

1999 Survey on Petroleum Industry Occupational Injuries, Illnesses, and Fatalities Summary Report: Aggregate Data Only

**As Reported to the
American Petroleum Institute**

**Covering Petroleum and Petrochemical
Operations of Reporting Companies**

API Publication 2378
June 2000

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INTRODUCTION

The American Petroleum Institute (API) has published this report since 1931. It includes information regarding workplace injuries, illnesses, fatalities, lost workday cases, and incidence rates by industry segment and functions.

Prior to this year's survey, companies were only asked to submit data about their own employees in their U.S. operations. To increase the value of this report, the scope was expanded to include non-U.S. operations. Additionally, data was collected for four new functions: *Upstream Support Service, Lubricants/Specialties, Downstream Support Services, and Power Generation* and two new incident rates: *Days Away plus Restricted Activity Cases* and *Days Away Cases*.

Another major change introduced was the ability for companies to submit their data electronically over the Internet. Some of the features of this online database include automatic data checks, online instructions, and reports. It also provides companies that are willing to share their data with the ability to produce customized reports allowing them to benchmark against their peers.

Participation in the API annual survey is voluntary and company participation varies from year to year. Therefore, exercise caution when using this data to characterize the performance of the industry as a whole. However, eighty companies that responded to this year's survey with U.S. operations data also responded to last year's survey. These eighty companies represent ninety percent of the total number of employees and eighty-nine percent of the total number of hours reported to API for 1999.

Participants were asked to submit data according to the Bureau of Labor Statistics (BLS) Recordkeeping Guidelines for Occupational Injuries and Illnesses, September 1986 edition. Therefore, this report provides incidence rates per 200,000 hours worked on the same basis as those reported by BLS.

One hundred and fourteen companies responded to the survey. All but one of these companies submitted data for U.S. operations. Thirteen companies submitted data for non-U.S. operations.

SUMMARY

U.S. Operations: Company Employees

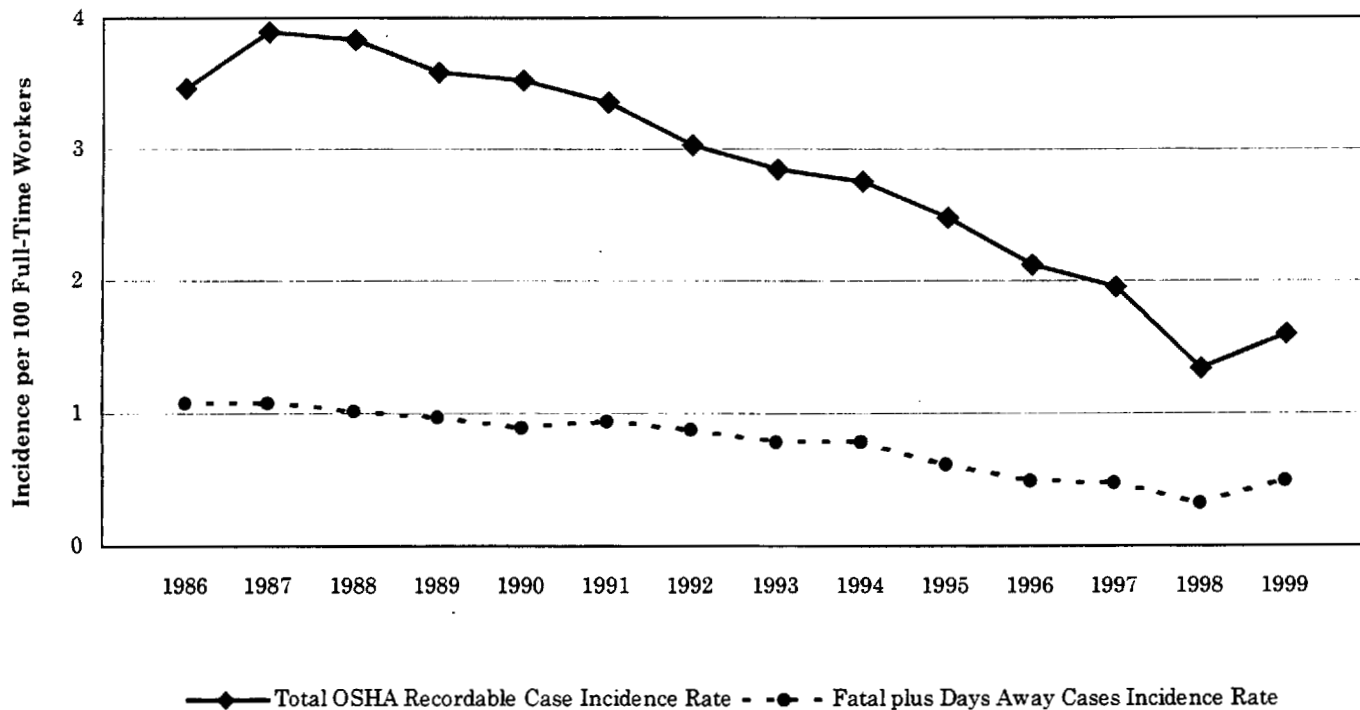
1999 data pertaining to U.S. occupational injuries, illnesses and fatalities for an employer's own employees were submitted to the American Petroleum Institute (API) by one hundred and thirteen oil and gas companies (including eight subsidiaries), employing 174,368 persons with a total work experience of 357 million hours. In 1998, one hundred and eighteen companies reported 212,850 employees with a work experience of 435 million hours.

