



## ***Food Safety Overview Talking Points***

1. Food preservation is just keeping microorganisms (bacteria, yeasts, and molds) from spoiling our food and from making us sick. **We either destroy them, or we stop them from growing.**
2. There are three methods for long-term storage: freezing, dehydrating, and canning.
3. **Freezing essentially puts microorganisms into an extreme state of hibernation.** Freezing doesn't destroy most microorganisms, but it prevents them from growing.
4. **Dehydrating removes moisture from food.** Microorganisms need moisture to grow. No moisture, no growth. When properly stored, dried microorganisms don't grow. They do, however, survive dry conditions very well. So keep dried foods dry during storage so they don't start to rehydrate, giving the microorganisms a good growth environment.
5. **Canning destroys microorganisms with heat.**
  - a. There are three types of canning processes: boiling water, atmospheric steam, and pressure. The deciding factor on which method to use is the acidity level of the product you're canning.
  - b. *Most* bacteria, molds and yeast are destroyed at boiling water temperature using a boiling water canner or atmospheric steam canner. The one that isn't, the one we worry about, is *Clostridium botulinum*. It grows when there's no oxygen, plenty of moisture, warmer temperatures, and in a low-acid food. When *Clostridium botulinum* grows, it produces a toxin called botulinum, and we eat that **toxin**, we get ill with the disease called **botulism**.
    - i. When *Clostridium botulinum* is **not** in its ideal environment, which is most of the time, it creates a protective spore around itself and waits. Adults can eat the spore with the bacteria inside it and it does nothing to us, because the spore itself doesn't cause illness in our highly acidic stomach. (As an FYI, infant botulism is when the spore germinates in a baby's lower-acid stomach and grows, producing the toxin.)
    - ii. If we freeze food, it's too cold for *Clostridium botulinum* to grow so it stays within the protective spore and does nothing. If we dehydrate it, we remove the moisture essential for growth, so again, it stays within the protective spore and does nothing.
    - iii. When hanging out in soil or on fresh food, *Clostridium botulinum* is surrounded by oxygen and won't grow because it's encased in its protective spore.
  - c. *Clostridium botulinum* is of greatest concern with food preservation when canning low-acid foods, such as vegetables, beans, meats and fish or when canning "pickled" low-acid foods with insufficient added acid. The spore protects the pathogen from destruction in boiling water temperatures. Much higher temperatures such as those achieved by a pressure canner are needed to destroy the *Clostridium botulinum* spores.
6. We use boiling water or steam canning to destroy **non spore-forming** bacteria in high acid foods. The high acid prevents any surviving spores of *Clostridium botulinum* from germinating. We use pressure canning to destroy *Clostridium botulinum* and any other spore-forming bacteria in low-acid foods.

***Start Clean***

- Sanitation is critically important for all types of food preservation. We clean and sanitize our work surfaces and tools, including our cell phones and common touch points.
- We wear a clean apron to keep our potentially dirty clothes away from our food.
- We keep our hair pulled back from face to keep our hands from touching our face and hair AND to keep the hair out of our food.
- We wash our hands frequently and thoroughly. Cuts or burns? Wear gloves and treat them like a second skin. Wash them frequently while you wear them.