

Agricultural Dust Explosions in 2011*

There were 9 dust explosions reported in the U.S. in 2011 according to Kingsly Ambrose, Assistant Professor, Kansas State University. This compares to 11 in 2010 and a ten-year average of 9.8 explosions.

There were 6 fatalities and 4 injured.

The explosions were in 5 grain elevators, 2 feed mills, 1 wheat flour mill, and 1 corn processing plant.

The **probable ignition source** was identified in 3 cases as a spark, 1 as smoldering pallets, 1 overheated rolling belt, and 4 were unknown.

Fuel sources were identified as 3 from corn, 2 were mixed feed, 1 was wheat flour, 1 was alfalfa pellets, and 2 were unknown.

Dust explosions occurred in eight different states: 2 each in Wisconsin and Nebraska, and 1 each in California, Iowa, Kansas, Michigan, and Mississippi.

Contact Dr. Kingsly Ambrose by e-mail (kingsly@ksu.edu) or telephone (785-532-4091). Address: 312 Shellenberger Hall, Manhattan, KS 66506

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

REPORTED DUST EXPLOSIONS IN U.S. 2011

<u>No</u>	<u>DATE</u>	<u>COMPANY</u>	<u>ADDRESS</u>	<u>FACILITY</u>	<u>FATALITIES</u>	<u>INJURED</u>
1	2011/01/21	Wisconsin Rapids Grain Feed Mill	Brokaw, WI	Grain elevator	0	0
2	2011/03/05	Lansing Grain elevator	Lansing, MI	Grain elevator	0	1
3	2011/03/28	Fremont Grain Bin	Fremont, NE	Grain elevator	0	0
4	2011/04/12	Ag Valley Co-Op	Bartley, NE	Grain Elevator	0	0
5	2011/04/19	Cargill	San Bernardino, CA	Mill	0	1
6	2011/06/02	CP Feeds	Valders, WI	Feed mill	0	1
7	2011/07/15	Cargill	Byhalia, MS	Feed mill	0	0
8	2011/08/18	ADM	Clinton, IA	Corn Processing Plant	0	1
9	2011/10/29	Bartlett Grain	Atchison, KS	Grain elevator	6	0

TABLE 1. U.S. AGRICULTURAL DUST EXPLOSION STATISTICS

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	TEN YEAR TOTAL
Number	8	8	6	13	9	7	19	8	11	9	98
Fatalities	1	2	0	2	0	0	0	0	0	6	11
Injured	8	8	4	11	8	6	9	12	17	4	87
Type of Facility											
Grain Elevator	6	4	1	7	5	5	14	4	7	5	58
Feed Mill	0	2	2*	5	2	1	3	2	2	2	21
Flour Mill	0	1	0	1**	0	0	0	0	0	1	3
Other:											
Corn Milling, Dry	0	0	0	0	0	0	0	0	0	0	0
Corn Milling, Wet	1	0	1*	0	0	0	0	0	1	0	3
Rice Mill	0	0	0	0	0	0	0	0	0	0	0
Other	1	1	2	0	2	1	2	2	1	1	13

* Explosion occurred in raw grain storage facilities.

**Explosion occurred in separate bulk flour storage facility.

Source: Dr. Kingsly Ambrose, Kansas State University

TABLE 2. AGRICULTURAL DUST EXPLOSIONS BY COMMODITY HANDLED AT TIME OF EXPLOSION 2002-2011

COMMODITY	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	<u>TEN YEAR TOTAL</u>
Corn	5	6	3	7	5	4	14	4	8	3	59
Soybeans	1	0	0	0	0	0	0	0	0	0	1
Wheat	0	1	0	2	0	0	0	0	0	0	3
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
Mixed feed	0	1	0	1	2	1	5	2	3	2	17
Rice (Bran)(Flour)(Hulls)	0	0	0	0	0	0	0	0	0	0	0
Wheat Flour	0	0	0	1	0	0	0	1	0	1	3
Wheat (Starch)(Gluten)	1	0	1	0	1	0	0	0	0	0	3
Other	1	0	2	2	1	1	0	1	0	3	11
TOTAL EXPLOSIONS	8	8	6	13	9	7	19	8	11	9	98

Source: Dr. Kingsly Ambrose, Kansas State University

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

STATE	1958-2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	10-YEAR TOTAL	1958-2011
Iowa	74	1	1	2	1	1	1	4	3	1	1	16	89
Illinois	66	1	1	0	0	0	1	3	2	4	0	12	78
Minnesota	48	1	0	1	3	1	0	4	1	0	0	11	59
Kansas	47	2	0	1	0	1	1	0	0	0	1	6	53
Ohio	29	0	2	1	1	0	0	1	0	1	0	6	35
Nebraska	72	0	0	0	0	0	0	1	1	0	2	4	76
Indiana	24	2	0	0	0	0	1	0	0	0	0	3	27
Missouri	28	0	0	0	0	1	1	1	0	0	0	3	31
South Dakota	11	0	1	0	0	0	0	1	0	1	0	3	14
Texas	44	0	0	0	0	0	1	1	0	0	0	2	46
Louisiana	17	0	0	0	0	0	0	1	0	0	0	1	18
Washington	7	0	0	0	0	0	0	0	0	0	0	0	7

Source: Dr. Kingsly Ambrose, Kansas State University