

Salaries of Non-Academic Chemists

1987

Analysis of the
American Chemical Society's
1987 Survey of Salaries
and Employment



1987 SALARIES OF NON-ACADEMIC CHEMISTS

**ANALYSIS OF THE AMERICAN CHEMICAL SOCIETY'S
1987 SURVEY OF SALARIES AND EMPLOYMENT**

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ACKNOWLEDGEMENTS

Each year, the American Chemical Society conducts salary surveys of its members. This report is one of four presenting detailed results of the 1987 Salary and Employment Status Survey. The four reports are: *1987 Salaries of Non-academic Chemists*, *1987 Salaries of Academic Chemists*, *1987 Salaries of Non-academic Chemical Engineers*, and *1987 Employment Status and Demographic Characteristics of ACS Members*. A summary of the survey findings was published in the June 29, 1987 issue of *Chemical and Engineering News*.

General oversight of the survey and its analysis was provided by the ACS joint Board-Council Committee on Economic Status, headed by Valerie D. Kuck¹, and by its subcommittee on surveys, chaired by Jack G. Kay². The committee expresses its gratitude to the 12,000 ACS members who provided a valuable service to the profession by completing the survey questionnaire.

Joan Burrelli and Nguyen Bailey of ACS Statistical Services, managed by John Robert Jones, conducted this year's survey and prepared this report. Dr. Burrelli wrote the summary and comment on the following pages.

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SUMMARY AND COMMENT

Joan S. Burrelli*

Salaries in Industry

This year, median salaries for all degree levels were only slightly higher than those last year. The overall median salary for PhD industrial chemists increased 5% (to \$52,500) while master's degree chemists reported an increase of 3% (to \$41,300) and bachelor's degree chemists' median salary increased 1% (to \$34,900). Because the Consumer Price Index rose approximately 3% from March 1986 to March 1987, those salary increases in some cases represent decreases in constant dollars.

\$52,500 for PhD, up 5% from 1986, up 2% in constant dollars
\$41,300 for MS, up 3% from 1986, unchanged in constant dollars
\$34,900 for BS, up 1% from 1986, down 2% in constant dollars

Salaries within industry vary according to type of industry, work function, work specialty, length of experience, and degree of responsibility. Salaries for chemists employed in industry are generally higher for those working in the petroleum industry, those in R&D management, physical chemists, those with greater experience, and those with greater responsibility.

Salaries differed only slightly by geographic region. The median salary of PhDs ranged from a high of \$54,200 in the Pacific and West South Central regions to a low of \$47,600 in the Mountain region. Regional differences in salaries are largely a function of differences in type of industry.

As in the past, salaries for women chemists were lower than those for men. The median salary for women PhDs in industry was 85% of that for men. The difference in men's and women's median salaries is partly due to differences in experience. When length of experience is taken into account, the salary gap narrows. For example, the median salary for women PhDs in industry with 5-9 years since the BS is 98% that for men with comparable experience. The difference in men's and women's median salaries can also be explained by differences in work function and responsibility. Men are more likely than women to be in management and women are more likely than men to be in research.

Salaries in Government

In 1987, the overall median salary was \$50,300 for PhD chemists in government, \$33,200 for masters' degree chemists, and \$32,000 for bachelors' degree chemists.

*Dr. Burrelli is Senior Research Associate in the ACS Office of Statistical Services.

Although government chemists' salaries are lower, on average, than industrial chemists' salaries, salaries within government vary according to the same factors as salaries within industry do: work function (e.g., management, applied research), work specialty, length of experience, and degree of experience. Salaries of chemists employed in government are generally higher for those in R&D management, physical chemists, those with greater experience, and those with greater responsibility.

Salaries of women chemists in government are lower than those for men. The median salary for women PhDs in government was 83% of that for men. This difference is largely due to differences in experience, work function, and level of responsibility. Women chemists in government have, on average, less experience and less responsibility than men, and women chemists are less likely than men to be in management.

NOTE: Results of the 1987 ACS Salary and Employment Status Survey are presented in a new format this year. Four separate reports: *1987 Salaries of Non-academic Chemists*, *1987 Salaries of Academic Chemists*, *1987 Salaries of Non-academic Chemical Engineers*, and *1987 Employment Status and Demographic Characteristics of ACS Members* replace the traditional one report. Also, the format of the tables is new. If you have comments or suggestions to make concerning this format, please contact Joan Burrelli at the ACS Office of Statistical Services (202-872-4433).

A METHOD FOR ESTIMATING AVERAGE SALARIES

A compact summary of the information in this report is possible through a statistical technique known as multiple regression. This technique identifies which characteristics have the greatest effect on salaries, and results in a formula for estimating the average salary of respondents with certain characteristics.

For industrial chemists responding to the 1987 survey, the three characteristics which account for most of the variation among salaries are highest degree, experience (years since B.S. is used to measure experience in ACS surveys), and work function.

Table I displays the factors needed to estimate the average salary for any group of respondents who are industrial chemists with any combination of the listed characteristics.

For example, to estimate the average salary in March 1987 for industrial chemists with the doctorate, 15 to 19 years of experience, and working in R&D management, find the corresponding factors in Table I and multiply them together with the base salary for all industrial chemists:

$$(\$23,714) \times (1.297) \times (1.645) \times (1.206) = \$61,018$$

Table I

SALARY FACTORS FOR INDUSTRIAL CHEMISTS

BASE SALARY	\$23,714
DEGREE:	
Bachelor's	1.000
Master's	1.051
Doctorate	1.271
MATURITY:	
(Years Since Receiving B.S.)	
0-1	1.000
2-4	1.090
5-9	1.300
10-14	1.479
15-19	1.645
20-24	1.781
25-29	1.940
30-34	1.976
35-39	2.039
40 or more	1.910
WORK FUNCTION:	
Basic Research	1.000
R&D Management	1.206
Applied Research	0.985
General Management	1.174
Marketing	1.050
Production	0.909
Forensic/Lab Analysis	0.864
Writing	0.910
Chemistry Information Services	0.909
Data Processing	0.895
Consulting	0.974
Other	0.980

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GOVERNMENTAL CHEMISTS

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TECHNICAL NOTES

The target population of the 1987 Salary and Employment Status Survey was those ACS members who had U.S. mailing addresses, were not older than 70, and had neither student, retired, nor emeritus status. On January 31, 1987 the ACS membership totalled 129,808, of which approximately 90,000 were eligible for inclusion in the survey. A systematic sample of 20,000 members with non-chemical engineering degrees (mostly chemists) and all 6,965 members with chemical engineering degrees were selected from the target population.

The survey questionnaires were mailed to this sample of 26,965 members by bulk mail during the week of March 2-6. By the May 15 cut-off date, 11,982 (44.4%) usable questionnaires had been returned.

Members indicating a degree field of chemical engineering on the ACS membership record were oversampled this year in order to produce a separate report on chemical engineers' salaries. To make the data base from which the non-chemical engineers' tables were produced comparable to those of previous years, a random sample of 24% of those oversampled was drawn and included with the 24% sample of non-chemical engineers (the 20,000 out of approximately 83,000 non-chemical engineers eligible for inclusion in the survey).

Definitions

For the purposes of the survey analysis only, the following definitions were used:

Chemist: A respondent who indicated a work specialty of chemistry or biochemistry (categories 2 through 14 of Question I.B. on the questionnaire) or a non-chemistry work specialty (categories 15 and 16) and a degree field of chemistry or biochemistry.

Unemployed: A respondent who is unemployed and seeking employment (category 4 of Question I.D. on the questionnaire).

This report represents the respondents' principal annual salaries as of March 1, 1987. The respondent's age is given as of March 1, 1987. A respondent's state and geographic region refer to place of residence rather than place of employment. A respondent's metropolitan area refers to place of employment. A list of geographic regions and their member states is on page 8 of this report. A list of metropolitan areas and their component 3-digit ZIP codes appears on page 9.

Small Cell Count

If the number of responses in a cell of a salary table is small, then the sample salary statistics for that cell may not accurately estimate the corresponding population salary statistics. In general, a cell containing fewer than 15 responses does not provide a useful estimate of the median salary, and a cell containing fewer than 25 responses does not provide a useful estimate of the 25th or the 75th salary percentile. For this reason, cells containing fewer than 15 responses were suppressed in the tables in this book.

GEOGRAPHIC REGIONS

PACIFIC

Alaska
California
Hawaii
Oregon
Washington

MOUNTAIN

Arizona
Colorado
Idaho
Montana
Nevada
New Mexico
Utah
Wyoming

WEST NORTH CENTRAL

Iowa
Kansas
Minnesota
Missouri
Nebraska
North Dakota
South Dakota

WEST SOUTH CENTRAL

Arkansas
Louisiana
Oklahoma
Texas

EAST NORTH CENTRAL

Illinois
Indiana
Michigan
Ohio
Wisconsin

EAST SOUTH CENTRAL

Alabama
Kentucky
Mississippi
Tennessee

MIDDLE ATLANTIC

New Jersey
New York
Pennsylvania

SOUTH ATLANTIC

Delaware
District of Columbia
Florida
Georgia
Maryland
North Carolina
South Carolina
Virginia
West Virginia

NEW ENGLAND

Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

METROPOLITAN AREAS

Metropolitan Area	Three-Digit ZIP Codes
Atlanta, GA	300-303
Baltimore, MD	210-214
Boston, MA	017-024
Chicago, IL	463, 464, 600-606
Cincinnati, OH	410, 450-452, 470
Cleveland-Akron, OH	440-443
Columbus, OH	430-432
Dallas, TX	750-753, 760-762
Dayton, OH	453-455
Denver, CO	800-804
Detroit, MI	480-483
Houston-Beaumont, TX	770-777
Los Angeles, CA	900-918, 926-928
Miami, FL	330-333
Newark, NJ	070-076, 079
New York, NY	100-108, 110-114, 116
Philadelphia, PA	189-191, 193, 194
Pittsburgh, PA	150-152
St. Louis, MO	620-622, 630-633
San Francisco, CA	940-951
Washington, DC	200-209, 220-223

See *1987 National Five-Digit ZIP Code and Post Office Directory*, United States Postal Service, for the three-digit ZIP codes corresponding to the above metropolitan areas.

SALARIES of INDUSTRIAL CHEMISTS employed FULL-TIME
according to DEGREE and YEARS SINCE BS
1987 ACS Salary Survey

Degree and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
BS						
Total	1336	37,416	15,059	27,500	34,890	44,978
0-1	36	23,027	5,300	19,250	23,000	25,000
2-4	213	25,385	5,452	21,800	25,400	28,185
5-9	332	30,616	6,429	26,000	30,000	35,000
10-14	189	35,873	8,762	30,000	34,500	41,000
15-19	135	41,047	11,568	35,000	40,000	46,000
20-24	104	45,055	10,861	36,698	45,000	53,000
25-29	100	48,248	16,871	40,052	46,100	54,300
30-34	88	51,368	15,266	42,600	48,000	59,250
35-39	113	53,719	22,960	42,000	50,000	60,000
40 Or More	26	44,792	17,337	35,000	42,200	52,000
MS						
Total	794	43,962	15,222	33,400	41,300	51,000
2-4	31	29,946	6,416	26,500	29,146	33,500
5-9	145	32,496	6,401	28,440	32,200	35,400
10-14	166	38,724	8,555	32,825	38,000	43,500
15-19	138	45,037	12,521	37,200	43,276	51,000
20-24	79	47,397	13,313	38,770	44,900	54,112
25-29	74	53,546	13,495	44,550	51,000	62,000
30-34	70	51,589	14,142	41,736	50,000	60,000
35-39	64	57,041	21,006	41,800	54,000	64,950
40 Or More	26	61,497	23,325	49,834	55,000	65,000
PhD						
Total	1834	55,759	16,558	44,000	52,500	63,000
5-9	197	41,432	5,349	39,000	40,600	43,000
10-14	394	46,415	6,989	42,000	45,000	51,000
15-19	337	52,640	10,717	45,800	52,200	59,300
20-24	339	59,909	15,426	51,000	58,000	67,000
25-29	211	65,549	17,393	53,364	62,900	74,000
30-34	162	66,874	21,610	53,000	63,650	75,000
35-39	143	68,988	19,595	55,000	66,500	81,000
40 Or More	51	63,418	16,301	52,000	64,000	77,000

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.1.2

SALARIES of MEN CHEMISTS employed FULL-TIME in INDUSTRY
according to DEGREE and YEARS SINCE BS
1987 ACS Salary Survey

Degree and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
BS						
Total	1029	39,417	15,921	28,500	36,400	47,000
0-1	22	23,373	5,586	19,500	23,500	26,000
2-4	133	25,828	5,794	21,800	26,000	28,500
5-9	233	31,009	6,577	26,000	30,800	35,000
10-14	146	36,186	9,089	30,000	34,850	43,000
15-19	110	42,642	11,267	36,000	40,868	46,776
20-24	88	46,111	10,499	38,200	47,500	53,500
25-29	90	49,317	17,245	41,000	46,780	55,500
30-34	80	52,507	15,323	43,500	49,050	60,030
35-39	105	54,380	23,566	42,000	50,000	60,000
40 Or More	22	45,677	18,353	37,000	43,200	52,000
MS						
Total	648	45,518	15,629	34,950	42,500	52,732
2-4	19	32,218	6,887	27,240	32,000	36,500
5-9	99	32,980	6,546	28,500	33,000	36,300
10-14	133	38,759	9,108	32,800	38,000	43,000
15-19	116	45,553	12,595	38,280	43,850	51,000
20-24	67	47,941	13,716	38,770	45,000	58,843
25-29	66	54,447	13,439	45,200	51,152	62,500
30-34	63	52,522	12,689	42,600	51,000	60,000
35-39	60	58,602	20,756	47,500	54,900	65,500
40 Or More	25	61,963	23,682	50,000	56,000	65,000
PhD						
Total	1689	56,508	16,785	44,880	53,000	64,500
5-9	166	41,558	5,570	39,000	41,000	43,200
10-14	347	46,581	6,786	42,000	45,360	51,000
15-19	314	52,609	10,834	45,800	52,000	59,000
20-24	315	60,759	15,526	52,000	59,000	67,300
25-29	203	66,110	17,413	54,000	63,120	75,000
30-34	157	67,353	21,384	54,500	64,000	75,000
35-39	139	69,381	19,451	55,000	66,900	81,000
40 Or More	48	64,201	16,278	52,500	65,450	77,500

Note: Cells with fewer than 15 cases have been suppressed.

SALARIES of WOMEN CHEMISTS employed FULL-TIME in INDUSTRY
according to DEGREE and YEARS SINCE BS
1987 ACS Salary Survey

Degree and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
BS						
Total	306	30,727	8,908	24,600	30,000	35,000
2-4	80	24,647	4,773	21,850	24,350	28,000
5-9	99	29,690	5,997	25,000	30,000	33,800
10-14	43	34,810	7,546	30,500	33,700	38,900
15-19	25	34,028	10,371	27,900	32,000	36,000
20-24	16	39,246	11,319	31,500	38,700	45,360
MS						
Total	144	36,912	10,852	30,000	35,017	42,784
5-9	46	31,453	6,014	27,400	31,550	35,000
10-14	33	38,586	5,929	33,300	38,000	43,500
15-19	22	42,316	12,031	33,516	40,085	48,700
PhD						
Total	143	46,960	10,226	40,000	44,760	53,000
5-9	31	40,755	3,964	38,690	40,000	41,160
10-14	47	45,190	8,322	41,000	44,600	50,000
15-19	22	52,697	9,213	44,500	53,250	62,000
20-24	23	48,907	8,270	43,000	47,000	54,000

Note: Cells with fewer than 15 cases have been suppressed.

SALARIES of INDUSTRIAL CHEMISTS employed FULL-TIME
according to DEGREE and RESPONSIBILITY
1987 ACS Salary Survey

Degree and Responsibility	Count	Mean	Standard Deviation	25th %ile	50th %ile	75th %ile
BS						
Total	1298	37,279	15,018	27,400	34,640	44,472
6.00	28	23,828	4,387	21,358	23,750	26,169
7.00	73	26,445	6,364	22,400	25,300	28,900
8.00	96	29,660	7,774	24,000	27,800	35,000
9.00	121	30,267	8,822	24,000	29,000	35,000
10.00	144	32,502	8,969	25,771	32,000	37,187
11.00	186	35,263	10,066	28,920	33,700	42,000
12.00	144	38,395	10,035	30,580	36,475	45,050
13.00	130	39,490	13,511	29,810	37,250	46,100
14.00	88	39,723	11,824	30,300	38,000	45,500
15.00	70	42,507	10,810	35,463	43,000	49,900
16.00	61	44,658	14,642	34,600	44,000	54,000
17.00	49	47,587	14,697	36,000	48,000	56,000
18.00	43	50,545	17,419	40,000	46,860	60,000
19.00	23	59,387	27,284	46,000	53,000	68,000
20.00	27	72,506	37,537	50,000	60,000	85,200
MS						
Total	889	43,867	15,103	33,400	41,200	51,000
7.00	38	32,323	5,923	29,000	31,442	35,000
8.00	51	33,585	6,854	29,176	33,000	37,404
9.00	67	34,476	8,416	28,500	32,700	38,560
10.00	101	36,609	9,418	30,000	35,000	42,000
11.00	117	41,218	9,930	35,000	40,000	46,000
12.00	123	44,480	12,459	36,000	42,500	50,500
13.00	83	46,077	10,808	38,000	46,000	55,920
14.00	79	48,805	12,351	41,000	46,000	56,000
15.00	50	46,772	13,252	38,000	44,500	55,000
16.00	54	49,246	15,782	40,800	49,500	54,500
17.00	44	52,287	13,406	42,100	51,500	64,750
18.00	31	58,095	20,923	45,500	54,000	63,000
19.00	18	69,889	19,887	59,000	72,500	78,000
20.00	16	74,588	33,726	46,250	61,800	103,000
PhD						
Total	2062	55,684	16,808	44,000	52,275	63,000
7.00	16	43,626	8,836	37,850	42,580	50,850
8.00	39	44,621	11,388	40,000	42,960	48,000
9.00	67	42,070	7,851	38,000	41,000	46,000
10.00	134	46,889	10,068	40,000	45,000	51,200
11.00	305	49,383	11,338	42,000	47,000	53,000
12.00	363	51,709	11,526	43,000	50,000	58,000
13.00	269	53,973	12,648	45,000	52,000	60,000
14.00	215	56,368	14,867	46,500	54,750	63,000
15.00	162	56,589	13,150	47,800	54,660	64,100
16.00	154	61,371	14,484	51,400	61,000	70,400
17.00	102	62,388	15,194	54,000	60,000	68,000
18.00	116	71,624	19,518	58,622	68,750	82,000
19.00	67	81,745	22,598	67,000	80,000	96,000
20.00	46	81,643	34,674	60,000	75,000	95,000

Note: Cells with fewer than 15 cases have been suppressed.

A respondent's responsibility score is derived from adding the responses to Questions VI. A through D on the questionnaire.

14 Table 1.2.2 SALARIES of MEN CHEMISTS employed FULL-TIME in INDUSTRY
according to DEGREE and RESPONSIBILITY
1987 ACS Salary Survey

Degree and Responsibility	Count	Mean	Standard Deviation	25th %ile	50th %ile	75th %ile
BS						
Total	999	39,235	15,903	28,500	36,000	46,665
6.00	19	23,977	4,254	21,590	23,500	26,000
7.00	45	26,596	7,290	21,500	25,300	28,500
8.00	61	30,191	8,220	24,000	28,000	35,000
9.00	81	30,951	9,614	24,180	28,725	36,500
10.00	108	33,597	9,166	28,000	33,000	38,950
11.00	133	37,361	10,135	30,600	35,800	45,000
12.00	117	39,251	9,966	32,000	38,868	45,900
13.00	104	40,803	14,075	31,000	38,950	48,700
14.00	75	40,312	11,972	33,000	38,400	48,800
15.00	61	42,521	10,557	36,000	43,000	49,900
16.00	49	46,997	14,342	35,200	46,000	55,000
17.00	47	47,952	14,889	35,000	49,000	56,000
18.00	41	51,523	17,220	40,000	47,000	60,000
19.00	22	61,117	26,603	47,000	54,000	68,000
20.00	25	75,109	37,632	50,000	60,300	85,200
MS						
Total	725	45,474	15,498	35,000	42,500	52,000
7.00	27	32,096	6,205	28,560	31,000	35,000
8.00	39	33,778	7,285	29,176	33,600	37,500
9.00	44	36,339	9,203	30,000	35,000	42,250
10.00	70	37,678	10,028	31,100	35,500	43,500
11.00	100	42,218	10,022	35,000	40,800	48,500
12.00	107	45,419	12,580	36,900	43,151	51,000
13.00	74	47,201	10,758	39,200	47,050	56,000
14.00	62	50,307	12,458	42,000	48,500	57,500
15.00	44	47,036	13,916	37,500	45,000	55,500
16.00	44	50,167	13,775	41,000	50,000	56,075
17.00	40	51,967	13,080	42,100	51,000	64,250
18.00	30	58,365	21,225	45,500	54,500	63,000
19.00	18	69,889	19,887	59,000	72,500	78,000
20.00	15	76,893	33,579	50,900	62,500	106,000
PhD						
Total	1891	56,453	17,047	44,900	53,000	64,200
8.00	33	44,072	11,469	40,000	42,600	47,000
9.00	58	42,777	7,683	39,000	41,015	46,757
10.00	120	47,417	10,249	40,148	45,000	51,250
11.00	270	49,769	11,665	42,000	47,390	53,000
12.00	331	52,543	11,642	43,800	51,300	59,000
13.00	252	54,377	12,811	45,750	52,150	60,000
14.00	193	57,038	14,853	48,700	55,000	64,400
15.00	153	57,010	13,298	48,000	55,000	65,000
16.00	139	62,219	14,599	52,000	61,750	72,000
17.00	100	62,495	15,322	54,500	60,000	68,000
18.00	112	71,563	19,552	58,622	68,750	81,750
19.00	66	82,044	22,637	68,000	80,000	96,000
20.00	46	81,643	34,674	60,000	75,000	95,000

Note: Cells with fewer than 15 cases have been suppressed.

A respondent's responsibility score is derived from adding the responses to Questions VI. A through D on the questionnaire.

SALARIES of WOMEN CHEMISTS employed FULL-TIME in INDUSTRY
according to DEGREE and RESPONSIBILITY
1987 ACS Salary Survey

Degree and Responsibility	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
BS						
Total	298	30,763	8,897	24,800	30,000	35,000
7.00	28	26,202	4,615	23,275	25,300	29,375
8.00	35	28,733	6,946	23,500	27,500	32,000
9.00	40	28,884	6,850	23,250	30,000	33,000
10.00	36	29,218	7,550	23,950	29,250	33,750
11.00	53	29,998	7,760	24,300	30,000	35,000
12.00	27	34,687	9,653	29,000	31,000	37,000
13.00	25	34,607	9,483	28,000	34,990	41,000
MS						
Total	162	36,631	10,617	30,000	35,017	42,200
9.00	23	30,912	5,167	27,600	31,000	33,200
10.00	31	34,195	7,460	30,000	35,000	39,000
11.00	17	35,334	7,092	32,500	36,000	40,000
12.00	15	37,086	9,008	30,800	37,401	44,650
14.00	17	43,326	10,551	35,034	45,000	47,500
PhD						
Total	169	47,110	10,728	40,000	44,600	53,000
11.00	34	46,443	8,021	40,044	43,780	52,320
12.00	32	43,080	4,930	40,000	42,000	45,680
13.00	17	47,999	8,019	41,700	46,600	56,000
14.00	22	50,490	13,963	44,000	45,650	56,500

Note: Cells with fewer than 15 cases have been suppressed.

A respondent's responsibility score is derived from adding the responses to Questions VI. A through D on the questionnaire.

SALARIES of BS CHEMISTS employed FULL-TIME in INDUSTRY
according to WORK SPECIALTY and YEARS SINCE BS
1987 ACS Salary Survey

Work Specialty & Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Biochemistry						
Total	29	32,251	12,867	25,000	28,725	35,000
General Chemistry						
Total	67	38,624	12,112	28,500	37,000	48,000
5-9	19	35,033	8,446	28,000	35,000	42,000
Agricultural/Food Chemistry						
Total	55	38,512	17,100	26,000	32,261	49,900
Analytical Chemistry						
Total	455	34,179	10,905	26,000	32,207	40,000
2-4	84	24,629	4,881	21,160	24,550	27,450
5-9	122	29,587	5,809	25,000	30,000	34,000
10-14	63	34,422	8,336	28,600	32,000	38,000
15-19	50	37,415	7,693	32,000	36,425	42,000
20-24	37	42,757	10,130	36,495	39,900	50,200
25-29	34	46,640	11,821	40,000	45,665	52,000
30-34	20	44,393	8,851	39,450	43,250	48,550
35-39	27	45,406	13,059	39,250	45,000	52,400
Clinical Chemistry						
Total	15	36,489	14,139	26,000	36,000	43,500
Environmental Chemistry						
Total	122	34,043	12,885	25,800	31,000	41,000
2-4	20	24,327	6,847	19,700	22,500	29,215
5-9	40	30,004	7,403	25,000	28,050	35,000
10-14	20	33,461	9,666	26,500	34,350	39,950
15-19	16	45,336	18,336	36,250	39,750	46,625
Inorganic Chemistry						
Total	39	39,819	12,355	30,000	36,000	45,000
Materials Science						
Total	77	41,968	14,436	31,000	38,900	52,000
5-9	16	34,314	5,055	31,060	34,705	36,250
Medicinal/Pharmaceu- tical Chemistry						
Total	78	34,082	11,999	24,260	32,600	41,000
2-4	21	23,966	4,886	22,500	24,200	26,000
5-9	18	29,181	6,548	24,000	28,571	35,000
Organic Chemistry						
Total	128	40,631	19,562	28,150	35,340	48,000
2-4	15	26,242	2,691	24,000	26,500	28,200
5-9	26	29,468	4,546	27,000	28,914	32,000
10-14	17	35,386	6,151	31,600	34,500	38,000
15-19	19	42,202	12,238	34,500	40,000	46,776
25-29	15	48,749	10,672	41,040	50,000	60,000

Table 1.3.1 (Cont'd)

Work Specialty & Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Physical Chemistry Total	26	44,130	26,909	31,200	35,000	45,900
Polymer Chemistry Total	200	42,534	16,773	30,000	40,250	51,500
2-4	33	27,307	6,938	22,880	26,400	30,000
5-9	33	32,185	5,408	28,700	32,000	35,000
10-14	25	36,795	9,469	31,400	36,000	43,000
20-24	21	46,058	11,620	40,400	47,220	54,000
25-29	16	47,997	9,359	41,500	45,188	53,500
30-34	23	54,724	16,001	45,600	50,000	65,000
35-39	28	58,375	18,597	44,450	54,300	63,000
Other Chemical Science Total	45	39,915	22,631	30,000	37,000	42,500

NOTE: Cells with fewer than 15 cases have been suppressed.

SALARIES of BS CHEMISTS employed FULL-TIME in INDUSTRY
according to WORK FUNCTION and YEARS SINCE BS
1987 ACS Salary Survey

Work Function and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
R&D Mgt						
Total	110	51,325	14,788	42,000	50,500	60,000
20-24	21	52,820	8,847	47,000	52,200	60,000
30-34	15	63,280	16,099	52,000	60,000	71,000
35-39	19	56,727	7,524	53,000	56,088	61,000
Basic Research						
Total	86	30,032	8,070	24,000	28,000	34,000
2-4	29	24,386	3,218	22,500	24,300	26,400
5-9	28	29,290	4,457	26,150	29,700	32,600
Applied Research						
Total	451	35,539	11,223	27,150	33,072	42,000
2-4	85	26,936	5,035	24,180	26,400	29,000
5-9	125	30,402	5,921	27,000	30,000	35,000
10-14	57	34,451	8,255	29,810	32,000	39,000
15-19	44	40,124	7,854	35,700	39,970	45,000
20-24	31	45,723	9,362	39,277	43,500	53,000
25-29	31	44,314	11,428	36,000	42,000	50,668
30-34	23	50,094	11,968	45,000	48,300	54,000
35-39	32	48,285	10,877	40,000	48,400	56,600
General Mgt						
Total	104	49,645	25,089	35,000	44,978	56,500
5-9	18	34,687	8,321	29,300	36,000	37,500
10-14	16	40,196	7,128	35,500	36,900	45,000
35-39	17	80,356	41,583	52,700	70,600	85,200
Marketing						
Total	100	43,617	17,048	33,800	42,100	50,000
5-9	21	33,818	7,189	29,500	33,000	37,000
10-14	17	38,238	8,923	30,000	37,500	45,000
Production						
Total	298	32,428	10,278	25,000	31,000	39,708
2-4	53	23,521	4,902	20,000	23,000	27,400
5-9	76	29,111	6,309	25,000	27,500	33,000
10-14	49	35,246	7,949	30,000	34,000	40,100
15-19	31	34,918	8,221	28,000	35,500	41,700
20-24	22	36,048	9,107	30,000	34,000	43,000
25-29	19	42,710	8,417	35,600	43,000	48,000
35-39	16	42,902	15,501	31,425	41,000	47,500
Forensics						
Total	70	30,535	9,381	23,500	30,000	35,200
5-9	25	28,466	5,880	23,500	30,000	31,000
Chemistry Info Services						
Total	17	36,901	10,782	30,000	35,000	45,000
Consulting						
Total	21	39,052	24,454	25,400	29,000	43,000
Other						
Total	74	37,773	13,684	30,100	35,800	43,000
5-9	18	32,132	6,194	27,500	33,490	36,400

NOTE: Cells with fewer than 15 cases have been suppressed.
The "other" category includes writing and computer programming.

Table 1.3.3

SALARIES of BS CHEMISTS employed FULL-TIME
according to INDUSTRY and YEARS SINCE BS
1987 ACS Salary Survey

Industry and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Non-Manufacturing						
Total	176	32,440	13,621	23,650	29,200	39,025
2-4	37	22,909	5,073	19,400	22,000	27,000
5-9	66	29,568	7,774	24,000	28,600	35,000
10-14	19	32,129	8,606	25,000	32,500	38,900
15-19	16	43,519	18,768	31,000	41,000	46,125
Basic Chemicals						
Total	52	38,404	12,446	29,250	36,250	46,555
Specialty Chemicals						
Total	176	39,696	17,237	28,910	35,000	46,700
2-4	21	25,897	4,307	22,500	26,400	28,900
5-9	42	30,949	6,662	25,000	30,700	35,000
10-14	24	35,857	9,111	30,750	33,550	41,500
15-19	19	37,805	8,842	34,000	36,400	41,650
20-24	16	46,332	12,015	37,950	47,000	54,200
25-29	19	56,650	28,932	42,000	50,000	59,600
30-34	16	50,515	15,365	40,950	46,000	62,500
Agricultural Chemicals						
Total	31	35,052	12,240	28,000	32,200	40,736
Coatings and Paints						
Total	67	41,624	23,547	28,000	36,000	50,000
Electronics						
Total	43	38,426	10,418	30,368	38,000	41,600
Food						
Total	62	35,382	13,675	25,124	32,150	45,000
Petroleum/Natural Gas						
Total	45	45,092	17,400	33,600	42,000	53,500
Pharmaceuticals						
Total	226	34,598	10,667	26,000	32,350	40,100
2-4	53	25,915	4,260	24,000	25,500	27,150
5-9	61	30,501	5,799	26,000	30,000	35,000
10-14	31	36,529	9,007	30,500	34,000	39,000
15-19	24	41,706	10,348	36,225	39,800	44,500
20-24	15	39,944	8,784	33,000	39,900	48,000
Plastics						
Total	62	39,534	18,173	27,000	38,854	48,000
Rubber						
Total	35	45,139	15,957	33,000	44,000	53,000

Table 1.3.3 (Cont'd)

Industry and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Metals, Minerals Total	52	39,974	14,091	30,000	36,475	47,430
Other Manufactures Total	309	37,590	14,110	28,620	35,463	45,000
2-4	46	25,334	5,108	21,500	25,250	28,185
5-9	78	31,665	6,045	28,400	31,750	35,966
10-14	45	33,815	8,165	29,000	33,700	37,500
15-19	32	42,601	9,287	35,750	42,797	47,250
20-24	26	43,770	10,361	35,000	43,120	50,000
25-29	20	46,100	14,726	33,500	44,285	56,882
30-34	19	50,908	16,344	43,000	48,000	53,000
35-39	33	50,352	22,858	40,100	48,000	53,000

Note: Cells with fewer than 15 cases have been suppressed.
 The "metals, minerals" category includes steel or ferrous metals and other metals, minerals.
 The "other manufactures" category includes biochemical products, glass and ceramics, paper, and soaps and detergents.

Table 1.3.4

SALARIES of BS CHEMISTS employed FULL-TIME
according to GEOGRAPHIC REGION and YEARS SINCE BS
1987 ACS Salary Survey

Geographic Region & Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Pacific						
Total	96	39,748	15,303	29,315	37,000	47,100
5-9	26	32,467	5,548	28,200	33,000	37,000
10-14	15	40,776	8,735	32,200	39,000	48,000
Mountain						
Total	41	34,556	11,367	27,360	35,500	40,500
West North Central						
Total	68	32,835	11,297	25,000	30,000	36,700
2-4	17	24,706	3,473	22,300	24,000	26,000
5-9	19	29,355	5,698	25,000	28,000	35,000
West South Central						
Total	86	40,073	17,827	27,141	35,000	48,800
5-9	21	29,384	6,125	24,148	29,000	31,320
East North Central						
Total	379	35,926	12,509	26,900	33,000	43,000
2-4	69	25,673	4,815	22,500	26,000	28,000
5-9	101	30,676	6,709	26,600	30,000	35,000
10-14	55	35,440	8,581	31,000	33,000	39,000
15-19	29	40,978	9,212	35,400	38,300	47,500
20-24	29	41,499	9,989	34,000	41,000	50,000
25-29	24	46,631	11,109	38,964	44,000	55,250
30-34	24	50,650	16,035	45,300	48,150	60,180
35-39	29	50,823	12,880	43,000	52,400	60,000
East South Central						
Total	44	33,879	9,525	24,390	34,300	41,438
Middle Atlantic						
Total	336	38,762	13,937	29,050	36,000	45,188
2-4	56	26,081	6,735	21,900	26,000	28,553
5-9	65	31,126	5,540	27,500	31,800	35,000
10-14	49	34,664	8,187	30,000	34,000	40,000
15-19	35	41,121	10,071	36,000	40,000	45,000
20-24	26	47,960	10,473	40,000	47,833	54,000
25-29	32	48,858	10,717	43,500	50,000	56,290
30-34	27	53,044	17,627	42,000	48,000	60,000
35-39	31	50,750	11,029	44,000	48,600	56,000
South Atlantic						
Total	168	37,020	12,620	27,384	35,800	45,250
2-4	19	23,847	5,189	20,800	24,000	29,000
5-9	50	29,716	7,100	24,000	28,974	35,300
10-14	23	37,878	8,355	32,600	37,200	43,000
15-19	20	44,115	9,050	39,250	43,397	48,000
20-24	16	43,542	10,093	37,650	43,050	49,956
New England						
Total	108	40,511	26,886	27,075	33,900	45,250
2-4	17	24,799	3,669	22,360	24,500	27,150
5-9	21	31,096	6,970	25,700	30,400	35,000
10-14	15	35,601	9,209	28,000	31,500	45,000

Note: Cells with fewer than 15 cases have been suppressed.

