

Powdered Infant Formula and Cronobacter

Adapted from CDC: <https://www.cdc.gov/cronobacter/infection-and-infants.html>

Cronobacter (formerly called *Enterobacter sakazakii*) is a group of bacteria that are found naturally in the environment. These bacteria can survive in very dry conditions. Sometimes, they have been found in dry foods, such as powdered infant formula, powdered milk, herbal teas, and starches. They also have been found in wastewater.

Rare, but serious illness in infants

Cronobacter illness is very rare, but it is often deadly in young infants. It usually occurs in the first days or weeks of life. Typically, CDC is informed of about 4-6 cases of *Cronobacter* illness in infants each year, but reporting isn't required. *Cronobacter* bacteria can cause severe blood infections (sepsis) or meningitis (an inflammation of the membranes that protect the brain and spine). Infants 2 months of age and younger are most likely to develop meningitis if they are infected with *Cronobacter* bacteria. **Infants born prematurely and those with weakened immune systems are also at increased risk for serious *Cronobacter* infections.**

In infants, the illness generally starts with fever. It usually includes poor feeding, crying, or listlessness. Young infants with these symptoms should be taken to a doctor.

Illnesses linked to powdered infant formula

In some outbreak investigations, *Cronobacter* bacteria were found in powdered infant formula that had been contaminated in the factory. In other cases, *Cronobacter* bacteria might have contaminated the powdered infant formula after it was opened at home or elsewhere during preparation.

Powdered infant formula is not sterile

Manufacturers report that, using current methods, it is not possible to eliminate all germs from powdered infant formula in the factory. Powdered infant formula can also be contaminated after the containers are opened. **Very young infants, infants born prematurely, and infants with weakened immune systems are at the highest risk.**

Powdered formula can get *Cronobacter* in it after the container is opened. *Cronobacter* can live on surfaces in the home, such as a kitchen counter or sinks, and in water. *Cronobacter* could get into powdered formula if formula lids or scoops are placed on contaminated surfaces and later touch the formula. It can also get into formula if the formula is mixed with contaminated water or in a contaminated bottle.

To best protect your infant, here are some things you can do:

- **Breastfeed.** Breastfeeding helps prevent many kinds of infections among infants. Almost no cases of *Cronobacter* infection have been reported among infants who were being exclusively breastfed (meaning, the baby was fed only breast milk and no formula or other foods).

- **If your baby gets formula, choose infant formula sold in liquid form, especially when your baby is a newborn or very young.** Liquid formulations of infant formula are made to be sterile and should not transmit *Cronobacter* infection.
- **If your baby gets powdered infant formula, follow these steps**
 If your baby gets powdered infant formula, there are things you can do to protect your baby from infections – not just *Cronobacter* infections. Good hygiene, mixing the formula with water hot enough to kill germs, and safely storing formula can prevent growth of *Cronobacter* bacteria and other germs. These are keys to keeping your baby safe and healthy.
 - **Clean up before preparation**
 - Wash your hands with soap and water
 - Clean bottles in a dishwasher with hot water and a heated drying cycle, or scrub bottles in hot, soapy water and then sterilize them
 - Clean work surfaces, such as countertops and sinks
 - **Prepare safely**
 - Keep powdered formula lids and scoops clean (be careful about what they touch)
 - Close containers of infant formula or bottled water as soon as possible
 - **Use up quickly or store safely**
 - Use formula within 2 hours of preparation. If the baby does not finish the entire bottle of formula, discard the unused formula.
 - If you do not plan to use the prepared formula right away, refrigerate it immediately and use it within 24 hours. Refrigeration slows bacterial growth and increases safety.
 - When in doubt, throw it out. If you can't remember how long you have kept formula in the refrigerator, it is safer to throw it out than to feed it to your baby.
 - **If your baby is at higher risk consider taking these extra steps to prepare your powdered formula with hot water (at least 158°F/70°C)**
 - Use hot water (158 degrees F/70 degrees C and above) to make formula
 - Carefully shake, rather than stir, formula in the bottle
 - Cool formula to ensure it is not too hot before feeding your baby by running the prepared, capped bottle under cool water or placing it into an ice bath, taking care to keep the cooling water from getting into the bottle or on the nipple
 - Before feeding the baby, test the temperature by shaking a few drops on your wrist

For More Information

- <http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm048694.htm>
- [WHO Safe Preparation, Storage and Handling of Powdered Infant Formula](#)
- [CDC Infant Formula Preparation and Storage](#)