

Employment and Injuries in the Fuel Industries

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INTRODUCTION

THIS CHAPTER of the Minerals Yearbook contains injury experience and related employment data for the coal-mining, coking, and oil and gas industries for 1957. Injury experience is measured by the number of injuries per million man-hours of exposure to the hazards of the particular industry.

Since the accident hazards for each of the three sections are not comparable, no attempt has been made to combine data for presenting an overall experience for the fuel section of the mineral industries. Discussions and tabulations, covering the injury and employment records of the mineral industry as a whole, are presented in volume III.

COAL

Injury experience at all coal mines in the United States was more favorable in 1957 than in the preceding year, according to reports received by the Bureau of Mines, United States Department of the Interior. The combined frequency rate (fatal and nonfatal) of 44.16 injuries per million man-hours of exposure to the hazards of the coal-mining industry was 6 percent lower than in 1956.

Nonfatal injuries at bituminous-coal, lignite, and anthracite mines were lower in both number and frequency of occurrence; fatality experience of the industry was higher. Sixty-four of the four hundred and seventy-seven fatal injuries resulted from 5 major disasters at bituminous-coal mines during the year. The last major disaster at an anthracite mine occurred on March 27, 1952; the bituminous-coal industry was free of such disasters from November 13, 1954, until January 18, 1957.

The average number of men working daily and their accumulated man-hours decreased 4 and 6 percent, respectively, under 1956. Employees averaged 7.83 hours per day for a total of 405.8 million man-hours or 1,627 hours per man during 1957.

Bituminous-Coal Mines.—The safety record of bituminous-coal and lignite mines in 1957 was 6 percent better than in the preceding year. Preliminary data showed that 14,991 fatal and nonfatal injuries occurred at a rate of 41.47 per million man-hours of exposure; in 1956 final data were 16,878 injuries, which resulted in a frequency rate of 44.02.

Of the 426 fatalities at bituminous-coal and lignite mines, 375 occurred in underground workings, 26 at surface operations connected with underground mines, 22 at strip pits, and 3 at auger mines.

The leading cause of accidents in coal mines, falls of roof, face, and rib, resulted in 197 deaths in the bituminous-coal and lignite industry. The 64 fatalities involved in 5 major disasters (a single accident that results in the death of 5 men or more) were classified as follows: 4 disasters killing 59 men were caused by explosions of gas, and 1 killing 5 men was caused by a coal-mine bump.

The average daily working force of 218,600 men accumulated 361.5 million man-hours of worktime in 209 active mine days. The average workyear per man was 1,654 hours.

Anthracite Mines.—The injury-frequency rate at Pennsylvania anthracite mines declined 2 percent, owing entirely to a 14-percent decrease in the total number of injuries sustained.

Fifty-one men were killed in 1957—5 less than in 1956. However, because of a 12-percent decrease in total man-hours, the resulting rate of occurrence in 1957 was 3 percent higher than in 1956. Nonfatal

TABLE 1.—Employment and injury experience at coal mines in the United States, 1953-57

Industry and year	Average men working daily ¹	Average active mine days ²	Million man-days worked	Million man-hours worked	Number of injuries		Frequency rates per million man-hours	
					Fatal	Nonfatal	Fatal	Nonfatal
Bituminous-coal mines:³								
1953.....	295,425	191	56.3	444.3	397	20,112	0.89	45.26
1954.....	241,919	177	42.8	337.7	334	14,746	.99	43.66
1955.....	225,611	210	47.3	373.6	360	15,971	.96	42.75
1956.....	227,804	212	48.4	383.4	392	16,486	1.02	43.00
1957 ⁴	218,600	209	45.7	361.5	426	14,565	1.18	40.29
Anthracite mines:								
1953.....	55,701	169	9.4	69.3	64	4,146	.92	59.85
1954.....	41,786	164	6.8	50.2	62	2,972	1.23	59.18
1955.....	34,550	182	6.3	46.0	60	2,919	1.30	63.46
1956.....	32,564	212	6.9	50.2	56	3,333	1.12	66.37
1957.....	30,825	196	6.1	44.3	51	2,877	1.15	64.93
Total coal mines:								
1953.....	351,126	187	65.7	513.6	461	24,258	.90	47.23
1954.....	283,705	175	49.6	388.0	396	17,718	1.02	45.67
1955.....	260,161	206	53.6	419.6	420	18,890	1.00	45.02
1956.....	260,368	212	55.3	433.7	448	19,819	1.03	45.70
1957 ⁴	249,425	208	51.8	405.8	477	17,442	1.18	42.98

¹ Average number of men at work each day mine was active. Because absenteeism and labor turnover are taken into consideration, this number is lower than number of men available for work, as measured by a count of names on payroll.

² Average in which operating time of each mine is weighted by average number of workers in mines.

³ Includes lignite.

⁴ Bituminous data for 1957 are preliminary.

injuries in 1957 were lower in both number and frequency—14 and 2 percent, respectively.

Of the 51 deaths chargeable to the anthracite industry, 49 occurred underground and 2 at independent breakers. Surface operations at underground and strip or open-cut mines were free from fatalities in 1957. Thirty of the underground deaths resulted from accidents involving falls of roof, face, and rib.

The average number of men working daily and total man-hours decreased 5 and 12 percent, respectively, from 1956. The number of active days declined from 212 in 1956 to 196 in 1957, the average workday from 7.29 to 7.26 hours, and the workyear from 1,542 hours to 1,438.