SALARIES of BS CHEMISTS employed FULL-TIME in INDUSTRY
according to SELECTED STATES
1987 ACS Salary Survey

Selected States	Count	Mean	Standard Deviation	25th %ile	50th %ile	75th %ile
Arizona	17	33,993	11,676	28,000	31,600	38,600
California	92	39,939	15,527	29,315	37,000	47,100
Colorado	15	33,317	13,556	22,000	32,000	44,800
Connecticut	44	45,301	33,396	29,000	38,350	49,150
Florida	28	34,291	11,364	26,500	30,050	41,897
Georgia	23	35,196	9,557	25,124	34,800	42,400
Illinois	107	35,295	12,395	25,400	31,900	43,000
Indiana	41	33,934	10,268	26,900	32,500	41,000
Louisiana	19	36,756	12,266	26,550	32,500	50,000
Massachusetts	48	35,902	15,352	26,000	33,430	41,350
Maryland	21	41,176	15,740	32,000	40,400	48,000
Michigan	76	33,720	10,644	26,800	32,000	36,000
Minnesota	20	32,650	12,564	22,350	28,500	44,000
Missouri	27	34,061	9,925	28,000	31,200	36,400
North Carolina	32	36,204	13,478	26,034	33,750	45,250
New Jersey	126	41,298	14,904	30,000	39,025	50,000
New York	93	36,668	12,570	28,000	34,528	43,000
Ohio	116	38,642	13,857	27,700	35,900	50,000
Pennsylvania	117	37,695	13,589	28,600	35,800	44,325
South Carolina	23	37,608	14,324	25,000	38,000	46,500
Tennessee	18	35,734	9,206	24,000	38,200	42,000
Texas	59	41,316	19,752	27,141	35,000	46,728
Virginia	24	37,726	12,975	26,250	37,050	49,000
Wisconsin	39	35,969	13,216	28,000	32,000	41,000

Note: Cells with fewer than 15 cases have been suppressed.

SALARIES of BS CHEMISTS employed FULL-TIME in INDUSTRY
according to SELECTED METROPOLITAN AREAS
1987 ACS Salary Survey

Selected Metropolitan Areas	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Atlanta	16	35,766	10,445	26,612	34,500	42,700
Baltimore	16	40,550	12,994	31,000	43,000	47,500
Boston	35	37,893	15,779	30,135	35,000	42,000
Chicago	80	33,776	11,691	25,200	31,000	36,750
Cincinnati	24	38,077	13,234	27,240	34,600	46,800
Cleveland-Akron	39	36,346	12,057	26,961	35,000	45,000
Columbus	19	36,595	13,881	26,000	32,000	50,000
Detroit	23	39,333	13,739	29,000	36,000	46,700
Houston-Beaumont	20	46,011	22,353	28,700	42,500	59,500
Los Angeles	34	40,453	15,977	29,650	38,000	48,000
Newark	51	41,493	16,908	30,000	39,000	49,900
New York	21	40,008	12,144	32,800	36,000	50,000
Philadelphia	47	36,600	13,937	26,000	34,700	42,000
Pittsburgh	22	41,194	12,615	31,380	39,555	47,982
St. Louis	19	35,443	10,900	28,000	33,000	39,000
San Francisco	36	38,502	14,912	28,250	35,483	44,978

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.4.1

SALARIES of MS CHEMISTS employed FULL-TIME in INDUSTRY
according to WORK SPECIALTY and YEARS SINCE MS
1987 ACS Salary Survey

Work Specialty and Years Since MS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Biochemistry Total	26	40,274	12,274	33,300	36,750	46,000
General Chemistry Total	24	45,651	16,871	31,322	41,620	57,250
Agricultural/Food Chemistry Total	36	45,540	17,278	32,400	42,450	54,500
Analytical Chemistry Total	203	40,217	13,712	31,000	38,000	46,000
5-9	40	29,993	5,579	27,050	30,350	33,100
10-14	40	36,428	7,790	31,500	36,500	41,900
15-19	41	43,036	15,433	36,000	41,000	45,500
20-24	23	39,848	10,434	29,320	41,000	48,208
25-29	21	50,261	10,057	43,920	47,327	60,000
Environmental Chemistry Total	75	43,399	19,561	30,700	39,500	51,000
10-14	24	35,100	8,337	30,250	34,100	39,460
Inorganic Chemistry Total	18	52,431	20,382	38,000	48,850	66,000
Materials Science Total	62	46,931	11,988	38,844	45,000	52,000
Medicinal/Pharmaceu- tical Chemistry Total	67	42,142	13,026	32,700	39,500	48,000
Organic Chemistry Total	93	44,059	17,981	33,000	40,000	50,000
5-9	24	32,080	5,173	28,070	32,450	34,314
10-14	15	37,409	6,379	31,700	36,000	41,663
Physical Chemistry Total	20	49,818	20,337	36,500	46,500	52,598
Polymer Chemistry Total	128	46,960	12,057	38,750	46,000	54,250
5-9	17	35,721	6,162	35,000	36,000	39,800
10-14	24	42,268	6,646	38,750	42,500	47,000
15-19	25	46,504	13,649	35,100	48,000	53,000
Other Chemical Science Total	42	45,790	12,275	36,000	44,650	56,000

Note: Cells with fewer than 15 cases have been suppressed
The "other chemical science" category includes clinical chemistry.

Table 1.4.2

SALARIES of MS CHEMISTS employed FULL-TIME in INDUSTRY
according to WORK FUNCTION and YEARS SINCE MS
1987 ACS Salary Survey

Work Function and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
R&D Mgt						
Total	105	57,055	14,119	48,000	55,000	64,800
10-14	18	45,229	8,501	41,663	44,000	50,960
15-19	16	54,281	10,360	45,350	53,000	61,500
20-24	17	60,256	14,343	50,280	60,000	71,220
25-29	19	62,609	10,898	56,000	62,000	71,800
Basic Research						
Total	51	37,813	9,944	31,000	36,000	44,900
5-9	24	32,668	5,405	30,075	32,450	35,500
Applied Research						
Total	308	41,561	10,334	33,900	40,622	48,000
5-9	58	33,694	5,759	30,000	33,100	35,400
10-14	64	39,667	6,851	34,800	40,000	44,200
15-19	60	41,284	8,478	35,000	41,640	47,100
20-24	21	41,009	9,347	34,000	41,000	46,000
25-29	24	46,944	9,818	42,000	45,100	50,550
30-34	33	50,045	11,047	41,736	49,000	58,000
35-39	26	49,737	10,888	40,000	51,120	56,000
General Mgt						
Total	53	57,986	25,416	40,000	48,450	67,140
Marketing						
Total	66	46,082	13,261	36,000	44,250	54,800
Production						
Total	106	37,680	11,532	29,100	35,550	44,000
5-9	21	28,599	6,159	23,800	27,400	33,000
10-14	22	33,030	6,825	28,776	33,500	36,750
15-19	27	43,573	10,786	35,100	42,000	50,500
Forensics						
Total	28	31,706	8,036	25,200	30,950	38,700
Chemistry Info Services						
Total	16	40,071	9,730	33,720	37,700	47,500
Consulting						
Total	19	39,547	16,420	29,000	32,000	44,000
Other						
Total	42	42,784	20,243	32,100	37,960	47,327

Note: Cells with fewer than 15 cases have been suppressed.
The "other" category includes writing and computer programming.

Table 1.4.3

SALARIES of MS CHEMISTS employed FULL-TIME
according to INDUSTRY and YEARS SINCE MS
1987 ACS Salary Survey

Industry and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Non-Manufacturing						
Total	95	40,424	16,967	30,500	37,401	46,000
5-9	17	29,869	7,022	25,000	28,500	34,800
10-14	24	37,093	10,797	30,600	35,500	43,000
15-19	19	46,381	21,385	36,700	38,560	51,000
Basic Chemicals						
Total	44	46,584	15,691	36,200	43,704	55,460
Specialty Chemicals						
Total	97	46,591	15,809	34,800	43,080	54,000
10-14	15	43,122	8,049	40,000	41,000	44,000
15-19	22	43,779	12,152	33,516	44,040	52,000
35-39	16	50,781	17,139	36,600	49,500	56,846
Agricultural Chemicals						
Total	31	43,710	20,654	31,200	43,151	49,600
Biochemical Products						
Total	17	35,744	10,986	28,440	34,000	41,000
Coatings and Paints						
Total	34	42,956	11,118	35,000	41,832	50,700
Electronics						
Total	30	51,176	22,301	38,844	46,000	55,000
Food						
Total	34	46,428	16,546	35,000	42,300	50,000
Petroleum/Natural Gas						
Total	31	49,389	19,654	33,000	48,500	60,800
Pharmaceuticals						
Total	150	41,257	12,809	32,040	38,000	46,000
5-9	28	29,881	4,112	27,400	30,075	32,750
10-14	34	37,170	5,115	33,000	37,000	41,200
15-19	29	43,566	10,228	36,000	42,768	48,700
25-29	16	56,147	13,892	44,775	56,250	67,500
Plastics						
Total	46	46,734	11,798	41,000	46,250	53,000
Rubber						
Total	19	48,727	11,432	38,000	48,000	55,000

Table 1.4.3 (Cont'd)

Industry and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Metals, Minerals						
Total	15	37,149	9,556	28,700	38,000	43,920
Other Manufactures						
Total	151	43,758	12,987	34,163	41,000	52,000
5-9	28	32,307	4,452	29,097	33,000	35,000
10-14	37	38,754	7,719	33,100	36,500	44,600
15-19	21	43,300	7,540	39,000	43,000	45,000
20-24	15	52,607	16,127	41,000	49,620	66,000

Note: Cells with fewer than 15 cases have been suppressed.

The "metals, minerals" category includes steel or ferrous metals and other metals, minerals.

The "other manufactures" category includes glass and ceramics, paper, and soaps and detergents.

SALARIES of MS CHEMISTS employed FULL-TIME
according to GEOGRAPHIC REGION and YEARS SINCE BS
1987 ACS Salary Survey

Geographic Region & Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Pacific						
Total	77	42,556	12,226	34,000	42,000	47,760
5-9	20	33,185	6,210	30,000	33,500	36,000
Mountain						
Total	15	39,233	11,975	30,000	38,000	51,000
West North Central						
Total	46	39,598	12,134	31,500	37,568	45,000
West South Central						
Total	57	46,273	16,649	35,000	43,500	52,000
East North Central						
Total	199	43,276	15,657	33,000	39,500	50,400
5-9	31	31,351	5,494	27,100	30,900	35,000
10-14	46	40,326	9,372	34,200	38,200	46,000
15-19	40	42,614	11,780	34,000	39,750	49,600
25-29	15	57,525	17,263	45,840	55,000	62,500
30-34	20	45,408	12,012	38,248	42,550	50,500
35-39	20	56,880	27,554	37,000	51,200	67,000
East South Central						
Total	22	46,907	12,100	40,000	46,514	51,240
Middle Atlantic						
Total	203	44,990	16,460	33,000	42,240	53,500
5-9	27	32,243	7,412	29,040	31,000	35,000
10-14	51	37,392	7,703	31,000	37,000	42,500
15-19	29	45,394	10,538	37,100	45,000	53,000
20-24	21	42,984	13,065	37,500	42,000	45,000
25-29	21	56,675	14,819	48,000	57,500	68,000
30-34	18	56,458	14,078	50,800	54,000	58,000
35-39	17	58,347	17,190	50,000	58,600	61,300
South Atlantic						
Total	102	43,402	15,914	34,900	41,200	49,000
5-9	26	32,267	6,277	27,400	33,700	36,300
10-14	17	39,690	7,689	37,000	41,000	43,000
15-19	16	51,257	22,044	41,000	46,100	53,500
New England						
Total	66	45,882	13,799	35,000	41,568	55,000
5-9	15	35,247	6,233	31,200	33,200	41,000

Note: Cells with fewer than 15 cases have been suppressed.

SALARIES of MS CHEMISTS employed FULL-TIME in INDUSTRY
according to SELECTED STATES
1987 ACS Salary Survey

Selected States	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
California	86	42,633	12,158	34,000	40,922	48,000
Connecticut	33	46,125	15,466	35,000	41,736	51,500
Delaware	18	44,085	16,673	33,516	41,100	50,000
Florida	16	46,466	21,369	32,200	46,460	57,922
Illinois	60	43,426	19,404	31,500	39,400	47,100
Indiana	22	38,618	10,836	32,520	35,850	43,400
Massachusetts	31	46,570	11,729	37,524	48,000	55,000
Michigan	57	40,647	12,295	32,000	37,404	50,000
Minnesota	15	41,099	10,539	35,000	37,920	44,200
Missouri	22	41,269	12,052	31,500	37,950	48,000
North Carolina	33	39,706	10,484	33,000	41,000	45,000
New Jersey	116	45,186	13,540	34,000	44,000	53,750
New York	71	47,231	20,219	33,400	44,600	54,000
Ohio	68	45,386	15,041	33,475	43,800	54,500
Pennsylvania	57	39,723	12,887	30,500	37,500	44,676
Texas	40	48,342	17,334	36,900	45,100	52,000

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.4.6

SALARIES of MS CHEMISTS employed FULL-TIME in INDUSTRY
according to SELECTED METROPOLITAN AREAS
1987 ACS Salary Survey

Selected Metropolitan Areas	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Boston	25	47,973	11,686	41,000	48,000	55,000
Chicago	51	44,691	20,704	31,500	40,000	48,000
Cincinnati	16	42,578	20,474	32,730	34,750	46,960
Cleveland-Akron	34	48,984	11,750	39,000	49,500	57,500
Detroit	15	43,064	9,907	34,500	42,000	51,000
Houston-Beaumont	23	47,957	18,344	37,800	43,500	60,000
Los Angeles	32	41,760	12,828	31,500	39,750	47,800
Newark	75	44,195	12,966	34,000	44,000	53,500
Philadelphia	24	45,234	14,717	34,000	43,500	58,000
Pittsburgh	15	38,123	11,120	30,500	37,971	45,800
San Francisco	34	45,899	12,091	37,800	43,800	52,000

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.5.1

SALARIES of PhD CHEMISTS employed FULL-TIME in INDUSTRY
according to WORK SPECIALTY and YEARS SINCE BS
1987 ACS Salary Survey

Work Specialty and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Biochemistry						
Total	94	54,886	18,881	42,000	50,000	61,100
10-14	31	47,144	8,932	40,000	46,000	50,000
15-19	18	52,094	14,845	42,000	54,000	58,800
20-24	17	60,759	16,876	48,000	56,000	64,000
General Chemistry						
Total	34	62,060	23,166	46,032	59,605	65,000
Agricultural/Food Chemistry						
Total	78	56,283	17,059	44,775	52,600	67,300
10-14	21	44,314	5,640	40,000	44,117	48,540
Analytical Chemistry						
Total	324	52,311	12,678	43,000	50,000	60,000
5-9	42	41,106	4,122	39,200	41,000	43,000
10-14	73	45,802	6,395	41,000	45,000	49,800
15-19	72	52,374	9,899	46,618	52,850	58,610
20-24	71	57,766	11,923	50,000	56,000	64,000
25-29	23	56,545	10,070	46,000	60,000	62,900
30-34	20	62,239	16,663	51,800	59,500	68,000
35-39	20	65,400	19,215	53,500	62,300	71,200
Clinical Chemistry						
Total	25	60,953	23,557	45,000	54,000	65,000
Environmental Chemistry						
Total	89	53,222	16,458	43,680	52,000	62,000
10-14	15	43,459	7,534	37,080	44,580	50,600
15-19	18	50,459	10,462	42,000	51,027	56,200
20-24	20	60,466	25,340	50,500	57,800	68,500
Inorganic Chemistry						
Total	83	53,165	16,653	42,000	49,800	60,000
5-9	15	39,700	6,175	36,900	40,000	42,800
10-14	22	45,654	6,605	42,180	45,580	50,000
15-19	15	49,936	8,778	42,000	51,000	56,000
Materials Science						
Total	123	59,815	19,269	47,300	55,000	69,000
10-14	26	48,427	8,024	45,000	48,000	52,766
15-19	15	55,538	9,268	49,632	55,000	62,300
20-24	24	59,340	12,320	49,400	57,500	68,750
25-29	17	72,809	23,157	60,000	69,000	76,800
35-39	16	74,006	27,333	52,000	70,450	87,450

Table 1.5.1 (Cont'd)

Work Specialty and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Medicinal/Pharmaceu- tical Chemistry						
Total	168	57,544	17,585	44,634	52,160	67,000
5-9	22	42,861	4,070	41,000	43,000	44,000
10-14	39	46,497	8,646	40,200	45,300	50,000
15-19	29	54,091	12,648	46,700	49,000	57,000
20-24	33	62,844	17,832	54,000	60,000	67,500
25-29	19	76,311	20,111	64,000	74,000	89,000
Organic Chemistry						
Total	297	55,136	15,876	42,850	52,000	63,120
5-9	36	41,722	5,892	39,550	40,390	42,350
10-14	70	46,018	6,070	42,000	44,970	50,000
15-19	56	51,049	9,582	43,600	50,640	58,600
20-24	47	59,629	10,673	52,000	58,000	68,000
25-29	33	69,568	17,651	53,000	66,000	85,400
30-34	28	67,593	24,510	51,750	63,000	86,500
35-39	17	67,417	14,073	63,200	67,000	73,440
Physical Chemistry						
Total	96	58,274	15,223	47,000	56,000	65,550
10-14	15	48,025	7,318	42,000	46,380	54,000
15-19	22	54,061	8,310	49,200	56,000	60,000
20-24	19	58,492	9,482	53,100	56,000	65,100
Polymer Chemistry						
Total	363	56,471	16,088	44,500	53,000	64,200
5-9	37	41,653	4,014	39,500	40,300	43,800
10-14	63	47,358	6,505	42,420	45,000	52,000
15-19	57	52,609	9,406	45,000	52,000	60,000
20-24	57	61,701	19,388	50,400	59,000	69,000
25-29	55	63,220	14,796	54,000	60,000	68,640
30-34	41	61,415	17,033	50,500	60,000	70,000
35-39	40	66,255	17,573	53,500	63,578	79,250
Other Chemical Science						
Total	60	58,131	18,098	48,000	54,000	63,100
20-24	16	60,183	10,097	52,175	59,500	65,500

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.5.2

SALARIES of PhD CHEMISTS employed FULL-TIME in INDUSTRY
according to WORK FUNCTION and YEARS SINCE BS
1987 ACS Salary Survey

Work Function and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
R&D Mgt						
Total	432	67,891	18,581	55,000	65,000	76,400
10-14	45	51,624	7,705	46,000	52,000	55,000
15-19	87	59,433	10,932	54,180	59,220	64,000
20-24	120	67,851	16,104	59,122	65,550	72,650
25-29	61	79,808	18,826	66,000	75,500	90,000
30-34	49	75,953	20,181	64,500	70,000	87,000
35-39	46	80,566	20,523	66,900	81,500	92,000
40 Or More	15	64,158	16,378	53,000	60,000	76,000
Basic Research						
Total	275	51,390	12,843	42,000	48,000	57,100
5-9	59	41,524	3,394	39,640	41,000	44,000
10-14	80	45,511	6,277	41,000	45,000	50,000
15-19	48	53,829	9,164	48,200	51,170	60,000
20-24	31	58,549	9,742	53,000	55,500	65,000
25-29	25	58,670	12,579	51,000	58,000	65,100
Applied Research						
Total	850	51,018	12,570	42,000	49,000	57,240
5-9	116	41,036	5,620	38,450	40,255	42,825
10-14	229	45,899	6,264	41,700	44,940	50,000
15-19	161	49,434	8,048	44,000	49,200	54,000
20-24	125	53,770	8,817	47,805	54,100	60,000
25-29	83	59,757	11,981	51,060	60,000	66,000
30-34	67	61,368	21,429	50,000	59,100	64,000
35-39	54	63,629	15,037	53,000	62,000	73,500
40 Or More	15	60,457	19,183	40,200	58,300	80,000
General Mgt						
Total	58	65,605	22,158	53,000	63,500	75,000
Marketing						
Total	52	53,673	15,548	44,500	52,000	58,960
20-24	16	55,438	9,433	48,500	55,200	61,750
Production						
Total	56	50,596	15,667	42,050	46,113	54,750
Forensics						
Total	25	49,822	9,164	44,340	48,000	56,000
Consulting						
Total	30	53,779	19,327	37,200	50,000	70,000
Other						
Total	38	57,022	15,553	47,000	55,750	68,000

NOTE: Cells with fewer than 15 cases have been suppressed.
The "other" category includes writing and computer programming.

Table 1.5.3

SALARIES of PhD CHEMISTS employed FULL-TIME
according to INDUSTRY and YEARS SINCE BS
1987 ACS Salary Survey

Industry and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Non-Manufacturing						
Total	131	50,768	14,391	40,000	48,400	58,500
10-14	24	43,959	10,497	37,500	41,900	49,000
15-19	41	50,187	10,229	41,000	49,548	58,000
20-24	23	51,328	13,648	43,680	50,000	60,000
Basic Chemicals						
Total	167	58,056	18,378	44,900	53,760	65,000
5-9	19	41,419	3,385	39,500	41,030	42,500
10-14	40	46,072	5,691	42,550	44,800	48,520
15-19	26	55,405	8,149	49,000	54,300	62,500
20-24	29	60,281	11,729	53,000	59,000	69,000
25-29	19	70,079	19,549	56,600	64,400	80,000
30-34	15	77,273	31,642	59,100	66,000	77,000
35-39	17	73,252	16,386	63,200	65,820	78,000
Specialty Chemicals						
Total	300	53,572	15,560	42,380	50,150	60,000
5-9	34	41,686	8,246	38,000	40,000	42,400
10-14	68	45,609	6,455	41,450	44,420	49,300
15-19	48	47,145	8,102	42,000	46,779	52,900
20-24	57	59,774	15,324	53,000	57,500	64,200
25-29	37	64,287	18,331	52,000	60,500	69,000
30-34	26	65,449	17,051	52,000	62,813	86,000
35-39	23	59,940	18,374	46,000	57,700	79,000
Agricultural Chemicals						
Total	92	54,333	13,534	43,000	52,320	66,450
10-14	23	43,781	5,224	39,600	42,000	46,000
15-19	17	51,748	15,366	44,000	52,440	56,000
20-24	23	58,758	9,664	50,000	59,800	68,400
Biochemical Products						
Total	44	57,248	25,231	40,000	51,650	61,500
Coatings and Paints						
Total	55	52,160	10,936	43,000	50,200	60,000
Electronics						
Total	73	55,148	13,747	47,000	53,000	61,700
10-14	24	49,883	8,677	45,500	50,500	55,000
Food						
Total	43	58,924	20,723	45,000	55,000	66,000
Glass, Ceramics						
Total	18	60,683	15,056	51,000	61,700	70,400
Paper						
Total	22	57,573	11,923	49,500	54,500	67,500
Petroleum/Natural Gas						
Total	117	63,624	18,008	51,000	59,000	73,800
10-14	31	51,249	6,854	44,500	52,000	56,000
15-19	21	54,045	8,359	49,632	53,000	58,700
20-24	19	67,377	12,811	59,000	65,000	76,020

Table 1.5.3 (Cont'd)

Industry and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Pharmaceuticals						
Total	315	55,974	16,834	43,620	52,000	64,000
5-9	40	41,399	4,485	39,600	41,089	43,325
10-14	77	46,701	6,880	42,000	45,700	50,000
15-19	59	53,387	12,385	46,700	52,000	58,116
20-24	53	60,946	13,794	53,340	60,000	67,000
25-29	35	70,546	19,291	54,000	70,000	85,000
30-34	25	71,183	22,797	55,000	70,321	80,000
35-39	17	71,042	17,396	62,000	67,000	75,000
Plastics						
Total	111	58,210	19,378	44,500	53,000	67,000
10-14	22	45,992	6,328	43,500	44,750	48,000
15-19	17	53,671	10,034	47,000	49,300	61,000
20-24	23	68,467	26,030	53,000	61,536	78,000
Rubber						
Total	26	57,828	14,775	50,000	55,000	61,100
Soaps, Detergents						
Total	33	51,592	14,512	41,500	45,000	61,000
Metals, Minerals						
Total	17	46,921	6,107	43,800	45,000	50,000
Other Manufactures						
Total	270	55,551	14,936	45,000	53,000	62,800
5-9	27	41,034	5,484	38,000	40,400	45,000
10-14	48	46,525	6,716	42,420	46,460	51,800
15-19	54	55,505	11,174	47,632	55,000	63,000
20-24	49	58,232	11,665	50,000	58,000	66,000
25-29	34	60,777	17,411	48,960	57,500	65,820
30-34	25	60,671	16,587	51,600	60,700	62,800
35-39	28	68,174	18,176	52,250	66,000	80,000

Note: Cells with fewer than 15 cases have been suppressed.
The "metals,minerals" category includes steel or ferrous metals
and other metals, minerals.

Table 1.5.4

SALARIES of PhD CHEMISTS employed FULL-TIME
according to GEOGRAPHIC REGION and YEARS SINCE BS
1987 ACS Salary Survey

Geographic Region & Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Pacific						
Total	176	57,149	16,822	45,000	54,248	65,000
10-14	42	46,064	8,280	40,860	45,500	50,600
15-19	36	53,217	11,803	46,850	54,090	59,125
20-24	38	63,103	12,567	54,315	60,000	69,000
25-29	21	66,622	12,824	57,000	65,000	73,000
Mountain						
Total	41	47,204	12,383	40,000	47,632	53,340
West North Central						
Total	85	54,357	16,945	42,900	50,000	65,000
10-14	20	45,320	5,591	41,210	44,970	51,400
15-19	17	54,108	15,138	45,000	52,300	58,000
West South Central						
Total	146	58,042	16,745	45,000	54,200	66,000
10-14	34	45,988	7,699	40,500	44,400	51,000
15-19	26	52,211	8,733	46,000	51,600	60,000
20-24	34	61,468	12,138	52,000	60,000	69,100
25-29	16	72,615	19,055	59,000	64,500	88,460
East North Central						
Total	421	55,824	17,032	44,000	52,320	63,000
5-9	51	42,067	4,491	39,000	41,000	44,000
10-14	100	46,406	6,583	42,000	45,000	50,125
15-19	68	53,092	10,230	46,268	53,350	60,000
20-24	70	61,260	16,957	52,000	59,122	67,200
25-29	61	65,350	16,284	54,000	62,790	71,000
30-34	32	71,128	28,358	55,750	65,200	88,500
35-39	28	67,257	18,281	54,000	64,100	77,000
East South Central						
Total	38	51,731	12,539	44,000	49,174	60,000
Middle Atlantic						
Total	541	56,189	15,687	45,000	53,000	64,000
5-9	62	42,510	4,855	40,000	41,000	44,000
10-14	113	47,675	6,271	42,720	48,000	52,000
15-19	96	53,135	10,337	46,100	52,850	59,750
20-24	102	60,130	16,659	50,100	58,000	67,000
25-29	51	65,173	15,697	54,036	64,900	75,000
30-34	58	64,431	15,693	53,000	61,313	73,500
35-39	42	69,789	21,058	55,200	67,750	79,500
40 Or More	17	67,591	15,856	57,500	66,000	77,000
South Atlantic						
Total	228	54,070	15,884	43,590	51,600	60,000
5-9	23	39,394	5,178	37,000	39,960	43,000
10-14	42	44,995	6,653	40,500	44,800	48,700
15-19	45	49,887	8,409	44,400	50,200	55,000
20-24	34	54,827	12,057	47,000	54,450	60,000
25-29	27	60,927	15,136	51,650	60,000	65,820
30-34	22	66,454	23,316	51,600	62,000	68,400
35-39	25	67,074	17,842	57,000	62,100	80,000

Table 1.5.4 (Cont'd)

Geographic Region & Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
New England						
Total	131	57,882	20,541	42,500	54,000	68,000
10-14	26	46,963	9,553	42,000	44,630	52,000
15-19	28	55,011	14,135	43,531	52,900	62,850
20-24	23	62,635	22,288	51,000	59,000	70,000

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.5.5

SALARIES of PhD CHEMISTS employed FULL-TIME in INDUSTRY
according to SELECTED STATES
1987 ACS Salary Survey

Selected States	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
California	193	56,707	16,725	45,000	53,000	65,000
Connecticut	56	63,215	23,916	46,350	56,375	72,768
Delaware	76	58,508	17,992	45,800	54,500	65,410
Florida	21	45,998	13,613	37,000	42,000	50,000
Georgia	19	54,157	14,167	44,180	52,000	60,000
Illinois	129	57,415	19,061	44,000	52,000	63,000
Indiana	52	60,787	23,462	45,000	56,000	68,000
Louisiana	35	54,927	15,223	41,300	52,600	65,000
Massachusetts	76	55,434	15,783	42,000	53,500	65,550
Maryland	25	51,079	15,787	40,500	47,800	56,200
Michigan	133	54,489	15,919	43,000	50,000	63,700
Minnesota	40	53,837	13,109	43,970	51,490	64,000
Missouri	44	53,046	18,440	40,850	47,700	58,500
North Carolina	55	53,521	15,302	43,680	50,000	59,500
New Jersey	265	58,863	17,835	47,000	55,000	67,000
New York	166	56,098	16,496	45,000	52,000	63,300
Ohio	135	53,345	13,136	44,000	52,000	60,240
Oklahoma	25	62,299	18,177	47,280	60,000	76,020
Pennsylvania	205	54,186	14,877	43,800	51,600	61,536
South Carolina	20	52,172	12,671	44,750	51,540	62,000
Tennessee	26	51,775	15,654	43,000	47,000	57,400
Texas	104	56,890	16,737	44,400	52,988	63,800
Virginia	25	54,196	11,755	46,000	52,000	60,000
Wisconsin	23	50,247	11,902	40,000	49,000	60,000
West Virginia	21	50,596	9,153	44,580	50,000	54,900

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.5.6

SALARIES of PhD CHEMISTS employed FULL-TIME in INDUSTRY
according to SELECTED METROPOLITAN AREAS
1987 ACS Salary Survey

Selected Metropolitan Areas	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Boston	61	52,944	16,717	40,000	47,500	63,000
Chicago	115	57,842	21,167	44,000	52,000	63,000
Cincinnati	44	53,644	15,635	43,250	48,500	62,300
Cleveland-Akron	54	52,898	12,563	44,000	52,460	59,736
Dallas	15	61,480	14,282	52,000	60,000	66,000
Detroit	49	54,837	15,635	44,000	50,000	65,000
Houston-Beaumont	53	58,958	18,021	44,500	54,000	67,300
Los Angeles	52	58,858	17,567	44,900	54,090	65,850
Newark	127	58,987	17,163	47,000	55,000	68,500
New York	22	52,385	11,664	42,000	51,500	59,300
Philadelphia	106	52,941	12,634	43,200	50,960	60,000
Pittsburgh	33	55,788	20,330	42,000	51,600	62,500
St. Louis	38	52,165	13,493	41,250	49,450	60,000
San Francisco	106	57,177	16,441	45,300	54,658	65,000
Washington, DC	18	49,686	11,858	40,500	47,400	56,200

Note: Cells with fewer than 15 cases have been suppressed.

Table 2.1.1

SALARIES of GOVERNMENT CHEMISTS employed FULL-TIME
according to DEGREE and YEARS SINCE BS
1987 ACS Salary Survey

Degree and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
BS						
Total	194	34,543	11,152	26,600	32,000	42,340
2-4	24	24,451	4,240	21,201	24,000	27,564
5-9	35	25,503	5,753	22,000	26,000	28,078
10-14	24	32,880	6,902	26,800	32,534	36,445
15-19	31	35,931	8,154	29,800	32,600	41,000
20-24	31	38,995	10,129	29,736	40,000	42,600
25-29	19	41,741	10,605	32,508	43,000	50,346
MS						
Total	104	35,159	10,445	28,000	33,200	41,679
5-9	19	26,494	4,565	22,458	27,000	30,000
10-14	16	30,291	5,653	26,150	30,000	34,637
15-19	20	37,947	7,714	30,750	37,500	42,600
20-24	17	39,565	11,823	34,000	39,000	50,343
PhD						
Total	306	50,183	12,800	41,309	50,338	59,488
5-9	15	36,419	6,323	32,000	37,000	41,309
10-14	37	40,958	10,554	35,000	40,100	48,000
15-19	36	47,516	10,386	40,710	50,319	54,450
20-24	76	48,757	11,404	41,250	47,200	55,395
25-29	44	54,000	10,839	46,064	55,000	60,650
30-34	39	54,811	11,821	48,000	54,900	61,500
35-39	42	56,326	14,345	50,000	59,950	65,400
40 Or More	17	58,757	12,151	51,000	59,488	69,000

Note: Cells with fewer than 15 cases have been suppressed.

Table 2.2.1

SALARIES of GOVERNMENT CHEMISTS employed FULL-TIME
according to DEGREE and RESPONSIBILITY
1987 ACS Salary Survey

Degree and Responsibility	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
BS						
Total	191	34,414	11,059	26,600	32,000	42,000
4-8	30	26,924	6,056	22,458	27,674	30,000
9-12	90	31,008	8,019	24,731	30,000	36,900
13-16	56	40,756	10,380	32,300	42,000	49,850
17-20	15	46,147	15,769	32,000	51,200	58,000
MS						
Total	112	36,070	10,642	28,078	34,874	42,171
9-12	58	34,526	8,154	29,000	33,200	41,000
13-16	33	40,135	11,664	30,500	38,000	48,000
PhD						
Total	333	50,293	12,657	41,726	50,338	59,300
9-12	94	43,155	11,344	35,326	41,985	48,876
13-16	158	51,866	10,770	45,500	52,000	59,212
17-20	68	58,674	11,907	51,518	59,750	68,923

Note: Cells with fewer than 15 cases have been suppressed.

A respondent's responsibility score is derived from adding the responses to Questions VI. A through D on the questionnaire.

