



## Cooperative Extension Service

Extension Grain Science and Industry  
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REVISED FEB. 14, 1989

### 1988 GRAIN DUST EXPLOSIONS LOWEST SINCE 1975\*

Twelve grain dust explosions were reported in the U.S. in 1988 according to data compiled by Ralph Regan, FGIS Safety Director and Robert W. Schoeff, Extension Marketing and Safety Specialist, Kansas State University. This compares to 15 in 1987 and a 10 year average of 20 explosions.

The not-so-good news was the 8 fatalities compared to none in 1987 and 1983. Ten injured was also a record low.

Most of the explosions continue to occur in grain elevators, 7 of 12, with 2 in corn processing plants.

The principal location of the primary explosion was the elevator leg, 4, and dust systems, 4 of 12.

The cause of the primary explosion remains unknown in 8 of the 12 explosions. Extension light, fire and metal sparks were identified as other probable causes.

Corn dust was involved in 8 of 12 cases; wheat, oats, rice and soybeans in the other four.

Explosions occurred in 10 states; 3 in Minnesota, 1 each in Alabama, Arkansas, Illinois, Indiana, Iowa, Kentucky, Louisiana, Oklahoma and Texas.

One agricultural dust explosion occurred in a sugar plant in California.

Appreciation is expressed to the many people who were willing to provide this information which is based on voluntary reports and published information.

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January 26, 1989

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

## REPORTED GRAIN DUST EXPLOSIONS IN U.S. - 1988

<u>DATE</u>	<u>COMPANY AND ADDRESS</u>	<u>FACILITY</u>	<u>DAMAGE*</u>	<u>KILLED</u>	<u>INJURED</u>
Jan. 11	Farmers Elevator Assn. Hutchinson, MN	Grain Elevator	Minor	0	1
Jan. 14	ADM Corn Sweeteners Cedar Rapids, IA	Corn Processing	Not Available	0	0
Jan. 14	Minnesota Corn Processors Marshall, MN	Corn Wet Milling	Minor	0	0
Jan. 15	Ellis Grain Elevator Henderson, KY	Grain Elevator	Severe**	3	2
Jan. 25	Alabama State Docks Mobile, AL	Port Elevator	Severe	0	5
Mar. 19	Union Sugar Co. -Div. of Holly Sugar Corp. Santa Maria, CA		Not Available	0	3
Mar. 28	Peavey Co. - ConAgra Carlisle, IN	Grain Elevator	Moderate	0	0
Apr. 22	ADM-Growmark Joliet, IL	Grain Elevator	Severe**	5	2
July 6	Hudsons Feed Mill Westville, OK	Feed Mill	Minor	0	0
Sept. 20	Sun-Rice Milling Co. Crawfordsville, AR	Rice Mill	Minor	0	0
Oct. 5	Louis Dreyfus Corp. Reserve, LA	Port Elevator	Moderate	0	0
Nov. 6	Public. Elevator Corpus Christi, TX	Port Elevator	Severe	0	0
Dec. 2	Fruen Mill-ConAgra Minneapolis, MN	Oat Mill	Minor	0	0
TOTAL NUMBER OF INCIDENTS - 12				8	10

\*Minor - Less than \$50,000  
 Moderate - 50,000 - \$500,000  
 Severe - Over \$500,000

Robert W. Schoeff  
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 January 26, 1989  
 in cooperation with  
 Ralph Regan, FGIS,  
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1988

**U.S. Dust Explosion Statistics\***

	1990- 1956 <sup>1</sup>	1958- 1975 <sup>2</sup>	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	Average 10 Years 1979-1988
Number	490	192	19	44	21	14	13	21	22	21	15	12	20
Dead	381	68	2	10	13	6	0	9	4	2	0	8	5
Injured	991	346	18	47	62	34	14	30	20	14	18	10	27
Est. Damage to facility (\$ Mil)	70.0	55.0	8.0	10.0	29.0	15.0	3.6	19.9	65.0	1.6	8.3	8.9	16.9
Type of Facility:													
Grain elevator			16	27	19	11	9	13	18	11	11	7	67%
Feed mill			2	8	1	2	4	5	1	5	4	1	16%
Corn processor			0	2	0	0	0	1	2	0	0	2	3%
Flour Mill			1	1	0	0	0	1	0	1	0	0	2%
Rice Mill			0	0	1	0	0	0	1	2	0	1	2%
Other:													
Brewery			0	2	0	0	0	0	0	0	0	0	
Soybean			0	1	0	0	0	1	0	0	0	0	
Alfalfa dehy.			0	1	0	0	0	0	0	0	0	0	
Starch plant			0	0	0	1	0	0	0	0	0	0	
Starea plant			0	0	0	0	0	0	0	0	0	0	
Oat mill			0	0	0	0	0	0	0	0	0	1	
Other			0	0	0	0	0	1	0	2	0	0	
TOTAL			0	4	0	1	0	2	0	2	0	1	10%

<sup>1</sup> N.F.P.A (no report for 1957)<sup>2</sup> U.S.D.A. Task Force Report

\*Source: Robert W. Schoeff, Dept. of Grain Science, Kansas State University, January 26, 1989 in cooperation with Ralph Regan, FGIS-USDA

**U.S.**  
**GRAIN DUST EXPLOSIONS**  
**LEADING STATES - 1958 TO DATE**

	<u>1958-81</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>TOTAL</u>
NEBRASKA	43	2	1	6	4	2	0	0	58
ILLINOIS	36	1	2	2	4	1	2	1	49
IOWA	39	2	0	0	2	2	2	1	48
TEXAS	29	1	3	1	1	2	1	1	39
MINNESOTA	26	0	2	1	2	1	1	3	36
MISSOURI	21	2	0	0	0	1	2	0	26
KANSAS	21	0	0	0	1	5	0	0	27
OHIO	15	0	0	0	2	0	2	0	19
OKLAHOMA	15	0	0	0	0	0	0	1	16
NEW YORK	9	0	0	0	0	0	0	0	9
WISCONSIN	9	0	0	0	0	0	0	0	9

Source: Robert W. Schoeff  
Kansas State University  
January 1989

**DUST EXPLOSIONS BY  
COMMODITY HANDLED AT TIME OF EXPLOSION**

**1980 TO DATE**

<u>COMMODITY</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
CORN		7	8	12	14	7	12	8
SORGHUM		1	1	2	2	5	-	-
SOYBEANS		2	1	2	-	1	1	1
WHEAT		1	-	4	-	2	-	1
BARLEY		-	-	-	1	1	-	-
OATS		-	-	-	-	-	-	1
BARLEY CHAFF- MALT SPROUTS		1	-	-	-	-	-	-
CORN STARCH		-	-	-	1	-	-	-
CORN GLUTEN MEAL		-	-	1	2	-	-	1
GRAIN SCREENINGS		-	1	-	-	-	1	-
RICE (BRAN)		-	-	-	1	2	-	-
WHEAT STARCH		1	-	-	-	-	-	-
MIXED FEED		-	-	-	-	-	1	-
NONE		-	1	1	1	2	-	-
TOTAL EXPLOSIONS	21	14	13	20	22	21	15	12

Robert W. Schoeff  
January 1989