

DEPARTMENT OF COMMERCE

UNITED STATES BUREAU OF MINES
SCOTT TURNER, DIRECTOR

REPORT OF INVESTIGATIONS

COAL-MINE FATALITIES IN MARCH, 1931



BY

W. W. ADAMS AND L. CHENOWETH

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By W. W. Adams² and L. Chenoweth³

The fatality rate from accidents at coal mines in the United States in March 1931, while not as favorable as the unusually low rate that prevailed in February, represented a marked improvement as compared with March a year ago. The rate for bituminous mines alone was likewise much better than that of March of last year although it was not as low as the rate for February of the present year. On the other hand, the fatality rate for anthracite mines (all of which are in Pennsylvania) was much more favorable in March 1931 than in either the preceding month of February or in March, 1930. These facts are revealed by reports furnished by State mine inspectors to the United States Bureau of Mines, Department of Commerce.

Reports for March, 1931, showed that 116 men were killed in the coal mines of the United States during that month, an increase of 10 from the number reported for the previous month but a decrease of 55 from March, 1930. The production of coal in March was 38,615,000 tons; this was an increase of 1,816,000 tons from the production in February of the present year, and a decrease of 1,629,000 tons from March, a year ago. The death rate⁴ per million tons of coal produced in March, 1931, was 3.00, an increase of three per cent from the rate for the previous month, and a decrease of slightly more than 29 per cent from the rate for March, 1930.

The March rate for bituminous mines alone was 2.78 based upon 94 fatalities and an output of 33,870,000 tons, while that for March of last year was 3.94 based upon 141 fatalities and a production of 35,773,000 tons. Revised reports for February, 1931, showed 65 fatalities, a production of 31,408,000 tons, and a fatality rate of 2.07.

In the anthracite mines of Pennsylvania 22 men lost their lives during the month. With a production of 4,745,000 tons there was a death rate of 4.64 per million tons mined; this rate was next to the lowest rate ever reported for March and one of the lowest rates on record for any month. In March of last

1 The Bureau of Mines will welcome reprinting of this paper, provided the following footnote acknowledgment is used: "Reprinted from U. S. Bureau of Mines Report of Investigations 3108."

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4 Death rates in this paper are based on tonnage rather than on number of men employed, as the latter item is not reported monthly to the Bureau of Mines.

year the anthracite record showed 30 deaths, 4,471,000 tons of coal produced, and a fatality rate of 6.71. Revised records for February of the present year reveal 41 deaths, 5,391,000 tons of coal mined, and a fatality rate of 7.61.

Reports for the first three months of 1931 show that accidents in all coal mines in the United States have caused the loss of 403 lives. The production of coal during this period was 120,113,000 tons, resulting in a death rate of 3.36, as compared with 3.97 for the same period in 1930, based on 566 deaths and 142,539,000 tons. During the three-month period, bituminous mines produced 103,820,000 tons of coal and had 299 fatal accidents, thus showing a fatality rate of 2.88 as compared with a rate of 3.56 for the same period last year when an output of 125,106,000 tons with 445 deaths was reported. Anthracite mines produced 16,293,000 tons of coal with 104 fatalities during the first quarter of 1931, the death rate being 6.38 as compared with last year's record for the same three months which showed a rate of 6.94 based on 121 deaths and 17,433,000 tons.

There were no major disasters -- that is disasters in each of which five or more lives were lost -- at any coal mine during March or February of the present year, but three such disasters in January causing 41 deaths resulted in a death rate of 0.341 per million tons of coal mined during the three-month period. For the same period in 1930 there were 71 deaths caused by six major disasters with a combined fatality rate of 0.498. The major disasters thus far in 1931 occurred at the rate of 2.50 separate disasters (as distinguished from the number of deaths resulting from the disasters) for each hundred-million tons of coal produced, as compared with 4.21 separate disasters per hundred-million tons for the corresponding three-month period last year.