Table 2.3.1

SALARIES of GOVERNMENT CHEMISTS employed FULL-TIME
according to WORK SPECIALTY and DEGREE
1987 ACS Salary Survey

Work Specialty & Degree	Count	Mean	Standard Deviation	25th %ile	50th %ile	75th %ile
BS						
Total	194	34,543	11,152	26,600	32,000	42,340
Analytical Chemistry	82	35,276	11,672	27,172	32,450	42,952
Environmental Chemistry	57	33,142	9,821	26,300	30,513	39,039
MS						
Total	115	35,948	10,744	28,000	34,747	42,341
Analytical Chemistry	47	33,231	9,542	27,000	31,300	38,000
Environmental Chemistry	32	36,715	10,729	28,750	36,770	43,500
PhD						
Total	340	50,199	12,693	41,500	50,319	59,394
Biochemistry	42	47,510	13,299	37,000	47,407	59,000
Agricultural/Food Chemistry	27	52,730	11,566	45,600	53,000	60,000
Analytical Chemistry	74	45,613	11,341	37,067	45,023	52,000
Environmental Chemistry	50	50,731	13,714	42,000	50,669	59,000
Materials Science	24	53,143	11,896	42,300	52,550	64,678
Medicinal/Pharmaceutical Chemistry	17	44,075	14,462	41,000	46,000	51,000
Organic Chemistry	17	52,742	11,902	45,000	54,400	60,000
Physical Chemistry	51	55,268	12,163	50,000	54,000	64,562

Note: Cells with fewer than 15 cases have been suppressed.

Table 2.4.1

SALARIES of GOVERNMENT CHEMISTS employed FULL-TIME
according to WORK FUNCTION and DEGREE
1987 ACS Salary Survey

Work Function and Degree	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
BS						
Total	194	34,543	11,152	26,600	32,000	42,340
Basic Research	21	34,265	9,511	29,000	30,000	39,200
Applied Research	25	37,517	9,903	30,200	36,911	43,000
General Mgt	30	40,819	12,939	29,600	37,714	50,000
Production	24	32,313	9,639	25,000	31,238	40,282
Forensics	58	29,887	8,903	23,000	28,650	36,000
Other	20	34,388	12,262	26,000	28,530	42,600
MS						
Total	115	35,948	10,744	28,000	34,747	42,341
Applied Research	23	36,109	8,939	30,000	35,000	41,358
General Mgt	16	39,461	11,796	29,750	36,750	50,200
Forensics	29	29,038	5,345	26,000	29,028	33,400
Other	17	37,386	9,088	30,500	37,040	45,000
PhD						
Total	340	50,199	12,693	41,500	50,319	59,394
R&D Mgt	63	60,525	10,347	52,000	60,000	69,000
Basic Research	128	49,350	12,271	41,000	50,000	59,000
Applied Research	63	47,380	9,349	40,000	47,000	54,400
General Mgt	31	52,568	10,887	45,000	53,010	60,000
Forensics	21	36,530	11,405	30,000	34,500	42,000
Other	15	43,010	12,075	39,000	45,128	50,338

Note: Cells with fewer than 15 cases have been suppressed.

SALARIES of CHEMISTS employed FULL-TIME in GOVERNMENT
according to DEGREE and SEX
1987 ACS Salary Survey

Degree and Sex	Count	Mean	Standard Deviation	25th %ile	50th %ile	75th %ile
Men						
BS	141	36,538	11,291	28,078	35,400	44,400
MS	77	35,710	10,196	29,000	33,400	42,000
PhD	281	50,853	12,904	42,000	50,350	60,000
Women						
BS	53	29,236	8,883	24,000	27,172	32,400
MS	27	33,588	11,175	26,000	31,000	39,000
PhD	25	42,649	8,662	35,820	42,000	50,300

Note: Cells with fewer than 15 cases have been suppressed.



American Chemical Society

OFFICE OF THE
EXECUTIVE DIRECTOR

1155 SIXTEENTH STREET, N.W.
WASHINGTON, D.C. 20036
Phone (202) 872-4600

February 24, 1987

Dear Colleague:

Each year the American Chemical Society studies the economic status of the U.S. chemical profession by surveying a sample of ACS members. You are one of about 25,000 members I am asking to participate in this survey, conducted under the aegis of the Joint Board-Council Committee on Economic Status. This year, the ACS will conduct a special study of the economic status of member chemical engineers. This year's sample, therefore, includes more than the usual number of chemical engineers.

Because a high response rate is needed to assure accurate results, your participation is an important service to our colleagues. Please take a few minutes now to complete the questionnaire and return it in the enclosed business reply envelope. The procedure is confidential, and the information you provide will be reported only as a part of aggregated data.

Findings will be reported to ACS members in several ways. Preliminary results will be presented at the spring meeting in Denver; early in the summer, the ACS will publish detailed analyses as Salaries 1987. At about the same time, Chemical and Engineering News will publish a cover story on the salaries and employment status of chemists and chemical engineers.

Please feel free to use the back of the questionnaire for whatever comments or suggestions you might care to make.

Thank you for your assistance.

Sincerely,

A handwritten signature in cursive script that reads "John K. Crum".

John K. Crum

Encl.

1987 Comprehensive Salary and Employment Status Survey

I. EDUCATION AND EMPLOYMENT STATUS

A. PLEASE INDICATE THE YEAR IN WHICH YOU EARNED ANY OF THE FOLLOWING DEGREES:

Bachelor's	19 ___	1-2
Master's	19 ___	3-4
Doctorate	19 ___	5-6

B. PLEASE CHECK THE APPROPRIATE BOX IN EACH COLUMN.

	Field of highest degree	ONE specialty most related to your current or most recent job	
Chemical engineering	<input type="checkbox"/> 01	<input type="checkbox"/> 01	
Biochemistry	<input type="checkbox"/> 02	<input type="checkbox"/> 02	
General chemistry	<input type="checkbox"/> 03	<input type="checkbox"/> 03	
Agricultural/food chemistry	<input type="checkbox"/> 04	<input type="checkbox"/> 04	
Analytical chemistry	<input type="checkbox"/> 05	<input type="checkbox"/> 05	
Clinical chemistry	<input type="checkbox"/> 06	<input type="checkbox"/> 06	
Environmental chemistry	<input type="checkbox"/> 07	<input type="checkbox"/> 07	
Inorganic chemistry	<input type="checkbox"/> 08	<input type="checkbox"/> 08	
Materials science	<input type="checkbox"/> 09	<input type="checkbox"/> 09	
Medicinal/pharmaceutical chemistry	<input type="checkbox"/> 10	<input type="checkbox"/> 10	
Organic chemistry	<input type="checkbox"/> 11	<input type="checkbox"/> 11	
Physical chemistry	<input type="checkbox"/> 12	<input type="checkbox"/> 12	
Polymer chemistry	<input type="checkbox"/> 13	<input type="checkbox"/> 13	
Other chemical science	<input type="checkbox"/> 14	<input type="checkbox"/> 14	
Business Administration	<input type="checkbox"/> 15	<input type="checkbox"/> 15	
Other Non-chemistry	<input type="checkbox"/> 16	<input type="checkbox"/> 16	7-10

C. Were you unemployed at any time during the calendar year 1986?

No 1 Yes 2 11

If yes, how many total weeks were you not employed and actively seeking employment during calendar year 1986?

___ weeks (ENTER A NUMBER FROM 1 TO 52) 12-13

D. PLEASE ENTER YOUR PRIMARY EMPLOYMENT STATUS AS OF MARCH 1, 1987. CHOOSE THE ONE CATEGORY THAT BEST FITS YOUR SITUATION.

Employed full-time (35 hours or more per week)	<input type="checkbox"/> 1	
Employed part-time	<input type="checkbox"/> 2	
Postdoctoral or other fellowship	<input type="checkbox"/> 3	
Not employed but actively seeking employment	<input type="checkbox"/> 4	
Not employed and NOT seeking employment	<input type="checkbox"/> 5	14

G. If you were UNEMPLOYED on March 1, how long had you been unemployed?

Less than 1 month	<input type="checkbox"/> 1	
1 to 3 months	<input type="checkbox"/> 2	
4 to 6 months	<input type="checkbox"/> 3	
7 to 12 months	<input type="checkbox"/> 4	
More than 1 year	<input type="checkbox"/> 5	15

H. If you were EMPLOYED on March 1, what are the first three digits of the zip code where you work?

___ 16-18

II. QUESTIONS ABOUT YOURSELF

A. Your sex:

Male 1 Female 2 19

B. Your marital status:

Single 1 Married 2 20

C. Age at last birthday before March 1, 1987:

___ years old 21-22

D. Citizenship or visa status:

U.S. native	<input type="checkbox"/> 1	
U.S. naturalized	<input type="checkbox"/> 2	
U.S. permanent resident visa	<input type="checkbox"/> 3	
Other visa	<input type="checkbox"/> 4	23

E. Race or ethnic group:

American Indian or Alaskan Native	<input type="checkbox"/> 1	
Asian or Pacific Islander	<input type="checkbox"/> 2	
Black (not of Hispanic origin)	<input type="checkbox"/> 3	
Hispanic	<input type="checkbox"/> 4	
White	<input type="checkbox"/> 5	
Other race or ethnic group	<input type="checkbox"/> 6	24

F. Please enter the two-letter post office abbreviation for the STATE in which you live.

___ 25-26

IF YOU ARE NOT CURRENTLY EMPLOYED, PLEASE SKIP TO SECTION IV, MOST RECENT OR CURRENT JOB.

III. CURRENT INCOME

A. If you are CURRENTLY EMPLOYED, how long have you worked for your current employer?

___ years ___ months 27-30

B. BASE ANNUAL SALARY from PRINCIPAL JOB as of March 1, 1987. (DO NOT INCLUDE payments for bonus, second job, overtime work, summer teaching, or other supplemental earnings or employment.) If zero, please indicate. If on a 9 or 10 month contract, report the 9 or 10 month salary rather than an annualized salary.

\$ _____ per year 31-36

C. TOTAL PROFESSIONAL INCOME during calendar year 1986. (INCLUDE consulting fees, base annual salary, income from second job, bonuses, payments for overtime, summer teaching, and other supplemental earnings.)

\$ _____ per year 37-42

D. If you are currently employed, does your employer pay your ACS dues?

Yes 1 No 2 43

IV. DESCRIBE YOUR CURRENT OR MOST RECENT JOB.

IF YOUR CURRENT OR MOST RECENT EMPLOYER IS NOT AN ACADEMIC INSTITUTION, GO TO SECTION V AT THE TOP OF THE NEXT COLUMN.

CURRENT OR MOST RECENT EMPLOYMENT IS IN AN ACADEMIC INSTITUTION.

A. Current (or most recent) principal employer.

- 1. Public institution 1 Private institution 2 44
- 2. High school 1
- Medical or professional school 2
- College or university where the highest degree offered in chemical science is:
 - Associate 3
 - Bachelor's 4
 - Master's 5
 - Doctorate 6 45

B. Your academic rank:

- Full professor 1
- Associate professor 2
- Assistant professor, tenure track 3
- Instructor, lecturer, or non-tenure track 4
- Non-teaching research associate 5
- My institution does not have ranks 6 46

C. Have you been granted tenure?

- Yes 1 No 2 47

D. Your basic contract is for a period of:

- 9 or 10 months 1
- 11 or 12 months 2 48

E. About what fraction of your total academic year assignment is devoted to:

	1/4 or less	1/3	1/2	2/3	3/4	full-time	
Teaching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	49
Research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	50
Administration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	51
Other	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	52

F. What was your principal professional activity during the SUMMER OF 1986?

- Teaching 1
- Funded research or study 2
- Unpaid scholarly/academic 3
- Administration 4
- Consulting 5
- Non-academic employment 6
- Other 7 53

THANK YOU. YOU HAVE COMPLETED THE QUESTIONNAIRE. PLEASE USE THE BLANK SPACE ON THE BACK OF THIS QUESTIONNAIRE FOR COMMENTS.

V. CURRENT OR MOST RECENT EMPLOYMENT IS NOT IN AN ACADEMIC INSTITUTION.

A. Current (or most recent) principal employer.

- Self-employed 01
- Private industry
 - Non-manufacturing 02
 - Manufacturing
 - Basic chemicals 03
 - Specialty chemicals 04
 - Agricultural chemicals 05
 - Biochemical products 06
 - Coatings and paints 07
 - Electronics 08
 - Food 09
 - Glass, ceramics 10
 - Paper 11
 - Petroleum/natural gas 12
 - Pharmaceuticals, personal care 13
 - Plastics 14
 - Rubber 15
 - Soaps, detergents, surfactants 16
 - Steel or ferrous metals 17
 - Other metals, minerals 18
 - Other manufactures (specify) 19
- Government
 - Federal (civilian) 20
 - State or local 21
 - Military 22
- Other non-academic
 - Hospitals, independent laboratory 23
 - Non-profit organization, other research institution 24
 - Other employment 25 54-55

B. Check the ONE work function that best describes your job.

- Research and Development
 - Management or administration of R&D 01
 - Basic research 02
 - Applied research, development, design 03
- General management, administration (other than research and development) 04
- Marketing, sales, purchasing, technical service, economic evaluation 05
- Production, quality control 06
- Forensic analysis, other laboratory analysis 07
- Writing, editing, abstracting 08
- Chemistry information services 09
- Computer programming, analysis, design 10
- Consulting 11
- Other 12 56-57

C. Were you eligible for a bonus during calendar 1986?

- Yes 1 No 2* 58

D. Did you receive a bonus during calendar 1986?

- Yes 1 No 2 59

IF yes, please indicate amount

\$ _____

VI. LEVEL OF RESPONSIBILITY:

Please examine the statements within each of the four groups (Duties, Technical Decisions and Recommendations, Supervision Received, and Supervision Exercised) and, within each group, check the box of the statement that most closely corresponds to your responsibility on the job.

A. Duties:

- I receive on-the-job training working on simple projects or assisting more senior staff. 1
- I perform responsible and varied assignments within projects 2
- I plan, conduct, and coordinate projects of some complexity 3
- I undertake long-term and short-term planning and supervision of projects. I make decisions on work programs and have budgetary control of projects 4
- I have full managerial responsibility for a function with full responsibility for the operation of a budget and long term planning 5

65

B. Technical Decisions and Recommendations:

- I am responsible for minor technical details only, all other matters being checked. 1
- I am responsible for technical detail which is reviewed overall 2
- I am responsible for technical matters but am subject to occasional review. 3
- I have full technical responsibility for projects. 4
- I am responsible for all technical matters including the delegation of responsibility 5

66

C. Supervision Received:

- My work is assigned with detailed instructions, guidance being always available. My results are subject to close scrutiny 1
- My work is assigned in terms of detailed objectives and priorities, guidance being available on problems and unusual features. My work is subject to scrutiny. 2
- My work is assigned in terms of general objectives and priorities, guidance being available on policy or unusually complex problems. My work is reviewed for effectiveness only 3
- My work is such that I receive executive instruction on broad overall objectives and it is reviewed only for its general effectiveness and adherence to policy 4
- My work is unsupervised, other than I comply with the policy decided within the governing body. 5

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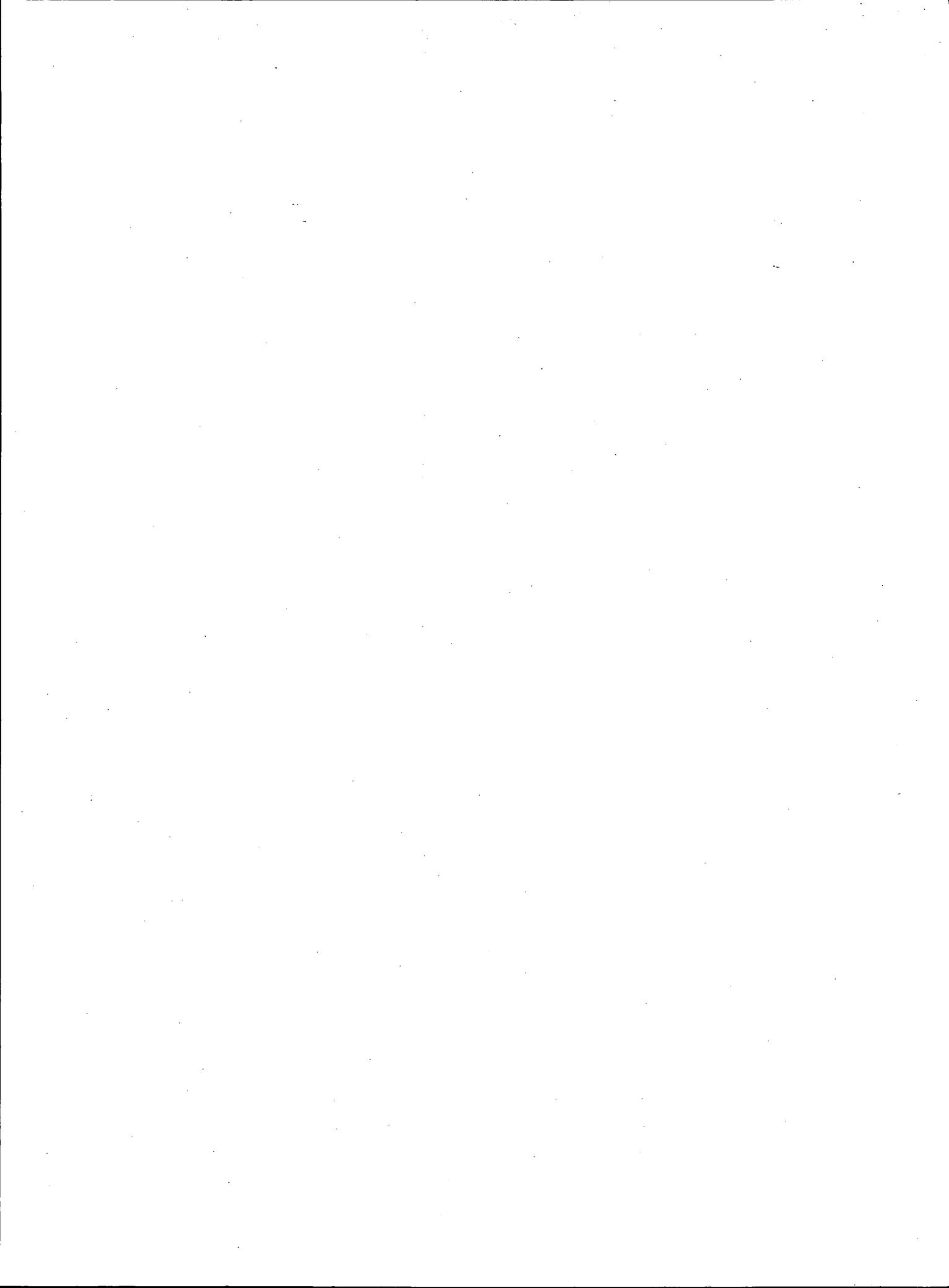
D. Supervision Exercised:

- I have no authority but may give technical guidance to juniors working on the same project. 1
- I have no managerial responsibilities for qualified staff but may be assigned graduates, technicians, or other juniors as assistants from time to time 2
- I supervise a group of qualified staff, technicians, and other employees. I assign and review their work. I can recommend on the selection, discipline, rating, training, and perhaps rate of pay 3
- I am responsible for leaders of groups containing qualified staff, technicians, and other employees. I give guidance on policy and complex technical matters delegating responsibility for discipline, rating, training, and rates of pay 4
- I have full control over senior staff who are in turn responsible for groups of qualified staff and other employees 5

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THANK YOUR FOR YOUR PARTICIPATION.

PLEASE RETURN THIS QUESTIONNAIRE TO
ACS STATISTICAL SERVICES,
Room 202, 1155 16th Street NW, Washington, DC 20036





ACS OFFICE OF STATISTICAL SERVICES PUBLICATIONS

Salaries: The Office of Statistical Services annually surveys the ACS membership, gathering detailed information on member chemists and chemical engineers. The reports based on this survey contain statistical tables describing the respondents' employment status, employer, work function and specialty, salaries, and demographic characteristics.

Reports are available for each year from 1973 through the current year. In 1987, four separate reports are available: *1987 Salaries of Non-Academic Chemists*, *1987 Salaries of Non-Academic Chemical Engineers*, *1987 Salaries of Academic Chemists*, and *1987 Employment Status and Demographic Characteristics of ACS Members*.

Starting Salaries: The Office of Statistical Services also surveys new graduates in chemistry and chemical engineering each summer, and publishes reports detailing the graduates' employment status, post-graduation plans, starting salaries, and other employment and demographic characteristics.

Reports are available for each year from 1975 through the current year.

Professionals in Chemistry: The *Professionals in Chemistry* series compiles information concerning chemists and chemical engineers from ACS, government, and private industry sources. It details information on demography, employment, salaries, education, and supply and demand for the entire chemical profession.

Reports are available for each year from 1975 through 1978, and combined reports for 1979-1980, 1981-82, 1983-84, and 1985-86.

Special Reports:

1975 Report of Chemists' Salaries and Employment Status Supplement: Economic Status of Women in the ACS.

Women Chemists 1980: A supplemental report on the ACS's 1980 Survey of Salaries and Employment.

Women Chemists 1985: A supplemental report on the ACS's 1985 Survey of Salaries and Employment.

For prices and ordering information, please call or write:

Distribution Office
American Chemical Society
1155 Sixteenth Street, N.W.
Washington, D.C. 20036

Toll Free No.: (800) 227-5558



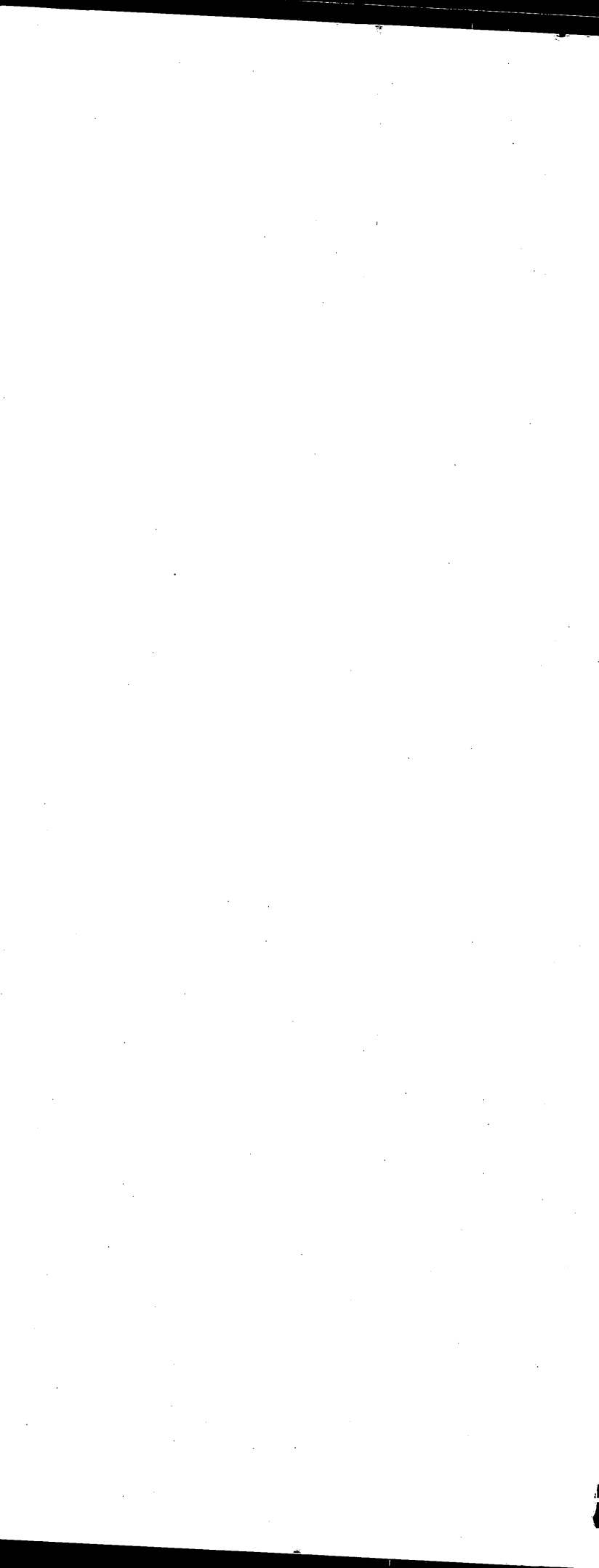
**Statistical Services
American Chemical Society
Washington, D.C.**

ISBN-08412-1408-5

Salaries of Non-Academic Chemical Engineers

1987

Analysis of the
American Chemical Society
1987 Survey of Salaries
and Employment



1987 SALARIES OF NON-ACADEMIC CHEMICAL ENGINEERS

**ANALYSIS OF THE AMERICAN CHEMICAL SOCIETY'S
1987 SURVEY OF SALARIES AND EMPLOYMENT**

This report was prepared by the
ACS Office of Statistical Services

American Chemical Society
1155 Sixteenth Street, N.W.
Washington, D.C. 20036

July 1987

Available from the Distribution Office, ACS

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ACKNOWLEDGEMENTS

Each year, the American Chemical Society conducts salary surveys of its members. This report is one of four presenting detailed results of the 1987 Salary and Employment Status Survey. The four reports are: *1987 Salaries of Non-academic Chemists*, *1987 Salaries of Academic Chemists*, *1987 Salaries of Non-academic Chemical Engineers*, and *1987 Employment Status and Demographic Characteristics of ACS Members*. A summary of the survey findings was published in the June 29, 1987 issue of *Chemical and Engineering News*.

General oversight of the survey and its analysis was provided by the ACS joint Board-Council Committee on Economic Status, headed by Valerie D. Kuck¹, and by its subcommittee on surveys, chaired by Jack G. Kay². The committee expresses its gratitude to the 12,000 ACS members who provided a valuable service to the profession by completing the survey questionnaire.

Joan Burrelli and Nguyen Bailey of ACS Statistical Services, managed by John Robert Jones, conducted this year's survey and prepared this report. Dr. Burrelli wrote the summary and comment on the following pages.

Robert K. Neuman, Head
Department of Professional Services

¹Mrs. Valerie Kuck, Member of Technical Staff, AT&T Bell Laboratories, Murray Hill, New Jersey.

²Dr. Jack Kay, Professor of Chemistry, Drexel University, Philadelphia, Pennsylvania.

SUMMARY AND COMMENT

Joan S. Burrelli*

This year, for the first time, the ACS is producing a separate report on chemical engineers' salaries. ACS member chemical engineers are, on average, older and are more likely to have PhDs than are nonmember chemical engineers. Because the salary figures in this report are presented separately according to degree and years since BS, I believe that they are accurate and represent chemical engineers salaries in the categories reported.

Salaries in Industry

Median salaries for all degree levels were higher this year than last year. The overall median salary for PhD industrial chemical engineers increased 2.5% (to \$61,000) while master's degree chemical engineers reported an increase of 7% (to \$51,000) and bachelor's degree chemical engineers' median salary increased 9% (to \$47,100). Because the Consumer Price Index rose approximately 3% from March 1986 to March 1987, those salary increases represent increases in constant dollars for bachelor's and master's degree chemical engineers and decreases in constant dollars for PhD chemical engineers.

\$61,000 for PhD, up 2.5% from 1986, down 0.5% in constant dollars
\$51,000 for MS, up 7% from 1986, up 4% in constant dollars
\$47,100 for BS, up 9% from 1986, up 6% in constant dollars

Salaries within industry vary according to type of industry, work function, length of experience, and degree of responsibility. Salaries for chemical engineers employed in industry are generally higher for those working in the basic chemicals and petroleum industries, those in general management or R&D management, those with greater experience, and those with greater responsibility.

Salaries differed by geographic region. The median salary of BS chemical engineers ranged from a high of \$57,000 in the West South Central region to a low of \$36,600 in the West North Central region. The regional differences in salaries are largely a function of differences in type of employer. The high salaries in the West South Central region can be explained by the high proportion (more than one-third) of the chemists in this region who are employed in the petroleum industry.

As in the past, salaries for women chemical engineers were lower than those for men. The median salary for women PhDs in industry was 72% of that for men. The difference in men's and women's median salaries is largely due to differences in experience. Half of the BS women chemical engineers in the sample have less than five years of experience. When length of experience is taken into account, the salary gap narrows. For example, the median salary for BS women in industry with 2-4 years since the BS is 98% that for men with comparable experience.

NOTE: Results of the 1987 ACS Salary and Employment Status Survey are presented in a new format this year. Four separate reports: *1987 Salaries of Non-academic Chemists*, *1987 Salaries of Academic Chemists*, *1987 Salaries of Non-academic Chemical Engineers*, and *1987 Employment Status and Demographic Characteristics of ACS Members* replace the traditional one report. Also, the format of the tables is new. If you have comments or suggestions to make concerning this format, please contact Joan Burrelli at the ACS Office of Statistical Services (202-873-4433).

*Dr. Burrelli is Senior Research Associate in the ACS Office of Statistical Services.

A METHOD FOR ESTIMATING AVERAGE SALARIES

A compact summary of the information in this report is possible through a statistical technique known as multiple regression. This technique identifies which characteristics have the greatest effect on salaries, and results in a formula for estimating the average salary of respondents with certain characteristics.

For industrial chemical engineers responding to the 1987 survey, the three characteristics which account for most of the variation among salaries are highest degree, experience (years since B.S. is used to measure experience in ACS surveys), and work function.

Table I displays the factors needed to estimate the average salary for any group of respondents who are industrial chemists with any combination of the listed characteristics.

For example, to estimate the average salary in March 1987 for industrial chemical engineers with the doctorate, 15 to 19 years of experience, and working in R&D management, find the corresponding factors in Table I and multiply them together with the base salary for all industrial chemical engineers:

$$(\$27,046) \times (1.256) \times (1.675) \times (1.224) = \$69,645$$

Table I

SALARY FACTORS FOR INDUSTRIAL CHEMICAL ENGINEERS

BASE SALARY \$27,046

DEGREE:

Bachelor's	1.000
Master's	1.083
Doctorate	1.256

MATURITY:

(Years Since Receiving B.S.)

0-1	1.000
2-4	1.065
5-9	1.326
10-14	1.547
15-19	1.675
20-24	1.836
25-29	1.940
30-34	2.133
35-39	2.045
40 or more	1.936

WORK FUNCTION:

Basic Research	1.000
R&D Management	1.224
Applied Research	0.966
General Management	1.266
Marketing	1.026
Production	0.940
Forensic/Lab Analysis	0.781
Writing	0.863
Chemistry Information Services	0.797
Data Processing	0.965
Consulting	0.982
Other	0.979

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TECHNICAL NOTES

The target population of the 1987 Salary and Employment Status Survey was those ACS members who had U.S. mailing addresses, were not older than 70, and had neither student, retired, nor emeritus status. On January 31, 1987 the ACS membership totalled 129,808, of which approximately 90,000 were eligible for inclusion in the survey. A systematic sample of 20,000 members with non-chemical engineering degrees (for the most part chemists) and all 6,965 members with chemical engineering degrees were selected from the target population.

The survey questionnaires were mailed to this sample of 26,965 members by bulk mail during the week of March 2-6. By the May 15 cut-off date, 11,982 (44.4%) usable questionnaires had been returned.

Definitions

For the purposes of the survey analysis only, the following definitions were used:

Chemical Engineer: A respondent who indicated a work specialty of chemical engineer or a degree field of chemical engineer (category 1 of Question I.B. on the questionnaire).

Unemployed: A respondent who is unemployed and seeking employment (category 4 of Question I.D. on the questionnaire).

This report represents the respondents' principal annual salaries as of March 1, 1987. The respondent's age is given as of March 1, 1987. A respondent's state and geographic region refer to place of residence rather than place of employment. A respondent's metropolitan area refers to place of employment. A list of geographic regions and their member states is on page 6 of this report. A list of metropolitan areas and their component 3-digit ZIP codes appears on page 7.

Small Cell Count

If the number of responses in a cell of a salary table is small, then the sample salary statistics for that cell may not accurately estimate the corresponding population salary statistics. In general, a cell containing fewer than 15 responses does not provide a useful estimate of the median salary, and a cell containing fewer than 25 responses does not provide a useful estimate of the 25th or the 75th salary percentile. For this reason, cells containing fewer than 15 responses were suppressed in the tables in this book.

GEOGRAPHIC REGIONS

PACIFIC

Alaska
California
Hawaii
Oregon
Washington

MOUNTAIN

Arizona
Colorado
Idaho
Montana
Nevada
New Mexico
Utah
Wyoming

WEST NORTH CENTRAL

Iowa
Kansas
Minnesota
Missouri
Nebraska
North Dakota
South Dakota

WEST SOUTH CENTRAL

Arkansas
Louisiana
Oklahoma
Texas

EAST NORTH CENTRAL

Illinois
Indiana
Michigan
Ohio
Wisconsin

EAST SOUTH CENTRAL

Alabama
Kentucky
Mississippi
Tennessee

MIDDLE ATLANTIC

New Jersey
New York
Pennsylvania

SOUTH ATLANTIC

Delaware
District of Columbia
Florida
Georgia
Maryland
North Carolina
South Carolina
Virginia
West Virginia

NEW ENGLAND

Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

METROPOLITAN AREAS

Metropolitan Area	Three-Digit ZIP Codes
Atlanta, GA	300-303
Baltimore, MD	210-214
Boston, MA	017-024
Chicago, IL	463, 464, 600-606
Cincinnati, OH	410, 450-452, 470
Cleveland-Akron, OH	440-443
Columbus, OH	430-432
Dallas, TX	750-753, 760-762
Dayton, OH	453-455
Denver, CO	800-804
Detroit, MI	480-483
Houston-Beaumont, TX	770-777
Los Angeles, CA	900-918, 926-928
Miami, FL	330-333
Newark, NJ	070-076, 079
New York, NY	100-108, 110-114, 116
Philadelphia, PA	189-191, 193, 194
Pittsburgh, PA	150-152
St. Louis, MO	620-622, 630-633
San Francisco, CA	940-951
Washington, DC	200-209, 220-223

See 1987 National Five-Digit ZIP Code and Post Office Directory, United States Postal Service, for the three-digit ZIP codes corresponding to the above metropolitan areas.

