SUMMARY

Ontario

InfoSheet
Fiche d'information

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Best Production Practices for the Safe Production of Maple Syrup

Why is lead a problem?
Exposure to lead from different sources has been a public health concern for many years. Lead has been proven to have adverse effects on human health, especially on the nervous system. In recent years, efforts have been made to reduce or eliminate lead in food products, including maple syrup.

Where does lead come from?
Lead in maple syrup can come from several sources. The roots of trees growing in lead-containing soil may take up minuscule amounts of lead. Lead may be present in the soil due to local rock composition, or from particles deposited in the soil from atmospheric pollution. However, research has shown that lead levels in sap from these sources are insignificant.

The primary source of lead contamination is equipment. Maple syrup is an acidic substance (pH 3.4 – 6.6) that, in the presence of oxygen, can react with many metal surfaces. Contact time of maple sap or syrup with any lead-containing metal should be minimized throughout all collection, processing, and storage activities. Lead can leach into the sap through:

- galvanized equipment (made before 1994);
- most bronze and brass fittings;
- 50/50 solder (used for equipment before 1995);and
- "terneplate" (a tin/lead alloy used in older equipment).

Any lead present in sap is amplified by the concentration of sap into syrup. In other words, if the sap contains a trace amount of lead, the evaporation process will greatly elevate its concentration. Some of the lead attaches to suspended particles and can be removed with the "sugar sand" during filtration. However, a significant portion of the lead present in maple syrup is dissolved in the syrup and cannot be filtered out.

What you can do!
Whether you are from a long line of sugar-makers or a first-time entrepreneur, you can prevent unacceptable levels of lead in maple syrup. Your best defences against lead are knowledge and proactive efforts.

Your best defence against lead is new, stainless steel equipment. However, it may not be economically feasible to immediately replace old equipment. If that is the case, it is important to be aware of the condition of your equipment and how to operate it to minimize lead contamination.

The Future
As concern over the food safety increases, maple syrup producers must make it their mission to keep up-to-date with industry issues and best management practices to ensure that the product is free of all contaminants. With the production and promotion of safe, high quality product, Ontario's maple syrup industry will continue to thrive.

The following are some practices that can be followed to minimize the amount of lead entering your sap and syrup.

1. Collecting sap:

- Replace all old metal spouts with stainless steel or food-grade plastic spouts.
- Gather sap from buckets daily, especially if buckets are galvanized or tin.
- Reduce the use of, or eliminate, any metal buckets or gathering equipment containing lead or lead solder.
- Replace bronze gear pumps.
- Use food-grade tubing.
- Replace metal fittings coming in contact with sap with plastic or stainless steel fittings.

2. Storing Sap:

- Immediately replace all galvanized tanks that are corroded or damaged.
- Purchase only stainless steel, glass lined, or food-grade plastic storage tanks.

3. Boiling sap:

- Purchase lead-free pre-heaters.
- Purchase lead-free solder and stainless steel pans.
- Do not clean pans to a bright shine with a strong acid based cleaner if the pans have lead in the metal or in the solder. Sap reacts with exposed metal containing lead.
- Replace any brass or bronze fittings.
- Minimize the time that sap resides in the evaporator.
- Remove sap from pans if there are prolonged periods between boilings.
- Flush pans with water.
- Make sure any repairs are done with lead-free solder – ask for it!

4. Filtering:

- Ensure proper filtering (critical).
- Never filter syrup into old milk cans.
- Use orlon/felt filters and/or a filter press.
- Use filters in good condition.
- Use clean, unscented filters.
- Only filter syrup into food-grade containers.
- Use filters with a small micron size (e.g. 5).

5. Storing syrup :

- Ensure that all your syrup is batch coded.
- Never store syrup in corroded containers/drums.
- Don't use containers/drums that have been repaired with unknown or potentially hazardous substances.
- Ensure the container/drum is clean and free of odours.
- Never use old containers like milk cans.
- Use stainless steel, glass lined, or food-grade plastic barrels.

How to test your syrup.

The only way to know if there is lead in maple syrup is to have it tested. It is recommended that producers test syrup three times throughout the production season – at the beginning, middle and end. The current Health Canada guideline allows a maximum lead level of 0.5 parts per million.

For accurate results, testing of syrup should be done by a recognized laboratory. While not all laboratories do this test, the contacts listed below can assist you in finding an appropriate one.

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