

Agricultural Dust Explosions in 2019*

There were 9 grain dust explosions reported in the U.S. in 2019 according to Kingsly Ambrose, Associate Professor, Purdue University. This compares to 12 in 2018 and a ten-year average of 8.5 explosions.

There were 1 fatality and 7 injuries.

The explosions were in 3 feed mills, 1 ethanol plant, 2 grain mills and 4 grain elevators.

The **probable ignition sources** were identified in 2 case as fires, one as static electricity, one as hot bearing and 5 unknowns.

Fuel sources were identified as 4 from grain dust and 5 unknowns.

Dust explosions occurred in 7 different states: 3 in Iowa and 1 each in Indiana, Illinois, Minnesota, Ohio, Nebraska, and Georgia.

Contact Dr. Kingsly Ambrose by e-mail (rambrose@purdue.edu) or telephone (765-494-6599). Address: 225 S University Street, West Lafayette, IN 47907.

* This report subject to revision as additional information is received.

REPORTED DUST EXPLOSIONS IN U.S. 2019

<u>No</u>	<u>DATE</u>	<u>COMPANY</u>	<u>ADDRESS</u>	<u>FACILITY</u>	<u>FATALITIES</u>	<u>INJURED</u>
1	1/4/2019	ADM	Decatur, IL	Grain elevator/ Grain processing	0	0
2	1/5/2019	ADM	Clinton, IA	Grain elevator Grain processing	1	1
3	1/31/2019	ADM	Lincoln, NE	(soybean)	0	3
4	4/30/2019	Crystal feeds	Oakwood, GA	Feed mill	0	0
5	6/11/2019	New Vision Coop	Brewster, MN	Grain elevator	0	1
6	6/14/2019	Ag Partners Inc.	Sheldon, IA	Grain elevator	0	0
7	6/21/2019	POET Biorefining	Cloverdale, IN	Ethanol plant	0	2
8	7/23/2019	Deluxe Feeds	Sheldon, IA	Feed mill	0	0
9	9/5/2019	Legacy Farmers Coop	Custar, OH	Grain elevator	0	0

TABLE 1. U.S. AGRICULTURAL DUST EXPLOSION STATISTICS

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	TEN YEAR TOTAL
Number	11	9	10	7	7	8	5	7	12	9	85
Fatalities	0	6	0	1	0	0	3	5	1	1	17
Injured	17	4	8	7	14	10	8	12	2	7	89
Type of Facility											
Grain Elevator	7	5	8	3	5	2	2	5	8	5	50
Feed Mill	2	2	1	2	1	4	1	0	2	2	17
Flour Mill	0	1	0	1	0	0	2	0	0	0	4
Other:											
Corn Milling, Dry	0	0	0	0	0	0	0	1	0	1	2
Corn Milling, Wet	1	0	0	0	0	0	0	0	0	0	1
Rice Mill	0	0	0	0	0	0	0	0	0	0	
Other	1	1	1	1	1	2	0	1	2	1	11

Source: Dr. Kingsly Ambrose, Purdue University

TABLE 2. AGRICULTURAL DUST EXPLOSIONS BY COMMODITY HANDLED AT TIME OF EXPLOSION 2010-2019

<u>COMMODITY</u>	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	TEN YEAR TOTAL
Corn	8	3	6	5	3	2	1	6	6	5	45
Soybeans	0	0	3	0	0	0	0	0	0	1	4
Wheat	0	0	0	1	0	0	0	0	0	0	1
Barley (malted)	0	0	0	0	0	1	0	0	0	0	1
Oats	0	0	0	0	0	0	0	0	0	0	0
Beet pulp	0	0	0	0	0	0	0	0	0	0	0
Corn starch	0	0	0	0	0	0	0	0	0	0	0
Sugar	0	0	0	0	0	0	0	0	0	0	0
Mixed feed	3	2	1	0	2	3	1	0	4	2	18
Rice (Bran)(Flour)(Hulls)	0	0	0	0	0	0	0	0	0	0	0
Wheat Flour	0	1	0	0	0	0	0	0	0	0	1
Wheat (Starch)(Gluten)	0	0	0	0	0	0	1	0	0	0	1
Other	0	3	0	1	2	2	2	1	2	1	14
TOTAL EXPLOSIONS	11	9	10	7	7	8	5	7	12	9	85

Source: Dr. Kingsly Ambrose, Purdue University

TABLE 3. U. S. AGRICULTURAL DUST EXPLOSIONS LEADING STATES - 1958 to Date

<u>STATE</u>	1958-2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	10-YEAR TOTAL	1958-2019
Iowa	87	1	1	0	0	0	0	1	1	2	3	9	96
Illinois	74	4	0	1	0	1	1	0	0	2	1	10	84
Nebraska	74	0	2	0	2	0	0	0	1	1	1	7	81
Minnesota	59	0	0	2	0	0	0	0	1	1	1	5	64
Kansas	52	0	1	1	1	0	0	1	0	1	0	5	57
Texas	46	0	0	0	0	0	0	0	0	1	0	1	47
Ohio	34	1	0	0	0	0	1	0	0	0	1	3	37
Missouri	31	0	0	1	0	3	1	0	0	0	0	5	36
Indiana	27	0	0	0	1	0	1	1	1	1	1	6	33
Louisiana	18	0	0	0	0	0	0	0	0	1	0	1	19
South Dakota	13	1	0	1	1	0	0	0	0	0	0	3	16
Wisconsin	7	0	0	0	1	0	0	1	2	1	0	5	12