In 1999, the *Total OSHA Recordable Case Incidence Rate* reported was 1.60, compared to 1.34 for 1998. This rate is the number of total recordable cases per 200,000 hours worked, or approximately the number of cases per 100 full-time workers per year.

The *Fatal Plus Days Away Incidence Rate* reported for 1999 was .49 per 200,000 hours worked—or one case for every 204 employees, compared to .33 in 1998—or one case for every 303 employees.

Since 1986, the reported *Total OSHA Recordable Case Incidence Rate* and *Fatal plus Days Away Incidence Rate* have improved an average of 2.9 and 3.9 percent per year, respectively (see the figure below).

Reported U.S. Occupational Injuries, Illnesses, and Fatalities in the Petroleum Industry



Significant differences exist among companies regarding return-to-work policies and practices. Therefore, use of the *Fatal plus Days Away Incidence Rates* alone to judge and compare company safety performance is not recommended.

The Bureau of Labor Statistics (BLS) publishes employment figures for different sectors of the petroleum industry. The table below shows the number of full-time employees in the U.S. company information section of this report and the comparative total employment figures published by BLS. These figures can be used to calculate the API survey representation rate.

The API U.S. company information is limited to *company employees* only while the BLS has a more inclusive definition of employment (the BLS includes contract workers). Therefore, use caution when interpreting these representation rates.

Employment in the Petroleum Industry				
	E&P and Drilling	Refining and Gas Processing	Oil Pipelines	Total Marketing
BLS	293.1	92.1	13.3	855.0
API	28.5	47.2	9.7	38.5
API Representation Rate	10%	51%	73%	5%

Employment figures are in thousands. 1999 BLS figures are current as of March 2000.

Non-U.S. Operations: Company Employees

Thirteen oil and gas companies reported data about their non-U.S. operations. During 1999, these companies employed 57,844 employees with a total work experience of 124 million hours.

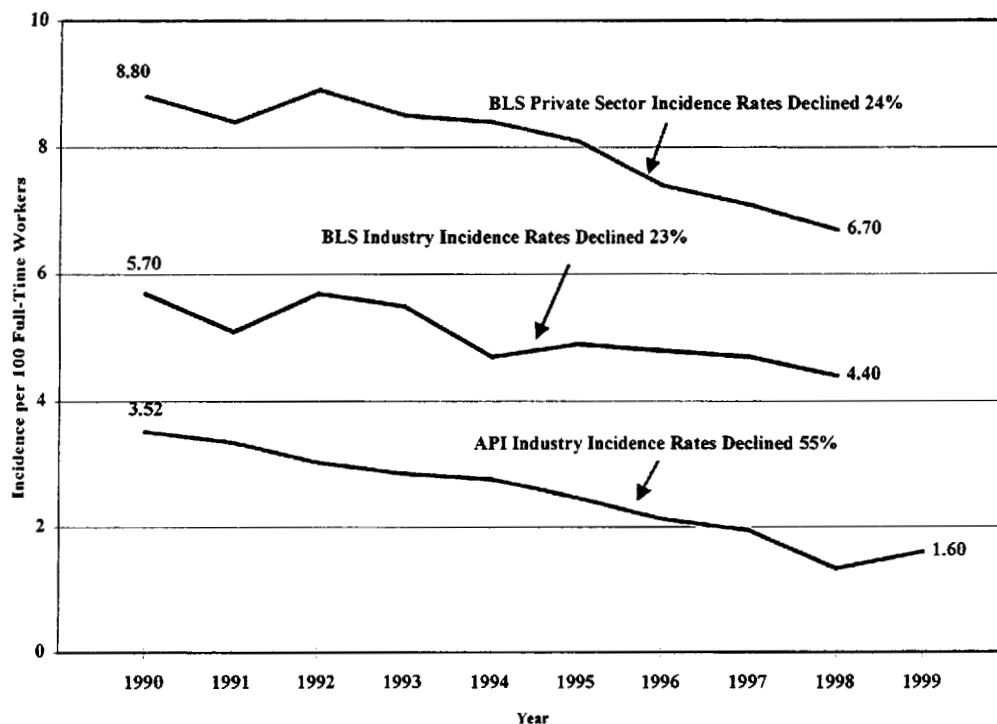
In 1999, the *Total OSHA Recordable Case Incidence Rate* reported was .54 for non-U.S. operations. This rate is the number of total recordable cases per 200,000 hours worked or approximately the number of cases per 100 full-time workers per year.

