

Flour and Cereal Grains – Outbreaks and Recalls: Tables and References

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Table 1. Outbreaks of foodborne illness associated with the consumption of flour and cereal grain products

Table 2. Recalls of wheat flour and wheat products, 2009 to present (September 2022)

Table 3. Recalls of non-wheat flour (nut, grain, tuber, or pseudocereal)

Table 1. Outbreaks of foodborne illness associated with the consumption of flour and cereal grain products

Product (source)	Pathogen	Year	Number of cases	Isolated from product?	Outbreak location(s)	Source
Wheat flour						
Flour (New Zealand)	<i>Salmonella</i> Typhimurium phage type 42	2008–2009	67	yes	New Zealand	McCallum et al., 2013
Flour (General Mills, Kansas City, MO)	<i>E. coli</i> O121, <i>E. coli</i> O26	2015–2016	63	yes	USA (24 states)	CDC, 2016; Crowe et al., 2017; US FDA, 2017
Flour (Arden Mills, Saskatoon, SK)	<i>E. coli</i> O121	2016–2017	30	yes	Canada (6 provinces)	Gill et al., 2019; Morton et al., 2017, 2020; PHAC, 2017; Robertson et al., 2018
Flour (Rogers Foods, BC)	<i>E. coli</i> O121	2017	6	yes	Canada (1 province: BC)	BCCDC, 2017; Beach, 2017
Flour (ADM Milling Co., Buffalo, NY)	<i>E. coli</i> O26	2018–2019	21	yes	USA (9 states)	CDC, 2019b; Marler, 2019; US FDA 2019b
Wheat flour product						
Cake mix, raw – in ice cream (USA)	<i>Salmonella</i> Typhimurium	2005	26	yes	USA (11 states)	Zhang et al., 2007
Frozen pot pies [flour could not be ruled out] (USA)	<i>Salmonella</i> serotype I 4,5,12:i:-	2007	396	yes	USA (41 states)	CDC, 2008a; Mody et al., 2014
Prepackaged, refrigerated cookie dough (USA)	<i>E. coli</i> O157:H7	2009	80	yes	USA (31 states)	CDC, 2009; Neil et al., 2012
Dough mix, dry (USA)	<i>E. coli</i> O157:H7	2015–2016	13	yes	USA (9 states)	Gieraltowski et al., 2017
Cake mix (USA)	<i>Salmonella</i> Agbeni	2018	7	yes	USA (5 states)	CDC, 2019a; US FDA, 2019a
Cake mix (USA)	<i>E. coli</i> O121	2021	16	no	USA (12 states)	CDC, 2021

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Product (source)	Pathogen	Year	Number of cases	Isolated from product?	Outbreak location(s)	Source
Cereal grain product						
Infant cereal [with oats] (Sweden)	<i>Salmonella</i> Muenchen	1961	110	no (yes in processing facility)	Sweden	Silverstolpe et al., 1961
Toasted oats cereal (USA)	<i>Salmonella</i> Agona	1998	400+	yes	USA (11 states)	CDC, 1998; Russo et al., 2013
Puffed rice or puffed wheat cereals (USA)	<i>Salmonella</i> Agona	2008	33	yes	USA (17 states)	CDC, 2008b; Hoffman et al., 2015; Russo et al., 2013
Puffed wheat cereal (USA)	<i>Salmonella</i> Mbandaka	2018	136	yes	USA (36 states)	CDC, 2018; Keaton et al., 2022

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Table 2. Recalls of wheat flour and wheat products, 2009 to present