Comparing the accident record for the first three months of 1931 with that for the same months of 1930, a reduction is noted for all of the principal causes of fatalities. The comparative rates are as follows:

Cause	Year 1930		Jan.-Mch. 1930		Jan.-Mch. 1931	
	Killed	Fatality rate	Killed	Fatality rate	Killed	Fatality rate
All causes	2,014	3.798	566	3.971	403	3.355
Falls of roof and coal	1,067	2.012	292	2.049	217	1.807
Haulage	303	.572	88	.617	66	.550
Gas or dust explosions:						
Local explosions	61	.115	25	.176	4	.033
Major explosions	214	.404	68	.477	41	.341
Explosives	78	.147	22	.154	10	.083
Electricity	76	.143	20	.140	10	.083
Miscellaneous	215	.405	51	.358	55	.058

Tables 1 to 6 present a detailed statistical comparison of the number and causes of accidents and the corresponding death rates in March, 1931, with similar figures for earlier periods. Table 7 gives a list of major disasters in coal mines in the United States during the year 1930 and for the three-month period of 1931. Table 8 gives a list of the names and addresses of coal-mine officials in the United States.

TABLE 1 - NUMBER OF DEATHS, BY CAUSES OF ACCIDENTS,
AT ALL COAL MINES IN THE UNITED STATES

(Includes both anthracite and bituminous coal)

Cause	1930		1931		
	Jan.-Mch.	Jan.	Feb.	Mch.	Jan.-Mch.
Falls of Roof & Coal	292	86	62	69	217
At face	200	67	46	50	163
In room	46	10	8	12	30
On entry	45	9	8	7	24
On slope	1	-	-	-	-
Haulage	88	25	18	23	66
Switching and spragging	2	1	1	-	2
Coupling	8	1	1	-	2
Falling from trips	4	-	-	3	3
Run over	36	8	7	9	24
Caught between car and rib	23	9	7	4	20
Caught between car and rock ²	4	-	1	2	3
Runaway cars	5	4	-	1	5
Miscellaneous	6	2	1	4	7
Gas or Dust Explosions	93	44	-	1	45
Open flame lamp	23	28	-	-	28
Matches or smoking		-	-	-	-
Defective safety lamp	32	-	-	-	-
Electric arc	13	-	-	-	-
Blasting	-	5	-	-	5
Miscellaneous	25	11	-	1	12
Explosives	22	2	4	4	10
Transportation	1	-	-	-	-
Charging	-	-	-	1	1
Suffocation	-	-	-	-	-
Drilling into old holes	4	-	-	-	-
Striking in loose rock	2	-	-	-	-
Thawing	-	-	-	-	-
Caps & detonators	-	-	-	-	-
Unguarded shots	2	-	-	-	-
Returned too soon	1	-	-	-	-
Premature shots	7	2	2	2	6
Sparks from lamp, etc.	2	-	-	1	1
Delayed shots	1	-	2	-	2
Shot breaking through rib	-	-	-	-	-
Miscellaneous	2	-	-	-	-
Electricity	20	3	4	3	10
Direct contact with trolley wire	12	3	2	2	7
Tools striking trolley wire	1	-	-	-	-
Contact with mining machine ...	1	-	1	-	1
Contact with machine feed wire.	1	-	-	-	-
Contact with haulage motor	-	-	-	-	-
Miscellaneous	5	-	1	1	2
Miscellaneous	51	21	19	16	55
Total	566	181	107	116	403

TABLE 2 - DEATH RATES, BY CAUSES OF ACCIDENTS, PER MILLION TONS OF COAL
PRODUCED AT ALL COAL MINES IN THE UNITED STATES
(Includes both anthracite and bituminous coal)