Table 1.1.1

SALARIES of CHEMICAL ENGINEERS employed FULL-TIME in INDUSTRY
according to DEGREE and YEARS SINCE BS
1987 ACS Salary Survey

Degree and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
BS						
Total	615	51,271	25,333	35,000	47,112	60,252
2-4	85	28,768	5,157	25,500	29,400	32,500
5-9	86	36,728	8,556	31,000	36,250	40,000
10-14	54	43,619	11,593	36,400	44,250	51,000
15-19	33	47,975	13,866	37,000	47,000	56,000
20-24	35	55,105	16,174	46,000	52,000	61,000
25-29	59	61,658	26,042	46,000	55,000	74,800
30-34	63	64,271	18,772	51,120	60,252	76,000
35-39	131	65,430	35,118	47,000	58,000	75,000
40 Or More	58	59,884	19,862	45,000	58,840	71,000
MS						
Total	495	56,449	29,988	41,000	51,000	65,000
2-4	18	32,244	3,535	31,500	32,100	34,200
5-9	89	38,251	7,104	33,600	37,000	42,780
10-14	69	54,017	55,321	41,000	45,600	52,000
15-19	51	52,952	11,453	45,000	52,000	60,000
20-24	44	59,435	12,881	50,050	59,200	67,310
25-29	48	61,885	16,977	50,508	57,250	72,300
30-34	55	72,963	30,000	53,000	65,000	81,000
35-39	84	65,264	26,105	49,500	59,500	78,302
40 Or More	36	67,110	29,302	51,500	60,400	80,000
PhD						
Total	533	66,281	26,300	49,750	61,000	75,500
5-9	52	43,905	3,342	41,750	44,050	46,740
10-14	92	52,143	8,314	46,310	51,000	56,660
15-19	85	62,249	16,510	52,300	60,000	69,800
20-24	84	68,373	18,943	56,100	66,972	78,600
25-29	85	72,131	18,526	59,200	69,000	82,600
30-34	59	79,063	27,177	62,840	75,000	87,000
35-39	56	83,075	30,913	62,700	74,898	92,250
40 Or More	20	88,240	72,565	60,000	67,500	84,600

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.1.2

SALARIES of MEN CHEMICAL ENGINEERS employed FULL-TIME in INDUSTRY
according to DEGREE and YEARS SINCE BS
1987 ACS Salary Survey

Degree and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
BS						
Total	573	52,586	25,592	36,500	48,600	62,000
2-4	65	28,884	4,916	25,500	29,000	32,500
5-9	74	37,439	8,796	32,000	38,000	41,220
10-14	53	43,380	11,568	36,400	44,000	50,000
15-19	30	49,392	13,139	38,000	47,900	56,000
20-24	31	56,074	16,446	46,700	52,000	61,000
25-29	59	61,658	26,042	46,000	55,000	74,800
30-34	63	64,271	18,772	51,120	60,252	76,000
35-39	131	65,430	35,118	47,000	58,000	75,000
40 Or More	57	59,776	20,021	45,000	58,680	71,000
MS						
Total	462	57,576	30,647	41,800	52,000	65,000
2-4	17	32,224	3,643	31,500	32,100	34,200
5-9	71	38,152	7,335	33,000	37,000	43,400
10-14	60	56,156	59,051	41,000	47,722	53,800
15-19	49	53,522	11,137	45,500	52,000	60,000
20-24	41	59,445	13,245	50,000	58,400	67,620
25-29	48	61,885	16,977	50,508	57,250	72,300
30-34	55	72,963	30,000	53,000	65,000	81,000
35-39	84	65,264	26,105	49,500	59,500	78,302
40 Or More	36	67,110	29,302	51,500	60,400	80,000
PhD						
Total	510	67,143	26,446	51,000	62,200	76,000
5-9	38	44,279	3,338	42,444	44,410	47,000
10-14	87	52,438	8,383	46,860	51,000	57,000
15-19	83	62,460	16,649	52,300	60,000	70,000
20-24	84	68,373	18,943	56,100	66,972	78,600
25-29	84	71,824	18,418	59,100	69,000	82,550
30-34	58	79,668	27,011	64,000	75,000	87,000
35-39	56	83,075	30,913	62,700	74,898	92,250
40 Or More	20	88,240	72,565	60,000	67,500	84,600

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.1.3

SALARIES of WOMEN CHEMICAL ENGINEERS employed FULL-TIME in INDUSTRY
according to DEGREE and YEARS SINCE BS
1987 ACS Salary Survey

Degree and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
BS						
Total	41	32,780	10,459	29,000	30,630	36,000
2-4	20	28,393	5,995	24,020	29,520	32,110
MS						
Total	33	40,661	8,748	35,000	38,500	45,000
5-9	18	38,641	6,285	35,000	37,455	41,600
PhD						
Total	23	47,151	12,035	42,000	44,100	47,500

Note: Cells with fewer than 15 cases have been suppressed.

SALARIES of CHEMICAL ENGINEERS employed FULL-TIME in INDUSTRY
according to DEGREE and RESPONSIBILITY SCORE
1987 ACS Salary Survey

Degree and Responsibility Score	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
BS						
Total	584	51,080	25,151	35,000	47,000	60,000
4-8	48	30,688	10,978	22,900	28,300	35,050
9-12	219	41,010	12,577	31,720	39,100	48,000
13-17	211	53,056	16,863	41,100	52,000	63,600
18-20	106	77,185	38,261	57,288	70,000	90,000
MS						
Total	517	55,509	29,333	40,700	50,000	63,000
4-8	30	37,614	9,335	32,000	35,050	42,800
9-12	208	45,795	11,828	36,570	45,000	52,190
13-17	199	58,460	35,349	44,000	53,640	65,000
18-20	80	80,135	32,917	61,550	75,050	90,750
PhD						
Total	573	65,728	25,800	49,200	60,700	75,696
4-8	16	46,766	9,343	41,500	46,330	53,950
9-12	229	54,418	12,135	45,500	52,000	60,060
13-17	232	67,758	17,195	55,000	66,000	77,140
18-20	96	90,963	43,582	70,500	83,800	99,200

Note: Cells with fewer than 15 cases have been suppressed.

A respondent's responsibility score is derived from adding the responses to Questions VI. A through D on the questionnaire.

Table 1.2.2

SALARIES of MEN CHEMICAL ENGINEERS employed FULL-TIME in INDUSTRY
according to DEGREE and RESPONSIBILITY SCORE
1987 ACS Salary Survey

Degree and Responsibility Score	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
BS						
Total	544	52,399	25,397	36,450	48,000	61,000
4-8	39	31,374	11,646	22,800	28,100	38,000
9-12	196	42,217	12,592	33,400	40,000	49,300
13-17	203	53,326	16,885	41,700	52,000	63,600
18-20	106	77,185	38,261	57,288	70,000	90,000
MS						
Total	483	56,557	29,986	41,000	51,660	65,000
4-8	28	38,086	9,478	32,000	35,950	42,940
9-12	183	46,551	12,025	38,000	46,000	53,600
13-17	192	58,963	35,859	45,000	55,000	65,200
18-20	80	80,135	32,917	61,550	75,050	90,750
PhD						
Total	547	66,551	25,981	50,000	62,000	76,200
9-12	214	55,131	12,177	46,300	52,410	61,400
13-17	224	68,214	17,003	55,000	66,400	77,340
18-20	95	91,173	43,764	70,000	84,000	100,000

Note: Cells with fewer than 15 cases have been suppressed.

A respondent's responsibility score is derived from adding the responses to Questions VI. A through D on the questionnaire.

Table 1.2.3

SALARIES of WOMEN CHEMICAL ENGINEERS employed FULL-TIME in INDUSTRY
according to DEGREE and RESPONSIBILITY SCORE
1987 ACS Salary Survey

Degree and Responsibility Score	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
BS						
Total	39	32,553	10,530	28,000	30,630	36,000
9-12	23	30,729	6,220	29,000	30,200	33,000
MS						
Total	34	40,618	8,724	33,000	39,450	45,000
9-12	25	40,261	8,583	35,000	37,910	45,000
PhD						
Total	26	48,403	12,677	42,000	44,200	48,000
9-12	15	44,245	4,868	40,800	44,000	46,320

Note: Cells with fewer than 15 cases have been suppressed.

A respondent's responsibility score is derived from adding the responses to Questions VI. A through D on the questionnaire.

Table 1.3.1

SALARIES of CHEMICAL ENGINEERS employed FULL-TIME in INDUSTRY
according to DEGREE and EMPLOYER
1987 ACS Salary Survey

Degree & Employer	Count	Mean	Standard Deviation	25th %ile	50th %ile	75th %ile
BS						
Non-Manufacturing	90	51,617	24,005	36,000	47,770	62,000
Basic Chemicals	37	71,072	54,258	47,400	57,400	78,700
Specialty Chemicals	103	52,873	21,968	35,000	50,000	65,000
Electronics	35	40,770	12,559	30,300	38,760	52,000
Petroleum/Natural Gas	33	60,423	21,583	46,000	57,500	77,000
Pharmaceuticals	28	51,347	20,269	32,952	51,250	63,100
Plastics	43	47,399	18,509	33,240	45,000	58,680
Other Manufactures	246	48,431	21,924	33,280	43,590	57,000
MS						
Non-Manufacturing	82	58,694	53,617	41,000	49,000	62,500
Basic Chemicals	49	64,100	22,667	50,000	60,000	76,000
Specialty Chemicals	85	59,776	27,354	42,000	55,000	69,000
Electronics	27	44,583	15,481	35,400	42,500	48,000
Petroleum/Natural Gas	34	64,851	24,084	47,944	59,110	80,000
Pharmaceuticals	40	51,840	23,073	39,000	45,800	57,090
Plastics	41	55,508	27,285	38,000	50,000	60,800
Other Manufactures	175	51,462	16,290	38,000	50,000	60,000
PHD						
Non-Manufacturing	88	67,322	28,744	48,750	58,100	79,000
Basic Chemicals	56	78,929	50,041	53,300	64,900	89,000
Specialty Chemicals	86	61,814	18,597	48,000	58,750	73,000
Electronics	21	54,442	12,735	45,500	49,600	65,000
Petroleum/Natural Gas	100	71,470	20,891	55,500	70,000	81,750
Pharmaceuticals	28	63,525	16,611	52,600	61,500	70,400
Plastics	38	58,629	15,968	44,300	55,000	70,000
Other Manufactures	163	63,842	21,609	48,000	61,000	74,100

Note: Cells with fewer than 15 cases have been suppressed.
The "other manufactures" category includes agricultural chemicals, biochemicals, coatings and paints, food, glass, paper, rubber, soaps and detergents, steel or ferrous metals, and other metals or minerals.

Table 1.4.1

SALARIES of BS CHEMICAL ENGINEERS employed FULL-TIME in INDUSTRY
according to WORK FUNCTION, and YEARS SINCE BS
1987 ACS Salary Survey

Work Function and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
R&D Mgt						
Total	59	65,882	20,270	54,000	62,160	79,000
35-39	19	72,421	19,604	58,000	67,900	79,000
Applied Research						
Total	164	43,164	15,598	31,200	39,388	51,750
2-4	34	29,638	4,145	26,000	30,100	32,500
5-9	31	34,107	7,727	30,000	32,280	36,000
30-34	17	55,351	14,836	46,500	51,120	60,000
35-39	26	55,844	16,369	44,000	51,650	69,000
General Mgt						
Total	103	68,726	38,847	50,000	61,000	76,000
35-39	33	80,589	55,295	58,000	65,000	85,000
Marketing						
Total	96	51,916	23,936	37,000	49,850	60,000
35-39	25	63,391	29,261	44,000	56,000	72,000
Production						
Total	88	41,706	15,258	31,850	39,250	48,900
5-9	20	38,008	4,710	35,100	38,390	39,920
Consulting						
Total	22	42,409	18,662	28,000	39,500	51,000
Other						
Total	79	46,239	17,726	33,300	45,100	54,701
35-39	16	55,126	24,820	40,550	50,500	64,300

Note: Cells with fewer than 15 cases have been suppressed.
The "other" category includes basic research, forensics, writing,
chemistry information services, and computer programming.

Table 1.4.2

SALARIES of BS CHEMICAL ENGINEERS employed FULL-TIME
according to GEOGRAPHIC REGION, and YEARS SINCE BS
1987 ACS Salary Survey

Geographic Region & Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Pacific						
Total	60	51,444	22,227	35,000	44,500	60,500
Mountain						
Total	16	42,050	16,510	31,094	47,556	49,250
West North Central						
Total	29	42,570	16,518	30,000	36,600	52,000
West South Central						
Total	45	59,280	22,446	39,100	57,000	78,500
East North Central						
Total	140	49,940	22,496	33,390	44,000	61,680
2-4	21	29,708	4,050	27,500	30,000	32,500
5-9	18	36,641	8,362	31,500	35,850	40,000
25-29	21	49,609	19,536	39,900	48,000	57,660
35-39	30	67,773	27,565	50,000	63,300	76,000
East South Central						
Total	15	50,913	20,673	38,500	52,000	60,000
Middle Atlantic						
Total	147	52,984	32,548	36,400	49,000	60,000
2-4	21	28,057	4,759	25,000	28,000	32,500
10-14	15	46,014	15,769	37,000	46,893	55,120
30-34	16	57,375	17,228	43,414	54,210	74,000
35-39	39	62,910	50,577	44,000	52,800	64,000
40 Or More	19	58,757	23,736	44,000	55,000	71,000
South Atlantic						
Total	98	48,469	22,941	34,500	45,500	57,600
2-4	17	27,646	6,388	22,800	27,310	31,200
5-9	19	36,720	8,784	31,000	38,000	41,220
35-39	16	68,663	30,477	53,300	61,100	76,400
New England						
Total	55	52,473	21,379	35,800	46,000	64,700

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.5.1

SALARIES of MS CHEMICAL ENGINEERS employed FULL-TIME
according to WORK FUNCTION, and YEARS SINCE BS
1987 ACS Salary Survey

Work Function and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
R&D Mgt Total	53	71,403	25,123	52,000	70,000	80,000
Applied Research Total	169	45,678	12,165	36,000	44,000	52,400
5-9	50	39,317	7,142	33,000	38,200	45,000
10-14	34	45,582	8,512	40,000	45,000	50,000
15-19	15	49,102	8,974	42,000	49,000	53,600
35-39	20	52,287	19,962	38,000	46,370	62,500
General Mgt Total	86	75,383	31,731	52,000	70,750	83,616
30-34	18	83,898	34,722	62,000	79,000	96,000
35-39	19	88,912	31,766	70,000	80,000	101,500
Marketing Total	56	53,818	13,132	44,000	55,000	62,250
Production Total	39	47,864	13,145	36,000	48,600	57,500
Consulting Total	30	66,232	83,478	40,000	52,350	63,000
Other Total	59	50,072	13,895	40,000	49,150	59,000

Note: Cells with fewer than 15 cases have been suppressed.
The "other" category includes basic research, forensics, writing,
chemistry information services, and computer programming.

Table 1.5.2

SALARIES of MS CHEMICAL ENGINEERS employed FULL-TIME
according to GEOGRAPHIC REGION, and YEARS SINCE BS
1987 ACS Salary Survey

Geographic Region & Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Pacific						
Total	43	53,265	16,765	41,600	50,000	60,000
West North Central						
Total	25	53,704	22,764	35,400	50,000	62,100
West South Central						
Total	48	58,025	17,673	46,500	57,550	67,500
East North Central						
Total	79	55,641	18,685	40,000	52,000	67,000
35-39	17	59,449	20,458	43,000	52,000	77,604
Middle Atlantic						
Total	159	59,532	44,007	41,000	51,000	66,000
5-9	26	37,123	9,500	29,440	36,270	44,000
10-14	24	66,122	92,736	42,250	46,100	50,000
15-19	15	56,792	11,271	49,680	53,600	61,000
20-24	17	59,467	10,093	49,500	63,000	67,000
30-34	16	80,619	35,785	56,650	74,750	93,500
35-39	25	67,814	32,771	50,000	61,152	74,000
South Atlantic						
Total	66	57,134	26,452	40,000	52,690	62,100
New England						
Total	50	52,496	18,518	41,000	48,300	60,000

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.6.1

SALARIES of PhD CHEMICAL ENGINEERS employed FULL-TIME
according to WORK FUNCTION, and YEARS SINCE BS
1987 ACS Salary Survey

Work Function and Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
R&D Mgt						
Total	107	77,561	22,044	65,000	71,600	84,000
15-19	22	73,008	19,227	63,500	68,100	77,280
20-24	23	71,019	10,107	68,500	70,800	75,500
25-29	21	85,994	20,055	71,000	81,000	98,000
Basic Research						
Total	24	54,531	17,853	43,200	46,700	57,122
Applied Research						
Total	265	57,864	14,150	47,500	55,000	64,900
5-9	38	43,556	3,668	41,000	43,751	46,560
10-14	60	50,674	6,882	46,200	49,350	54,000
15-19	44	57,556	9,674	50,450	55,500	62,200
20-24	36	61,322	13,321	54,000	58,000	63,350
25-29	36	65,645	12,399	58,750	63,680	70,250
30-34	25	69,835	16,708	60,700	73,500	78,000
35-39	21	70,732	16,377	60,000	70,668	76,000
General Mgt						
Total	48	97,081	53,347	74,800	84,750	99,200
Marketing						
Total	23	66,550	17,319	50,000	66,000	80,000
Consulting						
Total	22	63,938	18,154	48,000	60,500	76,000
Other						
Total	44	63,376	25,186	49,500	60,000	67,150

Note: Cells with fewer than 15 cases have been suppressed.
The "other" category includes production, forensics, writing,
chemistry information services, and computer programming.

Table 1.6.2

SALARIES of PhD CHEMICAL ENGINEERS employed FULL-TIME
according to GEOGRAPHIC REGION, and YEARS SINCE BS
1987 ACS Salary Survey

Geographic Region & Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Pacific						
Total	56	65,010	20,313	53,500	62,350	75,500
15-19	15	56,567	15,069	54,000	58,000	65,100
West North Central						
Total	21	62,180	20,235	43,500	62,000	73,500
West South Central						
Total	78	64,012	19,229	50,000	60,000	77,400
10-14	18	56,084	9,020	49,800	55,990	60,300
15-19	18	63,119	15,098	49,500	60,030	75,500
20-24	16	71,518	20,521	58,150	73,050	82,100
East North Central						
Total	85	65,041	25,200	48,000	60,700	70,800
10-14	18	50,476	6,233	46,300	48,750	55,026
25-29	15	69,343	12,508	65,000	70,000	80,000
Middle Atlantic						
Total	148	67,497	22,481	49,050	64,700	79,750
5-9	19	44,204	3,702	41,000	44,300	47,800
10-14	26	51,693	8,995	45,500	48,300	54,000
20-24	27	67,636	13,491	55,200	67,704	80,000
25-29	22	78,767	16,559	64,400	74,500	90,000
30-34	16	86,569	18,899	76,800	86,000	98,000
35-39	17	92,102	33,448	73,600	84,840	106,000
South Atlantic						
Total	63	68,953	46,669	47,500	58,200	73,000
New England						
Total	56	68,577	25,644	53,600	61,000	80,000

Note: Cells with fewer than 15 cases have been suppressed.



American Chemical Society

OFFICE OF THE
EXECUTIVE DIRECTOR

1155 SIXTEENTH STREET, N.W.
WASHINGTON, D.C. 20036
Phone (202) 872-4600

February 24, 1987

Dear Colleague:

Each year the American Chemical Society studies the economic status of the U.S. chemical profession by surveying a sample of ACS members. You are one of about 25,000 members I am asking to participate in this survey, conducted under the aegis of the Joint Board-Council Committee on Economic Status. This year, the ACS will conduct a special study of the economic status of member chemical engineers. This year's sample, therefore, includes more than the usual number of chemical engineers.

Because a high response rate is needed to assure accurate results, your participation is an important service to our colleagues. Please take a few minutes now to complete the questionnaire and return it in the enclosed business reply envelope. The procedure is confidential, and the information you provide will be reported only as a part of aggregated data.

Findings will be reported to ACS members in several ways. Preliminary results will be presented at the spring meeting in Denver; early in the summer, the ACS will publish detailed analyses as Salaries 1987. At about the same time, Chemical and Engineering News will publish a cover story on the salaries and employment status of chemists and chemical engineers.

Please feel free to use the back of the questionnaire for whatever comments or suggestions you might care to make.

Thank you for your assistance.

Sincerely,

A handwritten signature in cursive script that reads "John K. Crum".

John K. Crum

Encl.

AMERICAN CHEMICAL SOCIETY

1987 Comprehensive Salary and Employment Status Survey

I. EDUCATION AND EMPLOYMENT STATUS

A. PLEASE INDICATE THE YEAR IN WHICH YOU EARNED ANY OF THE FOLLOWING DEGREES:

Bachelor's	19 ___	1-2
Master's	19 ___	3-4
Doctorate	19 ___	5-6

B. PLEASE CHECK THE APPROPRIATE BOX IN EACH COLUMN.

	Field of highest degree	ONE specialty most related to your current or most recent job	
Chemical engineering	<input type="checkbox"/> 01	<input type="checkbox"/> 01	
Biochemistry	<input type="checkbox"/> 02	<input type="checkbox"/> 02	
General chemistry	<input type="checkbox"/> 03	<input type="checkbox"/> 03	
Agricultural/food chemistry	<input type="checkbox"/> 04	<input type="checkbox"/> 04	
Analytical chemistry	<input type="checkbox"/> 05	<input type="checkbox"/> 05	
Clinical chemistry	<input type="checkbox"/> 06	<input type="checkbox"/> 06	
Environmental chemistry	<input type="checkbox"/> 07	<input type="checkbox"/> 07	
Inorganic chemistry	<input type="checkbox"/> 08	<input type="checkbox"/> 08	
Materials science	<input type="checkbox"/> 09	<input type="checkbox"/> 09	
Medicinal/pharmaceutical chemistry	<input type="checkbox"/> 10	<input type="checkbox"/> 10	
Organic chemistry	<input type="checkbox"/> 11	<input type="checkbox"/> 11	
Physical chemistry	<input type="checkbox"/> 12	<input type="checkbox"/> 12	
Polymer chemistry	<input type="checkbox"/> 13	<input type="checkbox"/> 13	
Other chemical science	<input type="checkbox"/> 14	<input type="checkbox"/> 14	
Business Administration	<input type="checkbox"/> 15	<input type="checkbox"/> 15	
Other Non-chemistry	<input type="checkbox"/> 16	<input type="checkbox"/> 16	7-10

C. Were you unemployed at any time during the calendar year 1986?

No 1 Yes 2 11

If yes, how many total weeks were you not employed and actively seeking employment during calendar year 1986?

___ weeks (ENTER A NUMBER FROM 1 TO 52) 12-13

D. PLEASE ENTER YOUR PRIMARY EMPLOYMENT STATUS AS OF MARCH 1, 1987. CHOOSE THE ONE CATEGORY THAT BEST FITS YOUR SITUATION.

Employed full-time (35 hours or more per week)	<input type="checkbox"/> 1	
Employed part-time	<input type="checkbox"/> 2	
Postdoctoral or other fellowship	<input type="checkbox"/> 3	
Not employed but actively seeking employment	<input type="checkbox"/> 4	
Not employed and NOT seeking employment	<input type="checkbox"/> 5	14

G. If you were UNEMPLOYED on March 1, how long had you been unemployed?

Less than 1 month	<input type="checkbox"/> 1	
1 to 3 months	<input type="checkbox"/> 2	
4 to 6 months	<input type="checkbox"/> 3	
7 to 12 months	<input type="checkbox"/> 4	
More than 1 year	<input type="checkbox"/> 5	15

H. If you were EMPLOYED on March 1, what are the first three digits of the zip code where you work?

___ 16-18

II. QUESTIONS ABOUT YOURSELF

A. Your sex:

Male 1 Female 2 19

B. Your marital status:

Single 1 Married 2 20

C. Age at last birthday before March 1, 1987:

___ years old 21-22

D. Citizenship or visa status:

U.S. native	<input type="checkbox"/> 1	
U.S. naturalized	<input type="checkbox"/> 2	
U.S. permanent resident visa	<input type="checkbox"/> 3	
Other visa	<input type="checkbox"/> 4	23

E. Race or ethnic group:

American Indian or Alaskan Native	<input type="checkbox"/> 1	
Asian or Pacific Islander	<input type="checkbox"/> 2	
Black (not of Hispanic origin)	<input type="checkbox"/> 3	
Hispanic	<input type="checkbox"/> 4	
White	<input type="checkbox"/> 5	
Other race or ethnic group	<input type="checkbox"/> 6	24

F. Please enter the two-letter post office abbreviation for the STATE in which you live.

___ 25-26

IF YOU ARE NOT CURRENTLY EMPLOYED, PLEASE SKIP TO SECTION IV, MOST RECENT OR CURRENT JOB.

III. CURRENT INCOME

A. If you are CURRENTLY EMPLOYED, how long have you worked for your current employer?

___ years ___ months 27-30

B. BASE ANNUAL SALARY from PRINCIPAL JOB as of March 1, 1987. (DO NOT INCLUDE payments for bonus, second job, overtime work, summer teaching, or other supplemental earnings or employment.) If zero, please indicate. If on a 9 or 10 month contract, report the 9 or 10 month salary rather than an annualized salary.

\$ _____ per year 31-36

C. TOTAL PROFESSIONAL INCOME during calendar year 1986. (INCLUDE consulting fees, base annual salary, income from second job, bonuses, payments for overtime, summer teaching, and other supplemental earnings.)

\$ _____ per year 37-42

D. If you are currently employed, does your employer pay your ACS dues?

Yes 1 No 2 43

IV. DESCRIBE YOUR CURRENT OR MOST RECENT JOB.

IF YOUR CURRENT OR MOST RECENT EMPLOYER IS NOT AN ACADEMIC INSTITUTION, GO TO SECTION V AT THE TOP OF THE NEXT COLUMN.

CURRENT OR MOST RECENT EMPLOYMENT IS IN AN ACADEMIC INSTITUTION.

- A. Current (or most recent) principal employer.**
1. Public institution 1 Private institution 2 44
2. High school 1
 Medical or professional school 2
 College or university where the highest degree offered in chemical science is:
- Associate 3
 Bachelor's 4
 Master's 5
 Doctorate 6 45
- B. Your academic rank:**
- Full professor 1
 Associate professor 2
 Assistant professor, tenure track 3
 Instructor, lecturer, or non-tenure track 4
 Non-teaching research associate 5
 My institution does not have ranks 6 46
- C. Have you been granted tenure?**
 Yes 1 No 2 47
- D. Your basic contract is for a period of:**
 9 or 10 months 1
 11 or 12 months 2 48
- E. About what fraction of your total academic year assignment is devoted to:**
- | | | | | | | | |
|----------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----|
| | 1/4 or less | 1/3 | 1/2 | 2/3 | 3/4 | full-time | |
| Teaching | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 49 |
| Research | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 50 |
| Administration | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 51 |
| Other | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | <input type="checkbox"/> 6 | 52 |
- F. What was your principal professional activity during the SUMMER OF 1986?**
- Teaching 1
 Funded research or study 2
 Unpaid scholarly/academic 3
 Administration 4
 Consulting 5
 Non-academic employment 6
 Other 7 53

THANK YOU. YOU HAVE COMPLETED THE QUESTIONNAIRE. PLEASE USE THE BLANK SPACE ON THE BACK OF THIS QUESTIONNAIRE FOR COMMENTS.

V. CURRENT OR MOST RECENT EMPLOYMENT IS NOT IN AN ACADEMIC INSTITUTION.

- A. Current (or most recent) principal employer.**
- Self-employed 01
 Private industry 02
 Non-manufacturing 02
 Manufacturing 03-18
 Basic chemicals 03
 Specialty chemicals 04
 Agricultural chemicals 05
 Biochemical products 06
 Coatings and paints 07
 Electronics 08
 Food 09
 Glass, ceramics 10
 Paper 11
 Petroleum/natural gas 12
 Pharmaceuticals, personal care 13
 Plastics 14
 Rubber 15
 Soaps, detergents, surfactants 16
 Steel or ferrous metals 17
 Other metals, minerals 18
 Other manufactures (specify) 19
 Government 20-22
 Federal (civilian) 20
 State or local 21
 Military 22
 Other non-academic 23-25 54-55
 Hospitals, independent laboratory 23
 Non-profit organization, other research institution 24
 Other employment 25
- B. Check the ONE work function that best describes your job.**
- Research and Development 01-03
 Management or administration of R&D 01
 Basic research 02
 Applied research, development, design 03
 General management, administration (other than research and development) 04
 Marketing, sales, purchasing, technical service, economic evaluation 05
 Production, quality control 06
 Forensic analysis, other laboratory analysis 07
 Writing, editing, abstracting 08
 Chemistry information services 09
 Computer programming, analysis, design 10
 Consulting 11
 Other 12 56-57
- C. Were you eligible for a bonus during calendar 1986?**
 Yes 1 No 2 58
- D. Did you receive a bonus during calendar 1986?**
 Yes 1 No 2 59
 IF yes, please indicate amount
 \$ _____ 60-64

VI. LEVEL OF RESPONSIBILITY:

Please examine the statements within each of the four groups (Duties, Technical Decisions and Recommendations, Supervision Received, and Supervision Exercised) and, within each group, check the box of the statement that most closely corresponds to your responsibility on the job.

A. Duties:

- I receive on-the-job training working on simple projects or assisting more senior staff. 1
- I perform responsible and varied assignments within projects 2
- I plan, conduct, and coordinate projects of some complexity 3
- I undertake long-term and short-term planning and supervision of projects. I make decisions on work programs and have budgetary control of projects 4
- I have full managerial responsibility for a function with full responsibility for the operation of a budget and long term planning 5 65

B. Technical Decisions and Recommendations:

- I am responsible for minor technical details only, all other matters being checked. 1
- I am responsible for technical detail which is reviewed overall 2
- I am responsible for technical matters but am subject to occasional review. 3
- I have full technical responsibility for projects. 4
- I am responsible for all technical matters including the delegation of responsibility. 5 66

C. Supervision Received:

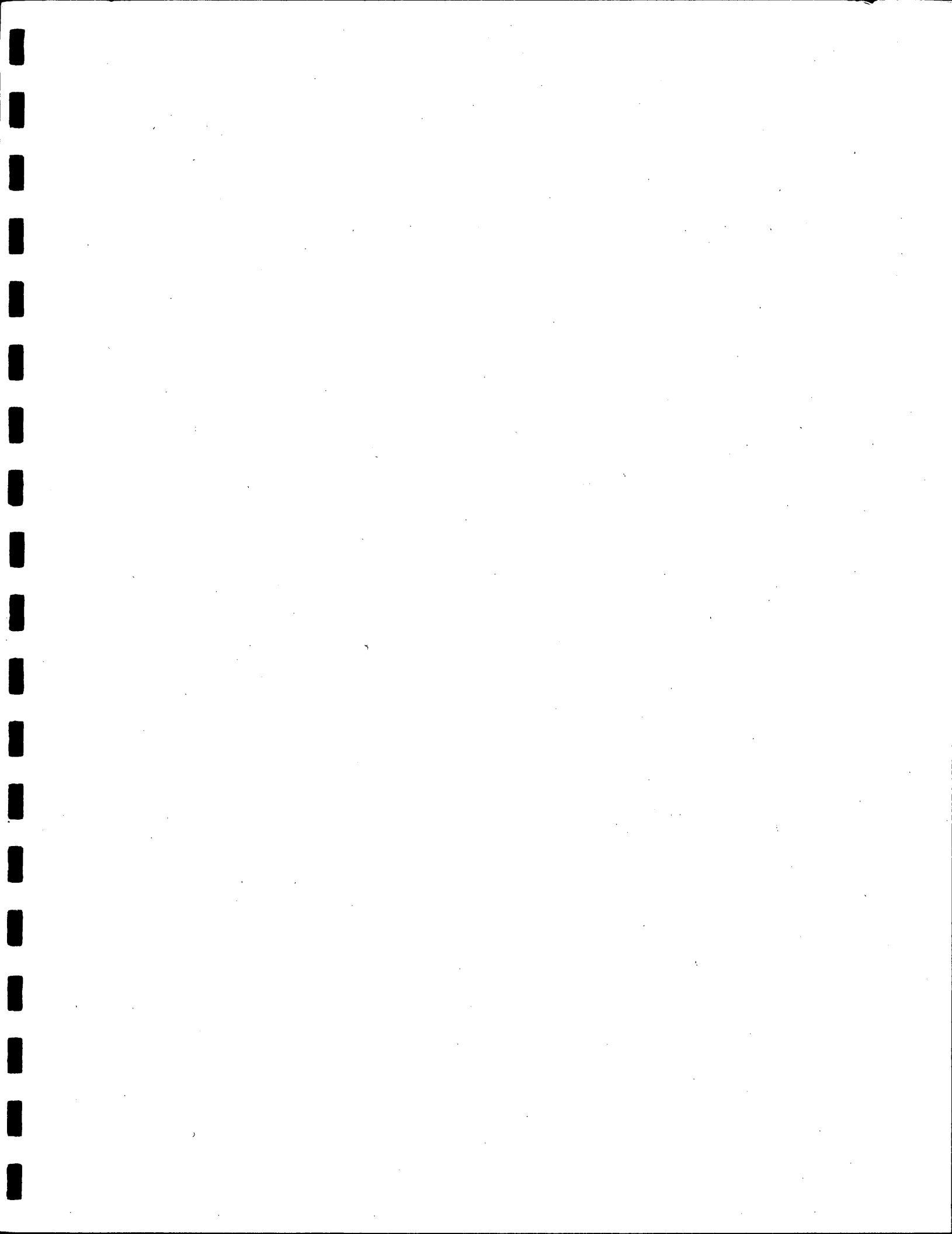
- My work is assigned with detailed instructions, guidance being always available. My results are subject to close scrutiny 1
- My work is assigned in terms of detailed objectives and priorities, guidance being available on problems and unusual features. My work is subject to scrutiny. 2
- My work is assigned in terms of general objectives and priorities, guidance being available on policy or unusually complex problems. My work is reviewed for effectiveness only 3
- My work is such that I receive executive instruction on broad overall objectives and it is reviewed only for its general effectiveness and adherence to policy. 4
- My work is unsupervised, other than I comply with the policy decided within the governing body. 5 67

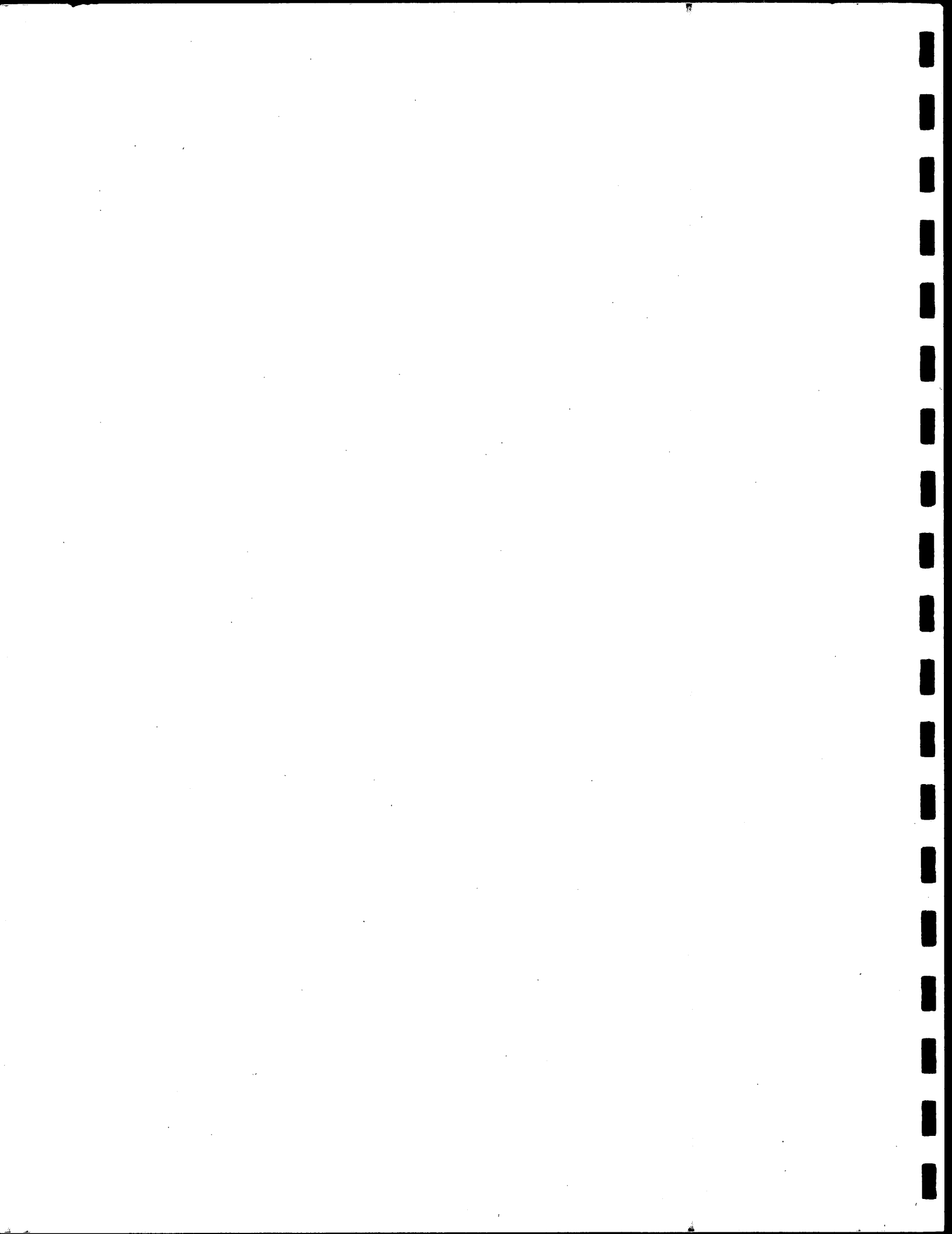
D. Supervision Exercised:

- I have no authority but may give technical guidance to juniors working on the same project. 1
- I have no managerial responsibilities for qualified staff but may be assigned graduates, technicians, or other juniors as assistants from time to time 2
- I supervise a group of qualified staff, technicians, and other employees. I assign and review their work. I can recommend on the selection, discipline, rating, training, and perhaps rate of pay. 3
- I am responsible for leaders of groups containing qualified staff, technicians, and other employees. I give guidance on policy and complex technical matters delegating responsibility for discipline, rating, training, and rates of pay 4
- I have full control over senior staff who are in turn responsible for groups of qualified staff and other employees 5 68

THANK YOUR FOR YOUR PARTICIPATION.