Date of recall mm/dd/yyyy (Reference)	Recall class	Product	Recalling firm	Reason given	Brand	Sub- recalls	Illnesses
11/27/2019 (34)	I	Organic all-purpose flour, unbleached (5-lb bags)	UNFI – United Natural Foods, Inc. (Providence, RI)	<i>E. coli</i> isolated in routine testing	Wild Harvest		none reported
11/27/2019 (33)	I	All-purpose flour, unbleached (5-lb bags)	Hodgson Mill Inc. (Effingham, IL); flour milled at ADM Milling Co. facility (St. Louis), repacked by Hodgson Mill	Pathogenic <i>E. coli</i> isolated in routine testing	Hodgson Mill		none reported
10/04/2019 (32)	II	All-purpose flour (5-lb bags)	J. M. Smucker Co. (Orrville, OH)	Potential <i>E. coli</i> O26 contamination	Robin Hood		none reported
10/03/2019 11/01/2019 (30*, 31**) *expansion of 06/13 recall; **update of 10/03 recall	I	All-purpose flour, unbleached (5- and 25-lb bags)	King Arthur Flour Co., Inc. (Norwich, VT) & ADM Milling Co. (Buffalo, NY)	<i>E. coli</i> O26 isolated in routine testing	King Arthur		none reported
09/16/2019 (29)	I	All-purpose flour, unbleached (5-lb bags)	General Mills (Minneapolis, MN)	<i>E. coli</i> O26 isolated in routine testing	Gold Medal (Better if Used by Date 06SEP2020KC)		none reported
06/21/2019 (28)	II	Cookie and brownie mixes (25- and 32-oz glass jars)	Brand Castle, LLC (Bedford Heights, OH) & ADM Milling Co. (Buffalo, NY)	Potential <i>E. coli</i> contamination; wheat used for flour linked to ongoing outbreak associated with ADM	Brand Castle, Sisters Gourmet, In the Mix		none reported
06/14/2019 (27)	II	Bread flour (5-lb bags)	Hometown Food Co. (Chicago, IL) & ADM Milling Co. (Buffalo, NY)	Potential <i>E. coli</i> contamination; wheat used for flour linked to ongoing outbreak associated with ADM	Pillsbury Best		none reported
06/13/2019 (26)	II	All-purpose flour, unbleached (5-lb bags)	King Arthur Flour Co., Inc. (Norwich, VT) &	Potential <i>E. coli</i> contamination; wheat used for flour linked to	King Arthur		none reported

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Date of recall mm/dd/yyyy (Reference)	Recall class	Product	Recalling firm	Reason given	Brand	Sub- recalls	Illnesses
			ADM Milling Co. (Buffalo, NY)	ongoing outbreak associated with ADM			
05/23/2019 (24, 25)	I	All-purpose flour (5-lb bags)	ALDI (Batavia, IL) & ADM Milling Co. (Buffalo, NY)	<i>E. coli</i> isolated in testing by RI Dept. of Health	Baker's Corner (packed for ALDI stores)	yes	17
03/10/2019 03/12/2019 03/13/2019 (21, 22, 23)	II	All-purpose flour, unbleached (5-lb bags)	Pillsbury/ Hometown Food Co. (Chicago, IL)	Possible <i>Salmonella</i> contamination	Pillsbury Best		none reported
01/23/2019 (20)	I	All-purpose flour, unbleached (5-lb bags)	General Mills (Minneapolis, MN)	<i>Salmonella</i> isolated in routine testing	Gold Medal (Better if Used by Date 20APR2020KC)		none reported
11/05/2018 (19)	I	Cake mixes (15.25-oz packs)	Conagra Brands (Chicago, IL)	<i>Salmonella</i> isolated in retail sample; linked to outbreak	Duncan Hines Classic Cake: White, Yellow, Butter Golden, Signature Confetti		5
06/14/2018 (18)	I	Puffed wheat cereal (23-oz and 15.3-oz boxes)	Kellogg Company (Battle Creek, MI)	<i>Salmonella</i> contamination; linked to outbreak	Kellogg's Honey Smacks		73
06/19/2017 (17)	II	Flour (20-kg bags), milled by Ardent Mills	Distributors: Flour Barrel (Guelph, ON); Hillcrest Home Baking (Floradale, ON)	Possible <i>E. coli</i> O121 contamination	Robin Hood - Super Keynote Strong Bakers Flour; Italian Style Flour		none reported
06/16/2017 (16)	II	Cookie dough, pie and tart shells	Various Canadian manufacturers	Possible <i>E. coli</i> O121 contamination	In-Dey-Go Fundraising Inc. (cookie dough); Apple Valley, Mildmay Cheese Haus		none reported
06/15/2017 (15)	II	All-purpose flour (bulk packs - various sizes)	Distributors: Country Bulk Inc. (Waterloo, ON) & Country Pantry Bulk Foods (Heidelberg, ON)	Possible <i>E. coli</i> O121 contamination	Robin Hood		none reported

