

March 20, 2006

### **Agricultural Dust Explosions in 2005\***

There were 13 dust explosions reported in the U.S. in 2005 according to Robert W. Schoeff, Professor Emeritus, Kansas State University, and Mavis Rogers, FGIS-USDA. This compares to 6 in 2004 and a ten-year average of 10.5 explosions.

There were two fatalities and 11 injured.

The location of the **primary explosion** was identified in 5 of the 13 incidents as the bucket elevator, two were in the headhouse, two in storage bins, and 4 were unknown.

The **probable ignition source** was identified in three cases as welding/cutting, 2 fires, 1 extension light, 1 bearing failure, 1 static electricity, and 5 were unknown.

**Fuel sources** were identified as corn (7) and wheat (2), one each for wheat flour and mixed feeds, and 2 unknown.

**Dust explosions** occurred in nine different states: Minnesota (3), North Carolina (2), Kentucky (2), and 1 each in Colorado, Iowa, Louisiana, Ohio, Oklahoma, and Washington.

This report is based on a variety of news sources and the voluntary cooperation of management as we seek to identify that agricultural dust explosions have occurred and what the causes might have been. The websites for Grainnet and GEAPS have been of tremendous assistance. The data is compiled as a service to the grain storage and processing and allied industries, trade associations, insurance companies, and government agencies.

VHS video tapes or DVDs of “Deadly Dust II” and “Deadly Dust III” are still available for employee training and showing to your local fire department. Contact Anita McDiffett by e-mail ([almgret@ksu.edu](mailto:almgret@ksu.edu)) or telephone (785-532-4080).

In the future, we would like to send this information by email where possible. Please send your email address to Anita <mailto:alm@wheat.ksu.edu> to receive future copies of this information.

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

REPORTED DUST EXPLOSIONS IN U.S. - 2005\*\*

<u>NO</u>	<u>DATE</u>	<u>COMPANY</u>	<u>ADDRESS</u>	<u>FACILITY</u>	<u>DAMAGE*</u>	<u>KILLED</u>	<u>INJURED</u>
1	Jan. 24	ADM Milling	Enid, OK	Bulk Flour Storage	Severe	1	1
2	Jan. 25	Pilgrims Pride	Arcadia, LA	Feed Mill	NA	0	1
3	April 8	Hutchinson Coop	Hutchinson, MN	Country Elevator	Minor	0	0
4	May 25	United Harvest	Vancouver, WA	Port Elevator	Severe	0	0
5	June 6	Tyson Foods, Inc.	Sebree, KY	Feed Mill	NA	0	0
6	July 1	The Andersons	Toledo, OH	Port Elevator	Severe	0	0
7	Aug. 2	Southern States Cooperative	Winchester, KY	Feed Mill	Moderate	0	0
8	Aug. 22	Farmers Coop	Lanesboro, IA	Country Elevator	Moderate	0	0
9	Oct. 2	Johnstown Feed and Seed Inc.	Johnstown, CO	Country Elevator	Severe	0	0
10	Oct. 22	Wendell Farmers Elevator Co.	Wendell, MN	Country Elevator	Severe	0	0
11	Oct. 25	Crystal Cooperative	Vernon Center, MN	Country Elevator	Severe	0	6
12	Dec. 30	Land O'Lakes Purina LLC	Statesville, NC	Feed Mill	Severe	1	1
13	Dec. 30	Browns of Carolina	Laurinburg, NC	Feed Mill	Minor	0	2
TOTALS:						2	11

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 March 20, 2006

\*Minor: Less than \$50,000; Moderate: \$50,000-\$500,000; Severe: over \$500,000.

\*\*Report is subject to revision as new information is received.

In cooperation with FGIS-USDA, Washington, DC.