The *Fatal Plus Days Away Incidence Rate* reported for 1999 was .16 per 200,000 hours worked—or one case for every 625 employees.

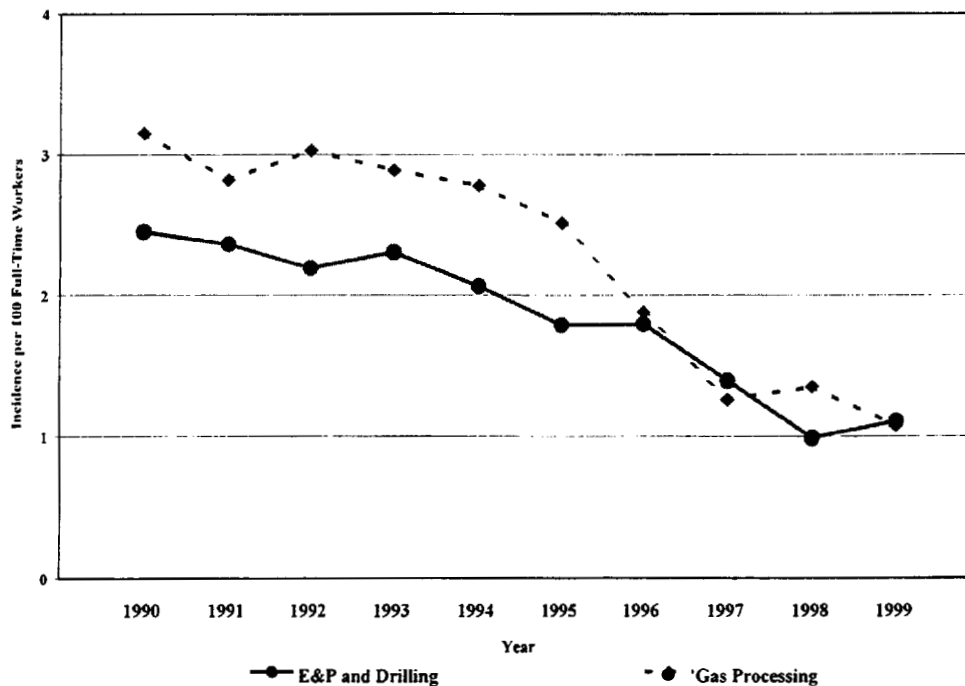
Trends

The total OSHA recordable incidence rate as reported to API has declined by more than half over the past ten years. The following graphs show the ten-year trend for selected U.S. petroleum industry sectors.

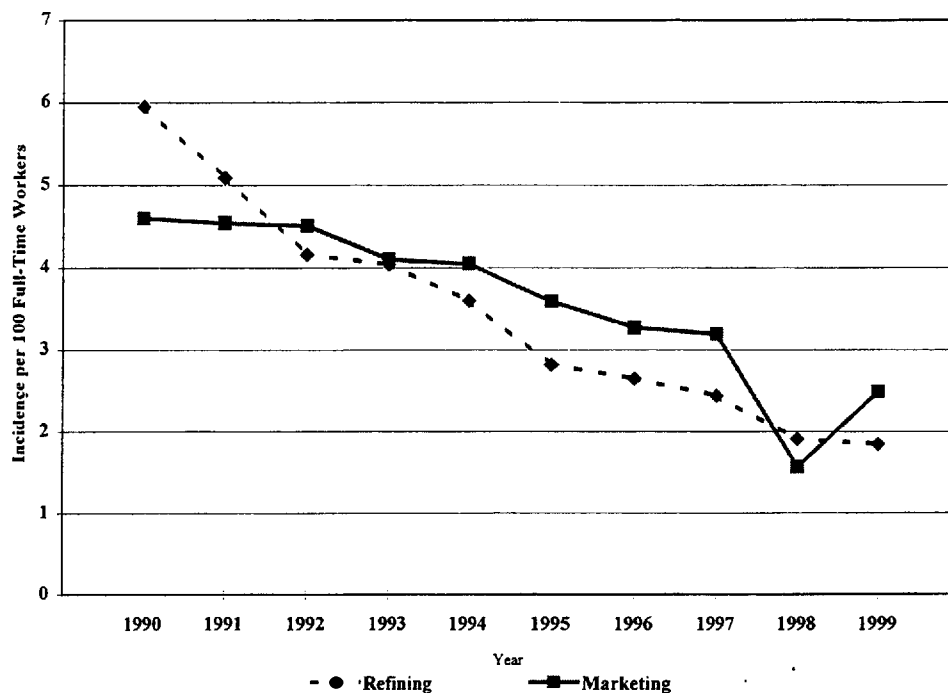
Total OSHA Recordable Incidence Rates in the U.S.



