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Agricultural Dust Explosions in 2002*

There were eight dust explosions reported in the U.S. in 2002 according to Robert W. Schoeff, Professor Emeritus, Kansas State University, and Mavis Rogers, FGIS-USDA. This compares to 9 in 2001 and a ten-year average of 12.2 explosions.

There was one fatality and seven injured.

The **primary explosion** occurred in the bucket elevator in seven cases and in a pelleting plant.

The **probable ignition source** was bearing failure, static electricity, and hot metal with five cases unknown.

Fuel sources were identified as corn (5), wheat starch, soybeans, and grass seed straw.

Dust explosions occurred in six different states: Kansas (2), Indiana (2), Iowa, Illinois, Minnesota, and Oregon (1 each).

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 data is compiled as a service to the grain storage and processing and allied industries, trade associations, insurance companies, and government agencies.

Please give credit when using these data in your publications and electronic media.

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

**Further investigation determined that mechanical failure rather than a dust explosion caused the destruction of the vacuator at Bartlett Grain Co. on November 23, 2002.

REPORTED DUST EXPLOSIONS IN U.S. - 2002**

<u>NO</u>	<u>DATE</u>	<u>COMPANY</u>	<u>ADDRESS</u>	<u>FACILITY</u>	<u>DAMANGE*</u>	<u>KILLED</u>	<u>INJURED</u>
1	April 13	Harvest Land Coop	Springfield, MN	Grain Elevator	Moderate	0	0
2	April 18	Farmers Coop Assn.	Hanover, KS	Grain Elevator	Moderate	0	0
3	June 3	Graham Grain Co.	Shelburn, IN	Grain Elevator	Moderate	0	1
4	Aug. 8	ADM/Countrymark	Clymers, IN	Grain Elevator	Moderate	0	0
5	Aug. 8	Mill Rite Farms	Millersburg, OR	Pelleting Plant	Severe	1	3
6	Aug. 22	Bridgeport Grain Co.	Bridgeport, IL	Grain Elevator	Minor	0	0
7	Sept. 9	Farmers Cooperative	Woolstock, IA	Grain Elevator	Severe	0	3
8	Sept. 20	Midwest Grain Products	Atchison, KS	Starch Plant	Minor	<u>0</u>	<u>0</u>
TOTALS:						1	7

*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.

Robert W. Schoeff
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TABLE 1. U.S. AGRICULTURAL DUST EXPLOSION STATISTICS*

	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>TEN YEAR TOTAL</u>
Number	13	15	14	13	16	18	7	8	9	8	121
Dead	2	1	1	1	1	7	0	1	1	1	16
Injured	20	14	12	19	14	24	19	12	7	8	149
Est. Damage to Facility (\$ Mil.)	4.0	7.1	6.7	29.6	11.4	29.8	4.4	8.2	5.3	5.1	11.16
Type of Facility:											
Grain Elevator	9	7	4	4	9	11	3	2	4	6	59
Feed Mill	0	3	4	4	2	3	4*	1	2	0	23
Flour Mill	1	2	0	1	1	0	0	0	0	0	5
Other:											
Corn Milling, Dry	0	0	1	1	0	0	0	0	0	0	2
Corn Milling, Wet	1	1	2	0	0	1	0	0	0	1	6
Rice Mill	0	0	2	1	0	0	0	0	0	0	3
Other	2	2	1	2	4	3	0	5	3	1	23

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

Source: Robert W. Schoeff, Kansas State University, in cooperation with FGIS-USDA, REVISED March 15, 2003.

TABLE 2. AGRICULTURAL DUST EXPLOSIONS
BY COMMODITY HANDLED AT TIME OF EXPLOSION
1993-2002

<u>COMMODITY</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>TEN YEAR TOTAL</u>
Corn	9	8	3	5	8	9	7	2	5	5	61
Sorghum	0	1	0	0	0	0	0	0	0	0	1
Soybeans	1	0	1	2	2	1	0	0	0	1	8
Wheat	1	2	1	0	3	2	0	1	0	0	10
Barley (malTED)	0	1	0	1	0	0	0	0	0	0	2
Oats	0	1	0	0	0	0	0	0	0	0	1
Beet Pulp	0	0	0	1	0	0	0	0	0	0	1
Corn Starch	2	0	2	0	0	1	0	0	0	0	5
Distillers Feed	0	0	1	0	0	0	0	0	0	0	1
Mixed Feed	0	0	2	1	0	0	0	0	1	0	4
Rice (Bran) (Flour) (Hulls)	0	1	3	1	0	0	0	0	0	0	5
Wheat Flour	0	0	0	1	1	1	0	0	0	0	3
Wheat (Starch) (Gluten)	0	0	0	0	0	1	0	0	1	1	3
Other	0	1	1	1	2	3	0	5	2	1	16
TOTAL EXPLOSIONS	13	15	14	13	16	18	7	8	9	8	121

Source: Robert W. Schoeff, Kansas State University, in cooperation with FGIS-USDA, REVISED March 15, 2003.

TABLE 3. U.S. AGRICULTURAL DUST EXPLOSIONS

LEADING STATES – 1958 TO DATE

<u>STATE</u>	<u>1958-1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>10-YEAR TOTAL</u>
Iowa	57	1	4	2	3	3	1	1	2	0	1	18
Illinois	54	0	1	3	1	1	1	1	0	4	1	13
Kansas	35	0	3	0	0	0	6	1	0	2	2	14
Nebraska	60	3	1	1	1	5	1	0	0	0	0	12
Minnesota	39	1	1	0	2	1	1	2	1	0	1	10
Ohio	23	2	0	1	0	1	1	0	0	1	0	6
Indiana	20	1	1	0	0	0	1	0	0	1	2	6
Texas	41	0	0	1	0	0	1	0	1	0	0	4
South Dakota	8	0	0	0	1	1	1	0	0	0	0	4
Louisiana	15	2	0	0	0	0	0	0	0	0	0	2
Washington	6	0	0	1	0	0	0	0	0	0	0	1
Missouri	27	0	0	0	0	0	1	0	0	0	0	1

Source: Robert W. Schoeff, Kansas State University, in cooperation with FGIS-USDA, REVISED March 15, 2003