PLEASE RETURN THIS QUESTIONNAIRE TO
ACS STATISTICAL SERVICES,
Room 202, 1155 16th Street NW, Washington, DC 20036





ACS OFFICE OF STATISTICAL SERVICES PUBLICATIONS

Salaries: The Office of Statistical Services annually surveys the ACS membership, gathering detailed information on member chemists and chemical engineers. The reports based on this survey contain statistical tables describing the respondents' employment status, employer, work function and specialty, salaries, and demographic characteristics.

Reports are available for each year from 1973 through the current year. In 1987, four separate reports are available: *1987 Salaries of Non-Academic Chemists*, *1987 Salaries of Non-Academic Chemical Engineers*, *1987 Salaries of Academic Chemists*, and *1987 Employment Status and Demographic Characteristics of ACS Members*.

Starting Salaries: The Office of Statistical Services also surveys new graduates in chemistry and chemical engineering each summer, and publishes reports detailing the graduates' employment status, post-graduation plans, starting salaries, and other employment and demographic characteristics.

Reports are available for each year from 1975 through the current year.

Professionals in Chemistry: The *Professionals in Chemistry* series compiles information concerning chemists and chemical engineers from ACS, government, and private industry sources. It details information on demography, employment, salaries, education, and supply and demand for the entire chemical profession.

Reports are available for each year from 1975 through 1978, and combined reports for 1979-1980, 1981-82, 1983-84, and 1985-86.

Special Reports:

1975 Report of Chemists' Salaries and Employment Status Supplement: Economic Status of Women in the ACS.

Women Chemists 1980: A supplemental report on the ACS's 1980 Survey of Salaries and Employment.

Women Chemists 1985: A supplemental report on the ACS's 1985 Survey of Salaries and Employment.

For prices and ordering information, please call or write:

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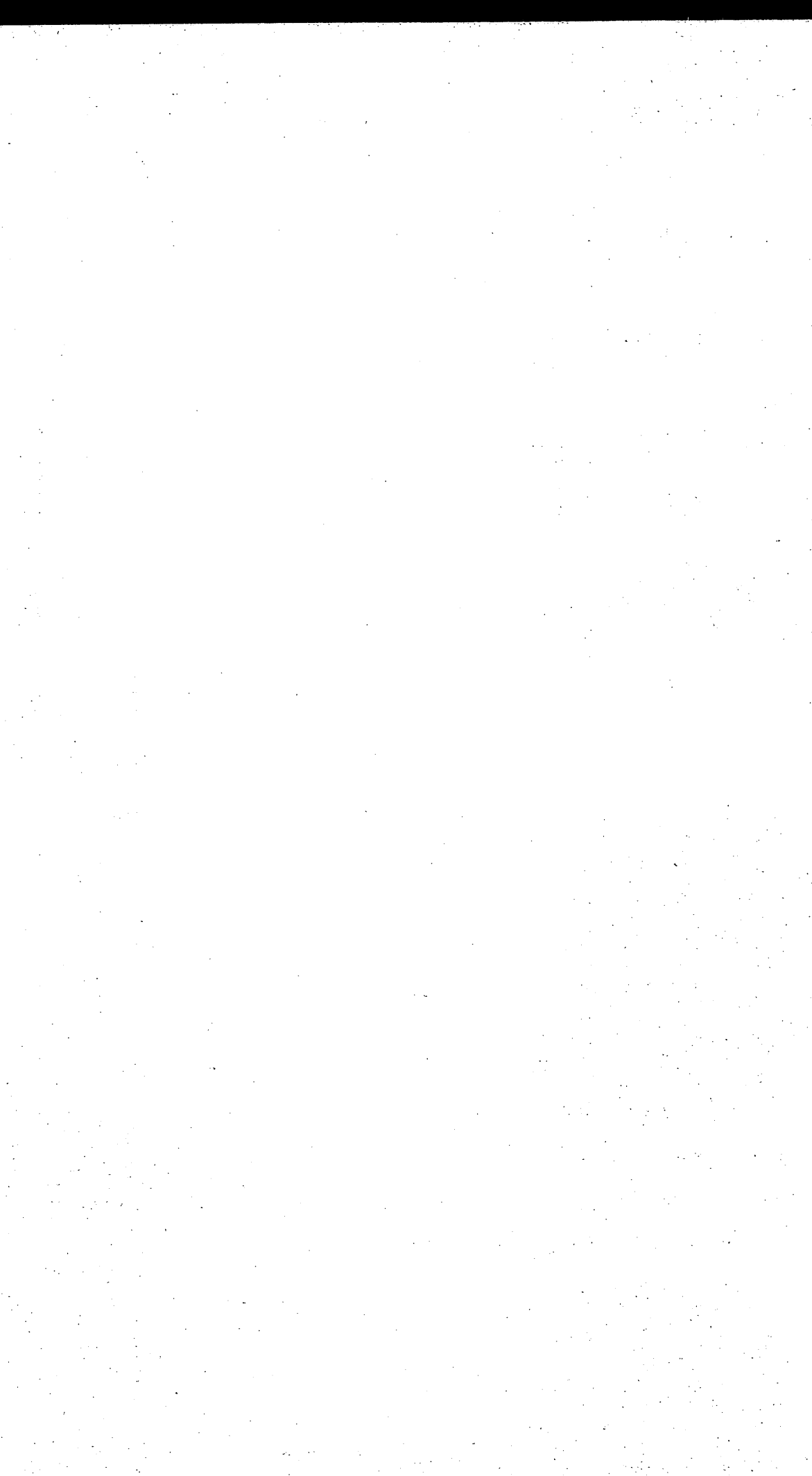


Statistical Services
American Chemical Society
Washington, D.C.

ISBN-03412-1410-7

Employment Status and Demographic Characteristics of ACS Members 1987

Analysis of the
American Chemical Society's
1987 Survey of Salaries
and Employment



**1987 EMPLOYMENT STATUS AND
DEMOGRAPHIC CHARACTERISTICS OF ACS MEMBERS**

**ANALYSIS OF THE AMERICAN CHEMICAL SOCIETY'S
1987 SURVEY OF SALARIES AND EMPLOYMENT**

This report was prepared by the
ACS Office of Statistical Services

American Chemical Society
1155 Sixteenth Street, N.W.
Washington, D.C. 20036

July 1987

Available from the Distribution Office, ACS

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ACKNOWLEDGEMENTS

Each year, the American Chemical Society conducts salary surveys of its members. This report is one of four presenting detailed results of the 1987 Salary and Employment Status Survey. The four reports are: *1987 Salaries of Non-academic Chemists*, *1987 Salaries of Academic Chemists*, *1987 Salaries of Non-academic Chemical Engineers*, and *1987 Employment Status and Demographic Characteristics of ACS Members*. A summary of the survey findings was published in the June 29, 1987 issue of *Chemical and Engineering News*.

General oversight of the survey and its analysis was provided by the ACS joint Board-Council Committee on Economic Status, headed by Valerie D. Kuck¹, and by its subcommittee on surveys, chaired by Jack G. Kay². The committee expresses its gratitude to the 12,000 ACS members who provided a valuable service to the profession by completing the survey questionnaire.

Joan Burrelli and Nguyen Bailey of ACS Statistical Services, managed by John Robert Jones, conducted this year's survey and prepared this report. Dr. Burrelli wrote the summary and comment on the following pages.

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SUMMARY AND COMMENT

Joan S. Burrelli*

Employment and Unemployment

The overall unemployment rate among chemists decreased in spring 1986 to 1.1%, after having been 1.7% in 1985. The unemployment rate this year was the lowest since 1981. As unemployment decreased, the percent of chemists employed full-time increased 0.6 percentage points to 94.7% of all chemists. Each tenth of a percentage point represents approximately 90 ACS member chemists in the U.S. work force. The overall unemployment rate among chemical engineers, though higher than that for chemists, also decreased this year to 1.6% after having been 2.4% in 1985.

As the level of unemployment decreased, the percent of chemists experiencing extended periods of unemployment decreased. The length of unemployment for unemployed chemists was smaller in 1986-87 than in 1985-86. Only 22% of those unemployed had been unemployed for more than one year. In 1986 more than 30% reported they had been unemployed for more than one year.

This year, we asked two new questions on the questionnaire—"Were you unemployed at any time during the calendar year 1986?" and "If yes, how many total weeks were you not employed and actively seeking employment during calendar year 1986?" Of chemists in the labor force on March 1, 1987, 4% had been unemployed at some time during 1986. More than 20% of these reported they were unemployed for 7 to 12 months.

Unemployment rates were not uniform for all chemists. Generally speaking, unemployment rates were higher for those chemists with only BS degrees, for women, for older chemists, for blacks, and for industrial chemists.

Degree

The unemployment rate for BS chemists (1.7%) was twice that for PhD chemists (0.8%).

Gender

The unemployment rate for women was 1.5%; that for men 1.0%. This difference is partly due to the lower proportion of women holding advanced degrees. Whereas 62% of the men have PhD degrees, only 38% of the women do. But even within degree categories women experienced higher unemployment than men did. The unemployment rate for PhD women chemists was 1.3%; that for men 0.8%. Not only were women more likely than men to be unemployed, women chemists were three times as likely as men to work part-time (3.6% compared with 1.1%).

Age

Unemployment rates were highest in the 20-24 and 60-64 age categories (1.6% and 1.5% respectively).

*Dr. Burrelli is Senior Research Associate in the ACS Office of Statistical Services.

Race/Ethnicity

The unemployment rate for black chemists (3.3%) was three times that for white chemists (1.1%). As is the case for women chemists, the higher unemployment rate for blacks is partly explained by the lower proportion of blacks holding doctorate degrees.

Type of Employer

Industrial chemists had a higher rate of unemployment (1.5%) than chemists in any other type of employment. The unemployment rate for academic chemists was 0.8%, for government chemists 0.4%, and for other nonacademic chemists 1.0%. The overall decrease in unemployment is largely a result of a decrease in unemployment among industrial chemists (down from 2.2% in 1986). The unemployment rates for academic and government chemists remained the same as last year's.

Among academics, a smaller percent of chemists held postdoctoral fellowships in 1987 (6.5%) than in 1986 (7.2%). Within industry, chemists in the specialty chemicals, basic chemicals, or pharmaceuticals industries experienced lower rates of unemployment than chemists employed in other industries. Chemists in the metals/minerals industry had the highest rate of unemployment of all industries (6.3%).

Geographic Region

Unemployment rates for chemists were lowest in the Pacific and East South Central regions of the country. Unemployment was highest for chemists living in the West North Central region.

NOTE: Results of the 1987 ACS Salary and Employment Status Survey are presented in a new format this year. Four separate reports, *1987 Salaries of Non-academic Chemists*, *1987 Salaries of Academic Chemists*, *1987 Salaries of Non-academic Chemical Engineers*, and *1987 Employment Status and Demographic Characteristics of ACS Members*, replace the traditional one report. Also, the format of the tables is new. If you have comments or suggestions to make concerning this format, please contact Joan Burrelli at the ACS Office of Statistical Services (202-872-4433).

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TECHNICAL NOTES

The target population of the 1987 Salary and Employment Status Survey was those ACS members who had U.S. mailing addresses, were not older than 70, and had neither student, retired, nor emeritus status. On January 31, 1987 the ACS membership totalled 129,808, of which approximately 90,000 were eligible for inclusion in the survey. A systematic sample of 20,000 members with non-chemical engineering degrees (mostly chemists) and all 6,965 members with chemical engineering degrees were selected from the target population.

The survey questionnaires were mailed to this sample of 26,965 members by bulk mail during the week of March 2-6. By the May 15 cut-off date, 11,982 (44.4%) usable questionnaires had been returned.

Members indicating a degree field of chemical engineering on the ACS membership record were oversampled this year in order to produce a separate report on chemical engineers' salaries. To make the data base from which the non-chemical engineers' tables were produced comparable to those of previous years, a random sample of 24% of those oversampled was drawn and included with the 24% sample of non-chemical engineers (the 20,000 out of approximately 83,000 non-chemical engineers eligible for inclusion in the survey).

Definitions

For the purposes of the survey analysis only, the following definitions were used:

Chemist: A respondent who indicated a work specialty of chemistry or biochemistry (categories 2 through 14 of Question I.B. on the questionnaire) or a non-chemistry work specialty (categories 15 and 16) and a degree field of chemistry or biochemistry.

Chemical Engineer: A respondent who indicated a work specialty of chemical engineering (category 1 of question I.B. on the questionnaire).

Unemployed: A respondent who is unemployed and seeking employment (category 4 of Question I.D. on the questionnaire).

This report represents the respondents' principal annual salaries as of March 1, 1987. The respondent's age is given as of March 1, 1987. A respondent's state and geographic region refer to place of residence rather than place of employment. A respondent's metropolitan area refers to place of employment. A list of geographic regions and their member states is on page 9 of this report. A list of metropolitan areas and their component 3-digit ZIP codes appears on page 10.

Proportions

The proportion of people falling within a certain cell in one of the tables is a sample proportion. The sample proportion is used to make statements about the corresponding population proportion, but, of course, the sample proportion generally is not exactly equal to the population proportion. A useful estimate of the representativeness of the sample proportion is the confidence interval. Such an interval estimate is illustrated in the following statement: "We assert with 95% confidence that the population proportion is between 0.04 and 0.06." A simple but adequate formula for a confidence interval centered on the sample proportion is

$$\begin{aligned} p \text{ (lower)} &= \hat{p} - z [\hat{p} (1 - \hat{p}) / n]^{\frac{1}{2}} \\ \text{and } p \text{ (upper)} &= \hat{p} + z [\hat{p} (1 - \hat{p}) / n]^{\frac{1}{2}} \end{aligned}$$

$$\begin{aligned} \text{where } p \text{ (lower)} &= \text{lower boundary of the interval} \\ p \text{ (upper)} &= \text{upper boundary of the interval} \\ p &= \text{the sample proportion} \\ z &= \text{a function of the level of confidence} \\ &\quad \text{and is found in a table of the} \\ &\quad \text{standard normal distribution.} \\ n &= \text{the sample size} \end{aligned}$$

Inspection of the formula shows that the width of the confidence interval is inversely proportional to the square root of the sample size, so that proportions derived from small samples are not as precise as ones drawn from large samples. Also, if non-respondents differ from respondents with regard to the characteristics under consideration, the formula will overstate precision because the formula is based on assumption of 100% response.

Suppose a confidence interval is required for a group containing 1900 sample members. If the sample contains 95 persons with a specific characteristic, then the numbers that go into the formula are $p=95/1900=0.05$ and $n=1900$. For a 95% confidence interval, z is about 2. Putting these numbers into the formula above we have:

$$\begin{aligned} p \text{ (lower)} &= \hat{p} - z [\hat{p} (1 - \hat{p}) / n]^{\frac{1}{2}} \\ &= 0.05 - 2 [0.05 (0.95) / 1900]^{\frac{1}{2}} \\ &= 0.05 - 0.01 \\ &= 0.04 \end{aligned}$$

$$\begin{aligned} \text{and similarly, } p \text{ (upper)} &= 0.05 + 0.01 \\ &= 0.06 \end{aligned}$$

Thus, a 95% confidence interval for p is from 4.0% to 6.0%. Although we cannot say that the population proportion is exactly 5.0%, we can be confident that it is between 4.0% and 6.0%. The 95% level of confidence means roughly that if this procedure were followed a large number of times using different samples of the same size, the population proportion would be within the calculated interval about 95% of the time.

Small Cell Count

If the number of responses in a cell of a salary table is small, then the sample salary statistics for that cell may not accurately estimate the corresponding population salary statistics. In general, a cell containing fewer than 15 responses does not provide a useful estimate of the median salary, and a cell containing fewer than 25 responses does not provide a useful estimate of the 25th or the 75th salary percentile. For this reason, cells containing fewer than 15 responses were suppressed in the tables in this book.

Median

If a sample of size n is arranged in ascending order of magnitude, the median M_d is given by the $((n+1)/2)$ th value. If $(n+1)/2$ is not an integer, then the median is a weighted average of the two values whose ranks are closest to $(n+1)/2$.

Discrepancies Among Tables

Some pairs of tables contain totals that should be identical but are not. For example, two tables that present information about PhD respondents should show the same total number of PhDs. They might, however, show different totals. To illustrate, if one table groups the PhDs according to specialty and the other groups them according to geographic region, the totals will differ unless the number who did not indicate their specialty is the same as the number who did not indicate their geographic region.

Comparing Salaries

Often questions arise concerning B.S. chemists' salaries as compared with M.S. chemists', or women's salaries as compared with men's. These and similar comparisons require caution.

Statistical tests should be performed to determine whether observed differences in salaries of various sample groups could be mere chance occurrences resulting from peculiarities of the sample. Whether a difference in salaries is "statistically significant" depends not only on the magnitude of the difference but also on the sample size and the magnitude of the sample standard deviations.

Discussion of statistical tests of significance can be found in *Introductory Statistics for Business and Economics* by Thomas H. Wonnacott and Ronald J. Wonnacott, N.Y.: Wiley, 1984; and other similar texts.

GEOGRAPHIC REGIONS

PACIFIC

Alaska
California
Hawaii
Oregon
Washington

MOUNTAIN

Arizona
Colorado
Idaho
Montana
Nevada
New Mexico
Utah
Wyoming

WEST NORTH CENTRAL

Iowa
Kansas
Minnesota
Missouri
Nebraska
North Dakota
South Dakota

WEST SOUTH CENTRAL

Arkansas
Louisiana
Oklahoma
Texas

EAST NORTH CENTRAL

Illinois
Indiana
Michigan
Ohio
Wisconsin

EAST SOUTH CENTRAL

Alabama
Kentucky
Mississippi
Tennessee

MIDDLE ATLANTIC

New Jersey
New York
Pennsylvania

SOUTH ATLANTIC

Delaware
District of Columbia
Florida
Georgia
Maryland
North Carolina
South Carolina
Virginia
West Virginia

NEW ENGLAND

Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

METROPOLITAN AREAS

Metropolitan Area	Three-Digit ZIP Codes
Atlanta, GA	300-303
Baltimore, MD	210-214
Boston, MA	017-024
Chicago, IL	463, 464, 600-606
Cincinnati, OH	410, 450-452, 470
Cleveland-Akron, OH	440-443
Columbus, OH	430-432
Dallas, TX	750-753, 760-762
Dayton, OH	453-455
Denver, CO	800-804
Detroit, MI	480-483
Houston-Beaumont, TX	770-777
Los Angeles, CA	900-918, 926-928
Miami, FL	330-333
Newark, NJ	070-076, 079
New York, NY	100-108, 110-114, 116
Philadelphia, PA	189-191, 193, 194
Pittsburgh, PA	150-152
St. Louis, MO	620-622, 630-633
San Francisco, CA	940-951
Washington, DC	200-209, 220-223

See *1987 National Five-Digit ZIP Code and Post Office Directory*, United States Postal Service, for the three-digit ZIP codes corresponding to the above metropolitan areas.

Table 1.3.1

EMPLOYMENT STATUS OF ALL CHEMISTS
according to AGE
1987 Survey of ACS Members

AGE	EMPLOYMENT STATUS					Total
	Full-Time	Part-Time	Postdoc	Not Employed - Seeking	Not Employed - Not Seeking	
20-24	118	1	1	2	2	124
Row Percent	95.2%	.8%	.8%	1.6%	1.6%	100.0%
Column Percent	1.7%	.9%	.7%	2.4%	2.6%	1.6%
25-29	709	7	55	7	5	783
Row Percent	90.5%	.9%	7.0%	.9%	.6%	100.0%
Column Percent	9.9%	6.2%	37.4%	8.5%	6.5%	10.4%
30-34	1226	15	59	18	7	1325
Row Percent	92.5%	1.1%	4.5%	1.4%	.5%	100.0%
Column Percent	17.2%	13.3%	40.1%	22.0%	9.1%	17.5%
35-39	1104	11	19	13	3	1150
Row Percent	96.0%	1.0%	1.7%	1.1%	.3%	100.0%
Column Percent	15.5%	9.7%	12.9%	15.9%	3.9%	15.2%
40-44	1087	9	8	4	4	1112
Row Percent	97.8%	.8%	.7%	.4%	.4%	100.0%
Column Percent	15.2%	8.0%	5.4%	4.9%	5.2%	14.7%
45-49	941	15	1	13	4	974
Row Percent	96.6%	1.5%	.1%	1.3%	.4%	100.0%
Column Percent	13.2%	13.3%	.7%	15.9%	5.2%	12.9%
50-54	707	11	2	9	8	737
Row Percent	95.9%	1.5%	.3%	1.2%	1.1%	100.0%
Column Percent	9.9%	9.7%	1.4%	11.0%	10.4%	9.7%
55-59	691	12	1	8	15	727
Row Percent	95.0%	1.7%	.1%	1.1%	2.1%	100.0%
Column Percent	9.7%	10.6%	.7%	9.8%	19.5%	9.6%
60-64	428	16	1	7	13	465
Row Percent	92.0%	3.4%	.2%	1.5%	2.8%	100.0%
Column Percent	6.0%	14.2%	.7%	8.5%	16.9%	6.1%
65-69	129	16	0	1	15	161
Row Percent	80.1%	9.9%	0.0%	.6%	9.3%	100.0%
Column Percent	1.8%	14.2%	0.0%	1.2%	19.5%	2.1%

Table 1.6.2

EMPLOYMENT STATUS OF INDUSTRIAL CHEMISTS
according to EMPLOYER
1987 Survey of ACS Members

EMPLOYER	EMPLOYMENT STATUS					Total
	Full-Time	Part-Time	Postdoc	Not Employed - Seeking	Not Employed - Not Seeking	
Non-Manufacturing	445	4	2	9	6	466
Row Percent	95.5%	.9%	.4%	1.9%	1.3%	100.0%
Column Percent	10.1%	16.7%	20.0%	14.5%	14.0%	10.3%
Basic Chemicals	291	1	0	1	3	296
Row Percent	98.3%	.3%	0.0%	.3%	1.0%	100.0%
Column Percent	6.6%	4.2%	0.0%	1.6%	7.0%	6.5%
Specialty Chemicals	643	3	0	5	6	657
Row Percent	97.9%	.5%	0.0%	.8%	.9%	100.0%
Column Percent	14.6%	12.5%	0.0%	8.1%	14.0%	14.5%
Agricultural Chemicals	175	3	0	3	0	181
Row Percent	96.7%	1.7%	0.0%	1.7%	0.0%	100.0%
Column Percent	4.0%	12.5%	0.0%	4.8%	0.0%	4.0%
Biochemical Products	85	0	0	1	0	86
Row Percent	98.8%	0.0%	0.0%	1.2%	0.0%	100.0%
Column Percent	1.9%	0.0%	0.0%	1.6%	0.0%	1.9%
Coatings and Paints	173	3	0	4	0	180
Row Percent	96.1%	1.7%	0.0%	2.2%	0.0%	100.0%
Column Percent	3.9%	12.5%	0.0%	6.5%	0.0%	4.0%
Electronics	163	0	3	5	4	175
Row Percent	93.1%	0.0%	1.7%	2.9%	2.3%	100.0%
Column Percent	3.7%	0.0%	30.0%	8.1%	9.3%	3.9%
Food	155	1	0	0	0	156
Row Percent	99.4%	.6%	0.0%	0.0%	0.0%	100.0%
Column Percent	3.5%	4.2%	0.0%	0.0%	0.0%	3.4%
Glass, Ceramics	37	0	0	1	1	39
Row Percent	94.9%	0.0%	0.0%	2.6%	2.6%	100.0%
Column Percent	.8%	0.0%	0.0%	1.6%	2.3%	.9%
Paper	50	0	0	0	0	50
Row Percent	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Column Percent	1.1%	0.0%	0.0%	0.0%	0.0%	1.1%

Table 1.7.1

EMPLOYMENT STATUS OF NON-ACADEMIC CHEMISTS
according to WORK FUNCTION
1987 Survey of ACS Members

WORK FUNCTION	EMPLOYMENT STATUS					Total
	Full-Time	Part-Time	Postdoc	Not Employed - Seeking	Not Employed - Not Seeking	
R&D Mgt	840	8	1	9	7	865
Row Percent	97.1%	.9%	.1%	1.0%	.8%	100.0%
Column Percent	15.5%	12.7%	3.3%	13.0%	13.0%	15.3%
Basic Research	682	3	24	8	8	725
Row Percent	94.1%	.4%	3.3%	1.1%	1.1%	100.0%
Column Percent	12.6%	4.8%	80.0%	11.6%	14.8%	12.9%
Applied Research	1992	14	5	25	21	2057
Row Percent	96.8%	.7%	.2%	1.2%	1.0%	100.0%
Column Percent	36.7%	22.2%	16.7%	36.2%	38.9%	36.5%
General Mgt	357	3	0	2	2	364
Row Percent	98.1%	.8%	0.0%	.5%	.5%	100.0%
Column Percent	6.6%	4.8%	0.0%	2.9%	3.7%	6.5%
Marketing	252	3	0	4	2	261
Row Percent	96.6%	1.1%	0.0%	1.5%	.8%	100.0%
Column Percent	4.6%	4.8%	0.0%	5.8%	3.7%	4.6%
Production	528	3	0	7	3	541
Row Percent	97.6%	.6%	0.0%	1.3%	.6%	100.0%
Column Percent	9.7%	4.8%	0.0%	10.1%	5.6%	9.6%
Forensics	300	2	0	4	1	307
Row Percent	97.7%	.7%	0.0%	1.3%	.3%	100.0%
Column Percent	5.5%	3.2%	0.0%	5.8%	1.9%	5.4%
Writing	41	2	0	1	3	47
Row Percent	87.2%	4.3%	0.0%	2.1%	6.4%	100.0%
Column Percent	.8%	3.2%	0.0%	1.4%	5.6%	.8%
Chemistry Info Services	72	3	0	1	0	76
Row Percent	94.7%	3.9%	0.0%	1.3%	0.0%	100.0%
Column Percent	1.3%	4.8%	0.0%	1.4%	0.0%	1.3%
Computer Prog	23	2	0	1	1	27
Row Percent	85.2%	7.4%	0.0%	3.7%	3.7%	100.0%
Column Percent	.4%	3.2%	0.0%	1.4%	1.9%	.5%

Table 1.8.1

EMPLOYMENT STATUS OF ALL CHEMISTS
according to SPECIALTY
1987 Survey of ACS Members

SPECIALTY	EMPLOYMENT STATUS					Total
	Full-Time	Part-Time	Postdoc	Not Employed - Seeking	Not Employed - Not Seeking	
Biochemistry	580	5	36	5	7	633
Row Percent	91.6%	.8%	5.7%	.8%	1.1%	100.0%
Column Percent	8.1%	4.3%	24.2%	5.9%	9.0%	8.3%
General Chemistry	403	19	1	7	8	438
Row Percent	92.0%	4.3%	.2%	1.6%	1.8%	100.0%
Column Percent	5.6%	16.5%	.7%	8.2%	10.3%	5.7%
Agricultural/Food Chemistry	282	6	1	2	3	294
Row Percent	95.9%	2.0%	.3%	.7%	1.0%	100.0%
Column Percent	3.9%	5.2%	.7%	2.4%	3.8%	3.9%
Analytical Chemistry	1549	17	16	19	8	1609
Row Percent	96.3%	1.1%	1.0%	1.2%	.5%	100.0%
Column Percent	21.5%	14.8%	10.7%	22.4%	10.3%	21.1%
Clinical Chemistry	120	4	2	4	2	132
Row Percent	90.9%	3.0%	1.5%	3.0%	1.5%	100.0%
Column Percent	1.7%	3.5%	1.3%	4.7%	2.6%	1.7%
Environmental Chemistry	587	10	6	7	3	613
Row Percent	95.8%	1.6%	1.0%	1.1%	.5%	100.0%
Column Percent	8.2%	8.7%	4.0%	8.2%	3.8%	8.0%
Inorganic Chemistry	315	3	14	2	3	337
Row Percent	93.5%	.9%	4.2%	.6%	.9%	100.0%
Column Percent	4.4%	2.6%	9.4%	2.4%	3.8%	4.4%
Materials Science	368	7	7	7	10	399
Row Percent	92.2%	1.8%	1.8%	1.8%	2.5%	100.0%
Column Percent	5.1%	6.1%	4.7%	8.2%	12.8%	5.2%
Medicinal/Pharmaceut ical Chemistry	467	5	9	4	3	488
Row Percent	95.7%	1.0%	1.8%	.8%	.6%	100.0%
Column Percent	6.5%	4.3%	6.0%	4.7%	3.8%	6.4%
Organic Chemistry	965	11	29	7	11	1023
Row Percent	94.3%	1.1%	2.8%	.7%	1.1%	100.0%
Column Percent	13.4%	9.6%	19.5%	8.2%	14.1%	13.4%

Table 2.3.1

LENGTH OF UNEMPLOYMENT OF CHEMISTS UNEMPLOYED on MARCH 1, 1987
according to WORK FUNCTION
1987 Survey of ACS Members

WORK FUNCTION	LENGTH OF UNEMPLOYMENT					Total
	Less Than 1 Month	1-3 Months	4-6 Months	7-12 Months	More Than 1 Year	
R&D Mgt	2	3	3	0	1	9
Row Percent	22.2%	33.3%	33.3%	0.0%	11.1%	100.0%
Column Percent	22.2%	15.8%	21.4%	0.0%	7.7%	13.4%
Basic Research	2	1	0	3	2	8
Row Percent	25.0%	12.5%	0.0%	37.5%	25.0%	100.0%
Column Percent	22.2%	5.3%	0.0%	25.0%	15.4%	11.9%
Applied Research	2	5	8	6	3	24
Row Percent	8.3%	20.8%	33.3%	25.0%	12.5%	100.0%
Column Percent	22.2%	26.3%	57.1%	50.0%	23.1%	35.8%
General Mgt	0	2	0	0	0	2
Row Percent	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%
Column Percent	0.0%	10.5%	0.0%	0.0%	0.0%	3.0%
Marketing	0	1	0	0	2	3
Row Percent	0.0%	33.3%	0.0%	0.0%	66.7%	100.0%
Column Percent	0.0%	5.3%	0.0%	0.0%	15.4%	4.5%
Production	1	1	2	1	2	7
Row Percent	14.3%	14.3%	28.6%	14.3%	28.6%	100.0%
Column Percent	11.1%	5.3%	14.3%	8.3%	15.4%	10.4%
Forensics	0	3	0	1	0	4
Row Percent	0.0%	75.0%	0.0%	25.0%	0.0%	100.0%
Column Percent	0.0%	15.8%	0.0%	8.3%	0.0%	6.0%
Writing	0	0	0	0	1	1
Row Percent	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
Column Percent	0.0%	0.0%	0.0%	0.0%	7.7%	1.5%
Chemistry Info Services	0	0	1	0	0	1
Row Percent	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
Column Percent	0.0%	0.0%	7.1%	0.0%	0.0%	1.5%
Computer Prog	1	0	0	0	0	1
Row Percent	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Column Percent	11.1%	0.0%	0.0%	0.0%	0.0%	1.5%
Consulting	1	1	0	1	0	3
Row Percent	33.3%	33.3%	0.0%	33.3%	0.0%	100.0%
Column Percent	11.1%	5.3%	0.0%	8.3%	0.0%	4.5%

Table 2.4.1

LENGTH OF UNEMPLOYMENT OF CHEMISTS UNEMPLOYED on MARCH 1, 1987
according to SPECIALTY
1987 Survey of ACS Members

