

FOOD SAFETY GUIDE

REVIEW OF FOOD SAFETY AND MANAGEMENT FOR VOLUNTEERS

FOR
GOODNESS
CAKES

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introduction

Welcome to our Food Safety Guide! Please use this as the occasional reference before baking a cake to donate through our organization. As you can read below, food safety, if not handled properly, can hurt the children we serve. Every child deserves to be celebrated, not end up sick!

According to Centers for Disease Control and Prevention (CDC), each year:

- Over 76 million people become sick due to food borne illness (1 out of 4 in the US!)
- Over 325,000 people are hospitalized
- Over 5,000 people die

As a result, the food service industry pays an average of \$74,000 for each incidence.

Some people are more vulnerable than others to food borne disease, generally because their immune systems are weakened. And if they become sick with a food borne illness, these people can face serious health consequences.

These risks can be reduced. You can help protect yourself – or people you care for – by knowing and following basic rules of food safety. There are four groups of people who are more vulnerable to food borne disease:

- 1 Senior citizens
- 2 Pregnant women
- 3 Very young children
- 4 People who suffer from weakened immune systems or chronic illnesses, such as cancer, diabetes, liver disease, and AIDS

Why are these people more vulnerable to food borne disease? What are the possible consequences for them? And most importantly, how can they avoid food borne illness?

This booklet provides these answers. Take a look, and don't take a chance. Take control! Help reduce risks of food borne disease. Your knowledge of how food becomes contaminated and how to prevent food borne illness is vital to the success of your donations by making sure the cakes are safe for consumption by the lucky children who receive them.

what to expect from this packet

You must be able to acquire and demonstrate competency in the following areas:

- Identify foodborne illness
- Identify time/temperature relationship with food borne illness
- Describe the relationship between personal hygiene and food safety
- Describe methods for preventing food contamination
- Identify and apply correct procedures for cleaning equipment and utensils
- Recognize problems associated with your kitchen and equipment
- Recognize problems associated with housekeeping and maintenance of your appliances

sources of hazard

Food can be contaminated in the following four ways:

- 1 Physical Contamination** is caused when hair, glass, metal, shavings, broken objects, dirty, etc. gets into food.
- 2 Biological Contamination** is caused by harmful bacteria, virus, fungi, or parasites that get into food.
- 3 Chemical Contamination** is caused when substances such as cleaning compounds, acids, detergents, soaps, chemicals, and pesticides get into food.
 - **Toxic Metals:** Metals such as copper, brass, tin, or galvanized metals can become toxic when they come in contact with acidic foods like lemonade, sauerkraut, dressing, or vinegar. Avoid using copper, zinc, brass, and peltre enamel pots on industrial stoves. Enamelware also can be dangerous because it may be plated with antimony or cadmium. If toxic metals are used with acidic food products, toxins may be produced, this is an example of chemical contamination.
 - **Additives:** The excessive use of additives may also be a source of chemic contamination. You must not apply sulfites to foods. Avoid adding large amounts of additives to foods (i.e. MSG).
- 4 Cross Contamination** is caused when bacteria or harmful microorganisms cross or transfer from one place to another. One example of this is when the same cutting board is used to cut raw chicken and then raw vegetables without washing in between.

microbiology

Human beings carry a minimum of 150 billion bacteria which makes us the major hazard against food, especially our hands. Bacteria, viruses, and parasites usually come from people who improperly handle food, and from microorganisms that are already in the food when we receive it.

!! If we leave food out in the **Danger Zone** (40°F - 140°F) the bacteria will multiply in great numbers.

!! The maximum accumulated time that food can remain in the Danger Zone is **4 hours**; the higher the temperature, the shorter amount of time the food can be left outside

1 Bacteria

Bacteria are the most common microorganisms that affect food. They live and can multiply anywhere and they can grow on food. Other microorganisms like viruses or parasites will not grow on food.

Bacteria need the following conditions in order to multiply faster:

- **Food** - especially food that is high in protein such as milk, meat, fish, or eggs
- **Moisture** - they like foods with plenty of water
- **Warm Temperature** - 70°F to 140°F
- **Time** - they need time to reproduce
- **Adequate pH** - 4.6 - 7.5, they do not like very acidic foods

The types of food in which harmful bacteria can grow are called **PHF - Potentially Hazardous Foods** (chicken, eggs, cheese, shellfish). Even cantaloupes and watermelons are classified as **PHF** because they have plenty of water, not a lot of acidity, and have the nutrients that bacteria need to grow.