Total OSHA Recordable Incidence Rates for U.S. Petroleum Industry Total Offshore and Onshore E&P, Drilling and Gas Processing Sectors as Reported to API



**Total OSHA Recordable Incidence Rates for U.S. Petroleum Industry
Marketing and Refining Sectors as Reported to API**



**Total OSHA Recordable Incidence Rates for U.S. Petroleum Industry
Pipeline, Marine and Petrochemical Manufacturing Sectors as Reported to API**

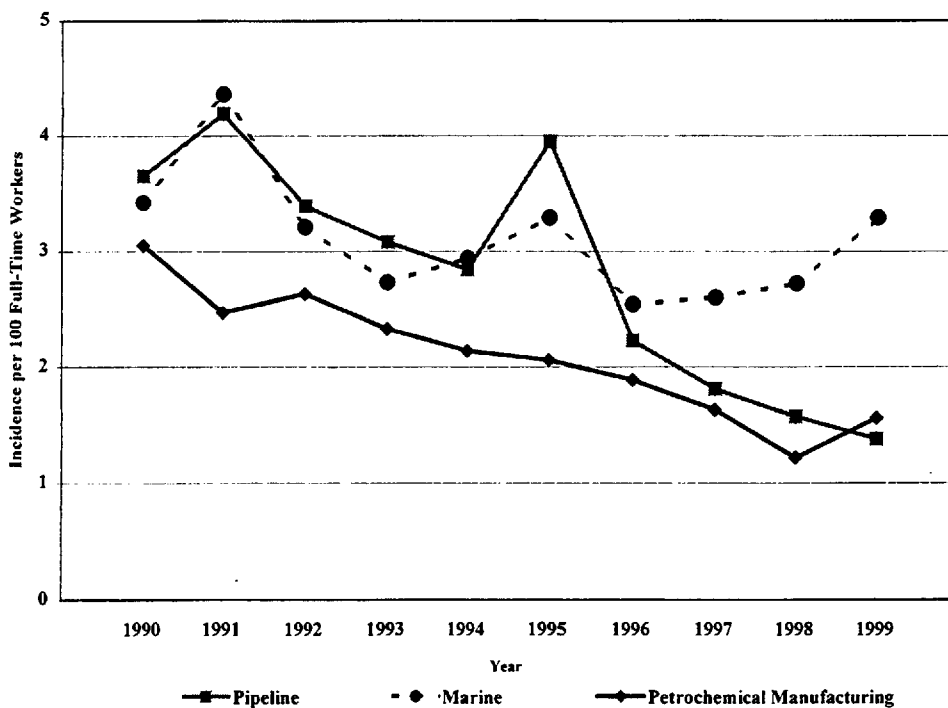


Table 1

**1999 U.S. Occupational Injuries, Illnesses and Fatalities
Covering Petroleum and Petrochemical Operations for Reporting Companies**

