



Egg Safety

Are Eggs Safe to Eat?

Yes! If the egg shells are clean and uncracked, and the eggs are properly cooked, they are a safe and nutritious food source. There are however some potential hazards that must be controlled.

Can Eggs be Contaminated?

Many types of pathogens can be present on the external surfaces of eggshells. As well, *Salmonella enteritidis* may infect the egg yolk as it develops in the hen. Further, *Yersinia enterocolitica* can infect uncracked eggs by passing through the shell.

Can Bacteria Grow in Egg Products?

Egg yolk is a very good medium for bacteria to grow in. At room temperature, one *Salmonella enteritidis* bacteria can grow to 16,000 organisms per gram of yolk after 24 hours. The egg white exhibits antibacterial properties to most pathogens. However, *Listeria monocytogenes*, *Yersinia enterocolitica* and *Aeromonas hydrophila* can grow in the egg white.

Will Growth Be Controlled by Refrigeration?

Yes! *Salmonella enteritidis* will not grow in egg products held at 7°C or less. *Listeria monocytogenes* will not grow in whole egg or egg white below 5°C.

Are There Exceptions?

Yes! *Yersinia enterocolitica* will grow in whole egg, egg yolk and egg white below 2°C. *Listeria monocytogenes* will grow in the egg yolk below 5°C. While refrigeration does not completely stop pathogen growth, it reduces growth rates very significantly.

Are Pasteurized Egg Products Safe?

Egg pasteurization is designed to cause a 6 to 8 log reduction of *Salmonella* in most liquid egg products. Pasteurization also causes a 2 to 3 log reduction of *Listeria monocytogenes*. These kill rates are considered satisfactory provided that the initial contamination is low. As such, pasteurized egg products are a safer alternative to shell eggs provided they are kept refrigerated.

How Can Purchasers Protect Themselves?

Households, restaurants, bakeries and institutions should follow these guidelines when purchasing and handling eggs.

- only purchase refrigerated, clean, uncracked, graded eggs from an approved supplier.
- refrigerate the eggs promptly after purchasing and keep them refrigerated until just prior to use. Never store eggs at room temperature.
- avoid contaminating the egg contents with the outside of the shell when cracking.
- after handling shell eggs, wash your hands thoroughly as you would after handling any raw animal product and especially before handling any cooked or ready-to-eat food.

- when cooking eggs:
 - for immediate service, cook to a minimum temperature of 63°C (145°F) for at least 15 seconds. A good indicator of safety is to cook until the yolk and white are no longer runny.
 - for dishes where eggs are used as an ingredient (e.g. casseroles, soups), cook to a minimum temperature of 68°C (155°F) for at least 15 seconds.
- serve cooked eggs and egg dishes immediately. Never leave cooked eggs or egg dishes at room temperature for longer than 2 hours. If they are not to be eaten within 2 hours, hot hold them at 60°C (140°F) or hotter, or refrigerate them.
- for dishes that use uncooked or partially cooked eggs (e.g. Caesar's salad dressing, egg-fortified beverages, certain egg custard desserts), pasteurized egg products are a safer alternative than shell eggs.
- many common egg dishes such as scrambled or fried eggs, French toast, and omelettes can easily be inadvertently undercooked. For these dishes to be safe, they must be cooked to the temperatures and times indicated above. Particularly for higher risk people such as young children, seniors, and immune compromised individuals, unless the cooking temperature and time can be verified, these dishes should be avoided or a pasteurized egg product used rather than shell eggs.
- use pasteurized egg products by the *best before* date.
- pooling eggs is especially risky. If you must pool eggs, pool the eggs just prior to cooking AND always cook them to 68°C (155°F) for at least 15 seconds. Only pool the number of eggs you will use immediately and never store pooled eggs.