Freezing, refrigerating, and drying foods do not kill bacteria. This only keeps them in a dormant or hibernating state. As soon as you thaw or take food from the refrigerator, the bacteria will continue to grow and double in number every 20 minutes which is the way bacteria reproduces itself.

**those aren't sprinkles*



When bacteria are multiplying, it consumes the nutrients in foods, and then produces waste products or metabolic by-products called toxins. These toxins may look and feel like slime, such as the one formed on old fish or meat. Toxins cannot be killed with heat or cold; this is the reason why food that does not smell good or feels slimy, cannot be fixed under any circumstances. If ingested, these toxins will produce intoxication in people.

Not all metabolic by-products are undesirable. Some are beneficial, like the ones produced by bacteria used to prepare cheese, yogurts, sour cream, and similar foods.

Spores: Some bacteria have the ability to change into forms that are very resistant to heat and dry conditions. They are called spores and are characterized by the formation of a thick “shell.” Bacteria that have turned into spore will not reproduce in that state, but once they sense good conditions, they will return to the bacteria state again and continue to multiply. Spores may be formed in improperly processed home canned foods; therefore that type of food cannot be purchased by a food service establishment. All the food for sale to the public has to be purchased from an approved source or has to come from a commercial kitchen.

pH = food acidity and alkalinity

Bacteria will grow best when food is slightly acid, neutral, or slightly alkaline, and contains enough water for its growth. The measure of acidity or alkalinity is called pH. Food which has been assigned a number below 7 is acid, if more than 7, it is alkaline, and if it is 7, neutral. The area of concern is the zone between 4.6 to 7.5. Foods rich in acid such as citric juices, dressing, and mayonnaise do not support bacterial growth.

Remember, bacteria can exist in a number of different places, but some bacteria are known to be found in certain food products.

types of bacteria

Salmonella Bacteria: Found in human intestines, in domestic and wild animals, especially poultry, eggs, and their shells. Also found in pets, roaches, and rodents. The food that can be contaminated include meat and poultry that are not cooked at the required temperatures. They can also be found in unpasteurized milk and dairy products, and passed through improper hygiene. Salmonella can be killed in poultry by cooking at 165°F for 15 seconds.

Shigella Bacteria: Found in the human intestines. Most food borne illnesses caused by this microorganism are the result of not washing the hands after using the bathroom and then touching food that will not be cooked. This bacteria may produce dysentery in humans.

E.Coli Bacteria: Found in human intestines and that of warm-blooded animals. It can contaminate food and water. Although most E. Coli will not cause problems, some types can cause serious diseases such as the one termed O157:H7. It is found in ground beef that has not been cooked at 155°F for at least 15 seconds. It can produce death in children and the elderly.

Listeria Bacteria: Found anywhere, especially in lunch and deli meats. They are naturally found in the soil, water, animal feed, and in the intestine of humans and animals. Also found in unpasteurized milk and its products, and in vegetables grown in contaminated soil. They can grow at temperatures below 41°F. Seventy percent of refrigerators in the United States have listeria. To prevent the spread of listeria inside the refrigerator, keep all foods covered. It can produce abortions, stillbirths, and birth defects if listeria contaminated food is ingested by pregnant women.

Staphylococcus Aureus Bacteria: Most common cause of food borne illness. It is found on the skin, nose, and mouth of 50-70% of all people. It is easily transmitted by sneezing, coughing, scratching skin, and touching hair. It is found especially in infected cuts and burns. Once on food, they multiply and produce toxins. Heat cannot kill toxins by this bacteria. Staphs are also unique because they can grow in foods that do not have a lot of water such as hams and custards. It can be transferred to food by the improper cleaning and sanitizing of food preparation utensils and equipment.

Bacillus Cereus Bacteria: Found in soil where vegetables and grains are grown. It forms spores and can be found on cooked rice that has been improperly cooled or held hot.