1	2	3	4			5					6					7
			OSHA Recordable Cases			Extent and Outcome of Injury and Illness					Incidence Rates					
			a	b	c	d	e	f	g	h	i	j	k	l	m	
Function	Average Number of Employees	Hours Worked (Thousands)	Injuries	Illnesses	Total	Fatalities	Lost Workday plus Restricted Activity Cases	Days Away Cases	From Work	Number of Days Away	Number of Restricted Activity	Non-Fatal Cases Without Lost Workdays	Total OSHA Recordable Case	Days Away plus Restricted Activity Cases	Fatal plus Days Away Cases	Number of Days Away
A. UPSTREAM																
1. Offshore																
a. Exploration	101	378	7	0	7	0	3	0	0	0	49	4	3.70	1.59	0.00	0.00
b. Production	2,708	5,607	30	0	30	0	16	6	172	492	14	1.07	0.57	0.21	0.21	6.14
c. E&P-Not separated	2,198	4,642	47	0	47	0	23	14	135	72	24	2.02	0.99	0.60	0.60	5.82
d. Drilling	204	398	1	0	1	0	0	0	0	0	1	0.50	0.00	0.00	0.00	0.00
Offshore E&P Subtotal	5,211	11,025	85	0	85	0	42	20	307	613	43	1.54	0.76	0.36	0.36	5.57
2. Onshore																
a. Exploration	467	877	3	0	3	0	0	0	0	0	0	3	0.68	0.00	0.00	0.00
b. Production	5,932	12,042	61	5	66	0	33	14	361	190	33	1.10	0.55	0.23	0.23	6.00
c. E&P-Not separated	16,719	33,881	147	18	165	1	78	62	2,152	747	86	0.97	0.46	0.37	0.37	12.70
d. Drilling	183	364	3	0	3	0	0	0	0	0	3	1.65	0.00	0.00	0.00	0.00
Onshore E&P Subtotal	23,301	47,164	214	23	237	1	111	76	2,513	937	125	1.01	0.47	0.33	0.32	10.86
3. Gas Processing	2,847	5,956	31	1	32	0	9	7	140	41	23	1.07	0.30	0.24	0.24	4.70
4. Upstream Support Services	4,408	8,695	19	0	19	0	8	6	5	16	11	0.44	0.18	0.14	0.14	0.12
Upstream Subtotal	35,767	72,840	349	24	373	1	170	109	2,965	1,607	202	1.02	0.47	0.30	0.30	8.14
B. DOWNSTREAM																
1. Marketing-Wholesale	8,008	17,019	193	9	202	2	132	58	1,907	1,301	69	2.37	1.55	0.71	0.68	22.41
2. Marketing-Retail	23,356	43,709	597	5	602	0	315	215	2,530	1,623	267	2.75	1.44	0.98	0.98	11.98
3. Marketing-Not separated	7,130	11,480	90	4	94	0	68	37	1,036	889	26	1.84	1.18	0.64	0.64	18.05
Marketing Subtotal	38,494	72,208	880	18	898	2	515	310	5,473	3,813	381	2.49	1.43	0.86	0.86	15.16
4. Refining	44,314	95,005	795	84	879	2	472	240	4,987	9,244	405	1.85	0.99	0.51	0.51	10.50
5. Lubricants/Specialties	2,677	5,568	30	1	31	0	15	6	316	490	16	1.11	0.54	0.22	0.22	11.36
6. Downstream Support Services	3,933	7,805	5	1	6	1	1	1	5	0	4	0.15	0.03	0.05	0.03	0.13
Downstream Subtotal	89,418	180,587	1,710	104	1,814	5	1,003	557	10,761	13,547	805	2.01	1.11	0.62	0.62	11.94
C. PIPELINE																
1. Pipeline-Liquid	9,760	20,702	119	8	127	1	43	28	542	618	83	1.23	0.42	0.28	0.27	5.24
2. Pipeline-Gas	1,627	3,736	45	1	46	0	24	19	398	319	22	2.48	1.28	1.02	1.02	21.31
3. Pipeline-Not sep	1,953	4,342	22	4	26	0	5	3	6	36	21	1.20	0.23	0.14	0.14	0.28
Pipeline Subtotal	13,340	28,780	186	13	199	1	72	50	946	873	126	1.38	0.50	0.35	0.35	6.57

Table 1

**1999 U.S. Occupational Injuries, Illnesses and Fatalities
Covering Petroleum and Petrochemical Operations for Reporting Companies**

1	2	3	4			5					6				7	
			OSHA Recordable Cases			Extent and Outcome of Injury and Illness					Incidence Rates					
			a	b	c	d	e	f	g	h	i	j	k	l		m
			Injuries	Illnesses	Total	Fatalities	Lost Workday plus Restricted Activity Cases	Days Away Cases	Number of Days Away From Work	Number of Days of Restricted Activity	Non-Fatal Cases Without Lost Workdays	Total OSHA Recordable Case	Days Away plus Restricted Activity Cases	Fatal plus Days Away Cases		
Function	Average Number of Employees	Hours Worked (Thousands)												Number of Days Away		
D. MARINE																
1. Marine-Tanker	579	1,157	23	0	23	0	10	10	na	0	13	3.98	1.73	1.73	na	
2. Marine-Inland	216	666	8	0	8	0	4	0	0	68	4	2.40	1.20	0.00	0.00	
3. 'Marine-Not sep	1,811	4,199	66	2	68	0	42	23	1,130	179	26	3.24	2.00	1.10	53.82	
Marine Subtotal	2,606	6,022	97	2	99	0	56	33	1,130	247	43	3.29	1.86	1.10	37.53	
E. PETROCHEMICAL MFG.	10,163	21,717	142	27	169	0	100	65	1,960	1,044	69	1.56	0.92	0.60	18.05	
F. POWER GENERATION	339	705	2	0	2	0	1	1	14	0	1	0.57	0.28	0.28	3.97	
G. RESEARCH & DEV.	4,827	9,869	30	10	40	0	12	7	74	77	28	0.81	0.24	0.14	1.50	
H. SUPPORT SERVICES	17,908	36,633	67	86	153	0	58	41	814	736	95	0.84	0.32	0.22	4.44	
Total U.S. Operations	174,368	357,153	2,583	298	2,849	7	1,472	863	18,684	18,131	1,370	1.60	0.82	0.49	10.48	