COKE

Work fatalities increased in the coke industry in 1957, and nonfatal injuries decreased. A 17-percent increase in the frequency of occurrence of fatalities was offset by a 22-percent decrease in the frequency of nonfatal injuries, resulting in a combined rate (fatal and nonfatal) of 4.38 injuries per million man-hours—the lowest since complete reports were made available to the Bureau of Mines in 1916. Employees at 21,130 ovens that operated consistently in 1957 worked 57.3 million man-hours and produced 80.9 million tons of coke and breeze. Each man averaged 2,830 hours for the year—an increase of 67 hours over 1956, although employment declined by 213 men. The average employee worked an 8-hour shift and coke ovens operated 9 days more than in 1956.

Slot-Type Ovens—There were 12 fatal and 197 nonfatal injuries reported in 1957—an increase of 20 percent in fatalities and a decrease

TABLE 2.—Employment and injury experience at coke plants in the United States, 1953-57

Industry and year	Average men working daily ¹	Average active plant days ²	Million man-days worked	Million man-hours worked	Number of injuries		Frequency rates per million man-hours	
					Fatal	Nonfatal	Fatal	Nonfatal
Slot-type coke ovens:								
1953.....	21,011	362	7.6	61.1	8	332	0.13	5.43
1954.....	17,944	361	6.5	51.8	8	245	.15	4.73
1955.....	19,597	362	7.1	56.7	9	280	.16	4.94
1956.....	19,318	355	6.9	54.9	10	268	.18	4.89
1957 ³	19,203	364	7.0	55.9	12	197	.21	3.53
Beehive-coke ovens:								
1953.....	2,429	201	.5	3.6	-----	93	-----	25.98
1954.....	1,265	71	.1	.7	-----	9	-----	13.40
1955.....	1,084	179	.2	1.5	-----	45	-----	30.96
1956.....	1,155	197	.2	1.7	-----	33	-----	19.41
1957 ³	1,057	186	.2	1.5	-----	42	-----	28.55
All coke ovens:								
1953.....	23,440	345	8.1	64.7	8	425	.12	6.57
1954.....	19,209	342	6.6	52.5	8	254	.15	4.84
1955.....	20,681	352	7.3	58.2	9	325	.15	5.59
1956.....	20,473	346	7.1	56.6	10	301	.18	5.32
1957 ³	20,260	355	7.2	57.3	12	239	.21	4.17

¹ Average number of men at work each day oven was active. Because absenteeism and labor turnover are taken into consideration, this number is lower than the number of men available for work, as measured by a count of names on payroll.

² Average in which operating time of each plant is weighted by average number of workers in the plant.

³ Preliminary.

of 26 percent in nonfatal injuries compared with 1956. The increase in man-hours was not enough to prevent a rising frequency of occurrence in the fatal rate (0.21 per million man-hours) but did result in the lowest nonfatal rate (3.53) recorded in 42 years of reporting.

Production increased by 3 percent in 1957 and although employees were reduced by 115, these men accumulated 55.9 million hours of worktime, each averaged 2,909 hours. Plants operated 9 days more than in 1956 and worked a straight 8-hour shift.

Beehive-Coke Ovens—The beehive-coke industry has an outstanding record of 5 consecutive years of operation without a fatality. Nonfatal injuries, however, increased from 33 in 1956 to 42 in 1957. Employment decreased 8 percent, and man-days and man-hours declined 14 and 13 percent, respectively. Days worked averaged 11 less in 1957, and a work force reduced from 1,155 in 1956 to 1,057 produced 16 percent less coke than in 1956. The nonfatal frequency rate per million man-hours rose 47 percent—from 19.41 in 1956 to 28.55 in 1957.

OIL AND GAS

The injury-frequency rate of the oil and gas industry, which has decreased gradually during 6 years, was the lowest since statistics were first collected in 1942 by the Bureau of Mines, United States Department of the Interior. The 1956 rate of 9.32 injuries per million man-hours of exposure to the hazards of the industry was reduced to 8.93 in 1957. Injuries occurring in 1957 were slightly more than in the previous year, but man-hours worked also increased, accounting for the lowered rate of occurrence. Of the 11,547 injuries in the oil and gas industry, 121 were fatalities and permanent total disabilities, 472 were permanent partial disabilities, and 10,954 were temporary. Six departments that showed improvement in frequency of injury occurrence in 1957, compared with 1956 were: Exploration, drilling, pipeline gas, refining, marketing, and miscellaneous.

Employment and man-hours accumulated increased 5 percent; workers averaged 2,095 hours each during the year—15 hours less than in 1956.

TABLE 3.—Employment and injury experience in the oil and gas industry of the United States, 1953-57

Year	Average men working daily	Million man-hours worked	Number of injuries		Frequency rates per million man-hours	
			Fatal ¹	Nonfatal	Fatal	Nonfatal
1953.....	594,398	1,264	179	14,452	0.14	11.43
1954.....	580,783	1,229	122	12,796	.10	10.41
1955.....	617,274	1,303	135	13,038	.10	10.01
1956.....	585,486	1,236	147	11,372	.12	9.20
1957.....	617,596	1,294	121	11,426	.09	8.83

¹ Fatal and permanent total injuries combined.

CONCLUSION

The overall injury experience (fatal and nonfatal combined) of each phase of the fuel industries in 1957 improved over the preceding year. Fatalities, which were higher in both number and frequency of occurrence in the coal-mining and coking industries, were offset by the decreased number of nonfatal injuries in the two industries. The oil and gas industry attained its best safety record since data were collected by the Bureau of Mines in 1942; the number of nonfatal injuries increased but the number of fatal and permanent total injuries declined, and man-hours of worktime increased.