Clostridium Botulinum Bacteria (Botulism): Microorganism responsible for causing botulism. It forms spores and grows only where there is no air (anaerobic). It is found in the soil, lakes, human intestines, fish, swollen cans, vacuum packed foods, and smoked meats. It is commonly found in vacuum and home-canned foods. Leftover baked and wrapped potatoes have to be refrigerated overnight to avoid botulism. Because spores are so difficult to kill, botulism is a very dangerous and harmful bacteria. **ANY FOODS SUSPECTED OF HAVING BOTULISM SHOULD BE DISCARDED IMMEDIATELY.**

2 Viruses

Viruses are microorganisms that will cause illnesses, but do not reproduce on food. They only use food as a means of transportation. They are 100 times smaller than bacteria, and can only reproduce in living cells, human beings, plants, or anything that is alive. They can be excreted in human feces, urine, or the respiratory tract. Failure to wash hands after using the bathroom coughing, sneezing, and wiping a runny nose are ways to spread contamination.

types of viruses

Hepatitis A (Infectious Hepatitis): Produced by a virus. It is found in the human intestines and urine of an infected person. Poor personal hygiene is the leading cause of Hepatitis A.

WASH YOUR HANDS!

Norwalk Virus: Believed to cause large viral illnesses. It lives in the human intestinal tract. Raw salads, raw vegetables, prepared salads, raw shellfish, and contaminated water may be the source of this type of contamination. The most likely food to transmit viral illness are those that are not heated or cooked after handling (sandwiches, milk, water, fruit, raw oysters, and clams).

3 Parasites

Parasites are organisms that live within or feed off another organism. They are usually larger than bacteria, but can be very small too.

types of parasites

Trichinella: Parasite found in pork that produces trichinosis. We must pay special attention to this parasite. Although the incidence of finding this parasite is not very high, it is very dangerous. We can kill trichinella by cooking pork to 145°F for 15 seconds.

Anisakis: Parasite found in fish and seafood that produces anisakiasis. Coughing is the most common symptom if the worms attach themselves to the throat. Parasites can be killed if food is cooked well or if frozen at -4°F for 7 days or -31°F for 15 hours.

4 Other

Seafood Toxins: Some fish and shellfish can become poisonous when they eat poisonous plankton or toxic algae in warm waters. Do not eat shellfish during a red tide.

Scombroid Poisoning: most common reported cause of seafood illness. It is produced when fish like mahi-mahi and tuna begin to spoil from being time/temperature abused.

Ciguatera: a type of seafood poisoning. The cause is not the fish, but what the fish eats. The small fish eats algae that may contain ciguatoxin. The bigger fish eats the smaller fish and then gets contaminated. Seen in tropical predatory fish such as snapper and barracuda.

Molds: A natural part of many food products such as cheese. They rarely cause food borne illnesses but are responsible for much of food spoilage:

- Some molds can produce toxins, molds can be killed by heating foods to 145°F for 10 minutes, but this process will not destroy their toxins (remember, toxins can never be killed)
- Freezing prevents growth of molds, but has no effect on the mold spores that are already present in the food
- Mold can grow at temperatures below 40°F (in the refrigerator, you may see mold grow on cheese)

Yeasts: Commonly used in the production of breads and in the processing of beer and wine. They do not produce food borne illness, but can ruin foods like sauerkraut, fruit juices, syrups, honey, jellies, etc. Yeasts can be killed by heating foods to 136°F for 15 minutes and can be controlled by proper cleaning and sanitizing.



ANY PERSON EXPOSED TO, CARRIES, OR DIAGNOSED WITH SALMONELLA TYPHI, SHIGELLA, E.COLI, OR HEPATITIS A VIRUS MUST BE REPORTED TO HEALTH OFFICIALS. INDIVIDUALS CARRYING CONTAGIOUS DISEASES MAY NOT DONATE CAKES UNTIL WE RECEIVE A PHYSICIAN'S WRITTEN APPROVAL.

super important

5 Foodborne Illness Classification

Food Infection - An illness produced by ingestion of living, harmful organisms which are present in food. These organisms such as bacteria, viruses, or parasites will multiply in the body and cause sickness.

- Not cooking food product to their required temperature > the organisms inside the food is not killed > someone gets sick > food infection

Food Intoxication - An illness produced by ingestion of bacterial toxins or excrements that is present in food before it is eaten. Intoxication may also occur from consuming foods that contain chemicals from cleaning agents, pesticides, or certain metals.