Table 2

**1999 Non-U.S. Occupational Injuries, Illnesses and Fatalities
Covering Petroleum and Petrochemical Operations for Reporting Companies**

1	2	3	4			5						6					7
			OSHA Recordable Cases			Extent and Outcome of Injury and Illness						Incidence Rates					
			a	b	c	d	e	f	g	h	i	j	k	l	m		
Function	Average Number of Employees	Hours Worked (Thousands)	Injuries	Illnesses	Total	Fatalities	Lost Workday Cases		Days Away Cases	Number of Days Away From Work	Number of Days of Restricted Activity	Non-Fatal Cases Without Lost Workdays	Total OSHA Recordable Case	Days Away plus Restricted Activity Cases	Fatal plus Days Away Cases	Days Away Cases	Number of Days Away
							plus Restricted Activity Cases	Days Away Cases									
A. UPSTREAM																	
1. Offshore																	
a. Exploration	15,000	30,000	50	25	75	5	0	0	0	0	0	70	0.50	0.00	0.03	0.00	0.00
b. Production																	
c. E&P-Not separated	8,908	17,818	58	0	58	1	25	19	198	2	32		0.65	0.28	0.22	0.21	2.20
d. Drilling	214	435	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
Offshore E&P Subtotal	24,122	48,253	108	25	133	6	25	19	196	2	102		0.55	0.10	0.10	0.08	0.81
2. Onshore																	
a. Exploration																	
b. Production																	
c. E&P-Not separated	16,693	33,667	73	2	75	2	37	35	363	2	36		0.45	0.22	0.22	0.21	2.18
d. Drilling	39	78	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
Onshore E&P Subtotal	16,732	33,745	73	2	75	2	37	35	363	2	36		0.44	0.22	0.22	0.21	2.15
Gas Processing																	
Upstream Support Services	52	106	1	0	1	0	0	0	0	0	1		1.89	0.00	0.00	0.00	0.00
Upstream Subtotal	40,906	82,104	182	27	209	8	62	54	569	4	139		0.51	0.15	0.15	0.13	1.36
B. DOWNSTREAM																	
1. Marketing-Wholesale																	
2. Marketing-Retail																	
3. Marketing-Not separated	9,157	18,831	21	0	21	1	12	12	140	0	8		0.22	0.13	0.14	0.13	1.49
Marketing Subtotal	9,157	18,831	21	0	21	1	12	12	140	0	8		0.22	0.13	0.14	0.13	1.49
4. Refining	2,169	4,454	28	0	28	0	4	3	50	36	24		1.26	0.18	0.13	0.13	2.25
Lubricants/Specialties	961	1,940	11	0	11	0	10	9	11	147	1		1.13	1.03	0.93	0.93	1.13
Downstream Support Services	275	568	0	0	0	0	0	0	0	0	0		0.00	0.00	0.00	0.00	0.00
Downstream Subtotal	12,562	25,793	60	0	60	1	28	24	201	183	33		0.47	0.20	0.19	0.19	1.56
C. PIPELINE																	
1. Pipeline-Liquid	284	544	7	0	7	0	0	0	0	0	7		2.57	0.00	0.00	0.00	0.00
2. Pipeline-Gas																	
3. Pipeline-Not sep																	
Pipeline Subtotal	284	544	7	0	7	0	0	0	0	0	7		2.57	0.00	0.00	0.00	0.00
D. MARINE																	
1. Marine-Tanker																	
2. Marine-Inland																	

Table 2

**1999 Non-U.S. Occupational Injuries, Illnesses and Fatalities
Covering Petroleum and Petrochemical Operations for Reporting Companies**

