



Cooperative Extension Service

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1990 GRAIN DUST EXPLOSIONS STAY LOW*

Fifteen grain dust explosions were reported in the U.S. in 1990 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 13 in 1989 and a ten-year average of 20 explosions.

There were no fatalities compared to two in 1989, eight in 1988, and none in 1987 and 1983. Seven injured equaled last year's record low.

Most of the explosions continue to occur in grain elevators, eight of 15, with two in corn processing and flour mills, and one each in a feed mill, rice mill, and bulk flour station.

The principal location of the primary explosion was the elevator leg, six, and storage bins, four of 15.

The probable cause of the primary explosion was fire in four of the 15 explosions. Bearing failure, foreign material, friction and metal sparks were identified as other probable causes.

Corn dust was involved in four of 15 accidents; distillers feed, wheat, wheat flour, barley, rice, feed by-products, sorghum and soybeans were other fuel sources.

Explosions occurred in ten states: three in Kansas, two in Illinois, Louisiana, and Minnesota, and one each in Arkansas, Michigan, Missouri, Ohio, Texas, and Washington.

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 16, 1991

KSU, County Extension
Councils and U.S. Department
of Agriculture Cooperating.

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materials available without
discrimination on the basis
of race, color, national
origin, sex, age, or handicap.

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

REPORTED GRAIN DUST EXPLOSIONS IN U.S. – 1990**

<u>NO.</u>	<u>DATE</u>	<u>COMPANY AND ADDRESS</u>	<u>FACILITY</u>	<u>DAMAGE*</u>	<u>KILLED</u>	<u>INJURED</u>
1	Feb. 21	Harvest States Cooperative Sherburn, MN	Grain Elevator	Moderate	0	2
2	Feb. 23	Riceland Foods Jonesboro, AR	Rice Mill	Minor	0	0
3	Mar. 18	Delta Bulk Conveyor Convent, LA	Floating Elevator	None	0	0
4	Mar. 28	Ruehl & Arstein Feed Mill Granger, WA	Feed Mill	Minor	0	0
5	Mar. 30	Midwest Grain Products Inc. Atchison, KS	Flour Mill	Minor	0	0
6	Apr. 16	Cargill Terre Haute Elevator Reserve, LA	Grain Elevator	Minor	0	2
7	June 5	Cargill Inc. Kansas City, MO	Grain Elevator	Minor	0	2
8	June 6	Anderson Brothers Toledo, OH	Grain Elevator	Moderate	0	0
9	June 24	Shadowdale Elevator Houston, TX	Grain Elevator	Severe	0	0
10	July 14	Midwest Grain Products Inc. Atchison, KS	Flour Mill	Minor	0	0
11	Aug. 31	Midwest Grain Products, Inc. Pekin, IL	Corn Mill	Minor	0	0
12	Sept. 10	Farmers Co-op Assn. Hanover, KS	Grain Elevator	Moderate	0	0
13	Sept. 27	Pekin Energy Co. Pekin, IL	Wet Corn Mill	Minor	0	0
14	Nov. 5	CSX Transportation Co. Grand Rapids, MI	Bulk Flour Station	Minor	0	0

<u>NO.</u>	<u>DATE</u>	<u>COMPANY AND ADDRESS</u>	<u>FACILITY</u>	<u>DAMAGE*</u>	<u>KILLED</u>	<u>INJURED</u>
15	Dec. 11	Harvest States Co-op Heartland, MN	Grain Elevator	Moderate	0	1
TOTALS					0	7

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

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 in cooperation with Ralph Regan, FGIS, USDA, Washington, DC

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

U.S. DUST EXPLOSION STATISTICS*

1990

	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
NUMBER	21	14	13	21	22	21	15	12	13	15
DEAD	13	6	0	9	4	2	0	8	2	0
INJURED	62	34	14	30	20	14	18	10	7	7
EST. DAMAGE TO FAC. \$ MIL.	29.0	15.0	3.6	19.9	65.0	1.6	8.3	8.7	3.9	5.0
TYPE OF FACILITY:										
GRAIN ELEVATOR	19	11	9	13	18	11	11	7	7	8
FEED MILL	1	2	4	5	1	5	4	1	1	1
FLOUR MILL	0	0	0	1	0	1	0	0	0	2
OTHER:										
CORN MILLING, DRY	0	0	0	1	2	0	0	2	1	1
CORN MILLING, WET	0	1	0	0	0	0	0	0	2	1
BREWERY	0	0	0	0	0	0	0	0	0	0
SOYBEAN	0	0	0	1	0	0	0	0	0	0
ALFALFA DEHY.	0	0	0	0	0	0	0	0	0	0
RICE MILL	1	0	0	0	1	2	0	1	0	1
OAT MILL	0	0	0	0	0	0	0	1	0	0
UNIDENTIFIED	0	0	0	1	0	2	0	0	0	0
TOTAL OTHER	1	1	0	3	3	4	0	4	2	1

*Source: Robert W. Schoeff, Dept. of Grain Science & Industry, Kansas State University, in cooperation with Ralph Regan, FGIS-USDA, January 16, 1991

U.S. GRAIN DUST EXPLOSIONS
LEADING STATES – 1958 TO DATE

	<u>1958-82</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1958-90</u> <u>TOTAL</u>
NEBRASKA	45	1	1	6	4	2	0	0	1	60
ILLINOIS	41	0	2	2	4	1	2	1	2	55
IOWA	37	2	0	0	2	2	2	1	3	49
TEXAS	30	3	3	1	1	2	1	1	0	42
MINNESOTA	26	2	2	1	2	1	1	3	1	39
KANSAS	21	0	0	0	1	5	0	0	3	30
MISSOURI	23	0	0	0	0	1	2	0	0	26
OHIO	15	0	0	0	2	0	2	0	0	19
OKLAHOMA	15	0	0	0	0	0	0	1	0	16
NEW YORK	9	0	0	0	0	0	0	0	0	9
WISCONSIN	9	0	0	0	0	0	0	0	0	9

Source: Robert W. Schoeff
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**DUST EXPLOSIONS BY COMMODITY HANDLED AT TIME OF EXPLOSION
1983 TO DATE**

<u>COMMODITY</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
CORN	8	11	14	6	13	7	4	2
SORGHUM	2	-	2	6	-	-	2	1
SOYBEANS	1	2	-	1	1	1	1	1
WHEAT	-	5	-	2	-	1	-	1
BARLEY	-	-	1	1	-	-	-	1
OATS	-	1	-	-	-	1	1	-
BARLEY CHAFF- MALT SPROUTS	-	-	-	1	-	-	-	-
BEET PULP	-	-	-	-	-	-	1	-
CORN STARCH	-	-	1	-	-	-	1	-
CORN GLUTEN MEAL	-	1	2	-	-	1	1	-
DISTILLERS FEED	-	-	-	-	-	-	-	1
FEED BY-PRODUCTS	-	-	-	-	-	-	1	1
GRAIN SCREENINGS	1	-	-	-	1	-	-	1
MIXED FEED	-	-	-	-	1	-	-	-
RICE (BRAN) (FLOUR)	-	-	1	2	-	1	-	1
WHEAT FLOUR	-	-	-	-	-	-	-	1
WHEAT (MIDS) (SCREENINGS)	-	-	-	-	-	-	-	-
WHEAT (STARCH) (GLUTEN)	-	-	-	-	-	-	1	-
OTHER	1	2	2	5	-	-	-	4

Source: Robert W. Schoeff, Kansas State University, January 16, 1991