WORK SPECIALTY	LENGTH OF UNEMPLOYMENT					Total
	Less Than 1 Month	1-3 Months	4-6 Months	7-12 Months	More Than 1 Year	
Biochemistry	0	1	2	1	1	5
Row Percent	0.0%	20.0%	40.0%	20.0%	20.0%	100.0%
Column Percent	0.0%	4.5%	12.5%	5.6%	5.6%	6.0%
General Chemistry	0	0	3	1	3	7
Row Percent	0.0%	0.0%	42.9%	14.3%	42.9%	100.0%
Column Percent	0.0%	0.0%	18.8%	5.6%	16.7%	8.4%
Agricultural/Food Chemistry	1	0	0	1	0	2
Row Percent	50.0%	0.0%	0.0%	50.0%	0.0%	100.0%
Column Percent	11.1%	0.0%	0.0%	5.6%	0.0%	2.4%
Analytical Chemistry	2	6	3	4	4	19
Row Percent	10.5%	31.6%	15.8%	21.1%	21.1%	100.0%
Column Percent	22.2%	27.3%	18.8%	22.2%	22.2%	22.9%
Clinical Chemistry	1	1	0	2	0	4
Row Percent	25.0%	25.0%	0.0%	50.0%	0.0%	100.0%
Column Percent	11.1%	4.5%	0.0%	11.1%	0.0%	4.8%
Environmental Chemistry	1	5	0	1	0	7
Row Percent	14.3%	71.4%	0.0%	14.3%	0.0%	100.0%
Column Percent	11.1%	22.7%	0.0%	5.6%	0.0%	8.4%
Inorganic Chemistry	0	0	1	1	0	2
Row Percent	0.0%	0.0%	50.0%	50.0%	0.0%	100.0%
Column Percent	0.0%	0.0%	6.3%	5.6%	0.0%	2.4%
Materials Science	2	2	2	0	1	7
Row Percent	28.6%	28.6%	28.6%	0.0%	14.3%	100.0%
Column Percent	22.2%	9.1%	12.5%	0.0%	5.6%	8.4%
Medicinal/Pharmaceu- tical Chemistry	0	2	0	1	1	4
Row Percent	0.0%	50.0%	0.0%	25.0%	25.0%	100.0%
Column Percent	0.0%	9.1%	0.0%	5.6%	5.6%	4.8%
Organic Chemistry	0	1	1	1	4	7
Row Percent	0.0%	14.3%	14.3%	14.3%	57.1%	100.0%
Column Percent	0.0%	4.5%	6.3%	5.6%	22.2%	8.4%
Physical Chemistry	0	0	0	1	1	2
Row Percent	0.0%	0.0%	0.0%	50.0%	50.0%	100.0%
Column Percent	0.0%	0.0%	0.0%	5.6%	5.6%	2.4%

Table 3.1.3

EMPLOYMENT STATUS OF ALL WOMEN CHEMICAL ENGINEERS
according to HIGHEST DEGREE and SEX
1987 Survey of ACS Members

HIGHEST DEGREE	EMPLOYMENT STATUS					Total
	Full-Time	Part-Time	Postdoc	Not Employed - Seeking	Not Employed - Not Seeking	
BS	7	0	0	0	1	8
Row Percent	5.5%	0.0%	0.0%	0.0%	.8%	6.3%
Column Percent	33.3%	0.0%	0.0%	0.0%	50.0%	34.8%
MS	6	0	0	0	1	7
Row Percent	4.5%	0.0%	0.0%	0.0%	.7%	5.2%
Column Percent	28.6%	0.0%	0.0%	0.0%	50.0%	30.4%
PHD	8	0	0	0	0	8
Row Percent	3.2%	0.0%	0.0%	0.0%	0.0%	3.2%
Column Percent	38.1%	0.0%	0.0%	0.0%	0.0%	34.8%
Total	21	0	0	0	2	23
Row Percent	4.1%	0.0%	0.0%	0.0%	.4%	4.5%
Column Percent	100.0%	0.0%	0.0%	0.0%	100.0%	100.0%

Table 3.5.2

EMPLOYMENT STATUS OF INDUSTRIAL CHEMICAL ENGINEERS
according to EMPLOYER
1987 Survey of ACS Members

EMPLOYER	EMPLOYMENT STATUS					Total
	Full-Time	Part-Time	Postdoc	Not Employed - Seeking	Not Employed - Not Seeking	
Non-Manufacturing	58	1	0	1	1	61
Row Percent	95.1%	1.6%	0.0%	1.6%	1.6%	100.0%
Column Percent	17.1%	33.3%	0.0%	12.5%	12.5%	16.9%
Basic Chemicals	35	1	0	2	0	38
Row Percent	92.1%	2.6%	0.0%	5.3%	0.0%	100.0%
Column Percent	10.3%	33.3%	0.0%	25.0%	0.0%	10.6%
Specialty Chemicals	50	0	0	1	0	51
Row Percent	98.0%	0.0%	0.0%	2.0%	0.0%	100.0%
Column Percent	14.7%	0.0%	0.0%	12.5%	0.0%	14.2%
Agricultural Chemicals	3	0	0	0	0	3
Row Percent	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Column Percent	.9%	0.0%	0.0%	0.0%	0.0%	.8%
Biochemical Products	2	0	0	0	0	2
Row Percent	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Column Percent	.6%	0.0%	0.0%	0.0%	0.0%	.6%
Coatings and Paints	9	0	0	0	0	9
Row Percent	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Column Percent	2.6%	0.0%	0.0%	0.0%	0.0%	2.5%
Electronics	14	0	1	0	1	16
Row Percent	87.5%	0.0%	6.3%	0.0%	6.3%	100.0%
Column Percent	4.1%	0.0%	100.0%	0.0%	12.5%	4.4%
Food	4	0	0	0	0	4
Row Percent	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Column Percent	1.2%	0.0%	0.0%	0.0%	0.0%	1.1%
Glass, Ceramics	1	0	0	0	0	1
Row Percent	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Column Percent	.3%	0.0%	0.0%	0.0%	0.0%	.3%
Paper	8	0	0	0	0	8
Row Percent	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Column Percent	2.4%	0.0%	0.0%	0.0%	0.0%	2.2%

Table 3.5.3

EMPLOYMENT STATUS OF ACADEMIC CHEMICAL ENGINEERS
according to PRINCIPAL EMPLOYER
1987 Survey of ACS Members

PRINCIPAL EMPLOYER	EMPLOYMENT STATUS			Total
	Full-Time	Part-Time	Postdoc	
Medical or Professional School	3	0	0	3
Row Percent	100.0%	0.0%	0.0%	100.0%
Column Percent	4.0%	0.0%	0.0%	3.8%
BS Degree	2	0	0	2
Row Percent	100.0%	0.0%	0.0%	100.0%
Column Percent	2.7%	0.0%	0.0%	2.5%
MS Degree	7	0	0	7
Row Percent	100.0%	0.0%	0.0%	100.0%
Column Percent	9.3%	0.0%	0.0%	8.9%
Doctorate	63	3	1	67
Row Percent	94.0%	4.5%	1.5%	100.0%
Column Percent	84.0%	100.0%	100.0%	84.8%
Total	75	3	1	79
Row Percent	94.9%	3.8%	1.3%	100.0%
Column Percent	100.0%	100.0%	100.0%	100.0%

Table 3.6.1

EMPLOYMENT STATUS OF NON-ACADEMIC CHEMICAL ENGINEERS
according to WORK FUNCTION
1987 Survey of ACS Members

WORK FUNCTION	EMPLOYMENT STATUS					Total
	Full-Time	Part-Time	Postdoc	Not Employed - Seeking	Not Employed - Not Seeking	
R&D Mgt	64	0	0	2	2	68
Row Percent	94.1%	0.0%	0.0%	2.9%	2.9%	100.0%
Column Percent	16.3%	0.0%	0.0%	25.0%	22.2%	16.2%
Basic Research	6	0	1	0	0	7
Row Percent	85.7%	0.0%	14.3%	0.0%	0.0%	100.0%
Column Percent	1.5%	0.0%	100.0%	0.0%	0.0%	1.7%
Applied Research	135	2	0	1	6	144
Row Percent	93.8%	1.4%	0.0%	.7%	4.2%	100.0%
Column Percent	34.4%	25.0%	0.0%	12.5%	66.7%	34.4%
General Mgt	43	1	0	2	0	46
Row Percent	93.5%	2.2%	0.0%	4.3%	0.0%	100.0%
Column Percent	10.9%	12.5%	0.0%	25.0%	0.0%	11.0%
Marketing	30	0	0	0	1	31
Row Percent	96.8%	0.0%	0.0%	0.0%	3.2%	100.0%
Column Percent	7.6%	0.0%	0.0%	0.0%	11.1%	7.4%
Production	40	0	0	0	0	40
Row Percent	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Column Percent	10.2%	0.0%	0.0%	0.0%	0.0%	9.5%
Writing	2	0	0	1	0	3
Row Percent	66.7%	0.0%	0.0%	33.3%	0.0%	100.0%
Column Percent	.5%	0.0%	0.0%	12.5%	0.0%	.7%
Chemistry Info Services	2	0	0	0	0	2
Row Percent	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Column Percent	.5%	0.0%	0.0%	0.0%	0.0%	.5%
Computer Prog	14	0	0	0	0	14
Row Percent	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Column Percent	3.6%	0.0%	0.0%	0.0%	0.0%	3.3%

Table 4.1.1

ALL RESPONDENTS
 according to SEX and HIGHEST DEGREE
 1987 Survey of ACS Members

SEX	HIGHEST DEGREE			Total
	Bachelors	Masters	Doctorate	
Men	1780	1435	4760	7975
Row Percent	22.3%	18.0%	59.7%	100.0%
Column Percent	76.8%	78.4%	89.6%	84.3%
Women	539	396	555	1490
Row Percent	36.2%	26.6%	37.2%	100.0%
Column Percent	23.2%	21.6%	10.4%	15.7%
Total	2319	1831	5315	9465
Row Percent	24.5%	19.3%	56.2%	100.0%
Column Percent	100.0%	100.0%	100.0%	100.0%

Table 4.2.1

ALL RESPONDENTS
according to AGE and HIGHEST DEGREE
1987 Survey of ACS Members

AGE	HIGHEST DEGREE			Total
	Bachelors	Masters	Doctorate	
20-24	128	11	2	141
Row Percent	90.8%	7.8%	1.4%	100.0%
Column Percent	5.6%	.6%	.0%	1.5%
25-29	476	195	260	931
Row Percent	51.1%	20.9%	27.9%	100.0%
Column Percent	20.7%	10.7%	4.9%	9.9%
30-34	419	301	813	1533
Row Percent	27.3%	19.6%	53.0%	100.0%
Column Percent	18.2%	16.6%	15.4%	16.3%
35-39	264	309	826	1399
Row Percent	18.9%	22.1%	59.0%	100.0%
Column Percent	11.5%	17.0%	15.7%	14.9%
40-44	186	252	928	1366
Row Percent	13.6%	18.4%	67.9%	100.0%
Column Percent	8.1%	13.9%	17.6%	14.5%
45-49	220	202	813	1235
Row Percent	17.8%	16.4%	65.8%	100.0%
Column Percent	9.6%	11.1%	15.4%	13.1%
50-54	162	179	616	957
Row Percent	16.9%	18.7%	64.4%	100.0%
Column Percent	7.0%	9.9%	11.7%	10.2%
55-59	225	199	537	961
Row Percent	23.4%	20.7%	55.9%	100.0%
Column Percent	9.8%	11.0%	10.2%	10.2%
60-64	171	118	350	639
Row Percent	26.8%	18.5%	54.8%	100.0%
Column Percent	7.4%	6.5%	6.6%	6.8%
65-70	50	50	129	229
Row Percent	21.8%	21.8%	56.3%	100.0%
Column Percent	2.2%	2.8%	2.4%	2.4%
70 or more	2	1	3	6
Row Percent	33.3%	16.7%	50.0%	100.0%
Column Percent	.1%	.1%	.1%	.1%
Total	2303	1817	5277	9397
Row Percent	24.5%	19.3%	56.2%	100.0%
Column Percent	100.0%	100.0%	100.0%	100.0%

Table 4.2.2

MEN RESPONDENTS
according to AGE and HIGHEST DEGREE
1987 Survey of ACS Members

AGE	HIGHEST DEGREE			Total
	Bachelors	Masters	Doctorate	
20-24	67	4	2	73
Row Percent	91.8%	5.5%	2.7%	100.0%
Column Percent	3.8%	.3%	.0%	.9%
25-29	313	126	196	635
Row Percent	49.3%	19.8%	30.9%	100.0%
Column Percent	17.7%	8.9%	4.1%	8.0%
30-34	308	214	678	1200
Row Percent	25.7%	17.8%	56.5%	100.0%
Column Percent	17.4%	15.0%	14.4%	15.2%
35-39	200	245	734	1179
Row Percent	17.0%	20.8%	62.3%	100.0%
Column Percent	11.3%	17.2%	15.5%	14.9%
40-44	144	198	851	1193
Row Percent	12.1%	16.6%	71.3%	100.0%
Column Percent	8.2%	13.9%	18.0%	15.1%
45-49	177	161	728	1066
Row Percent	16.6%	15.1%	68.3%	100.0%
Column Percent	10.0%	11.3%	15.4%	13.5%
50-54	150	150	583	883
Row Percent	17.0%	17.0%	66.0%	100.0%
Column Percent	8.5%	10.5%	12.3%	11.2%
55-59	205	178	508	891
Row Percent	23.0%	20.0%	57.0%	100.0%
Column Percent	11.6%	12.5%	10.8%	11.3%
60-64	154	101	321	576
Row Percent	26.7%	17.5%	55.7%	100.0%
Column Percent	8.7%	7.1%	6.8%	7.3%
65-70	47	44	120	211
Row Percent	22.3%	20.9%	56.9%	100.0%
Column Percent	2.7%	3.1%	2.5%	2.7%
70 or more	1	1	3	5
Row Percent	20.0%	20.0%	60.0%	100.0%
Column Percent	.1%	.1%	.1%	.1%

Table 4.2.3

WOMEN RESPONDENTS
according to AGE and HIGHEST DEGREE
1987 Survey of ACS Members

AGE	HIGHEST DEGREE			Total
	Bachelors	Masters	Doctorate	
20-24	61	6	0	67
Row Percent	91.0%	9.0%	0.0%	100.0%
Column Percent	11.4%	1.5%	0.0%	4.5%
25-29	163	69	64	296
Row Percent	55.1%	23.3%	21.6%	100.0%
Column Percent	30.4%	17.6%	11.6%	20.0%
30-34	111	87	135	333
Row Percent	33.3%	26.1%	40.5%	100.0%
Column Percent	20.7%	22.1%	24.5%	22.5%
35-39	64	64	92	220
Row Percent	29.1%	29.1%	41.8%	100.0%
Column Percent	11.9%	16.3%	16.7%	14.9%
40-44	42	53	76	171
Row Percent	24.6%	31.0%	44.4%	100.0%
Column Percent	7.8%	13.5%	13.8%	11.5%
45-49	43	41	84	168
Row Percent	25.6%	24.4%	50.0%	100.0%
Column Percent	8.0%	10.4%	15.2%	11.3%
50-54	12	29	33	74
Row Percent	16.2%	39.2%	44.6%	100.0%
Column Percent	2.2%	7.4%	6.0%	5.0%
55-59	20	21	29	70
Row Percent	28.6%	30.0%	41.4%	100.0%
Column Percent	3.7%	5.3%	5.3%	4.7%
60-64	17	17	29	63
Row Percent	27.0%	27.0%	46.0%	100.0%
Column Percent	3.2%	4.3%	5.3%	4.3%
65-70	3	6	9	18
Row Percent	16.7%	33.3%	50.0%	100.0%
Column Percent	.6%	1.5%	1.6%	1.2%
70 or more	1	0	0	1
Row Percent	100.0%	0.0%	0.0%	100.0%
Column Percent	.2%	0.0%	0.0%	.1%

Table 4.3.1

ALL RESPONDENTS
according to WORK SPECIALTY and HIGHEST DEGREE
1987 Survey of ACS Members

WORK SPECIALTY	HIGHEST DEGREE			Total
	Bachelors	Masters	Doctorate	
Chemical Engineering	128	135	250	513
Row Percent	25.0%	26.3%	48.7%	100.0%
Column Percent	5.8%	7.7%	4.9%	5.7%
Biochemistry	57	57	518	632
Row Percent	9.0%	9.0%	82.0%	100.0%
Column Percent	2.6%	3.3%	10.1%	7.0%
General Chemistry	102	134	202	438
Row Percent	23.3%	30.6%	46.1%	100.0%
Column Percent	4.6%	7.7%	3.9%	4.8%
Agricultural/Food Chemistry	70	59	162	291
Row Percent	24.1%	20.3%	55.7%	100.0%
Column Percent	3.2%	3.4%	3.2%	3.2%
Analytical Chemistry	604	330	675	1609
Row Percent	37.5%	20.5%	42.0%	100.0%
Column Percent	27.4%	18.9%	13.2%	17.7%
Clinical Chemistry	27	20	85	132
Row Percent	20.5%	15.2%	64.4%	100.0%
Column Percent	1.2%	1.1%	1.7%	1.5%
Environmental Chemistry	229	136	248	613
Row Percent	37.4%	22.2%	40.5%	100.0%
Column Percent	10.4%	7.8%	4.8%	6.8%
Inorganic Chemistry	51	34	252	337
Row Percent	15.1%	10.1%	74.8%	100.0%
Column Percent	2.3%	2.0%	4.9%	3.7%
Materials Science	87	94	220	401
Row Percent	21.7%	23.4%	54.9%	100.0%
Column Percent	3.9%	5.4%	4.3%	4.4%
Medicinal/Pharmaceu- tical Chemistry	98	97	292	487
Row Percent	20.1%	19.9%	60.0%	100.0%
Column Percent	4.4%	5.6%	5.7%	5.4%

Table 5.3.1 (Cont'd)

ALL RESPONDENTS
according to WORK SPECIALTY and HIGHEST DEGREE
1987 Survey of ACS Members

Work Specialty	HIGHEST DEGREE			Total
	Bachelors	Masters	Doctorate	
Organic Chemistry	163	133	723	1019
Row Percent	16.0%	13.1%	71.0%	100.0%
Column Percent	7.4%	7.6%	14.1%	11.2%
Physical Chemistry	34	34	443	511
Row Percent	6.7%	6.7%	86.7%	100.0%
Column Percent	1.5%	2.0%	8.7%	5.6%
Polymer Chemistry	230	157	508	895
Row Percent	25.7%	17.5%	56.8%	100.0%
Column Percent	10.4%	9.0%	9.9%	9.9%
Other Chemical Science	68	66	118	252
Row Percent	27.0%	26.2%	46.8%	100.0%
Column Percent	3.1%	3.8%	2.3%	2.8%
Business Administration	94	106	131	331
Row Percent	28.4%	32.0%	39.6%	100.0%
Column Percent	4.3%	6.1%	2.6%	3.7%
Other Non-Chemistry	164	150	292	606
Row Percent	27.1%	24.8%	48.2%	100.0%
Column Percent	7.4%	8.6%	5.7%	6.7%
Total	2206	1742	5119	9067
Row Percent	24.3%	19.2%	56.5%	100.0%
Column Percent	100.0%	100.0%	100.0%	100.0%

Table 4.4.1

ALL RESPONDENTS
according to RACE/ETHNICITY and HIGHEST DEGREE
1987 Survey of ACS Members

RACE/ETHNICITY	HIGHEST DEGREE			Total
	Bachelors	Masters	Doctorate	
American Indian	11	8	21	40
Row Percent	27.5%	20.0%	52.5%	100.0%
Column Percent	.5%	.4%	.4%	.4%
Asian	54	91	387	532
Row Percent	10.2%	17.1%	72.7%	100.0%
Column Percent	2.3%	5.0%	7.3%	5.7%
Black	39	19	49	107
Row Percent	36.4%	17.8%	45.8%	100.0%
Column Percent	1.7%	1.0%	.9%	1.1%
Hispanic	27	17	47	91
Row Percent	29.7%	18.7%	51.6%	100.0%
Column Percent	1.2%	.9%	.9%	1.0%
White	2162	1680	4738	8580
Row Percent	25.2%	19.6%	55.2%	100.0%
Column Percent	93.8%	92.0%	89.9%	91.2%
Other Race	13	12	29	54
Row Percent	24.1%	22.2%	53.7%	100.0%
Column Percent	.6%	.7%	.6%	.6%
Total	2306	1827	5271	9404
Row Percent	24.5%	19.4%	56.1%	100.0%
Column Percent	100.0%	100.0%	100.0%	100.0%

Table 4.5.1

ALL RESPONDENTS
according to RACE/ETHNICITY and SEX
1987 Survey of ACS Members

RACE/ETHNICITY	SEX		Total
	Men	Women	
American Indian	36	4	40
Row Percent	90.0%	10.0%	100.0%
Column Percent	.5%	.3%	.4%
Asian	444	91	535
Row Percent	83.0%	17.0%	100.0%
Column Percent	5.6%	6.1%	5.7%
Black	87	22	109
Row Percent	79.8%	20.2%	100.0%
Column Percent	1.1%	1.5%	1.2%
Hispanic	76	15	91
Row Percent	83.5%	16.5%	100.0%
Column Percent	1.0%	1.0%	1.0%
White	7257	1354	8611
Row Percent	84.3%	15.7%	100.0%
Column Percent	91.3%	90.8%	91.2%
Other Race	48	6	54
Row Percent	88.9%	11.1%	100.0%
Column Percent	.6%	.4%	.6%
Total	7948	1492	9440
Row Percent	84.2%	15.8%	100.0%
Column Percent	100.0%	100.0%	100.0%

Table 4.6.1

ALL RESPONDENTS
according to RACE/ETHNICITY and CITIZENSHIP
1987 Survey of ACS Members

RACE/ETHNICITY	CITIZENSHIP				Total
	U.S. Native	U.S. Natural- ized	U.S. Perm. Visa	Other Visa	
American Indian	39	1	0	0	40
Row Percent	97.5%	2.5%	0.0%	0.0%	100.0%
Column Percent	.5%	.1%	0.0%	0.0%	.4%
Asian	79	317	105	34	535
Row Percent	14.8%	59.3%	19.6%	6.4%	100.0%
Column Percent	1.0%	42.7%	32.7%	48.6%	5.7%
Black	93	8	6	2	109
Row Percent	85.3%	7.3%	5.5%	1.8%	100.0%
Column Percent	1.1%	1.1%	1.9%	2.9%	1.2%
Hispanic	48	26	13	4	91
Row Percent	52.7%	28.6%	14.3%	4.4%	100.0%
Column Percent	.6%	3.5%	4.0%	5.7%	1.0%
White	8016	379	189	30	8614
Row Percent	93.1%	4.4%	2.2%	.3%	100.0%
Column Percent	96.5%	51.0%	58.9%	42.9%	91.2%
Other Race	34	12	8	0	54
Row Percent	63.0%	22.2%	14.8%	0.0%	100.0%
Column Percent	.4%	1.6%	2.5%	0.0%	.6%
Total	8309	743	321	70	9443
Row Percent	88.0%	7.9%	3.4%	.7%	100.0%
Column Percent	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4.7.1

ALL RESPONDENTS

according to SELECTED METROPOLITAN AREAS and WORK SPECIALTY
1987 Survey of ACS Members

METROPOLITAN AREAS	WORK SPECIALTY										Total
	Chem Eng	Bio-chem	Anal. Chem	Envir Chem	Med/Pharm	Organic	Phys Chem	Polymer	Other Chem	Non-Chem	
Atlanta	5	4	14	3	2	11	4	9	22	9	83
Row Percent	6.0%	4.8%	16.9%	3.6%	2.4%	13.3%	4.8%	10.8%	26.5%	10.8%	100.0%
Column Percent	2.4%	1.4%	2.2%	1.2%	.8%	2.7%	2.0%	2.3%	3.0%	2.3%	2.2%
Baltimore	5	9	14	13	9	7	8	9	23	10	107
Row Percent	4.7%	8.4%	13.1%	12.1%	8.4%	6.5%	7.5%	8.4%	21.5%	9.3%	100.0%
Column Percent	2.4%	3.2%	2.2%	5.1%	3.8%	1.7%	3.9%	2.3%	3.1%	2.5%	2.9%
Boston	21	23	30	18	8	19	8	28	52	28	235
Row Percent	8.9%	9.8%	12.8%	7.7%	3.4%	8.1%	3.4%	11.9%	22.1%	11.9%	100.0%
Column Percent	10.0%	8.2%	4.8%	7.1%	3.4%	4.6%	3.9%	7.3%	7.1%	7.1%	6.3%
Chicago	23	32	74	28	37	47	20	43	74	36	414
Row Percent	5.6%	7.7%	17.9%	6.8%	8.9%	11.4%	4.8%	10.4%	17.9%	8.7%	100.0%
Column Percent	11.0%	11.5%	11.9%	11.0%	15.5%	11.5%	9.8%	11.2%	10.1%	9.1%	11.1%
Cincinnati	1	9	30	10	9	25	9	9	14	9	125
Row Percent	.8%	7.2%	24.0%	8.0%	7.2%	20.0%	7.2%	7.2%	11.2%	7.2%	100.0%
Column Percent	.5%	3.2%	4.8%	3.9%	3.8%	6.1%	4.4%	2.3%	1.9%	2.3%	3.4%
Cleveland-Akron	9	5	34	4	3	20	4	45	35	10	169
Row Percent	5.3%	3.0%	20.1%	2.4%	1.8%	11.8%	2.4%	26.6%	20.7%	5.9%	100.0%
Column Percent	4.3%	1.8%	5.4%	1.6%	1.3%	4.9%	2.0%	11.7%	4.8%	2.5%	4.5%
Columbus	5	9	16	10	3	10	6	16	22	12	109
Row Percent	4.6%	8.3%	14.7%	9.2%	2.8%	9.2%	5.5%	14.7%	20.2%	11.0%	100.0%
Column Percent	2.4%	3.2%	2.6%	3.9%	1.3%	2.4%	2.9%	4.2%	3.0%	3.0%	2.9%
Dallas	5	5	15	0	2	8	6	5	18	9	73
Row Percent	6.8%	6.8%	20.5%	0.0%	2.7%	11.0%	8.2%	6.8%	24.7%	12.3%	100.0%
Column Percent	2.4%	1.8%	2.4%	0.0%	.8%	2.0%	2.9%	1.3%	2.5%	2.3%	2.0%
Dayton	2	1	5	2	0	4	5	4	4	3	30
Row Percent	6.7%	3.3%	16.7%	6.7%	0.0%	13.3%	16.7%	13.3%	13.3%	10.0%	100.0%
Column Percent	1.0%	.4%	.8%	.8%	0.0%	1.0%	2.4%	1.0%	.5%	.8%	.8%
Denver	1	0	11	11	1	2	3	0	7	1	37
Row Percent	2.7%	0.0%	29.7%	29.7%	2.7%	5.4%	8.1%	0.0%	18.9%	2.7%	100.0%
Column Percent	.5%	0.0%	1.8%	4.3%	.4%	.5%	1.5%	0.0%	1.0%	.3%	1.0%
Detroit	4	6	27	14	11	20	9	29	21	8	149
Row Percent	2.7%	4.0%	18.1%	9.4%	7.4%	13.4%	6.0%	19.5%	14.1%	5.4%	100.0%
Column Percent	1.9%	2.2%	4.3%	5.5%	4.6%	4.9%	4.4%	7.6%	2.9%	2.0%	4.0%

Table 4.7.1 (Cont'd)

METROPOLITAN AREAS	WORK SPECIALTY										Total
	Chem Eng	Bio- chem	Anal. Chem	Envir Chem	Med/ Pharm	Organ- ic	Phys Chem	Poly- mer	Other Chem	Non- Chem	
Houston-Beaumont	27	11	32	9	3	22	7	31	25	15	182
Row Percent	14.8%	6.0%	17.6%	4.9%	1.6%	12.1%	3.8%	17.0%	13.7%	8.2%	100.0%
Column Percent	12.9%	3.9%	5.1%	3.5%	1.3%	5.4%	3.4%	8.1%	3.4%	3.8%	4.9%
Los Angeles	23	19	31	16	10	22	17	26	68	42	274
Row Percent	8.4%	6.9%	11.3%	5.8%	3.6%	8.0%	6.2%	9.5%	24.8%	15.3%	100.0%
Column Percent	11.0%	6.8%	5.0%	6.3%	4.2%	5.4%	8.3%	6.8%	9.3%	10.7%	7.3%
Miami	0	5	4	5	2	1	2	0	8	0	27
Row Percent	0.0%	18.5%	14.8%	18.5%	7.4%	3.7%	7.4%	0.0%	29.6%	0.0%	100.0%
Column Percent	0.0%	1.8%	.6%	2.0%	.8%	.2%	1.0%	0.0%	1.1%	0.0%	.7%
Newark	12	14	51	13	51	48	15	46	61	39	350
Row Percent	3.4%	4.0%	14.6%	3.7%	14.6%	13.7%	4.3%	13.1%	17.4%	11.1%	100.0%
Column Percent	5.7%	5.0%	8.2%	5.1%	21.4%	11.7%	7.3%	12.0%	8.3%	9.9%	9.4%
New York	6	19	24	5	8	19	10	8	37	29	165
Row Percent	3.6%	11.5%	14.5%	3.0%	4.8%	11.5%	6.1%	4.8%	22.4%	17.6%	100.0%
Column Percent	2.9%	6.8%	3.8%	2.0%	3.4%	4.6%	4.9%	2.1%	5.0%	7.4%	4.4%
Philadelphia	10	18	44	16	40	31	8	30	49	23	269
Row Percent	3.7%	6.7%	16.4%	5.9%	14.9%	11.5%	3.0%	11.2%	18.2%	8.6%	100.0%
Column Percent	4.8%	6.5%	7.1%	6.3%	16.8%	7.6%	3.9%	7.8%	6.7%	5.8%	7.2%
Pittsburgh	15	2	27	8	0	13	6	19	20	10	120
Row Percent	12.5%	1.7%	22.5%	6.7%	0.0%	10.8%	5.0%	15.8%	16.7%	8.3%	100.0%
Column Percent	7.2%	.7%	4.3%	3.1%	0.0%	3.2%	2.9%	4.9%	2.7%	2.5%	3.2%
St. Louis	10	17	17	8	7	19	1	5	31	11	126
Row Percent	7.9%	13.5%	13.5%	6.3%	5.6%	15.1%	.8%	4.0%	24.6%	8.7%	100.0%
Column Percent	4.8%	6.1%	2.7%	3.1%	2.9%	4.6%	.5%	1.3%	4.2%	2.8%	3.4%
San Francisco	15	39	76	22	14	41	30	16	73	38	364
Row Percent	4.1%	10.7%	20.9%	6.0%	3.8%	11.3%	8.2%	4.4%	20.1%	10.4%	100.0%
Column Percent	7.2%	14.0%	12.2%	8.6%	5.9%	10.0%	14.6%	4.2%	10.0%	9.6%	9.8%
Washington, DC	10	32	48	40	18	21	27	6	69	52	323
Row Percent	3.1%	9.9%	14.9%	12.4%	5.6%	6.5%	8.4%	1.9%	21.4%	16.1%	100.0%
Column Percent	4.8%	11.5%	7.7%	15.7%	7.6%	5.1%	13.2%	1.6%	9.4%	13.2%	8.7%
Total	209	279	624	255	238	410	205	384	733	394	3731
Row Percent	5.6%	7.5%	16.7%	6.8%	6.4%	11.0%	5.5%	10.3%	19.6%	10.6%	100.0%
Column Percent	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: The "other chemistry" category includes general chemistry, agricultural/food chemistry, clinical chemistry, inorganic chemistry, and materials science. The "non-chemistry" category includes business administration.