- Leaving potentially hazardous food product at room temperature, exposing to the danger zone > toxins are forms > someone gets sick > food intoxication

food products: quality and standards

Milk and Dairy Products: All milk and milk products must be pasteurized, Grade A, and must be received under 41°F. Check expiration dates. Products labeled **UHT** do not need refrigeration until opened. Butter and cheese should be checked for any signs of contamination.

Keep milk products in the refrigerator at all times 40°F or less. Milk must be served from the original container in which it was packed at the milk plant. Dry milk has to be refrigerated after it has been reconstituted. When serving ice cream from a bulk pack, the ice cream scoop must be kept in a dipper well with running water. It can be kept also in the food with the handle outwards or clean and dry. Self service of hard ice cream is not permitted.

Egg and Egg Products: Federal recommendations state that since eggs are **PHF**, they have to be received, transported, and stored at 40°F or less. Damaged or dirty eggs should be rejected.

Many health departments recommend the use of liquid eggs. Liquid, frozen, and dry eggs must be pasteurized. The use of pasteurized eggs is very much recommended and required for recipes that need none or little cooking. An example of this is Caesar salad and Hollandaise sauce.

Fruit and Vegetables: The best indication of quality is taste. All produce must be thoroughly washed in clean potable water before serving. This reduces possible contamination by soilborne bacteria (listeria) or chemical residue from pesticides.

Ice: Ice for use as food or for cooling other foods must be made from drinking water. Do not allow the handling of ice with hands, glasses, or anything else besides an approved scoop, and keep it on top of the ice machine in a clean and sanitary container.

Canned Foods: **BOTULISM CAN OCCUR IN CANNED OR VACUUM PACKED FOODS, AND IT IS EXTREMELY DANGEROUS.** Check for swollen cans, leakage, broken seals, dents along seams, rust or missing labels. Reject the cans if any of these conditions are detected.

Dry Foods: They include such products as cereals, flours, dry fruits, and vegetables. Be sure that these foods are in good condition, and dry upon receiving. Look for puncture, tears, holes, or slashing in the packages. Apply the rule of **FIFO** (first-in, first-out) to dry food storage as well.



food handling

Controlling food temperature is perhaps the most effective way to ensure that food is safe to eat.

1 Receiving Foods

Food must be inspected for spoilage and other signs of contamination. Things that must be checked are: weight, appearance, quality, quantity, expiration date, and temperatures. Cold food should be at 40°F or less and frozen food should arrive at 0°F or less; hot food at 140°F or more.

Packaged foods should be checked for any kind of defect such as leaks, bulges, dents, broken seals, rust, or missing labels. Reject and throw away packages that are damaged, patched, or taped shut.

Frozen foods that have the formation of large ice crystals at the bottom of the package is a sign that the product has been refrozen. Throw away these items.

2 Storing Foods

FIFO - First-in, first-out is the most important rule for storing foods. This means that food has to be used in the order of which it is received. Whenever possible, store foods in their original packaging. Take special care in repacking the product. Clearly label repackaged foods. Make sure chemicals and foods are stored separately to avoid possible chemical contamination.

Refrigerated Foods: Keep refrigerated foods at 40°F or below. Refrigerators should have a working visible thermometer at all times and be checked regularly. Always refrigerate meats, poultry, fish, and other **PHF** foods. Fresh fish has to be stored using correct ice down method. Do not refrigerate food if you do not have to, like carrots, bananas, onions, apples, pears, citrus fruits, and potatoes. Do not overload refrigerators. Overloading of refrigerators can lead to inadequate temperature control.

Keep raw foods separately from each other. Store raw foods at the bottom of the refrigerator and cooked foods on the upper shelves, always on top of the raw food (remember, uncooked eggs should be stored below cooked foods).

Frozen Foods: Keep all frozen foods between 0°F and -10°F. Do not thaw (defrost) and refreeze foods. Only refreeze if the product is cooked. Keep defrost cycle of freezers short so food will not thaw.

Dry Foods: Place dry foods in a storeroom between 50°F and 70°F with relative humidity away from sunlight. Dry foods should be placed on slatted shelves at least six inches off the floor and away from the wall to minimize rodent or pest activity. Do not use bathrooms, utility rooms, and similar spaces for storage of food, single-service items, paper goods, or equipment and utensils. Protect dry foods from any kind of contamination: dripping, condensation, or leakage from

overhead plumbing pipes. Do not expose products to overhead water and sewer lines unless the lines are shielded to interfere with potential drips.

