

# CARAMEL AND CANDIED APPLES: PREVENTING LISTERIA

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**"Potentially hazardous food (time/temperature control for safety food)"** means a FOOD that requires time/temperature control for safety (TCS) to limit pathogenic microorganism growth or toxin formation.

The Food and Drug Administration (FDA) classifies coating dried/intact/dehydrated fruit and vegetable products as a low-risk activity/food combination. Coating non-dried, non-intact fruits and vegetables is not a low-risk activity/food combination (21 CFR Part 117.5 subpart h).

Caramel and Candied Apples have been linked to outbreaks of Listeria monocytogenes. Listeriosis is a serious infection usually caused by eating food contaminated with the bacterium. An estimated 1,600 people get listeriosis each year, and about 260 die. The infection is most likely to sicken pregnant women and their newborns, adults aged 65 or older, and people with weakened immune systems.

Normally, neither caramel nor apples harbor listeria. Caramel doesn't have a lot of water, and apples are too acidic for the listeria bacteria to grow. When a stick is inserted into the apple, though, a small amount of juice moves to the surface. That moisture, trapped under a layer of caramel, creates the perfect environment for listeria to grow. **This means that Caramel and Candied Apples become potentially hazardous or TCS when the skin is punctured by a stick or other means.**

Potentially Hazardous (or TCS) foods must be kept under refrigeration at or below 41° F or held out of temperature control for a maximum of four (4) hours, and then discarded.

## Recommendations:

- Have a couple of apples on display that will not be sold, and retrieve apples from refrigeration at the time of sale.
- Rotate displayed apples. Display a smaller number of apples for a maximum of 4 hrs. and restock from refrigeration.
  - This requires time stamps and grouping apples by when they were removed from refrigeration.
- Make the apples without the stick, insert the stick when sold. The apples may be held at room temperature until sold.

For more information on Listeria, please visit [cdc.gov/listeria](http://cdc.gov/listeria).