Table 4.8.1

ALL RESPONDENTS
according to SELECTED METROPOLITAN AREAS and EMPLOYMENT STATUS
1987 Survey of ACS Members

METROPOLITAN AREAS	EMPLOYMENT STATUS					Total
	Full-Time	Part-Time	Postdoc	Not Employed - Seeking	Not Employed - Not Seeking	
Atlanta	84	2	1	0	0	87
Row Percent	96.6%	2.3%	1.1%	0.0%	0.0%	100.0%
Column Percent	2.3%	3.1%	1.5%	0.0%	0.0%	2.2%
Baltimore	104	3	0	0	1	108
Row Percent	96.3%	2.8%	0.0%	0.0%	.9%	100.0%
Column Percent	2.8%	4.6%	0.0%	0.0%	16.7%	2.8%
Boston	228	6	9	0	1	244
Row Percent	93.4%	2.5%	3.7%	0.0%	.4%	100.0%
Column Percent	6.1%	9.2%	13.2%	0.0%	16.7%	6.3%
Chicago	405	11	8	0	0	424
Row Percent	95.5%	2.6%	1.9%	0.0%	0.0%	100.0%
Column Percent	10.9%	16.9%	11.8%	0.0%	0.0%	10.9%
Cincinnati	124	0	2	0	0	126
Row Percent	98.4%	0.0%	1.6%	0.0%	0.0%	100.0%
Column Percent	3.3%	0.0%	2.9%	0.0%	0.0%	3.3%
Cleveland-Akron	170	5	0	0	1	176
Row Percent	96.6%	2.8%	0.0%	0.0%	.6%	100.0%
Column Percent	4.6%	7.7%	0.0%	0.0%	16.7%	4.5%
Columbus	110	1	2	0	0	113
Row Percent	97.3%	.9%	1.8%	0.0%	0.0%	100.0%
Column Percent	2.9%	1.5%	2.9%	0.0%	0.0%	2.9%
Dallas	74	2	1	0	0	77
Row Percent	96.1%	2.6%	1.3%	0.0%	0.0%	100.0%
Column Percent	2.0%	3.1%	1.5%	0.0%	0.0%	2.0%
Dayton	31	2	0	0	0	33
Row Percent	93.9%	6.1%	0.0%	0.0%	0.0%	100.0%
Column Percent	.8%	3.1%	0.0%	0.0%	0.0%	.9%
Denver	39	0	0	0	0	39
Row Percent	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Column Percent	1.0%	0.0%	0.0%	0.0%	0.0%	1.0%
Detroit	154	1	2	0	0	157
Row Percent	98.1%	.6%	1.3%	0.0%	0.0%	100.0%
Column Percent	4.1%	1.5%	2.9%	0.0%	0.0%	4.1%

Table 4.9.1

ALL RESPONDENTS
according to SELECTED METROPOLITAN AREAS and SEX
1987 Survey of ACS Members

METROPOLITAN AREAS	SEX		Total
	Men	Women	
Atlanta	75	12	87
Row Percent	86.2%	13.8%	100.0%
Column Percent	2.3%	1.8%	2.2%
Baltimore	97	11	108
Row Percent	89.8%	10.2%	100.0%
Column Percent	3.0%	1.7%	2.8%
Boston	200	44	244
Row Percent	82.0%	18.0%	100.0%
Column Percent	6.2%	6.7%	6.3%
Chicago	337	89	426
Row Percent	79.1%	20.9%	100.0%
Column Percent	10.4%	13.6%	11.0%
Cincinnati	113	15	128
Row Percent	88.3%	11.7%	100.0%
Column Percent	3.5%	2.3%	3.3%
Cleveland-Akron	155	21	176
Row Percent	88.1%	11.9%	100.0%
Column Percent	4.8%	3.2%	4.5%
Columbus	93	20	113
Row Percent	82.3%	17.7%	100.0%
Column Percent	2.9%	3.1%	2.9%
Dallas	64	12	76
Row Percent	84.2%	15.8%	100.0%
Column Percent	2.0%	1.8%	2.0%
Dayton	30	3	33
Row Percent	90.9%	9.1%	100.0%
Column Percent	.9%	.5%	.9%
Denver	33	6	39
Row Percent	84.6%	15.4%	100.0%
Column Percent	1.0%	.9%	1.0%
Detroit	133	24	157
Row Percent	84.7%	15.3%	100.0%
Column Percent	4.1%	3.7%	4.0%
Houston-Beaumont	170	24	194
Row Percent	87.6%	12.4%	100.0%
Column Percent	5.3%	3.7%	5.0%

Table 4.9.1 (Cont'd)

METROPOLITAN AREAS	SEX		Total
	Men	Women	
Los Angeles	242	41	283
Row Percent	85.5%	14.5%	100.0%
Column Percent	7.5%	6.3%	7.3%
Miami	22	6	28
Row Percent	78.6%	21.4%	100.0%
Column Percent	.7%	.9%	.7%
Newark	306	61	367
Row Percent	83.4%	16.6%	100.0%
Column Percent	9.5%	9.3%	9.5%
New York	131	40	171
Row Percent	76.6%	23.4%	100.0%
Column Percent	4.1%	6.1%	4.4%
Philadelphia	228	46	274
Row Percent	83.2%	16.8%	100.0%
Column Percent	7.1%	7.0%	7.1%
Pittsburgh	103	22	125
Row Percent	82.4%	17.6%	100.0%
Column Percent	3.2%	3.4%	3.2%
St. Louis	122	11	133
Row Percent	91.7%	8.3%	100.0%
Column Percent	3.8%	1.7%	3.4%
San Francisco	309	72	381
Row Percent	81.1%	18.9%	100.0%
Column Percent	9.6%	11.0%	9.8%
Washington, DC	262	75	337
Row Percent	77.7%	22.3%	100.0%
Column Percent	8.1%	11.5%	8.7%
Total	3225	655	3880
Row Percent	83.1%	16.9%	100.0%
Column Percent	100.0%	100.0%	100.0%

Table 4.10.1

ALL RESPONDENTS
according to SELECTED METROPOLITAN AREAS and AGE
1987 Survey of ACS Members

METROPOLITAN AREAS	AGE											Total
	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70 or more	
Atlanta	0	13	12	19	6	14	7	8	4	3	0	86
Row Percent	0.0%	15.1%	14.0%	22.1%	7.0%	16.3%	8.1%	9.3%	4.7%	3.5%	0.0%	100.0%
Column Percent	0.0%	3.0%	1.8%	3.3%	1.1%	2.9%	1.9%	2.1%	1.6%	3.0%	0.0%	2.2%
Baltimore	0	14	24	18	15	10	10	12	4	1	0	108
Row Percent	0.0%	13.0%	22.2%	16.7%	13.9%	9.3%	9.3%	11.1%	3.7%	.9%	0.0%	100.0%
Column Percent	0.0%	3.2%	3.7%	3.1%	2.7%	2.0%	2.7%	3.1%	1.6%	1.0%	0.0%	2.8%
Boston	3	36	42	40	35	16	23	21	20	6	0	242
Row Percent	1.2%	14.9%	17.4%	16.5%	14.5%	6.6%	9.5%	8.7%	8.3%	2.5%	0.0%	100.0%
Column Percent	6.8%	8.3%	6.4%	7.0%	6.2%	3.3%	6.3%	5.5%	7.8%	6.1%	0.0%	6.3%
Chicago	9	58	87	60	58	40	34	41	27	9	0	423
Row Percent	2.1%	13.7%	20.6%	14.2%	13.7%	9.5%	8.0%	9.7%	6.4%	2.1%	0.0%	100.0%
Column Percent	20.5%	13.4%	13.3%	10.5%	10.3%	8.2%	9.3%	10.7%	10.5%	9.1%	0.0%	11.0%
Cincinnati	2	17	25	22	16	12	14	10	7	2	0	127
Row Percent	1.6%	13.4%	19.7%	17.3%	12.6%	9.4%	11.0%	7.9%	5.5%	1.6%	0.0%	100.0%
Column Percent	4.5%	3.9%	3.8%	3.8%	2.8%	2.4%	3.8%	2.6%	2.7%	2.0%	0.0%	3.3%
Cleveland-Akron	4	14	29	18	24	28	16	24	13	4	0	174
Row Percent	2.3%	8.0%	16.7%	10.3%	13.8%	16.1%	9.2%	13.8%	7.5%	2.3%	0.0%	100.0%
Column Percent	9.1%	3.2%	4.4%	3.1%	4.3%	5.7%	4.4%	6.3%	5.1%	4.0%	0.0%	4.5%
Columbus	1	9	14	21	16	21	10	13	6	2	0	113
Row Percent	.9%	8.0%	12.4%	18.6%	14.2%	18.6%	8.8%	11.5%	5.3%	1.8%	0.0%	100.0%
Column Percent	2.3%	2.1%	2.1%	3.7%	2.8%	4.3%	2.7%	3.4%	2.3%	2.0%	0.0%	2.9%
Dallas	0	6	9	18	11	14	5	4	6	2	0	75
Row Percent	0.0%	8.0%	12.0%	24.0%	14.7%	18.7%	6.7%	5.3%	8.0%	2.7%	0.0%	100.0%
Column Percent	0.0%	1.4%	1.4%	3.1%	2.0%	2.9%	1.4%	1.0%	2.3%	2.0%	0.0%	1.9%
Dayton	1	5	4	3	4	7	2	3	3	1	0	33
Row Percent	3.0%	15.2%	12.1%	9.1%	12.1%	21.2%	6.1%	9.1%	9.1%	3.0%	0.0%	100.0%
Column Percent	2.3%	1.2%	.6%	.5%	.7%	1.4%	.5%	.8%	1.2%	1.0%	0.0%	.9%
Denver	0	7	5	9	4	6	0	3	2	2	0	38
Row Percent	0.0%	18.4%	13.2%	23.7%	10.5%	15.8%	0.0%	7.9%	5.3%	5.3%	0.0%	100.0%
Column Percent	0.0%	1.6%	.8%	1.6%	.7%	1.2%	0.0%	.8%	.8%	2.0%	0.0%	1.0%
Detroit	2	16	27	23	25	29	7	17	9	2	0	157
Row Percent	1.3%	10.2%	17.2%	14.6%	15.9%	18.5%	4.5%	10.8%	5.7%	1.3%	0.0%	100.0%
Column Percent	4.5%	3.7%	4.1%	4.0%	4.4%	5.9%	1.9%	4.4%	3.5%	2.0%	0.0%	4.1%

Table 4.11.1

ALL RESPONDENTS
according to SELECTED METROPOLITAN AREAS and HIGHEST DEGREE
1987 Survey of ACS Members

METROPOLITAN AREAS	HIGHEST DEGREE			Total
	Bachelors	Masters	Doctorate	
Atlanta	26	15	46	87
Row Percent	29.9%	17.2%	52.9%	100.0%
Column Percent	2.9%	1.8%	2.2%	2.2%
Baltimore	42	17	48	107
Row Percent	39.3%	15.9%	44.9%	100.0%
Column Percent	4.6%	2.1%	2.2%	2.8%
Boston	59	57	127	243
Row Percent	24.3%	23.5%	52.3%	100.0%
Column Percent	6.5%	7.0%	5.9%	6.3%
Chicago	117	98	212	427
Row Percent	27.4%	23.0%	49.6%	100.0%
Column Percent	12.8%	12.0%	9.9%	11.0%
Cincinnati	33	26	69	128
Row Percent	25.8%	20.3%	53.9%	100.0%
Column Percent	3.6%	3.2%	3.2%	3.3%
Cleveland-Akron	45	46	84	175
Row Percent	25.7%	26.3%	48.0%	100.0%
Column Percent	4.9%	5.6%	3.9%	4.5%
Columbus	34	18	60	112
Row Percent	30.4%	16.1%	53.6%	100.0%
Column Percent	3.7%	2.2%	2.8%	2.9%
Dallas	21	18	38	77
Row Percent	27.3%	23.4%	49.4%	100.0%
Column Percent	2.3%	2.2%	1.8%	2.0%
Dayton	11	4	18	33
Row Percent	33.3%	12.1%	54.5%	100.0%
Column Percent	1.2%	.5%	.8%	.9%
Denver	15	8	15	38
Row Percent	39.5%	21.1%	39.5%	100.0%
Column Percent	1.6%	1.0%	.7%	1.0%
Detroit	39	28	88	155
Row Percent	25.2%	18.1%	56.8%	100.0%
Column Percent	4.3%	3.4%	4.1%	4.0%
Houston-Beaumont	32	49	112	193
Row Percent	16.6%	25.4%	58.0%	100.0%
Column Percent	3.5%	6.0%	5.2%	5.0%

Table 4.11.1 (Cont'd)

METROPOLITAN AREAS	HIGHEST DEGREE			Total
	Bachelors	Masters	Doctorate	
Los Angeles	58	68	156	282
Row Percent	20.6%	24.1%	55.3%	100.0%
Column Percent	6.4%	8.3%	7.3%	7.3%
Miami	9	1	18	28
Row Percent	32.1%	3.6%	64.3%	100.0%
Column Percent	1.0%	.1%	.8%	.7%
Newark	74	108	184	366
Row Percent	20.2%	29.5%	50.3%	100.0%
Column Percent	8.1%	13.2%	8.6%	9.5%
New York	33	43	94	170
Row Percent	19.4%	25.3%	55.3%	100.0%
Column Percent	3.6%	5.2%	4.4%	4.4%
Philadelphia	66	40	169	275
Row Percent	24.0%	14.5%	61.5%	100.0%
Column Percent	7.2%	4.9%	7.9%	7.1%
Pittsburgh	31	26	66	123
Row Percent	25.2%	21.1%	53.7%	100.0%
Column Percent	3.4%	3.2%	3.1%	3.2%
St. Louis	29	27	76	132
Row Percent	22.0%	20.5%	57.6%	100.0%
Column Percent	3.2%	3.3%	3.6%	3.4%
San Francisco	79	61	240	380
Row Percent	20.8%	16.1%	63.2%	100.0%
Column Percent	8.7%	7.4%	11.2%	9.8%
Washington, DC	58	62	217	337
Row Percent	17.2%	18.4%	64.4%	100.0%
Column Percent	6.4%	7.6%	10.2%	8.7%
Total	911	820	2137	3868
Row Percent	23.6%	21.2%	55.2%	100.0%
Column Percent	100.0%	100.0%	100.0%	100.0%

Table 5.1.1

POSTDOCTORAL RESPONDENTS
according to CITIZENSHIP and RACE/ETHNICITY
1987 Survey of ACS Members

RACE/ETHNICITY	CITIZENSHIP				Total
	U.S. Native	U.S. Natural- ized	U.S. Perm. Visa	Other Visa	
American Indian	1	0	0	0	1
Row Percent	100.0%	0.0%	0.0%	0.0%	100.0%
Column Percent	.9%	0.0%	0.0%	0.0%	.6%
Asian	3	4	4	15	26
Row Percent	11.5%	15.4%	15.4%	57.7%	100.0%
Column Percent	2.6%	66.7%	28.6%	71.4%	16.6%
Black	1	0	0	0	1
Row Percent	100.0%	0.0%	0.0%	0.0%	100.0%
Column Percent	.9%	0.0%	0.0%	0.0%	.6%
Hispanic	0	1	1	1	3
Row Percent	0.0%	33.3%	33.3%	33.3%	100.0%
Column Percent	0.0%	16.7%	7.1%	4.8%	1.9%
White	111	1	9	5	126
Row Percent	88.1%	.8%	7.1%	4.0%	100.0%
Column Percent	95.7%	16.7%	64.3%	23.8%	80.3%
Total	116	6	14	21	157
Row Percent	73.9%	3.8%	8.9%	13.4%	100.0%
Column Percent	100.0%	100.0%	100.0%	100.0%	100.0%

Table 5.2.1

POSTDOCTORAL RESPONDENTS
according to SEX and DEGREE FIELD
1987 Survey of ACS Members

DEGREE FIELD	SEX		Total
	Men	Women	
Chemical Engineering	4	0	4
Row Percent	100.0%	0.0%	100.0%
Column Percent	3.4%	0.0%	2.6%
Chemistry	109	38	147
Row Percent	74.1%	25.9%	100.0%
Column Percent	93.2%	97.4%	94.2%
Non-Chemistry	4	1	5
Row Percent	80.0%	20.0%	100.0%
Column Percent	3.4%	2.6%	3.2%
Total	117	39	156
Row Percent	75.0%	25.0%	100.0%
Column Percent	100.0%	100.0%	100.0%

Table 6.1.1

ACADEMIC RESPONDENTS
according to TENURE STATUS and AGE LEVEL
1987 Survey of ACS Members

AGE	TENURE		Total
	Yes	No	
20-24	1	7	8
Row Percent	12.5%	87.5%	100.0%
Column Percent	.1%	.9%	.4%
25-29	3	102	105
Row Percent	2.9%	97.1%	100.0%
Column Percent	.2%	12.9%	5.1%
30-34	20	236	256
Row Percent	7.8%	92.2%	100.0%
Column Percent	1.6%	29.9%	12.4%
35-39	118	158	276
Row Percent	42.8%	57.2%	100.0%
Column Percent	9.3%	20.0%	13.4%
40-44	225	100	325
Row Percent	69.2%	30.8%	100.0%
Column Percent	17.7%	12.7%	15.8%
45-49	276	74	350
Row Percent	78.9%	21.1%	100.0%
Column Percent	21.7%	9.4%	17.0%
40-54	224	45	269
Row Percent	83.3%	16.7%	100.0%
Column Percent	17.6%	5.7%	13.1%
55-59	210	36	246
Row Percent	85.4%	14.6%	100.0%
Column Percent	16.5%	4.6%	11.9%
60-64	135	21	156
Row Percent	86.5%	13.5%	100.0%
Column Percent	10.6%	2.7%	7.6%
65-69	57	10	67
Row Percent	85.1%	14.9%	100.0%
Column Percent	4.5%	1.3%	3.3%
70 or more	2	0	2
Row Percent	100.0%	0.0%	100.0%
Column Percent	.2%	0.0%	.1%
Total	1271	789	2060
Row Percent	61.7%	38.3%	100.0%
Column Percent	100.0%	100.0%	100.0%

Table 6.2.1

ACADEMIC RESPONDENTS
according to TENURE STATUS and SEX
1987 Survey of ACS Members

SEX	TENURE		Total
	Yes	No	
Men	1151	566	1717
Row Percent	67.0%	33.0%	100.0%
Column Percent	90.0%	71.1%	82.7%
Women	128	230	358
Row Percent	35.8%	64.2%	100.0%
Column Percent	10.0%	28.9%	17.3%
Total	1279	796	2075
Row Percent	61.6%	38.4%	100.0%
Column Percent	100.0%	100.0%	100.0%

Table 6.3.1

ACADEMIC RESPONDENTS
according to SEX and AGE LEVEL
1987 Survey of ACS Members

AGE	SEX		Total
	Men	Women	
20-24	2	8	10
Row Percent	20.0%	80.0%	100.0%
Column Percent	.1%	2.1%	.5%
25-29	82	43	125
Row Percent	65.6%	34.4%	100.0%
Column Percent	4.7%	11.5%	5.9%
30-34	210	58	268
Row Percent	78.4%	21.6%	100.0%
Column Percent	12.0%	15.5%	12.6%
35-39	224	61	285
Row Percent	78.6%	21.4%	100.0%
Column Percent	12.8%	16.3%	13.4%
40-44	278	52	330
Row Percent	84.2%	15.8%	100.0%
Column Percent	15.9%	13.9%	15.6%
45-49	291	66	357
Row Percent	81.5%	18.5%	100.0%
Column Percent	16.7%	17.6%	16.8%
40-54	246	26	272
Row Percent	90.4%	9.6%	100.0%
Column Percent	14.1%	6.9%	12.8%
55-59	223	26	249
Row Percent	89.6%	10.4%	100.0%
Column Percent	12.8%	6.9%	11.7%
60-64	130	27	157
Row Percent	82.8%	17.2%	100.0%
Column Percent	7.4%	7.2%	7.4%
65-69	59	8	67
Row Percent	88.1%	11.9%	100.0%
Column Percent	3.4%	2.1%	3.2%
70 or more	2	0	2
Row Percent	100.0%	0.0%	100.0%
Column Percent	.1%	0.0%	.1%
Total	1747	375	2122
Row Percent	82.3%	17.7%	100.0%
Column Percent	100.0%	100.0%	100.0%

Table 6.4.1

ACADEMIC RESPONDENTS
according to SEX and HIGHEST DEGREE
1987 Survey of ACS Members

HIGHEST DEGREE	SEX		Total
	Men	Women	
Bachelors	49	33	82
Row Percent	59.8%	40.2%	100.0%
Column Percent	2.8%	8.7%	3.8%
Masters	144	94	238
Row Percent	60.5%	39.5%	100.0%
Column Percent	8.2%	24.8%	11.2%
Doctorate	1560	252	1812
Row Percent	86.1%	13.9%	100.0%
Column Percent	89.0%	66.5%	85.0%
Total	1753	379	2132
Row Percent	82.2%	17.8%	100.0%
Column Percent	100.0%	100.0%	100.0%

Table 6.5.1

ACADEMIC RESPONDENTS
according to SEX and RACE/ETHNICITY
1987 Survey of ACS Members

RACE/ETHNICITY	SEX		Total
	Men	Women	
American Indian	11	0	11
Row Percent	100.0%	0.0%	100.0%
Column Percent	.6%	0.0%	.5%
Asian	97	9	106
Row Percent	91.5%	8.5%	100.0%
Column Percent	5.5%	2.4%	5.0%
Black	18	6	24
Row Percent	75.0%	25.0%	100.0%
Column Percent	1.0%	1.6%	1.1%
Hispanic	16	1	17
Row Percent	94.1%	5.9%	100.0%
Column Percent	.9%	.3%	.8%
White	1597	361	1958
Row Percent	81.6%	18.4%	100.0%
Column Percent	91.3%	95.5%	92.0%
Other Race	11	1	12
Row Percent	91.7%	8.3%	100.0%
Column Percent	.6%	.3%	.6%
Total	1750	378	2128
Row Percent	82.2%	17.8%	100.0%
Column Percent	100.0%	100.0%	100.0%

Table 6.6.1

ACADEMIC RESPONDENTS
according to CITIZENSHIP and RACE/ETHNICITY
1987 Survey of ACS Members

RACE/ETHNICITY	CITIZENSHIP				Total
	U.S. Native	U.S. Natural- ized	U.S. Perm. Visa	Other Visa	
American Indian	10	1	0	0	11
Row Percent	90.9%	9.1%	0.0%	0.0%	100.0%
Column Percent	.5%	.7%	0.0%	0.0%	.5%
Asian	18	47	23	17	105
Row Percent	17.1%	44.8%	21.9%	16.2%	100.0%
Column Percent	1.0%	32.2%	21.9%	48.6%	4.9%
Black	18	2	2	2	24
Row Percent	75.0%	8.3%	8.3%	8.3%	100.0%
Column Percent	1.0%	1.4%	1.9%	5.7%	1.1%
Hispanic	7	3	5	2	17
Row Percent	41.2%	17.6%	29.4%	11.8%	100.0%
Column Percent	.4%	2.1%	4.8%	5.7%	.8%
White	1783	89	73	14	1959
Row Percent	91.0%	4.5%	3.7%	.7%	100.0%
Column Percent	96.8%	61.0%	69.5%	40.0%	92.1%
Other Race	6	4	2	0	12
Row Percent	50.0%	33.3%	16.7%	0.0%	100.0%
Column Percent	.3%	2.7%	1.9%	0.0%	.6%
Total	1842	146	105	35	2128
Row Percent	86.6%	6.9%	4.9%	1.6%	100.0%
Column Percent	100.0%	100.0%	100.0%	100.0%	100.0%

Table 6.7.1

ACADEMIC RESPONDENTS
according to WORK SPECIALTY and INSTITUTIONAL TYPE
1987 Survey of ACS Members

WORK SPECIALTY	ACADEMIC EMPLOYER						Total
	High School	Medical or Prof School	AA Degree	BS Degree	MS Degree	Doctorate	
Chemical Engineering	2	3	0	2	7	67	81
Row Percent	2.5%	3.7%	0.0%	2.5%	8.6%	82.7%	100.0%
Column Percent	1.7%	1.4%	0.0%	.5%	3.3%	6.9%	3.9%
Biochemistry	3	108	1	31	32	165	340
Row Percent	.9%	31.8%	.3%	9.1%	9.4%	48.5%	100.0%
Column Percent	2.5%	50.2%	.8%	7.8%	14.9%	17.0%	16.6%
General Chemistry	67	1	68	79	18	37	270
Row Percent	24.8%	.4%	25.2%	29.3%	6.7%	13.7%	100.0%
Column Percent	55.4%	.5%	53.5%	19.8%	8.4%	3.8%	13.2%
Agricultural/Food Chemistry	0	2	0	3	1	29	35
Row Percent	0.0%	5.7%	0.0%	8.6%	2.9%	82.9%	100.0%
Column Percent	0.0%	.9%	0.0%	.8%	.5%	3.0%	1.7%
Analytical Chemistry	1	6	7	62	26	106	208
Row Percent	.5%	2.9%	3.4%	29.8%	12.5%	51.0%	100.0%
Column Percent	.8%	2.8%	5.5%	15.5%	12.1%	10.9%	10.1%
Clinical Chemistry	0	15	0	1	1	7	24
Row Percent	0.0%	62.5%	0.0%	4.2%	4.2%	29.2%	100.0%
Column Percent	0.0%	7.0%	0.0%	.3%	.5%	.7%	1.2%
Environmental Chemistry	2	6	3	5	3	42	61
Row Percent	3.3%	9.8%	4.9%	8.2%	4.9%	68.9%	100.0%
Column Percent	1.7%	2.8%	2.4%	1.3%	1.4%	4.3%	3.0%
Inorganic Chemistry	5	2	8	37	20	83	155
Row Percent	3.2%	1.3%	5.2%	23.9%	12.9%	53.5%	100.0%
Column Percent	4.1%	.9%	6.3%	9.3%	9.3%	8.5%	7.6%
Materials Science	0	2	0	1	4	24	31
Row Percent	0.0%	6.5%	0.0%	3.2%	12.9%	77.4%	100.0%
Column Percent	0.0%	.9%	0.0%	.3%	1.9%	2.5%	1.5%
Medicinal/Pharmaceutical Chemistry	1	30	1	3	3	30	68
Row Percent	1.5%	44.1%	1.5%	4.4%	4.4%	44.1%	100.0%
Column Percent	.8%	14.0%	.8%	.8%	1.4%	3.1%	3.3%



American Chemical Society

OFFICE OF THE
EXECUTIVE DIRECTOR

1155 SIXTEENTH STREET, N.W.
WASHINGTON, D.C. 20036
Phone (202) 872-4600

February 24, 1987

Dear Colleague:

Each year the American Chemical Society studies the economic status of the U.S. chemical profession by surveying a sample of ACS members. You are one of about 25,000 members I am asking to participate in this survey, conducted under the aegis of the Joint Board-Council Committee on Economic Status. This year, the ACS will conduct a special study of the economic status of member chemical engineers. This year's sample, therefore, includes more than the usual number of chemical engineers.

Because a high response rate is needed to assure accurate results, your participation is an important service to our colleagues. Please take a few minutes now to complete the questionnaire and return it in the enclosed business reply envelope. The procedure is confidential, and the information you provide will be reported only as a part of aggregated data.

Findings will be reported to ACS members in several ways. Preliminary results will be presented at the spring meeting in Denver; early in the summer, the ACS will publish detailed analyses as Salaries 1987. At about the same time, Chemical and Engineering News will publish a cover story on the salaries and employment status of chemists and chemical engineers.

Please feel free to use the back of the questionnaire for whatever comments or suggestions you might care to make.

Thank you for your assistance.

Sincerely,

A handwritten signature in cursive script that reads "John K. Crum".

John K. Crum

Encl.

AMERICAN CHEMICAL SOCIETY

1987 Comprehensive Salary and Employment Status Survey

I. EDUCATION AND EMPLOYMENT STATUS

A. PLEASE INDICATE THE YEAR IN WHICH YOU EARNED ANY OF THE FOLLOWING DEGREES:

Bachelor's	19	___	1-2
Master's	19	___	3-4
Doctorate	19	___	5-6

B. PLEASE CHECK THE APPROPRIATE BOX IN EACH COLUMN.

	Field of highest degree	ONE specialty most related to your current or most recent job	
Chemical engineering	<input type="checkbox"/> 01	<input type="checkbox"/> 01	
Biochemistry	<input type="checkbox"/> 02	<input type="checkbox"/> 02	
General chemistry	<input type="checkbox"/> 03	<input type="checkbox"/> 03	
Agricultural/food chemistry	<input type="checkbox"/> 04	<input type="checkbox"/> 04	
Analytical chemistry	<input type="checkbox"/> 05	<input type="checkbox"/> 05	
Clinical chemistry	<input type="checkbox"/> 06	<input type="checkbox"/> 06	
Environmental chemistry	<input type="checkbox"/> 07	<input type="checkbox"/> 07	
Inorganic chemistry	<input type="checkbox"/> 08	<input type="checkbox"/> 08	
Materials science	<input type="checkbox"/> 09	<input type="checkbox"/> 09	
Medicinal/pharmaceutical chemistry	<input type="checkbox"/> 10	<input type="checkbox"/> 10	
Organic chemistry	<input type="checkbox"/> 11	<input type="checkbox"/> 11	
Physical chemistry	<input type="checkbox"/> 12	<input type="checkbox"/> 12	
Polymer chemistry	<input type="checkbox"/> 13	<input type="checkbox"/> 13	
Other chemical science	<input type="checkbox"/> 14	<input type="checkbox"/> 14	
Business Administration	<input type="checkbox"/> 15	<input type="checkbox"/> 15	
Other Non-chemistry	<input type="checkbox"/> 16	<input type="checkbox"/> 16	7-10

C. Were you unemployed at any time during the calendar year 1986?

No 1 Yes 2 11

If yes, how many total weeks were you not employed and actively seeking employment during calendar year 1986?

___ weeks (ENTER A NUMBER FROM 1 TO 52) 12-13

D. PLEASE ENTER YOUR PRIMARY EMPLOYMENT STATUS AS OF MARCH 1, 1987. CHOOSE THE ONE CATEGORY THAT BEST FITS YOUR SITUATION.

Employed full-time (35 hours or more per week)	<input type="checkbox"/> 1	
Employed part-time	<input type="checkbox"/> 2	
Postdoctoral or other fellowship	<input type="checkbox"/> 3	
Not employed but actively seeking employment	<input type="checkbox"/> 4	
Not employed and NOT seeking employment	<input type="checkbox"/> 5	14

G. If you were UNEMPLOYED on March 1, how long had you been unemployed?

Less than 1 month	<input type="checkbox"/> 1	
1 to 3 months	<input type="checkbox"/> 2	
4 to 6 months	<input type="checkbox"/> 3	
7 to 12 months	<input type="checkbox"/> 4	
More than 1 year	<input type="checkbox"/> 5	15

H. If you were EMPLOYED on March 1, what are the first three digits of the zip code where you work?

___ - ___ - ___ 16-18

II. QUESTIONS ABOUT YOURSELF

A. Your sex:

Male 1 Female 2 19

B. Your marital status:

Single 1 Married 2 20

C. Age at last birthday before March 1, 1987:

___ - ___ years old 21-22

D. Citizenship or visa status:

U.S. native	<input type="checkbox"/> 1	
U.S. naturalized	<input type="checkbox"/> 2	
U.S. permanent resident visa	<input type="checkbox"/> 3	
Other visa	<input type="checkbox"/> 4	23

E. Race or ethnic group:

American Indian or Alaskan Native	<input type="checkbox"/> 1	
Asian or Pacific Islander	<input type="checkbox"/> 2	
Black (not of Hispanic origin)	<input type="checkbox"/> 3	
Hispanic	<input type="checkbox"/> 4	
White	<input type="checkbox"/> 5	
Other race or ethnic group	<input type="checkbox"/> 6	24

F. Please enter the two-letter post office abbreviation for the STATE in which you live.

___ - ___ 25-26

IF YOU ARE NOT CURRENTLY EMPLOYED, PLEASE SKIP TO SECTION IV, MOST RECENT OR CURRENT JOB.

III. CURRENT INCOME

A. If you are CURRENTLY EMPLOYED, how long have you worked for your current employer?

___ - ___ years ___ - ___ months 27-30

B. BASE ANNUAL SALARY from PRINCIPAL JOB as of March 1, 1987. (DO NOT INCLUDE payments for bonus, second job, overtime work, summer teaching, or other supplemental earnings or employment.) If zero, please indicate. If on a 9 or 10 month contract, report the 9 or 10 month salary rather than an annualized salary.

\$ _____ per year 31-36

C. TOTAL PROFESSIONAL INCOME during calendar year 1986. (INCLUDE consulting fees, base annual salary, income from second job, bonuses, payments for overtime, summer teaching, and other supplemental earnings.)

\$ _____ per year 37-42

D. If you are currently employed, does your employer pay your ACS dues?

Yes 1 No 2 43

IV. DESCRIBE YOUR CURRENT OR MOST RECENT JOB.

IF YOUR CURRENT OR MOST RECENT EMPLOYER IS NOT AN ACADEMIC INSTITUTION, GO TO SECTION V AT THE TOP OF THE NEXT COLUMN.

CURRENT OR MOST RECENT EMPLOYMENT IS IN AN ACADEMIC INSTITUTION.

A. Current (or most recent) principal employer.

- 1. Public institution 1 Private institution 2 44
- 2. High school 1
- Medical or professional school 2
- College or university where the highest degree offered in chemical science is:
- Associate 3
- Bachelor's 4
- Master's 5
- Doctorate 6 45

B. Your academic rank:

- Full professor 1
- Associate professor 2
- Assistant professor, tenure track 3
- Instructor, lecturer, or non-tenure track 4
- Non-teaching research associate 5
- My institution does not have ranks 6 46

C. Have you been granted tenure?

- Yes 1 No 2 47

D. Your basic contract is for a period of:

- 9 or 10 months 1
- 11 or 12 months 2 48

E. About what fraction of your total academic year assignment is devoted to:

	1/4 or less	1/3	1/2	2/3	3/4	full-time	
Teaching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	49
Research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	50
Administration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	51
Other	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	52

F. What was your principal professional activity during the SUMMER OF 1986?

- Teaching 1
- Funded research or study 2
- Unpaid scholarly/academic 3
- Administration 4
- Consulting 5
- Non-academic employment 6
- Other 7 53

THANK YOU. YOU HAVE COMPLETED THE QUESTIONNAIRE. PLEASE USE THE BLANK SPACE ON THE BACK OF THIS QUESTIONNAIRE FOR COMMENTS.

V. CURRENT OR MOST RECENT EMPLOYMENT IS NOT IN AN ACADEMIC INSTITUTION.

A. Current (or most recent) principal employer.

- Self-employed 01
- Private industry 02
- Non-manufacturing 02
- Manufacturing 03
- Basic chemicals 03
- Specialty chemicals 04
- Agricultural chemicals 05
- Biochemical products 06
- Coatings and paints 07
- Electronics 08
- Food 09
- Glass, ceramics 10
- Paper 11
- Petroleum/natural gas 12
- Pharmaceuticals, personal care 13
- Plastics 14
- Rubber 15
- Soaps, detergents, surfactants 16
- Steel or ferrous metals 17
- Other metals, minerals 18
- Other manufactures (specify) 19
- Government 20
- Federal (civilian) 20
- State or local 21
- Military 22
- Other non-academic 23
- Hospitals, independent laboratory 23
- Non-profit organization, other research institution 24
- Other employment 25 54-55

B. Check the ONE work function that best describes your job.

- Research and Development 01
- Management or administration of R&D 01
- Basic research 02
- Applied research, development, design 03
- General management, administration (other than research and development) 04
- Marketing, sales, purchasing, technical service, economic evaluation 05
- Production, quality control 06
- Forensic analysis, other laboratory analysis 07
- Writing, editing, abstracting 08
- Chemistry information services 09
- Computer programming, analysis, design 10
- Consulting 11
- Other 12 56-57

C. Were you eligible for a bonus during calendar 1986?

- Yes 1 No 2 58

D. Did you receive a bonus during calendar 1986?

- Yes 1 No 2 59

IF yes, please indicate amount

\$ _____

VI. LEVEL OF RESPONSIBILITY:

Please examine the statements within each of the four groups (Duties, Technical Decisions and Recommendations, Supervision Received, and Supervision Exercised) and, within each group, check the box of the statement that most closely corresponds to your responsibility on the job.

A. Duties:

- I receive on-the-job training working on simple projects or assisting more senior staff 1
- I perform responsible and varied assignments within projects 2
- I plan, conduct, and coordinate projects of some complexity 3
- I undertake long-term and short-term planning and supervision of projects. I make decisions on work programs and have budgetary control of projects 4
- I have full managerial responsibility for a function with full responsibility for the operation of a budget and long term planning 5

65

B. Technical Decisions and Recommendations:

- I am responsible for minor technical details only, all other matters being checked 1
- I am responsible for technical detail which is reviewed overall 2
- I am responsible for technical matters but am subject to occasional review 3
- I have full technical responsibility for projects 4
- I am responsible for all technical matters including the delegation of responsibility 5

66

C. Supervision Received:

- My work is assigned with detailed instructions, guidance being always available. My results are subject to close scrutiny 1
- My work is assigned in terms of detailed objectives and priorities, guidance being available on problems and unusual features. My work is subject to scrutiny 2
- My work is assigned in terms of general objectives and priorities, guidance being available on policy or unusually complex problems. My work is reviewed for effectiveness only 3
- My work is such that I receive executive instruction on broad overall objectives and it is reviewed only for its general effectiveness and adherence to policy 4
- My work is unsupervised, other than I comply with the policy decided within the governing body 5

67

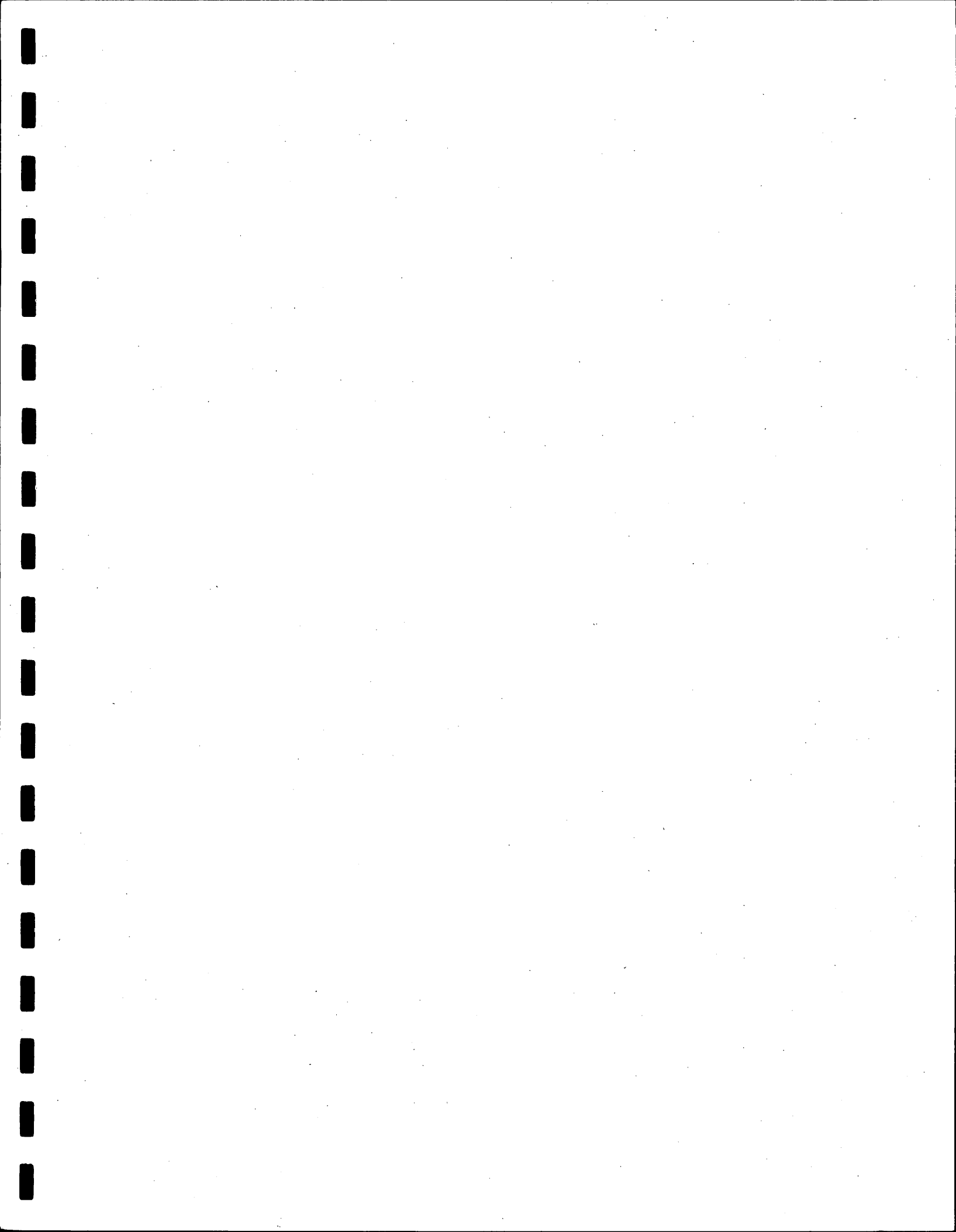
D. Supervision Exercised:

- I have no authority but may give technical guidance to juniors working on the same project 1
- I have no managerial responsibilities for qualified staff but may be assigned graduates, technicians, or other juniors as assistants from time to time 2
- I supervise a group of qualified staff, technicians, and other employees. I assign and review their work. I can recommend on the selection, discipline, rating, training, and perhaps rate of pay 3
- I am responsible for leaders of groups containing qualified staff, technicians, and other employees. I give guidance on policy and complex technical matters delegating responsibility for discipline, rating, training, and rates of pay 4
- I have full control over senior staff who are in turn responsible for groups of qualified staff and other employees 5

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THANK YOUR FOR YOUR PARTICIPATION.