Cause	Year 1930	Jan.-Mch. 1930	Jan.-Mch. 1931
Falls of Roof & Coal	2.012	2.049	1.807
At face	1.422	1.403	1.357
In room .....	.296	.323	.250
On entry .....	.271	.316	.200
On slope .....	.023	.007	--
Haulage .....	.572	.617	.550
Switching and spragging .....	.007	.014	.017
Coupling .....	.038	.056	.017
Falling from trips .....	.021	.028	.025
Run over .....	.234	.253	.200
Caught between car and rib .....	.128	.161	.167
Caught between car and roof .....	.034	.028	.025
Runaway cars .....	.072	.035	.041
Miscellaneous .....	.038	.042	.058
Gas or Dust Explosions .....	.519	.653	.374
Open flame lamp .....	.070	.161	.233
Matches or smoking			--
Defective safety lamp .....	.007	.225	--
Electric arc .....	.223	.091	--
Blasting .....	.072	--	.041
Miscellaneous .....	.147	.176	.100
Explosives .....	.147	.154	.083
Transportation .....	.007	.007	--
Charging .....	.004		.008
Suffocation .....	.004	--	--
Drilling into old holes .....	.023	.028	--
Striking in loose rock .....	.004	.014	--
Thawing	--	--	--
Caps & Detonators .....	.006	--	--
Unguarded shots .....	.015	.014	--
Returned too soon .....	.013	.007	--
Premature shots .....	.045	.049	.050
Sparks from lamp, etc. ....	.006	.014	.008
Delayed shots .....	.004	.007	.017
Shot breaking through rib .....	.009	--	--
Miscellaneous .....	.007	.014	--
Electricity .....	.143	.140	.083
Direct contact with trolley wire .....	.073	.084	.058
Tools striking trolley wire .....	.004	.007	--
Contact with mining machine .....	.017	.007	.008
Contact with machine feed wire .....	.015	.007	--
Contact with haulage motor .....	.002	--	--
Miscellaneous .....	.032	.035	.017
Miscellaneous .....	.405	.358	.458
Total	3.798	3.971	3.355

TABLE 3 - COAL-MINE FATALITIES IN THE U. S. IN MARCH, 1931, BY CAUSES AND STATES

CAUSE	Ala	Alas	Ark	Col.	Ill	Ind	Ia	Kan	Ky	Md	Mch	Mo	Mnt	NMx	NDk	O	Ok	Pa Bit	Tenn	Tex	Ut	Va	Wsh	WVa	Wyo	TOTAL BITUM	Pa anth	GRAND TOTAL
<u>UNDERGROUND</u>																												
Falls of roof	1	-	-	2	2	1	-	1	8	-	-	-	1	-	-	8	-	6	-	-	1	2	-	17	2	52	8	60
Falls of side	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	7	-	8	1	9
Haulage	2	-	-	1	-	-	-	-	2	-	-	-	-	-	-	1	-	3	-	-	1	-	1	9	1	21	2	23
Gas or dust explosions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Explosives	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2	2	4
Suffocated by mine gases.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	2	-	2
Electricity	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	3
Animals.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mining machines	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	1
Mine fires	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other causes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	5
Total	3	-	-	3	4	1	-	1	11	-	-	-	1	-	-	10	-	11	-	-	2	2	1	35	3	88	20	108
<u>SHAFT</u>																												
Persons falling.....	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Objects falling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cages, skips	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other causes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
<u>SURFACE</u>																												
Mine cars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	1	2
Electricity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	1
Machinery	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Boiler explosions	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Railway cars	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	2	-	2
Other causes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	1	-	5	2	7
GRAND TOTAL, MARCH, 1931	3	0	0	3	5	2	0	1	11	0	0	0	1	0	0	10	0	14	0	0	2	2	1	36	3	94	22	116
GRAND TOTAL, MARCH, 1930	6	0	0	4	12	2	2	0	27	1	0	0	0	1	1	9	0	18	2	0	8	5	1	42	0	141	30	171

TABLE 4 - COAL-MINE FATALITIES DURING 1931, BY MONTHS AND STATES

MONTH	Ala	Alas	Ark	Col	Ill	Ind	Ia	Kan	Ky	Md	Mch	Mo	Mnt	NMx	NDk	O	Ok	Pa bit	Tenn	Tex	Ut	Va	Wash	WVa	Wyo	TOTAL BITUM	Pa anth	GRAND TOTAL
January	2	-	-	5	9	31	1	-	7	1	-	3	-	-	-	9	-	20	3	-	2	1	2	43	1	140	41	181
February	1	-	-	-	8	2	1	1	7	-	-	-	-	-	-	4	1	20	1	-	1	2	-	14	2	65	41	106
March	3	-	-	3	5	2	-	1	11	-	-	-	1	-	-	10	-	14	-	-	2	2	1	36	3	94	22	116
TOTAL, 3 months, 1931 ..	6	0	0	8	22	35	2	2	25	1	0	3	1	0	0	23	1	54	4	0	5	5	3	93	6	299	104	403
TOTAL, 3 months, 1930 ..	25	0	2	13	28	9	7	5	65	3	0	3	1	2	1	20	3	75	5	0	41	14	2	117	4	445	121	566
TOTAL, YEAR 1930 ..	61	0	9	36	112	22	19	10	179	6	1	9	3	14	3	154	65	299	21	0	57	39	23	410	22	1,574	440	2,014