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Date of recall mm/dd/yyyy (Reference)	Recall class	Product	Recalling firm	Reason given	Brand	Sub- recalls	Illnesses
06/15/2017 (14)	II	All-purpose flour (20-kg)	Ardent Mills (Brampton, ON)	Possible <i>E. coli</i> O121 contamination	Robin Hood – Baker’s Hood	yes	none reported
06/07/2017 (12, 13)	II	All-purpose flour (10-kg bags)	Rogers Foods Ltd. (Armstrong, BC, Canada)	<i>E. coli</i> O121 contamination	Rogers		yes, 6 reported Feb– Apr 2017
05/31/2017 (11)	II	Durum wheat flour and wheat bran blends (20-lb bags)	Smucker Foods of Canada Corp. (Markham, ON)	Possible <i>E. coli</i> O121 contamination	Select Golden Temple, Swad, Maya		none reported
04/25/2017 (9, 10* recall list update to June 2, 2017)	II	Pie and tart shells (assorted sizes)	Harlan Bakeries (Edmonton, AB)	Possible <i>E. coli</i> O121 contamination	No name, Great Value, Apple Valley, Western Family		none reported
04/12/2017 (8)	II	Various flour and flour products	Ardent Mills (Saskatoon, SK, Canada)	<i>E. coli</i> O121 contamination; linked to outbreak	Brodie, Creative Baker, Golden Temple, Robin Hood	yes	yes, 30 reported: Nov 2016 – Apr 2017
04/04/2017 (7)	II	All-purpose flour (10-kg bags)	Smucker Foods of Canada Corp. (Markham, ON)	<i>E. coli</i> O121 contamination	Robin Hood	yes	yes, 1 reported March 2017
07/11/2016 (6)	II	Cake mix (2 flavors)	General Mills (Minneapolis, MN)	Made with affected flour recalled by General Mills	Betty Crocker Delights Super Moist		none reported
07/09/2016 (5)	II	Pancake mix (28-oz carton, 3.5- lb bag)	Continental Mills (Tukwila, WA)	Made with affected flour recalled by General Mills	Krusteaz (Blueberry)		none reported
07/01/2016 07/25/2016 (3, 4)	I	[expanded flour recalls]	General Mills (Minneapolis, MN)	<i>E. coli</i> O121 and/or O26 isolated from product; linked to multi-state outbreak	Gold Medal, Gold Medal Wondra, Signature Kitchens	yes	yes, 63 reported: Dec 2015 – Sep 2016
05/31/2016 (2)	I	All-purpose, quick- mixing, self-rising, or unbleached flour (13.5-oz carton; 2- 4.25-, 5- and 10-lb bags)	General Mills (Minneapolis, MN)	<i>E. coli</i> O121 and/or O26 isolated from product; linked to multi-state outbreak	Gold Medal, Gold Medal Wondra, Signature Kitchens		yes, 38 reported: Dec 2015 – May 2016

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Date of recall mm/dd/yyyy (Reference)	Recall class	Product	Recalling firm	Reason given	Brand	Sub- recalls	Illnesses
05/19/2009 (1)	I	Refrigerated cookie and brownie dough products	Nestlé USA (Solon, OH)	<i>E. coli</i> O157:H7 contamination; linked to outbreak	Toll House		yes, 80 reported

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Table 3. Recalls of non-wheat flour (nut, grain, tuber, or pseudocereal)

Date of recall mm/dd/yyyy (Reference)	Recall class	Product	Recalling firm	Reason given	Brand	Sub- recalls	Illnesses
05/27/2021 (3)	I	Tiger nuts [tuber] flour (2.2-lb boxes)	Tiger Nuts Inc. (Newburgh, NY)	Potentially contaminated with <i>Salmonella</i>	raw premium organic Tiger Nuts Flour (extra fine)		None reported
04/06/2018 (2)	I	Amaranth flour, organic (22-oz bags)	Bob's Red Mill Natural Foods (Milwaukie, OR)	<i>Salmonella</i> contamination in 1 lot (sell-by date Nov. 26, 2015)	Bob's Red Mill Organic		none reported
03/23/2018 (1)	I	Coconut flour (16-oz pouches)	King Arthur Flour Co., Inc. (Norwich, VT)	<i>Salmonella</i> isolation in routine testing	100% Organic, Finely Ground Coconut Flour		none reported

References (Table 3 – Recalls: non-wheat flour)

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3. U.S. Food and Drug Administration. 2021. Tiger Nuts Inc. recalls Tiger Nuts Flour in kilo's (2.2 lbs) because of possible health risk. Company announcement available at: <https://www.fda.gov/safety/recalls-market-withdrawals-safety-alerts/tiger-nuts-inc-recalls-tiger-nuts-flour-kilos-22-lbs-because-possible-health-risk>.