

Fast Facts

Wheat Flour and Grain-Based Foods – E. coli

What is Escherichia coli (E. coli)?

- *E. coli* is a bacteria commonly found in the environment and gut (intestines) of people and animals.
- While some strains of *E. coli* are generally harmless and are even beneficial to the human body, others can cause illness in humans.
- Different pathogenic strains of *E. coli* can cause different illnesses.
- *Some strains of E. coli* prefer human and animal digestive systems and some strains can survive and remain viable at colder and warmer temperatures.
<http://food.unl.edu/escherichinia-coli-o157h7-e-coli>

Canadian Wheat Flour Recall

- Two food safety investigations conducted by the Canadian Food Inspection Agency in the first half of 2017 have drawn additional attention to flour as a possible source of foodborne illness related to *E. coli*.0121. A number of voluntary recalls have been conducted in response to CFIA investigations in the period of March to June, 2017. <http://www.inspection.gc.ca/about-the-cfia/newsroom/food-recall-warnings/eng/1299076382077/1299076493846>
- The Public Health Agency of Canada (PHAC) has extensively investigated an outbreak of *E. coli* 0121 in which a total of 30 individuals contracted this rare strain of *E. coli*, traced to consumption of wheat flour. Not all of the 30 confirmed cases that were reported and investigated between November, 2016 and May 2017 were directly associated with handling and/or consumption of wheat flour. However, all cases were found to have contracted the same strain of *E. coli* 0121. <http://www.phac-aspc.gc.ca/phn-asp/2017/outbreak-ecoli-eng.php>

- All of the affected individuals who are residents of Canada (29 of 30), including those who were hospitalized for a short term, have recovered from their illness.

Wheat and Flour - low food safety risk for E.coli

- Pathogenic strains of *E. coli* that can cause foodborne illness in humans, were not found and documented in wheat flour before 2016 when an investigation of wheat flour was conducted in the U.S. by the Centers for Disease Control and concluded in later September, 2016.
<https://www.cdc.gov/ecoli/2016/o121-06-16/index.html>
- In fact, wheat flour and further processed foods made from wheat flour, including breads and other bakery products have very rarely been considered as a possible source of foodborne illness and very rarely identified as a source of infection in foodborne illness in Canada and the United States.
- Both harmful and harmless strains of *E. coli* are not normally found in wheat or other cereal grains or products of wheat milling such as wheat flour and bakery mixes.
- Wheat flour that is packaged in retail (for at-home baking and other food use) and commercial bags (for commercial baking and other food manufacturing use) normally has a moisture content ranging between 9.0 and 14%, varying with the relative humidity of surrounding air. This dry environment is not suitable for bacterial growth. Wheat flour also has a shelf life ranging from 3 months to more than 12 months.
- More importantly from a food safety perspective, *E. coli* and other bacteria present in wheat flour and other foods are normally and predictably killed by cooking temperatures experienced in baking and other cooking methods. For example, the internal cooking temperature reached during the baking process for pan breads, artisan breads and other common bakery products is

between 190 and 210 degrees F. *E. coli* is predictably killed in the baking process and other cooking methods that provide an internal cooking temperature of 160 to 165 degrees F, regardless of whether the source of the *E. coli* is wheat flour or other ingredients used in prepared food.

<https://www.canada.ca/en/health-canada/services/general-food-safety-tips/safe-internal-cooking-temperatures-chart.html>

What at-home chefs, commercial bakers and foodservice workers should know about cooking with wheat flour and foods made with wheat flour.

- Always read the labels on wheat flour and other food packages. Follow storage and cooking instructions carefully according to the recommended temperatures and time.
- Wheat flour is not a ready-to-eat food and is not intended to be eaten without baking or some other form of cooking.
- Dough, bakery products and other ready-to-cook foods such as fresh pasta not intended for cooking immediately should be refrigerated or frozen, if not previously frozen.
- Never eat raw cookie dough or uncooked batters made with wheat flour.
- Children should not be allowed to play with uncooked dough made with wheat flour.
- Persons handling doughs and batters should wash hands thoroughly after handling of uncooked bakery products and other foods containing wheat flour.
- All mixing bowls, equipment, utensils and preparation surfaces should be thoroughly washed with hot water and soap after cooking with wheat flour and other raw ingredients, including spices, eggs, meat, seafood and poultry.