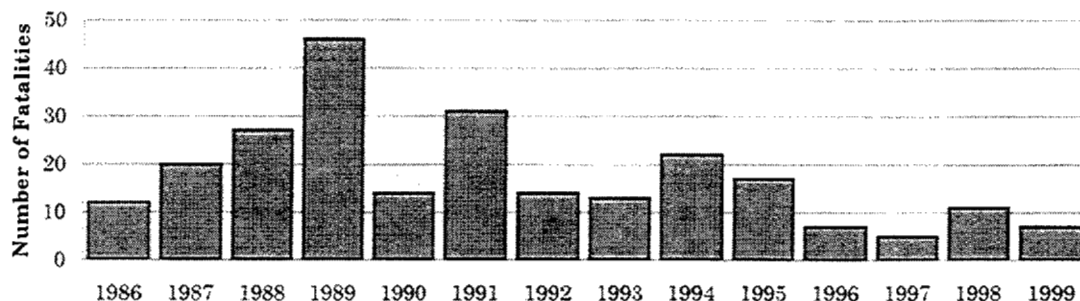
1 Function	2 Average Number of Employees	3 Hours Worked (Thousands)	4 OSHA Recordable Cases			5 Extent and Outcome of Injury and Illness					6 Incidence Rates				7 Severity Rate
			a	b	c	d	e	f	g	h	i	j	k	l	
			Injuries	Illnesses	Total	Fatalities	Lost Workday Cases plus Restricted Activity Cases	Days Away Cases	Number of Days Away From Work	Number of Days of Restricted Activity	Non-Fatal Cases Without Lost Workdays	Total OSHA Recordable Case	Days Away plus Restricted Activity Cases	Fatal plus Days Away Cases	Number of Days Away
3. Marine-Not sep	1,669	5,741	31	1	32	0	9	7	13	13	23	1.11	0.31	0.24	0.45
Marine Subtotal	1,669	5,741	31	1	32	0	9	7	13	13	23	1.11	0.31	0.24	0.45
E. PETROCHEMICAL MFG.	2,324	10,036	23	5	28	0	18	8	269	180	10	0.56	0.36	0.16	5.36
F. POWER GENERATION															
G. RESEARCH & DEV.															
H. SUPPORT SERVICES	109	209	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Total Non-U.S. Operations	57,844	124,427	303	33	336	9	115	93	1,042	360	212	0.54	0.18	0.16	1.67

1999 Summary of Fatal Injuries in the Petroleum Industry As Reported to the American Petroleum Institute

U.S. Company Operations

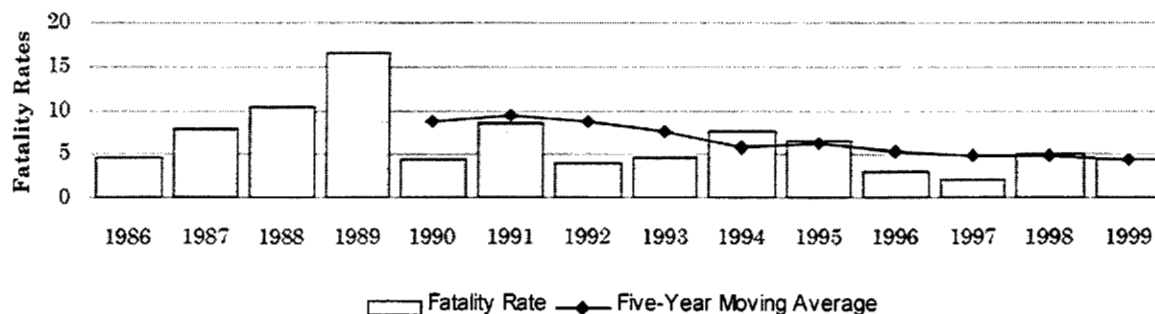
One hundred and thirteen oil and gas companies and their subsidiaries, employing 174,368 workers reported seven fatal accidents during 1999. This is equivalent to one fatality for every 24,910 workers employed. Comparatively, in 1998, there was one fatality for every 19,350 employees. The graph below shows the number of fatalities reported in this publication for the last 14 years.

Reported U.S. Occupational Fatalities in the Petroleum Industry



The change in the number of employees represented by this survey every year accounts for some of the variation in the data. Therefore, the following graph shows the fatality rate¹ for the past 14 years. However, as with any data, the factors that cause variations over time can also be cyclical, seasonal, trend, or irregular (random). Any combination of these factors can further cloud any visual interpretation of the data. Because this is annual data, cyclical and seasonal variations may be discounted. By calculating a *moving average*² for each year, we can smooth-out the effect of irregular variations and thus observe a trend. The fatality rate in the petroleum industry continues to improve as shown below by the five-year moving average line.

Reported U.S. Occupational Fatality Rates in the Petroleum Industry
(per 100,000 Employees)



¹ Fatality rate = (number of fatalities*100,000)/number of employees. This is the number of fatalities per 100,000 employees.

² A five-year moving average for a given year is the average of that year and the 4 preceding years. For example, the 5-year moving average for 1990, using rounded numbers, shown on the graph equals $(4+17+10+8+5)/5=8.8$.

Non-U.S. Company Operations

Thirteen companies, employing 57,844 workers, reported nine fatal accidents during 1999. This is equivalent to one fatality for every 6,427 workers employed.