To ensure proper air circulation throughout, keep all refrigerated foods, freezer, storeroom, and kitchen foods at least six inches off the floor.

Storing Cakes

Unfrosted Cake Layers: Can keep in room temperature for 2-3 days, unless your home is very hot, then refrigerate or freeze, wrapped tightly in plastic wrap. Oil-based cakes will typically last 1-2 days longer than butter-based ones.

Frosted and Un-Cut Cake: Any non-dairy based frosting, including buttercream and/or canned can be left out for 2-3 days at room temperature, as the frosting acts as plastic wrap by protecting it from air and moisture. However, keep it covered with a cake-keeper or an overturned bowl so that it does not attract dust, pet hair, or other things in the air.

Dairy-based frostings or cakes with dairy-based filling or fresh fruit should be stored in the refrigerator.

3 Defrosting Foods

There are five methods to correctly defrost/thaw foods:

- 1 Take food from the freezer and place it in the lower part of refrigerator
- 2 Leave food in a clean and sanitized sink under cold running water (2 hour maximum time for this method)
- 3 Use microwave only if food is going to be cooked right away
- 4 Place food in a clean container of cold water, only if you are planning to change the water every one to two hours
- 5 Defrost during a conventional cooking method, i.e. frying, boiling, broiling, etc

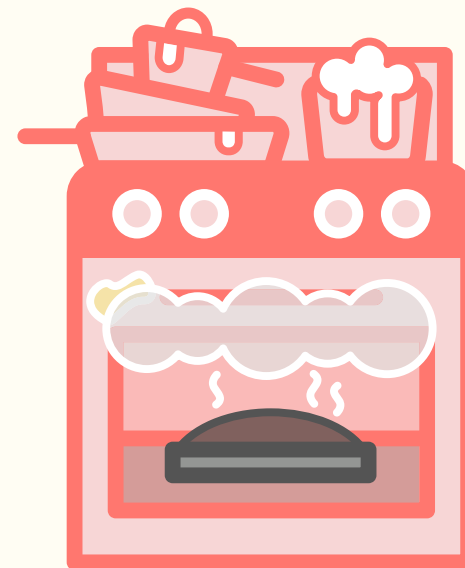
4 Preparing Foods

Careful preparation is the key to serving safe food. Preparation is the time when food has a greater chance of getting contaminated. Through all stages of food preparation and service monitoring, your health, personal hygiene, and hand washing is important. Humans provide an ideal environment for the growth of microorganisms. Prevention is the best way to avoid food borne illnesses.

Symptoms: Nausea, vomiting, cramps, and diarrhea are common symptoms of food borne illness. If you show signs of illness or oozing burns and cuts, you should absolutely not cook or bake for anyone.

People can be carriers of disease producing microorganisms and not be sick themselves. Carriers may not show any symptoms whatsoever.

Researchers have concluded that the HIV microorganism that causes AIDS is not spread by food. Anyone infected with AIDS should not be restricted from preparing food unless they have another illness or cut that may contaminate food.



personal hygiene

Practicing good hygiene means good health habits including bathing, washing hair, wearing clean clothing, and frequent hand washing. Poor personal habits are serious hazards in food establishments. Saliva, sweat, and other body fluids can be harmful sources of contamination if they get into food.

- Improper food tasting should be strictly prohibited. Harmful germs can be transferred to food when a person uses a utensil more than once to taste food
- Eating, drinking, and smoking should only be done in designated areas (fingers may become contaminated during these activities)
- Hair should be properly restrained to prevent contamination of foods
- The most important thing we should remember is proper hand washing.
- Food service employees must have short and clean nails, no nail polish, and no fake nails. The excessive use of jewelry on food service personnel is prohibited
- Gloves can cause contamination just like hands, treat them like second skin. Whenever hands should be washed, you should use a new pair of disposable gloves. When changing from old gloves to new gloves or putting gloves on for the first time, you must wash your hands
- Street clothes can carry contaminating media to food, equipment, and preparation surfaces. It's a good practice to change into clean clothes before baking

handwashing

Proper hand washing includes:

- Using warm water, as hot as you can stand
- Using soap on your hands and scrubbing all the way up to the elbows. Using a nail brush for your nails
- Washing a minimum of 20 seconds and doubling the time to 40 seconds if you use the toilet
- Using only disposable paper towels or the hot air machine to dry your hands.