TABLE 5. - COAL-MINE FATALITIES IN 1931, BY MONTHS, AND CAUSES OF ACCIDENTS

CAUSE	1931				1930
	Jan.	Feb.	Mch.	Total	Jan.-Mch.
<u>UNDERGROUND</u>					
Falls of roof	66	50	60	176	261
Falls of side	20	12	9	41	31
Haulage	25	18	23	66	88
Gas or dust explosions	44	-	1	45	93
Explosives	2	4	4	10	22
Suffocated by mine gases	-	1	2	3	3
Electricity	3	4	3	10	20
Animals	1	1	-	2	2
Mining machines	3	2	1	6	6
Mine fires	-	-	-	-	5
Other causes	5	9	5	19	15
TOTAL	169	101	108	378	546
<u>SHAFT</u>					
Persons falling	3	1	1	5	1
Objects falling	1	-	-	1	1
Cages, skips	-	-	-	-	2
Other causes	-	-	-	-	-
TOTAL	4	1	1	6	4
<u>SURFACE</u>					
Mine cars	2	-	2	4	6
Electricity	-	-	1	1	-
Machinery	2	-	1	3	3
Boiler explosions	-	-	1	1	-
Railway cars	-	1	2	3	4
Other causes	4	3	-	7	3
TOTAL	8	4	7	19	16
GRAND TOTAL	181	106	116	403	566

TABLE 6 - AVERAGE NUMBER OF MEN KILLED PER MILLION TONS OF COAL PRODUCED IN THE U. S. IN MARCH, 1931, AND EARLIER PERIODS

Cause of accident	Per cent of total 1921-1930	Death rates per million short tons						
		Average for 10 years 1921-1930	Year 1929	Year 1930	Average for March 10 years 1921-1930	1930	1931	
						Mch.	Feb.	Mch.
Bituminous Mines								
1. Falls of roof and coal.....	49.72	1.756	1.724	1.820	1.586	1.677	1.274	1.771
2. Underground haulage	17.58	.621	.651	.574	.571	.783	.414	.620
3. Explosions of gas or coal dust:								
Local explosions	2.24	.079	.043	.052	.089	.084	--	--
Major explosions	13.58	.479	.271	.464	.837	.922	--	--
4. Explosives	2.84	.100	.084	.069	.083	.056	.032	.059
5. Electricity	4.43	.157	.140	.149	.119	.112	.127	.059
6. Mining machines	1.43	.051	.052	.050	.032	--	.063	.030
7. Other causes underground	2.33	.082	.054	.080	.073	.168	.096	.059
8. All causes underground	94.15	3.325	3.019	3.258	3.390	3.802	2.006	2.598
9. All shaft accidents	1.33	.047	.032	.035	.034	.028	.032	.030
10. All accidents on surface	4.52	.160	.136	.117	.131	.112	.032	.147
11. All accidents	100.00	3.532	3.187	3.410	3.555	3.942	2.070	2.775
Anthracite Mines								
1. Falls of roof and coal	47.16	2.787	3.522	3.252	2.914	3.578	4.081	1.897
2. Underground haulage	12.58	.744	.880	.545	.782	.671	.928	.421
3. Explosions of gas:								
Local explosions	7.24	.428	.366	.530	.355	.671	--	.211
Major explosions	1.84	.109	--	--	.071	--	--	--
4. Explosives	10.85	.641	.582	.659	.654	.895	.556	.421
5. Electricity	1.12	.066	.081	.100	.029	--	--	.211
6. Other causes underground	8.29	.490	.420	.630	.398	.895	1.484	1.054
7. All causes underground	89.08	5.265	5.851	5.716	5.203	6.710	7.049	4.215
8. All shaft accidents	1.91	.113	.163	.029	.171	--	--	--
9. All accidents on surface	9.01	.532	.515	.559	.497	--	.556	.421
10. All accidents	100.00	5.910	6.529	6.304	5.871	6.710	7.605	4.636

