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Agricultural Dust Explosions in 2000*

There were eight dust explosions reported in the U.S. in 2000 according to Robert W. Schoeff, Professor Emeritus, Kansas State University, and Mavis Rogers, FGIS-USDA. This compares to 7 in 1999 and a ten-year average of 12.1 explosions.

There was one fatality and 12 injured.

The **primary explosion** occurred in the bucket elevator in three cases and in a dryer, grinding room, and scale system.

The **probable ignition source** was welding-cutting, and fire in two incidents.

Fuel sources were identified as corn, wheat, sugar, food ingredients, bakery by-product, and wood cellulose.

Dust explosions occurred in seven different states: Iowa, Minnesota, New York, New Mexico, Oklahoma, Tennessee, and Texas.

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.

REPORTED DUST EXPLOSIONS IN U.S. - 2000**

<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 22	Gore Brothers, Inc.	Clovis, NM	Feed Warehouse	Moderate	0	3
2	Jan 24	Wheeler Brothers Grain Company	Greenfield, OK	Grain Elevator	Moderate	0	0
3	Mar 22	Refined Sugar Inc.	Yonkers, NY	Sugar Processing	Minor	0	1
4	Mar 23	First Fiber Inc.	Surgoinsville, TN	Fiber Processing Plant	Moderate	0	1
5	May 1	Mississippi River Terminal Inc.	Clayton, IA	Grain Elevator	Minor	0	0
6	May 4	Cain Food Industries	Dallas, TX	Food Ingredient	Moderate	0	3
7	May 15	Endres Processing	Rosemont, MN	Feed Ingredient	Severe	1	4
8	Sept 14	Denison Seed Co.	Denison, IA	Feed Mill	Moderate	0	0
TOTALS:						1	12

Robert W. Schoeff
 Kansas State University
 Manhattan, KS 66506-2201
 January 15, 2001

*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. GRAIN DUST EXPLOSION STATISTICS*

	<u>1991</u>	<u>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>TEN YEAR TOTAL</u>
Number	12	6	13	15	14	13	16	18	7	8	122
Dead	1	1	2	1	1	1	1	7	0	1	16
Injured	4	8	20	14	12	19	14	24	19	12	146
Est. Damage to Facility (\$ Mil.)	.3	.4	4.0	7.1	6.7	29.6	11.4	29.8	4.4	8.2	101.9
Type of Facility:											
Grain Elevator	4	5	9	7	4	4	9	11	3	2	58
Feed Mill	4	0	0	3	4	4	2	3	4*	1	25
Flour Mill	1	0	1	2	0	1	1	0	0	0	6
Other:											
Corn Milling, Dry	0	0	0	0	1	1	0	0	0	0	2
Corn Milling, Wet	0	0	1	1	2	0	0	1	0	0	5
Rice Mill	1	0	0	0	2	1	0	0	0	0	4
Oat Mill	0	0	0	0	0	0	0	0	0	0	0
Other	2	1	2	2	1	2	4	3	0	5	22

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

Source: Robert W. Schoeff, Kansas State University, in cooperation with FGIS-USDA, January 15, 2001

TABLE 2. GRAIN DUST EXPLOSIONS
BY COMMODITY HANDLED AT TIME OF EXPLOSION
1991-2000

<u>COMMODITY</u>	<u>1991</u>	<u>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>TEN YEAR TOTAL</u>
Corn	5	4	9	8	3	5	8	9	7	2	60
Sorghum	0	0	0	1	0	0	0	0	0	0	1
Soybeans	0	0	1	0	1	2	2	1	0	0	7
Wheat	1	1	1	2	1	0	3	2	0	1	12
Barley (malted)	1	0	0	1	0	1	0	0	0	0	3
Oats	1	0	0	1	0	0	0	0	0	0	2
Beet Pulp	0	0	0	0	0	1	0	0	0	0	1
Corn Starch	0	1	2	0	2	0	0	1	0	0	6
Corn Gluten Meal	0	0	0	0	0	0	0	0	0	0	0
Distillers Feed	0	0	0	0	1	0	0	0	0	0	1
Feed By-Products	0	0	0	0	0	0	0	0	0	0	0
Grain Screenings	0	0	0	0	0	0	0	0	0	0	0
Mixed Feed	0	0	0	0	2	1	0	0	0	0	3
Rice (Bran)(Flour)(Hulls)	0	0	0	1	3	1	0	0	0	0	5
Wheat Flour	0	0	0	0	0	1	1	1	0	0	3
Wheat (Starch) (Gluten)	0	0	0	0	0	0	0	1	0	0	1
Other	4	0	0	1	1	1	2	3	0	5	18
TOTAL EXPLOSIONS	12	6	13	15	14	13	16	18	7	8	122

Source: Robert W. Schoeff, Kansas State University, in cooperation with FGIS-USDA, January 15, 2001.

TABLE 3. U.S. AGRICULTURAL DUST EXPLOSIONS

LEADING STATES - 1958 to Date

<u>STATE</u>	<u>1958-1990</u>	<u>1991</u>	<u>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>10-YEAR TOTAL</u>
Iowa	51	4	2	1	4	2	3	3	1	1	2	23
Kansas	34	1	0	0	3	0	0	0	6	1	0	11
Nebraska	59	1	0	3	1	1	1	5	1	0	0	13
Illinois	53	0	1	0	1	3	1	1	1	1	0	9
Minnesota	39	0	0	1	1	0	2	1	1	2	1	9
Ohio	22	1	0	2	0	1	0	1	1	0	0	6
Indiana	19	1	0	1	1	0	0	0	1	0	0	4
Texas	40	0	1	0	0	1	0	0	1	0	1	4
South Dakota	7	0	1	0	0	0	1	1	1	0	0	4
Washington	5	1	0	0	0	1	0	0	0	0	0	2
Louisiana	15	0	0	2	0	0	0	0	0	0	0	2
Missouri	27	0	0	0	0	0	0	0	1	0	0	1

Source: Robert W. Schoeff, Kansas State University, in cooperation with FGIS-USDA, January 15, 2001.