- After you finish drying your hands with the paper towel, use it to shut the water off
- Hand sanitizing lotions and chemical hand sanitizing solutions may be used in addition to hand washing. Hand sanitizing lotions should never be used in place of hand washing.

In conjunction with proper hand washing, fingernails should be trimmed, filed, and maintained so that hand washing will effectively remove soil from under and around them.

When preparing foods, follow these simple rules:

- Maintain proper personal hygiene
- Handle food with bare hands as little as possible
- Use disposable gloves
- Use thermometers



5 Cooking Foods

There are two main reasons why we cook food:

- To make food more tasty by changing its appearance, texture, and aroma
- More importantly, to heat foods and destroy harmful microorganisms that may cause illness

Using a thermometer is the only reliable way to check the internal temperature of foods. With the exception of pasteurized eggs and rare roast beef, all foods like poultry, meat, and fish should be cooked to at least 140°F or above for 15 seconds. Breaded or battered meats must be cooked thoroughly. **DO NOT HOLD UNUSED BATTER AND BREADING MIXTURES OVER FOR THE NEXT DAY**, they must be discarded.

6 Cooling Foods

According to CDC, inadequate cooling and improper refrigeration are the main causes for food contamination in the United States.

Bacteria will reproduce in foods if left outside to cool before refrigeration. Foods must pass through the temperature danger zone as quickly as possible. The **Food Code** recommends that potentially hazardous foods, should be cooled from 140°F to 70°F within 2 hours, and from 70°F to 40°F or below within an additional 4 hours.

7 Food Transportation

Food that has been exposed to sources of contamination should never be used again.



REMEMBER THAT IT IS NOT ALWAYS POSSIBLE TO IDENTIFY FOOD OR CONTAMINATED FOOD BY APPEARANCE, SMELL, OR TASTE.

IF IN DOUBT, THROW IT OUT!!

cleaning, sanitizing, and pest control

1 Cleaning

There are two ways to sanitize in food establishments:

- Heat sanitizing involves placing cleaned equipment and utensils in hot water (or a dishwasher) of 171°F for 30 seconds.
- Chemical sanitizing involves placing equipment and utensils in an approved chemical sanitizing solution for a minimum of 60 seconds at cool temperatures. It is important to remember, if the sanitizing solution temperature is too high, the sanitizer may evaporate from the solution.

2 Pest Control

Animals and pests can cause illnesses to people by contaminating food and food contact surfaces. Animals are not allowed in food establishments unless they are being used for support or special service (i.e. guide dogs for the blind). It is important that you do not touch animals during food preparation and service. If you touch an animal for any reason, wash your hands before returning to cooking.

The best way to keep pests out of your establishment is making sure they cannot get in. In other words, preventing is the best method of pest control.

- Do not leave food on floors
- Eliminate areas where pests may hide
- Make sure walls and floors have no holes that would allow the entrance of pests
- Use screens for windows and doors
- Keep the back of the establishment clean, organized, and dry

equipment, facilities, and maintenance

Refrigerators and Freezers: They must be made of durable materials that do not rust, doors that seal well, and easy to clean surfaces. Interiors should have sufficient light, with bulbs protected against breakage. Refrigerators should be designed to keep food at 40°F or below. Temperatures should range between 38°F to 40°F. Monitor temperature occasionally.

It is important to store foods in the correct part of the refrigerator. Label and date all foods. Use the **FIFO** rule: first-in, first-out. Do not overload the refrigerator by storing unnecessary foods, such as onions, carrots, bananas, and citric foods.

Keep doors closed as much as possible. Inspect doors for leaky or torn gaskets.

conclusion

Please remember the following from this packet to make sure your donation is as safe as possible:

- 1 Wash your hands constantly and be mindful of touching your face or any other surfaces
- 2 Expiration dates matter
- 3 Don't leave food that needs to be refrigerated out
- 4 If it smells bad, it's probably bad

All of this information and more can be found online: from the duration of an illness, incubation period, specific symptoms, how they're treated, transmission, and even infection rate in the US.



**A SAFE CAKE
IS A HAPPY KID!**

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THANK YOU!

questions? contact us!

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