TABLE 1. U.S. AGRICULTURAL DUST EXPLOSION STATISTICS\*

	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>TEN YEAR TOTAL</u>
Number	13	16	18	7	8	9	8	8	6	13	106
Dead	1	1	7	0	1	1	1	2	0	2	16
Injured	19	14	24	19	12	7	8	8	4	11	126
Est. Damage to Facility (\$ Mil.)	29.6	11.4	29.8	4.4	8.2	5.3	5.1	10.1	2.7	56.2	162.8
Type of Facility:											
Grain Elevator	4	9	11	3	2	4	6	4	1	7	51
Feed Mill	4	2	3	4*	1	2	0	2	2**	5	25
Flour Mill	1	1	0	0	0	0	0	1	0	1***	4
Other:											
Corn Milling, Dry	1	0	0	0	0	0	0	0	0	0	1
Corn Milling, Wet	0	0	1	0	0	0	1	0	1**	0	3
Rice Mill	1	0	0	0	0	0	0	0	0	0	1
Other	2	4	3	0	5	3	1	1	2	0	21

\* In 2 cases the explosion occurred in raw grain storage facilities.

\*\*In one case the explosion occurred in a raw grain storage facility.

\*\*\*Explosion occurred in separate bulk flour storage facility.

Source: Robert W. Schoeff, Kansas State University, in cooperation with FGIS-USDA, March 20, 2006.

TABLE 2. AGRICULTURAL DUST EXPLOSIONS  
 BY COMMODITY HANDLED AT TIME OF EXPLOSION  
 1996-2005

<u>COMMODITY</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>TEN YEAR TOTAL</u>
Corn	5	8	9	7	2	5	5	6	3	7	57
Soybeans	2	2	1	0	0	0	1	0	0	0	6
Wheat	0	3	2	0	1	0	0	1	0	2	9
Barley (malted)	1	0	0	0	0	0	0	0	0	0	1
Oats	0	0	0	0	0	1	0	0	0	0	1
Beet Pulp	1	0	0	0	0	0	0	0	0	0	1
Corn Starch	0	0	1	0	0	0	0	0	0	0	1
Sugar	0	0	1	0	0	0	0	0	0	0	1
Mixed Feed	1	0	0	0	1	1	0	1	0	1	5
Rice (Bran) (Flour) (Hulls)	1	0	0	0	0	0	0	0	0	0	1
Wheat Flour	1	1	1	0	1	0	0	0	0	1	5
Wheat (Starch) (Gluten)	0	0	1	0	0	1	1	0	1	0	4
Other	1	2	2	0	3	1	1	0	2	2	14
<b>TOTAL EXPLOSIONS</b>	<b>13</b>	<b>16</b>	<b>18</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>8</b>	<b>8</b>	<b>6</b>	<b>13</b>	<b>106</b>

Source: Robert W. Schoeff, Kansas State University, in cooperation with FGIS-USDA, March 20, 2006.

TABLE 3. U. S. AGRICULTURAL DUST EXPLOSIONS

LEADING STATES - 1958 to Date

<u>STATE</u>	<u>1958-1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>10-YEAR TOTAL</u>
Iowa	64	3	3	1	1	2	0	1	1	2	1	15
Illinois	58	1	1	1	1	0	4	1	1	0	0	10
Kansas	38	0	0	6	1	0	2	2	0	1	0	12
Nebraska	65	1	5	1	0	0	0	0	0	0	0	7
Minnesota	41	2	1	1	2	1	0	1	0	1	3	12
Ohio	26	0	1	1	0	0	1	0	2	1	1	7
Indiana	22	0	0	1	0	0	1	2	0	0	0	4
South Dakota	8	1	1	1	0	0	0	0	1	0	0	4
Texas	42	0	0	1	0	1	0	0	0	0	0	2
Louisiana	17	0	0	0	0	0	0	0	0	0	0	0
Washington	7	0	0	0	0	0	0	0	0	0	0	0
Missouri	27	0	0	1	0	0	0	0	0	0	0	1

Source: Robert W. Schoeff, Kansas State University, in cooperation with FGIS-USDA, March 20, 2006.