

## **Agricultural Dust Explosions in 2021\***

There were 7 grain dust explosions reported in the U.S. in 2021 according to Kingsly Ambrose, Associate Professor, Purdue University. This compares to 8 in 2020 and a ten-year average of 8.0 explosions.

There were 1 fatality and 5 injuries.

The explosions were in 1 feed mill, 1 ethanol plant, 1 grain mill and 4 grain elevators.

The **probable ignition sources** were identified in 1 case as fire, 2 as grain smoldering and 4 unknowns.

**Fuel sources** were identified as 5 from grain dust and 2 unknowns.

**Dust explosions** occurred in 6 different states: 2 in Minnesota, and 1 each in Georgia, Idaho, Indiana, Iowa, Oregon.

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

REPORTED DUST EXPLOSIONS IN U.S. 2021

<u>No</u>	<u>DATE</u>	<u>COMPANY</u>	<u>ADDRESS</u>	<u>FACILITY</u>	<u>FATALITIES</u>	<u>INJURED</u>
1	3/23/2021	Riches Seeds	Silverton, OR	Grain elevator	1	1
2	05/14/2021	Landus Cooperative	Jefferson, IA	Grain elevator	0	0
3	5/17/2021	Double J Milling	Mountain Home, ID	Grain elevator	0	1
4	6/1/2021	Christensen Farms	Sleepy Eye, MN	Feed mill	0	0
5	6/1/2021	Farmer's Co-op of Hanska	New Ulm, MN	Grain elevator	0	1
6	7/28/2021	Grain Plains	Mt. Vernon, IN	Ethanol plant	0	0
7	9/14/2021	Derst Baking Co.	Savannah, GA	Baking plant	0	2

TABLE 1. U.S. AGRICULTURAL DUST EXPLOSION STATISTICS

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	TEN YEAR TOTAL
Number	10	7	7	8	5	7	12	11	8	7	82
Fatalities	0	1	0	0	3	5	1	1	1	1	13
Injured	8	7	14	10	8	12	2	8	6	5	80
Type of Facility											
Grain Elevator	8	3	5	2	2	5	8	4	4	4	45
Feed Mill	1	2	1	4	1	0	2	4	1	1	17
Flour Mill	0	1	0	0	2	0	0	0	0	0	3
Other:											
Corn Milling, Dry	0	0	0	0	0	1	0	1	0	0	2
Corn Milling, Wet	0	0	0	0	0	0	0	0	1	1	2
Rice Mill	0	0	0	0	0	0	0	0	1	0	1
Other	1	1	1	2	0	1	2	2	1	1	12

Source: Dr. Kingsly Ambrose, Purdue University

TABLE 2. AGRICULTURAL DUST EXPLOSIONS BY COMMODITY HANDLED AT TIME OF EXPLOSION 2012-2021

<u>COMMODITY</u>	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	TEN YEAR TOTAL
Corn	6	5	3	2	1	6	6	5	2	3	39
Soybeans	3	0	0	0	0	0	0	1	0	0	4
Wheat	0	1	0	0	0	0	0	0	1	0	2
Barley (malted)	0	0	0	1	0	0	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	1	0	2	3	1	0	4	3	3	3	20
Rice (Bran)(Flour)(Hulls)	0	0	0	0	0	0	0	0	1	0	1
Wheat Flour	0	0	0	0	0	0	0	0	0	0	0
Wheat (Starch)(Gluten)	0	0	0	0	1	0	0	0	0	0	1
Other	0	1	2	2	2	1	2	2	1	1	14
<b>TOTAL EXPLOSIONS</b>	<b>10</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>5</b>	<b>7</b>	<b>12</b>	<b>11</b>	<b>8</b>	<b>7</b>	<b>82</b>

Source: Dr. Kingsly Ambrose, Purdue University

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

<u>STATE</u>	1958-2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	10-YEAR TOTAL	1958-2021
Iowa	87	0	0	0	0	1	1	2	3	1	1	9	96
Illinois	76	1	0	1	1	0	0	2	1	1	0	7	83
Nebraska	75	0	2	0	0	0	1	1	1	1	0	6	81
Minnesota	58	2	0	0	0	0	1	2	1	0	2	8	66
Kansas	53	1	1	0	0	1	0	1	0	1	0	5	58
Texas	46	0	0	0	0	0	0	1	0	1	0	2	48
Ohio	35	0	0	0	1	0	0	0	1	1	0	3	38
Missouri	31	1	0	3	1	0	0	0	0	1	0	6	37
Indiana	27	0	1	0	1	1	1	1	1	0	1	7	34
Louisiana	18	0	0	0	0	0	0	1	0	0	0	1	19
South Dakota	14	1	1	0	0	0	0	0	0	0	0	2	16
Wisconsin	7	0	1	0	0	1	2	1	1	0	0	6	13