

## **Agricultural Dust Explosions in 2018\***

There were 12 grain dust explosions reported in the U.S. in 2018 according to Kingsly Ambrose, Associate Professor, Purdue University. This compares to 7 in 2017 and a ten-year average of 8.4 explosions.

There was 1 fatality and 4 were injured.

The explosions occurred in 2 feed mills, 2 ethanol plants, and 8 grain elevators.

The **probable ignition sources** were identified in 3 cases as hot bearings and sparks, and 9 were unknowns.

**Fuel sources** were identified as 3 from grain dust and 9 unknowns.

**Dust explosions** occurred in 9 different states: 2 in Illinois and Iowa and 1 each in Minnesota, Indiana, Nebraska, Texas, Oklahoma, Wisconsin, Kansas, and Louisiana.

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

REPORTED DUST EXPLOSIONS IN U.S. 2018

<u>No</u>	<u>DATE</u>	<u>COMPANY</u>	<u>ADDRESS</u>	<u>FACILITY</u>	<u>FATALITIES</u>	<u>INJURED</u>
1	1/4/2018	MGI Grain processing LLC	East Grand Forks, MN	Grain elevator	0	0
2	3/8/2018	Topflight Grain Co-op	Beason, IL	Grain elevator	0	0
3	4/25/2018	Jupe Feed	Temple, TX	Feed mill	0	0
4	5/29/2018	Andersen Farm	South Sioux City, NE	Grain elevator	1	1
5	6/28/2018	IFG Export Grain Terminal	Lake Charles, LA	Grain elevator	0	0
6	8/3/2018	Palmer Grain Inc.	Palmer, KS	Grain elevator	0	1
7	8/10/2018	Landus Cooperative	Templeton, IA	Grain elevator	0	0
8	8/19/2018	Landus Cooperative	Rake, IA	Grain elevator	0	2
9	10/10/2018	Badger State Ethanol	Monroe, WI	Ethanol plant	0	0
10	10/18/2018	Big V Feeds	McAlester, OK	Feed mill	0	0
11	11/3/2018	ADM	Decatur, IL	Grain elevator	0	0
12	11/6/2018	Cardinal Ethanol	Union City, IN	Ethanol plant	0	0

TABLE 1. U.S. AGRICULTURAL DUST EXPLOSION STATISTICS

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	TEN YEAR TOTAL
Number	8	11	9	10	7	7	8	5	7	12	84
Fatalities	0	0	6	0	1	0	0	3	5	1	16
Injured	12	17	4	8	7	14	10	8	12	4	96
Type of Facility											
Grain Elevator	4	7	5	8	3	5	2	2	5	8	49
Feed Mill	2	2	2	1	2	1	4	1	0	2	17
Flour Mill	0	0	1	0	1	0	0	2	0	0	4
Other:											
Corn Milling, Dry	0	0	0	0	0	0	0	0	1	0	1
Corn Milling, Wet	0	1	0	0	0	0	0	0	0	0	1
Rice Mill	0	0	0	0	0	0	0	0	0	0	0
Other	2	1	1	1	1	1	2	0	1	2	12

Source: Dr. Kingsly Ambrose, Purdue University

TABLE 2. AGRICULTURAL DUST EXPLOSIONS BY COMMODITY HANDLED AT TIME OF EXPLOSION 2009-2018

<u>COMMODITY</u>	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	TEN YEAR TOTAL
Corn	4	8	3	6	5	3	2	1	6	6	44
Soybeans	0	0	0	3	0	0	0	0	0		3
Wheat	0	0	0	0	1	0	0	0	0	0	1
Barley (malted)	0	0	0	0	0	0	1	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	2	3	2	1	0	2	3	1	0	4	18
Rice (Bran)(Flour)(Hulls)	0	0	0	0	0	0	0	0	0	0	0
Wheat Flour	1	0	1	0	0	0	0	0	0	0	2
Wheat (Starch)(Gluten)	0	0	0	0	0	0	0	1	0	0	1
Other	1	0	3	0	1	2	2	2	1	2	14
<b>TOTAL EXPLOSIONS</b>	<b>8</b>	<b>11</b>	<b>9</b>	<b>10</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>5</b>	<b>7</b>	<b>12</b>	<b>84</b>

Source: Dr. Kingsly Ambrose, Purdue University

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

<u>STATE</u>	1958-2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	10-YEAR TOTAL	1958-2018
Iowa	85	3	1	1	0	0	0	0	1	1	2	9	94
Illinois	72	2	4	0	1	0	1	1	0	0	2	11	83
Nebraska	73	1	0	2	0	2	0	0	0	1	1	7	80
Minnesota	58	1	0	0	2	0	0	0	0	1	1	5	63
Kansas	52	0	0	1	1	1	0	0	1	0	1	5	57
Texas	46	0	0	0	0	0	0	0	0	0	1	1	47
Ohio	34	0	1	0	0	0	0	1	0	0	0	2	36
Missouri	31	0	0	0	1	0	3	1	0	0	0	5	36
Indiana	27	0	0	0	0	1	0	1	1	1	1	5	32
Louisiana	18	0	0	0	0	0	0	0	0	0	1	1	19
South Dakota	13	0	1	0	1	1	0	0	0	0	0	3	16
Wisconsin	7	0	0	0	0	1	0	0	1	2	1	5	12