1999 Survey of Occupational, Illnesses and Fatalities in the Petroleum Industry
List of Participants

<u>COMPANY</u>	<u>Type of Data Reported</u>	
	<u>U.S.</u> <u>Company</u> <u>Operations</u>	<u>Non-U.S.</u> <u>Company</u> <u>Operations</u>
Algonquin Gas Transmission	X	
All American Pipeline L.P.	X	
Alyeska Pipeline Service Company	X	
Amerada Hess Corporation	X	X
Anadarko Petroleum Corporation	X	X
Anschutz Ranch East Pipeline Inc	X	
Atlantic Richfield Company	X	X
ARCO Pipe Line Company	X	
Barger Engineering Inc	X	
Belle Fourche Pipeline Company	X	
Berry Petroleum Company	X	
BHP Petroleum (Americas) Inc	X	X
Big West Oil/Flying J Inc	X	
BP Amoco - Pipeline Business Unit	X	
Buckeye Pipe Line Company	X	
Butte Pipe Line Company	X	
BWOC Inc	X	
Callon Petroleum Company	X	
Calnev Pipe Line Company	X	
Cenex Harvest States	X	
Central Florida Pipeline Corporation	X	
Chevron Corporation	X	X
Chevron Pipe Line Company	X	
Chicap Pipe Line Company	X	
Ciniza Pipe Line Company	X	
Citgo Petroleum Corporation	X	
Citgo Pipeline Company	X	
Clark Refining & Marketing	X	
Colonial Pipeline Company	X	
Conoco Inc	X	X
Cook Inlet Pipe Line Company	X	
Croft Petroleum Company	X	
Cross Oil Refining & Marketing	X	
Devon Energy Corporation	X	
Dixie Pipeline Company	X	
Dome Pipeline Corporation	X	
Eberly & Meade Inc	X	
Embassy Oil	X	
Enbridge (U.S.) Inc	X	
Enbridge Pipelines (North Dakota) Inc	X	
Energy Pro Inc	X	
Enterprise Products Operating	X	
Equilon Enterprises LLC	X	
Equilon Pipeline Company	X	
Equistar Pipeline Operations	X	
Ergon Inc	X	
Excalibar Exploration Inc	X	

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<u>COMPANY</u>	<u>Type of Data Reported</u>	
	<u>U.S.</u> <u>Company</u> <u>Operations</u>	<u>Non-U.S.</u> <u>Company</u> <u>Operations</u>
Explorer Pipeline Company	X	
Exxon Company USA	X	
Exxon Pipeline Company	X	
Fina Inc	X	
Fina Oil & Chemical Company (Pipelines)	X	
Great Western Drilling	X	
Green Energy Inc	X	
Hunt Oil Company	X	X
Interstate Energy Company	X	
Justiss Oil Company Inc	X	
Kaneb Pipe Line Company	X	
Kentucky Hydrocarbon	X	
Kerr-McGee Corporation	X	
Lone Mountain Production Company	X	
Loop LLC	X	
Lyondell-Citgo Refining Company	X	
Marathon Ashland Petroleum	X	
Marathon Ashland Pipe Line	X	
Marathon Oil Company	X	
McGowan Working Partners	X	
Michael D Lillis	X	
Mitchell Energy Corporation	X	
Mobil Oil Corporation	X	
Motiva Enterprises LLC	X	
MR Drilling Company	X	
Navajo Refining Company (Pipeline Div)	X	
Occidental Oil & Gas Corporation	X	
Ocean Energy	X	X
Ouachita Exploration Inc	X	
Patina Oil & Gas Corporation	X	
Petroleos Mexicanos	X	X
Phillips Petroleum Company	X	X
Phillips Pipe Line Company	X	
Placid Refining Company	X	
Plantation Pipeline Company	X	
Portland Pipe Line Corporation	X	
Questar Pipeline Company	X	
Razorback Pipeline Company	X	
Saco Oil Company	X	
Santa Fe Snyder Corporation	X	
Seadrift Pipeline Corporation	X	
Seneca Resources Corporation	X	
Shakespeare Oil Company Inc	X	
Shell Oil Company	X	X
South Carolina Pipeline Corporation	X	
Stokes Production	X	
Sunoco Inc	X	

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	<u>U.S.</u> <u>Company</u> <u>Operations</u>	<u>Non-U.S.</u> <u>Company</u> <u>Operations</u>
Teppco	X	
Tellepsen Pipeline Services Company	X	
Tesoro Petroleum Companies Inc	X	
Texaco Inc	X	X
Texas Eastern Transmission Corporation	X	
Tosco Corporation	X	
Trans Mountain Oil Pipe Line Corporation	X	X
Transmontaigne Pipeline Inc	X	
United Refining Company	X	
Unocal Pipeline Company	X	
UOP Inc	X	
Venada National	X	
Vis-Op Oil	X	
Whitecap Pipeline Company	X	
Whiting Petroleum Corporation	X	
Williams Olefins - Gesmar Plant	X	
Withrow Engineering Inc	X	
Wolverine Pipe Line	X	
Wynnewood Refining Company	X	
Wyoming Pipeline Company	X	

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