avoid contact of this ready-to-eat food product during filling and capping.

LABELING

1. The following information must be on the container:
 - a. Name of product - Apple Cider
 - b. Ingredient statement with preservatives or flavorings, if they are used. If a preservative is used, a method for the proper measuring and addition of the preservative at safe levels must be established.
 - c. Manufacturer information - name, city, state and ZIP code of manufacturer. A street address is not required if the business is listed in a phone book or business directory.
 - d. Net quantity in U.S. and metric, i.e., 1 gal/3.78 liters
 - e. Warning statement - The warning statement must be incorporated as part of the label on every package of juice offered for retail sale that has not gone through a treatment process such as pasteurization, ultraviolet light or ozonation.
WARNING set in bold capital letters and a type size of no less than 1/16" (one sixteenth) in height. The warning label must be set off in a hairline box from the rest of the label information.

<p>WARNING: This product has not been pasteurized and therefore may contain harmful bacteria that can cause serious illness in children, the elderly, or persons with weakened immune systems.</p>

2. The following information is recommended on the container:
 - a. Keep Refrigerated
 - b. A lot code or date identifying the production date
 - c. A Best By or Use By Date

WASTE DISPOSAL

Pomace, the pulpy material remaining after pressing, should be promptly removed from the processing area and immediate vicinity as it serves as a pest attractant. Check with local authorities for approved disposal methods.

CUSTOM PRESSING

Some people have apple trees on their property and wish to have apple cider made from these apples. Performing this service has its own risks that must be weighed by the apple cider processor. The liability issues concerning custom pressing cider may far outweigh the benefits to the operator and customer. It is strongly recommended that an apple press operator not process any of their own products on the same day that they offer custom pressing for the following reasons:

1. Questionable quality of the apples that the customer brings in for processing. This could include the use of “drop”, decayed, and wormy apples, or apples that are stored or treated improperly with pesticides or fungicides.
2. Potential for contamination carrying over to the next customer. A complete clean up between customers is not always feasible due to the low volume of product each customer has and the time involved.
3. Customers using their own containers for pressed cider. The quality and sanitary condition of these containers is not known. The press operator should require customers to use new jugs for cider.

If custom pressing is done, it is recommended that a waiver or agreement be signed by the customer each time that includes the following information:

1. A statement that the customer has followed all appropriate sanitary handling techniques as outlined, i.e., not using drops, properly storing and culling the apples.
2. The product is intended only for their personal use, and not for sale. (The customer is prohibited from selling the cider)
3. Information that the product has not been pasteurized or treated.

Material adapted from:

Codex Alimentarius. Code of Practice for the Prevention and Reduction of Patulin Contamination in Apple Juice and Apple Juice Ingredients in Other Beverages. CA/RCP 50-2003.

Iowa State University. Apple Update: Safety, Quality, and Sustainability of Small-farm Production of Apples and Cider.

Rutgers University Food Science. “Recommendations for Good Manufacturing Practices and Plant Sanitation in Apple Press Operations.”

University of Wisconsin. “Wisconsin Apple Cider Safety Site.” www.wisc.edu/foodsci/cider (29 July 2005).

Washington State University Cooperative Extension. Reducing Food Safety Risks in Apples: A Self-Assessment Workbook for Producers of Apples Juice and Cider. May 2001.