TABLE 7 - COAL-MINE FATALITIES IN THE UNITED STATES IN WHICH FIVE OR MORE MEN WERE KILLED DURING 1930 AND 1931

Date	Name of mine	Location of mine	Nature of accident	Alleged cause of ignition	Killed
1930:					
Jan. 13	Peerless	Straven, Ala.	Gas or dust explosion	Electric arc.....	7
Jan. 19	No. 1	Lillybrook, W. Va.	"	Not stated	8
Feb. 6	Standard	Standardville, Utah	"	Electric arc	<u>1</u> / 23
Mch. 8	New Peerless	Lynn, Utah	"	Electric arc	5
Mch. 26	Yukon	Arnottsville, W. Va.	"	Not stated	12
Mch. 30	Kettle Island	Kettle Island, Ky.	"	Open flame lamp	16
Apr. 12	Carbonado	Carbonado, Wash.	"	Blasting	17
Aug. 8	Gilberton Colliery <u>2</u> /	Gilberton, Pa.	Fall of roof	-	8
Oct. 27	Wheatley #4	McAlester, Okla.	Gas or dust explosion	Not stated	30
Nov. 5	No. 6	Millfield, Ohio	"	Electric arc	<u>3</u> / 79
Nov. 29	Lutie No. 5	Wilburton, Okla.	"	Not stated	15
Dec. 6	Lamb	Madrid, N. Mex.	"	Electric arc	5
1931:					
Jan. 3	Midvale #4	Midvale, Ohio	Gas or dust explosion	Blasting	5
Jan. 6	Glen Rogers	Beckley, W. Va.	"	Not stated	8
Jan. 28	Little Betty	Dugger, Ind.	"	Open flame lamp	28

1/ Includes 3 killed by fall of slate about 28 hours later.

2/ Anthracite mine.

3/ Does not include 3 visitors, in no way connected with mining.

TABLE 8 - NAMES AND ADDRESSES OF COAL-MINE OFFICIALS IN THE UNITED STATES

State	Name	Official title	Address
Alabama	William B. Hillhouse ..	Chief mine inspector ..	Birmingham
Alaska	B. D. Stewart	Supervising mining engineer, U. S. Geological Survey	Juneau
Arkansas	Claude Speegle	State mine inspector ..	Fort Smith
Colorado	James Dalrymple	Chief inspector of coal mines	Capitol Build- ing, Denver.
Illinois	John S. Millhouse	Director, department of mines and minerals	Springfield
Indiana	A. C. Dally	Chief mine inspector ..	Room 421, State Capitol. Indianapolis.
Iowa	W. E. Holland	Inspector, district #1	Centerville
do.	R. T. Rhys	Inspector, district #2	Ottumwa
do.	Edward Sweeney	Inspector, district #3	Des Moines
Kansas	James Sherwood	State mine inspector..	Pittsburg
Kentucky	John F. Daniel	Chief department of mines	Lexington
Maryland	John J. Rutledge	Chief mine engineer, Maryland Bureau of Mines	22 Light St., Baltimore.
Michigan	John Murray	Coal-mine inspector	1503 Lyon St., Saginaw.
Missouri	Frank G. Fenix	Chief inspector	Joplin.
Montana	Edward Davies	State coal-mine inspector	521 N. 28th. St., Billings.
New Mexico ...	W. W. Risdon	State mine inspector..	Box 725, Gallup.
North Dakota .	Edwin Rupp	State mine inspector..	Bismarck.

TABLE 8 - NAMES AND ADDRESSES OF COAL-MINE OFFICIALS IN THE UNITED STATES
(Continued)

State	Name	Official title	Address
Ohio	E. W. Smith	Chief division of mines Industrial Commission of Ohio	Columbus :
Oklahoma	Miller D. Hay	Chief mine inspector	State Capitol, Oklahoma City.
Pennsylvania.	Walter H. Glasgow	Secretary of mines, department of mines	Harrisburg
Tennessee ...	A. W. Evans	Chief mine inspector	Nashville.
Texas	N. M. Bullock ...	State mine inspector	Rockdale.
Utah	John Taylor	State coal-mine inspector	State Capitol, Salt Lake City.
Virginia	A. G. Lucas	Chief State mine inspector	Richmond.
Washington ..	Wm. R. Reese	Chief mine inspector	324 Alaska Bldg., Seattle.
West Virginia	R. M. Lambie	Chief, department of mines	Charleston.
Wyoming	Lyman Fearn	Chief coal-mine inspector	Rock Springs.