PLEASE RETURN THIS QUESTIONNAIRE TO
ACS STATISTICAL SERVICES,
Room 202, 1155 16th Street NW, Washington, DC 20036



ACS OFFICE OF STATISTICAL SERVICES PUBLICATIONS

Salaries: The Office of Statistical Services annually surveys the ACS membership, gathering detailed information on member chemists and chemical engineers. The reports based on this survey contain statistical tables describing the respondents' employment status, employer, work function and specialty, salaries, and demographic characteristics.

Reports are available for each year from 1973 through the current year. In 1987, four separate reports are available: *1987 Salaries of Non-Academic Chemists*, *1987 Salaries of Non-Academic Chemical Engineers*, *1987 Salaries of Academic Chemists*, and *1987 Employment Status and Demographic Characteristics of ACS Members*.

Starting Salaries: The Office of Statistical Services also surveys new graduates in chemistry and chemical engineering each summer, and publishes reports detailing the graduates' employment status, post-graduation plans, starting salaries, and other employment and demographic characteristics.

Reports are available for each year from 1975 through the current year.

Professionals in Chemistry: The *Professionals in Chemistry* series compiles information concerning chemists and chemical engineers from ACS, government, and private industry sources. It details information on demography, employment, salaries, education, and supply and demand for the entire chemical profession.

Reports are available for each year from 1975 through 1978, and combined reports for 1979-1980, 1981-82, 1983-84, and 1985-86.

Special Reports:

1975 Report of Chemists' Salaries and Employment Status Supplement: Economic Status of Women in the ACS.

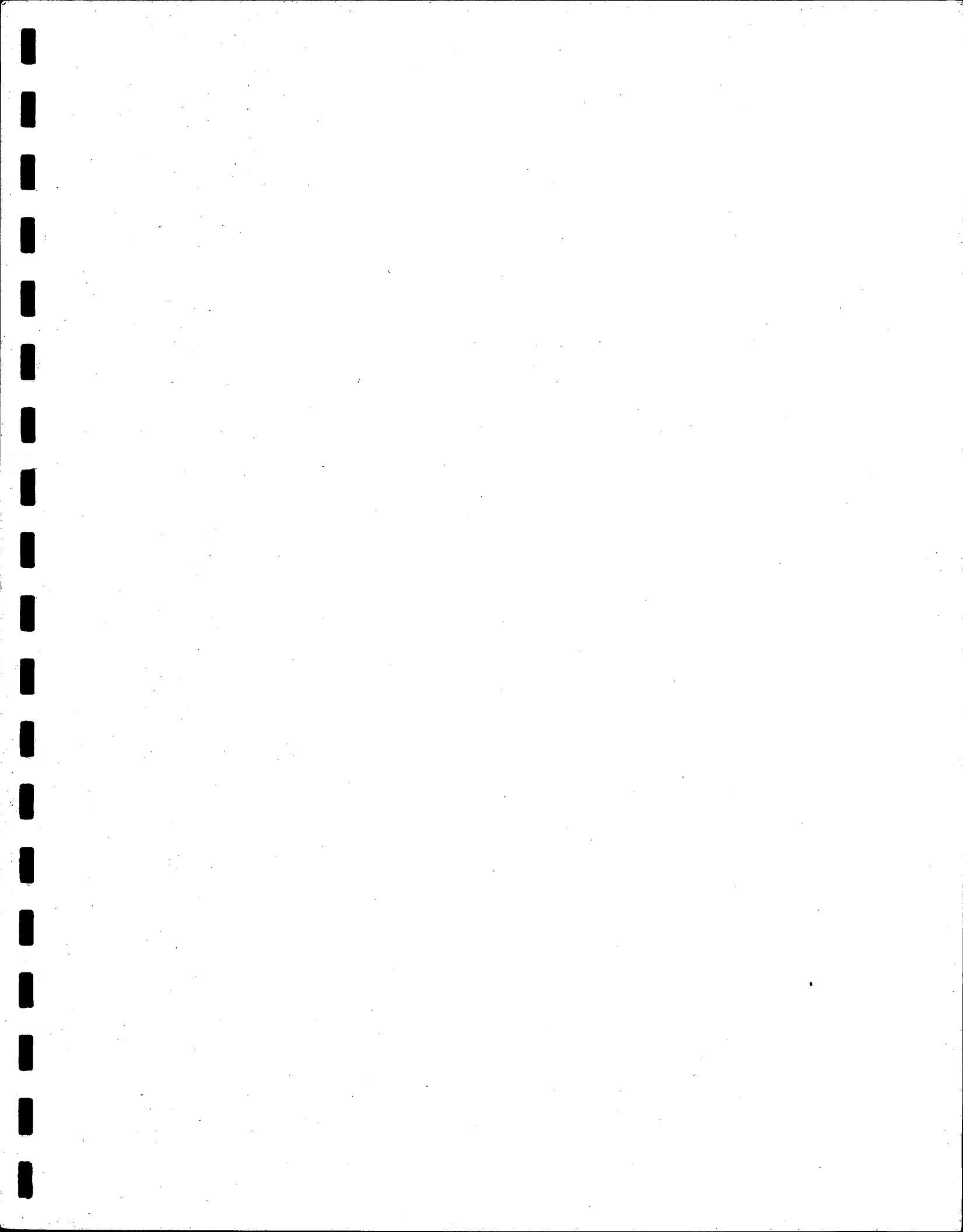
Women Chemists 1980: A supplemental report on the ACS's 1980 Survey of Salaries and Employment.

Women Chemists 1985: A supplemental report on the ACS's 1985 Survey of Salaries and Employment.

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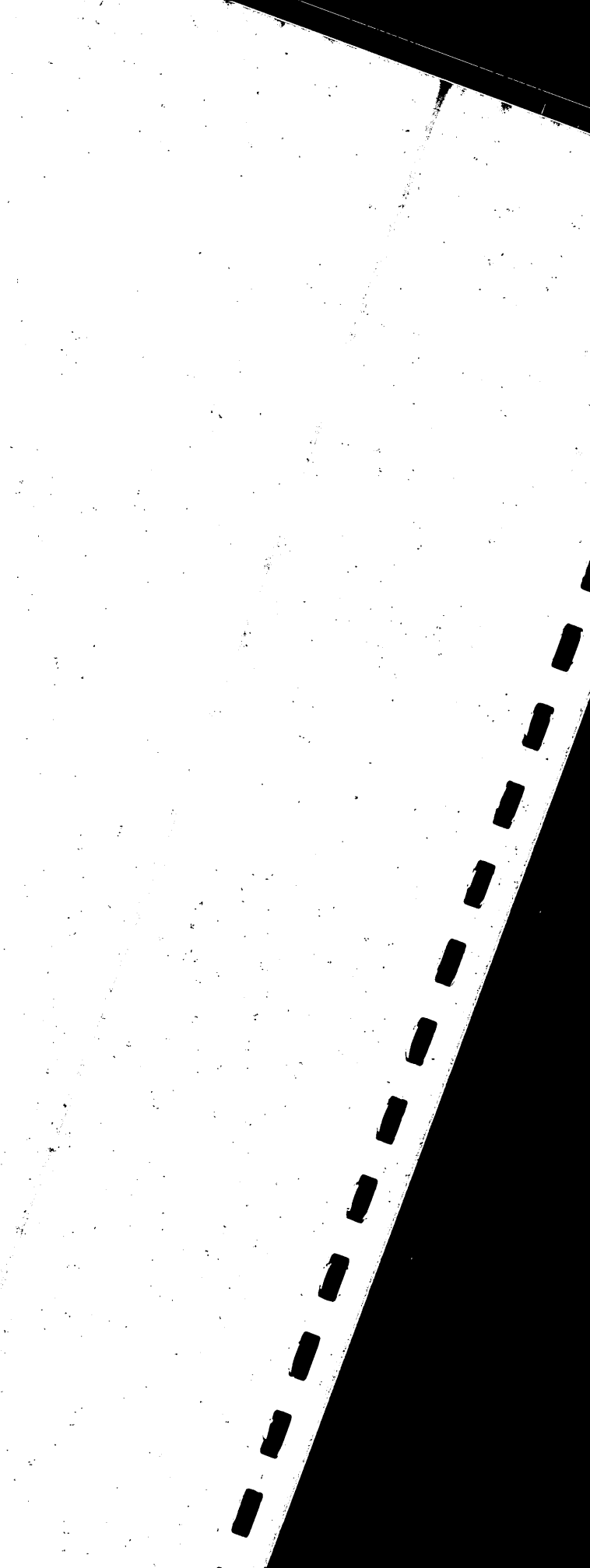
Statistical Services
American Chemical Society
Washington, D.C.

ISBN-08412-1411-5

Salaries of Academic Chemists

1987

Analysis of the
American Chemical Society
1987 Survey of Salaries
and Employment



1987 SALARIES OF ACADEMIC CHEMISTS

**ANALYSIS OF THE AMERICAN CHEMICAL SOCIETY'S
1987 SURVEY OF SALARIES AND EMPLOYMENT**

This report was prepared by the
ACS Office of Statistical Services

American Chemical Society
1155 Sixteenth Street, N.W.
Washington, D.C. 20036

July 1987

Available from the Distribution Office, ACS

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ACKNOWLEDGEMENTS

Each year, the American Chemical Society conducts salary surveys of its members. This report is one of four presenting detailed results of the 1987 Salary and Employment Status Survey. The four reports are: *1987 Salaries of Non-academic Chemists*, *1987 Salaries of Academic Chemists*, *1987 Salaries of Non-academic Chemical Engineers*, and *1987 Employment Status and Demographic Characteristics of ACS Members*. A summary of the survey findings was published in the June 29, 1987 issue of *Chemical and Engineering News*.

General oversight of the survey and its analysis was provided by the ACS joint Board-Council Committee on Economic Status, headed by Valerie D. Kuck¹, and by its subcommittee on surveys, chaired by Jack G. Kay². The committee expresses its gratitude to the 12,000 ACS members who provided a valuable service to the profession by completing the survey questionnaire.

Joan Burrelli and Nguyen Bailey of ACS Statistical Services, managed by John Robert Jones, conducted this year's survey and prepared this report. Dr. Burrelli wrote the summary and comment on the following pages.

Robert K. Neuman, Head
Department of Professional Services

¹Mrs. Valerie Kuck, Member of Technical Staff, AT&T Bell Laboratories, Murray Hill, New Jersey.

²Dr. Jack Kay, Professor of Chemistry, Drexel University, Philadelphia, Pennsylvania.

SUMMARY AND COMMENT

Joan S. Burrelli*

Salaries

Last year the Office of Statistical Services annualized salaries of academic chemists on 9 or 10 month contracts. Because the number of academic chemists on 11 or 12 month contracts has grown in the last several years, this year we are reporting separate salary figures for chemists on 9 or 10 month or on 11 or 12 month contracts. Approximately 60% of academic chemists are on 9 or 10 month contracts and 40% are on 11 or 12 month contracts.

In 1987 the median salary of a PhD full professor employed in a college or university was \$43,000 for one on a 9 or 10 month contract and \$58,200 for one on an 11 or 12 month contract. PhD associate professors' median salaries were \$32,100 and \$42,000 respectively, and PhD assistant professors' median salaries were \$27,000 and \$33,800 respectively for those on 9 or 10 month and 11 or 12 month contracts.

Median salaries for PhD full and associate professors increased only marginally from those of last year. The median salary of PhD full professors on 9 or 10 month contracts was 2.6% higher than that of last year; the median salary of PhD associate professors on 9 or 10 month contracts was 1.9% higher. Because the Consumer Price Index rose approximately 3% from March 1986 to March 1987, those salary increases represent decreases in constant dollars. PhD assistant professors' salaries, however, increased substantially over those of last year. The median salary of PhD assistant professors on 9 or 10 month contracts was 7.1% higher than that of last year. In constant dollars, this represents an increase of more than 4%.

Salaries in academia vary widely according to academic rank, school type, and work function (e.g., teaching, administration). Academic salaries are generally higher for full professors, those in public institutions, those in departments granting PhD degrees, and those in research as opposed to teaching.

Within ranks, median salaries do not vary widely according to length of experience. The median salary for a PhD associate professor with 10-14 experience since the BS and on a 9 or 10 month contract is \$32,050; that for one with 25-29 years since the BS is \$32,811.

Salaries of tenured faculty are somewhat higher than those of nontenured faculty. The median salary of a tenured PhD associate professor on a 9 or 10 month contract is \$33,000; that of a nontenured PhD associate professor on a 9 or 10 month contract is \$29,000.

Salaries for women academic chemists are generally lower than those for men. The median 9 or 10 month contract salary for women PhDs in academia was 84% of that for men. The difference in men's and women's median salaries is partly due to differences in rank. Women chemists in academia are less likely than men chemists to be full professors. The median salaries of men and women chemists with comparable rank are more nearly equal. For example, the median salary of women PhD full professors on 9 or 10 month contracts is 90% that of men's.

*Dr. Burrelli is Senior Research Associate in the ACS Office of Statistical Services.

NOTE: Results of the 1987 ACS Salary and Employment Status Survey are presented in a new format this year. Four separate reports: *1987 Salaries of Non-academic Chemists*, *1987 Salaries of Academic Chemists*, *1987 Salaries of Non-academic Chemical Engineers*, and *1987 Employment Status and Demographic Characteristics of ACS Members* replace the traditional one report. Also, the format of the tables is new. If you have comments or suggestions to make concerning this format, please contact Joan Burrelli at the ACS Office of Statistical Services (202-872-4433).

A METHOD FOR ESTIMATING AVERAGE SALARIES

A compact summary of the information in this report is possible through a statistical technique known as multiple regression. This technique identifies which characteristics have the greatest effect on salaries, and results in a formula for estimating the average salary of respondents with certain characteristics.

For academic chemists responding to the 1987 survey, the three characteristics which account for most of the variation among salaries are rank, academic work function, length of contract (9 or 10 month or 11 or 12 month), the highest degree offered by the respondent's department, and the control (public or private) of the respondent's institution.

Table I displays the factors needed to estimate the average salary for any group of respondents who are PhD academic chemists employed full-time in college or universities with any combination of the listed characteristics.

For example, to estimate the average salary in March 1987 for academic chemists at the rank of full professor, engaged primarily in research, on an 11 or 12 month contract, and employed in a PhD-granting department in a public university, find the corresponding factors in Table I and multiply them together with the base salary for all academic chemists:

$$(\$24,827) \times (1.604) \times (1.176) \times (1.148) \times (1.085) \times (1.000) = \$58,332$$

Table I

SALARY FACTORS FOR ACADEMIC CHEMISTS

BASE SALARY	\$24,827
RANK:	
Professor	1.604
Associate Professor	1.208
Assistant Professor	1.000
Instructor/Lecturer	0.981
Non-faculty Research Associate	0.869
Unranked Faculty Member	1.207
WORK FUNCTION:	
Teaching	1.000
Research	1.176
Administration	1.316
LENGTH OF CONTRACT	
9 or 10 Month	1.000
11 or 12 Month	1.148
HIGHEST DEGREE OFFERED IN DEPARTMENT:	
Bachelor's or Master's	1.000
Doctorate	1.085
INSTITUTIONAL CONTROL:	
Public	1.000
Private	0.931

TECHNICAL NOTES

The target population of the 1987 Salary and Employment Status Survey was those ACS members who had U.S. mailing addresses, were not older than 70, and had neither student, retired, nor emeritus status. On January 31, 1987 the ACS membership totalled 129,808, of which approximately 90,000 were eligible for inclusion in the survey. A systematic sample of 20,000 members with non-chemical engineering degrees (mostly chemists) and all 6,965 members with chemical engineering degrees were selected from the target population.

The survey questionnaires were mailed to this sample of 26,965 members by bulk mail during the week of March 2-6. By the May 15 cut-off date, 11,982 (44.4%) usable questionnaires had been returned.

Members indicating a degree field of chemical engineering were oversampled this year in order to produce a separate report on chemical engineers' salaries. To make the data base from which the non-chemical engineers' tables were produced comparable to those of previous years, a random sample of 24% of those oversampled was drawn and included with the 24% sample of non-chemical engineers (the 20,000 out of approximately 83,000 non-chemical engineers eligible for inclusion in the survey).

Definitions

For the purposes of the survey analysis only, the following definitions were used:

Chemist: A respondent who indicated a work specialty of chemistry or biochemistry (categories 2 through 14 of Question I.B. on the questionnaire) or a non-chemistry work specialty (categories 15 and 16) and a degree field of chemistry or biochemistry.

Unemployed: A respondent who is unemployed and seeking employment (category 4 of Question I.D. on the questionnaire).

This report represents the respondents' principal annual salaries as of March 1, 1987. The respondent's age is given as of March 1, 1987. A respondent's state and geographic region refer to place of residence rather than place of employment. A respondent's metropolitan area refers to place of employment. A list of geographic regions and their member states is on page 8 of this report. A list of metropolitan areas and their component 3-digit ZIP codes appears on page 9.

Small Cell Count

If the number of responses in a cell of a salary table is small, then the sample salary statistics for that cell may not accurately estimate the corresponding population salary statistics. In general, a cell containing fewer than 15 responses does not provide a useful estimate of the median salary, and a cell containing fewer than 25 responses does not provide a useful estimate of the 25th or the 75th salary percentile. For this reason, cells containing fewer than 15 responses were suppressed in the tables in this book.

Median

If a sample of size n is arranged in ascending order of magnitude, the median M_d is given by the $((n+1)/2)$ th value. If $(n+1)/2$ is not an integer, then the median is a weighted average of the two values whose ranks are closest to $(n+1)/2$.

Discrepancies Among Tables

Some pairs of tables contain totals that should be identical but are not. For example, two tables that present information about PhD respondents should show the same total number of PhDs. They might, however, show different totals. To illustrate, if one table groups the PhDs according to specialty and the other groups them according to geographic region, the totals will differ unless the number who did not indicate their specialty is the same as the number who did not indicate their geographic region.

Comparing Salaries

Often questions arise concerning B.S. chemists' salaries as compared with M.S. chemists', or women's salaries as compared with men's. These and similar comparisons require caution.

Statistical tests should be performed to determine whether observed differences in salaries of various sample groups could be mere chance occurrences resulting from peculiarities of the sample. Whether a difference in salaries is "statistically significant" depends not only on the magnitude of the difference but also on the sample size and the magnitude of the sample standard deviations.

Discussion of statistical tests of significance can be found in *Introductory Statistics for Business and Economics* by Thomas H. Wonnacott and Ronald J. Wonnacott, N.Y.: Wiley, 1984; and other similar texts.

GEOGRAPHIC REGIONS

PACIFIC

Alaska
California
Hawaii
Oregon
Washington

MOUNTAIN

Arizona
Colorado
Idaho
Montana
Nevada
New Mexico
Utah
Wyoming

WEST NORTH CENTRAL

Iowa
Kansas
Minnesota
Missouri
Nebraska
North Dakota
South Dakota

WEST SOUTH CENTRAL

Arkansas
Louisiana
Oklahoma
Texas

EAST NORTH CENTRAL

Illinois
Indiana
Michigan
Ohio
Wisconsin

EAST SOUTH CENTRAL

Alabama
Kentucky
Mississippi
Tennessee

MIDDLE ATLANTIC

New Jersey
New York
Pennsylvania

SOUTH ATLANTIC

Delaware
District of Columbia
Florida
Georgia
Maryland
North Carolina
South Carolina
Virginia
West Virginia

NEW ENGLAND

Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

METROPOLITAN AREAS

Metropolitan Area	Three-Digit ZIP Codes
Atlanta, GA	300-303
Baltimore, MD	210-214
Boston, MA	017-024
Chicago, IL	463, 464, 600-606
Cincinnati, OH	410, 450-452, 470
Cleveland-Akron, OH	440-443
Columbus, OH	430-432
Dallas, TX	750-753, 760-762
Dayton, OH	453-455
Denver, CO	800-804
Detroit, MI	480-483
Houston-Beaumont, TX	770-777
Los Angeles, CA	900-918, 926-928
Miami, FL	330-333
Newark, NJ	070-076, 079
New York, NY	100-108, 110-114, 116
Philadelphia, PA	189-191, 193, 194
Pittsburgh, PA	150-152
St. Louis, MO	620-622, 630-633
San Francisco, CA	940-951
Washington, DC	200-209, 220-223

See *1987 National Five-Digit ZIP Code and Post Office Directory*, United States Postal Service, for the three-digit ZIP codes corresponding to the above metropolitan areas.

Table 1.1.1

SALARIES of PhD ACADEMIC CHEMISTS employed FULL-TIME
according to RANK and CONTRACT STATUS
1987 ACS Salary Survey

Rank & Contract Status	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Full Professor						
Total	699	49,491	15,514	38,700	46,000	58,000
9 or 10 Month	494	45,310	12,520	37,009	43,000	51,718
11 or 12 Month	205	59,565	17,333	49,000	58,167	70,000
Associate Professor						
Total	267	35,453	8,680	29,900	34,000	40,300
9 or 10 Month	190	32,761	5,950	28,902	32,125	36,000
11 or 12 Month	77	42,096	10,621	35,300	42,000	46,000
Assistant Professor						
Total	224	29,018	5,746	25,000	28,000	32,000
9 or 10 Month	170	27,469	4,022	25,000	27,000	30,000
11 or 12 Month	54	33,891	7,446	28,500	33,750	38,500
Instructor						
Total	65	29,924	10,082	23,000	27,900	32,410
9 or 10 Month	24	24,969	6,034	20,950	23,500	27,950
11 or 12 Month	41	32,825	10,879	25,000	31,000	37,375
Research Associate						
Total	68	31,946	9,691	23,800	30,500	39,800
11 or 12 Month	68	31,946	9,691	23,800	30,500	39,800
No Ranks						
Total	25	39,049	18,895	29,000	34,000	42,000
9 or 10 Month	21	36,746	17,038	29,000	32,350	40,000

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.2.1

SALARIES of PhD ACADEMIC CHEMISTS employed FULL-TIME
according to RANK, and YEARS SINCE BS - 9 or 10 Month Contract
1987 ACS Salary Survey

Rank & Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Full Professor						
Total	449	45,053	12,344	37,000	42,879	50,000
15-19	26	42,413	10,086	36,000	41,100	48,000
20-24	94	41,329	10,756	33,539	38,575	47,000
25-29	97	44,555	11,674	37,000	42,300	50,000
30-34	101	44,750	9,881	38,600	43,000	50,000
35-39	77	45,902	13,848	37,500	42,900	52,000
40 Or More	50	53,617	15,794	42,370	49,774	68,000
Associate Professor						
Total	173	32,843	5,933	28,902	32,000	36,000
10-14	21	31,999	7,070	28,500	32,050	34,000
15-19	56	32,611	6,226	28,450	31,700	36,750
20-24	50	33,013	4,532	30,000	32,000	36,000
25-29	19	32,835	6,346	28,000	32,811	36,000
Assistant Professor						
Total	155	27,508	4,116	25,000	27,000	30,000
5-9	30	26,468	2,917	24,000	26,795	28,500
10-14	78	28,023	4,533	25,000	27,000	30,600
15-19	30	27,342	3,769	25,000	27,450	29,000
Instructor						
Total	21	24,965	6,162	21,000	24,000	27,900
No Ranks						
Total	20	36,859	17,472	27,150	32,175	41,000

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.2.2

SALARIES of PhD ACADEMIC CHEMISTS employed FULL-TIME
according to RANK, and YEARS SINCE BS - 11 or 12 Month Contract
1987 ACS Salary Survey

Rank & Years Since BS	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Full Professor						
Total	180	58,594	16,708	47,650	57,763	70,000
20-24	32	52,355	15,226	40,709	50,080	61,000
25-29	53	59,588	15,225	50,000	57,300	70,000
30-34	34	57,216	16,779	44,604	57,863	70,000
35-39	38	64,480	17,631	50,000	63,950	80,000
40 Or More	16	58,671	19,256	48,908	61,364	69,500
Associate Professor						
Total	64	41,305	9,188	35,000	42,000	46,000
15-19	18	44,241	10,441	36,700	42,200	48,000
20-24	21	42,779	8,028	39,000	42,000	48,500
Assistant Professor						
Total	47	34,125	7,376	28,800	34,000	38,500
10-14	20	33,619	6,039	31,000	34,138	35,500
Instructor						
Total	35	32,600	10,147	25,000	30,400	37,375
Research Associate						
Total	57	31,151	9,868	23,500	29,700	39,160

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.3.1

SALARIES of PhD ACADEMIC CHEMISTS employed FULL-TIME
according to RANK and ACADEMIC WORK FUNCTION - 9 or 10 Month Contract
1987 ACS Salary Survey

Rank & Work Function	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Teaching						
Full Professor	236	39,361	7,772	34,449	39,200	44,551
Associate Professor	99	30,549	5,491	26,936	30,000	34,000
Assistant Professor	77	25,490	3,296	23,000	25,000	28,000
Instructor	19	25,698	6,314	21,000	24,600	29,100
No Ranks	17	30,783	7,242	25,300	32,000	34,500
Teaching, Research						
Full Professor	54	49,321	13,240	40,500	46,050	57,000
Associate Professor	24	35,087	5,514	31,025	35,000	38,500
Assistant Professor	29	28,452	3,940	26,000	27,500	30,500
Research						
Full Professor	59	56,255	13,739	45,200	54,500	65,000
Associate Professor	19	36,938	5,992	33,000	35,000	42,000
Assistant Professor	27	29,084	2,788	27,000	29,000	31,138

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.3.2

SALARIES of PhD ACADEMIC CHEMISTS employed FULL-TIME
according to RANK and ACADEMIC WORK FUNCTION - 11 or 12 Month Contract
1987 ACS Salary Survey

Rank & Work Function	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Teaching Full Professor	30	41,777	9,611	34,000	40,750	49,500
Research Full Professor	58	61,470	17,245	50,000	60,500	72,000
Associate Professor	32	44,364	8,734	41,728	45,047	47,500
Assistant Professor	26	35,374	5,017	33,000	34,500	38,500
Instructor	24	32,968	10,234	26,000	31,000	38,500
Research Associate	57	30,319	9,024	23,000	28,000	37,000
Administration Full Professor	31	60,803	15,814	46,800	60,000	74,300

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.4.1

SALARIES of PhD ACADEMIC CHEMISTS employed FULL-TIME
according to RANK and SPECIALTY - 9 or 10 Month Contract
1987 ACS Salary Survey

Rank & Specialty	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Biochemistry						
Full Professor	55	47,102	11,859	38,250	44,000	55,317
Associate Professor	27	32,815	5,627	30,000	32,200	37,060
Assistant Professor	18	26,292	2,993	24,750	26,250	28,000
General Chemistry						
Full Professor	46	36,195	8,722	29,500	35,950	41,850
Associate Professor	22	31,031	6,284	26,730	30,250	33,400
Inorganic Chemistry						
Full Professor	50	44,389	7,764	38,000	44,250	50,000
Associate Professor	20	33,850	4,485	29,250	34,750	36,550
Assistant Professor	25	27,807	2,884	25,565	28,000	30,000
Organic Chemistry						
Full Professor	136	44,873	12,994	36,500	42,625	51,000
Associate Professor	48	32,654	6,837	28,450	31,198	37,366
Assistant Professor	33	26,630	2,903	24,400	26,500	28,013
Physical Chemistry						
Full Professor	96	47,312	13,770	38,679	44,270	52,000
Associate Professor	32	33,163	4,656	30,150	33,115	35,550
Assistant Professor	34	27,075	3,936	24,750	26,900	30,900
Other Chemical Science						
Full Professor	111	47,418	12,632	38,600	45,000	55,000
Associate Professor	41	32,933	6,500	29,000	33,000	36,000
Assistant Professor	46	28,987	5,371	25,100	28,750	32,500

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.4.2

SALARIES of PhD ACADEMIC CHEMISTS employed FULL-TIME
according to RANK and SPECIALTY - 11 or 12 Month Contract
1987 ACS Salary Survey

Rank & Specialty	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Biochemistry						
Full Professor	78	61,511	17,424	50,000	61,864	72,000
Associate Professor	28	45,489	9,304	41,278	45,250	48,250
Assistant Professor	22	35,590	4,852	33,000	35,500	38,500
Instructor	18	33,607	11,091	25,000	31,000	35,000
Research Associate	22	29,964	8,908	23,000	27,500	37,000
Inorganic Chemistry						
Full Professor	18	64,802	19,012	51,500	59,150	77,000
Physical Chemistry						
Full Professor	21	55,735	19,082	40,100	53,000	68,000
Other Chemical Science						
Full Professor	61	59,664	16,933	50,000	57,000	70,000
Associate Professor	25	43,348	12,324	35,000	42,000	46,600
Assistant Professor	20	36,548	8,002	30,000	33,750	43,350
Research Associate	32	33,235	9,002	26,000	32,500	40,140

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.5.1

SALARIES of PhD ACADEMIC CHEMISTS employed FULL-TIME
according to RANK and TENURE STATUS - 9 or 10 Month Contract
1987 ACS Salary Survey

Rank & Tenure Status	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Tenured						
Full Professor	480	45,490	12,517	37,180	43,000	52,000
Associate Professor	165	33,234	5,803	29,400	33,000	36,100
Assistant Professor	23	28,253	2,985	25,200	28,000	31,000
No Ranks	17	40,183	17,157	32,000	34,500	42,000
Not Tenured						
Associate Professor	24	29,495	6,171	25,500	29,000	33,500
Assistant Professor	146	27,356	4,169	24,820	27,000	30,000
Instructor	23	24,086	4,298	20,900	23,000	27,900

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.5.2

SALARIES of PhD ACADEMIC CHEMISTS employed FULL-TIME
according to RANK and TENURE STATUS - 11 or 12 Month Contract
1987 ACS Salary Survey

Rank & Tenure Status	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Tenured						
Full Professor	189	60,234	17,373	49,000	58,600	71,000
Associate Professor	57	43,975	10,229	39,000	43,000	47,000
Not Tenured						
Full Professor	16	51,672	15,189	40,450	51,000	61,000
Associate Professor	18	36,381	9,285	30,000	35,850	42,000
Assistant Professor	52	33,612	7,324	28,300	33,500	38,500
Instructor	39	33,154	11,002	25,000	31,000	38,000
Research Associate	60	31,287	9,377	23,550	30,500	38,480

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.6.1

SALARIES of PhD ACADEMIC CHEMISTS employed FULL-TIME
according to RANK and INSTITUTIONAL CONTROL - 9 or 10 Month Contract
1987 ACS Salary Survey

Rank & Institutional Control	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Public						
Full Professor	310	47,124	11,825	39,000	44,801	52,000
Associate Professor	127	33,334	5,517	29,938	33,000	36,000
Assistant Professor	97	28,150	3,558	25,900	28,000	30,500
Instructor	19	25,014	6,674	20,900	23,000	29,100
Private						
Full Professor	170	41,853	13,224	33,000	39,000	49,700
Associate Professor	55	31,449	6,478	26,936	31,000	36,000
Assistant Professor	68	26,520	4,016	24,000	26,000	28,900

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.6.2

SALARIES of PhD ACADEMIC CHEMISTS employed FULL-TIME
according to RANK and INSTITUTIONAL CONTROL - 11 or 12 Month Contract
1987 ACS Salary Survey

Rank & Institutional Control	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Public						
Full Professor	147	60,023	15,386	50,000	58,300	70,000
Associate Professor	51	44,165	10,654	39,000	42,000	46,600
Assistant Professor	27	35,975	6,182	32,000	35,000	38,500
Instructor	21	36,092	10,602	28,000	31,800	42,000
Research Associate	44	32,716	10,100	24,000	31,500	39,940
Private						
Full Professor	52	58,219	22,573	41,750	53,250	73,268
Associate Professor	19	35,907	9,653	29,000	35,000	45,000
Assistant Professor	26	31,549	8,158	25,010	29,400	38,500
Instructor	16	29,805	10,901	23,000	26,000	33,800
Research Associate	19	32,384	8,596	24,000	33,500	40,000

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.7.1

SALARIES of PhD ACADEMIC CHEMISTS employed FULL-TIME
according to RANK, and TYPE OF INSTITUTION - 9 or 10 Month Contract
1987 ACS Salary Survey

Rank & Type of Institution	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
BS Degree						
Full Professor	148	37,354	7,642	31,750	37,005	42,000
Associate Professor	61	29,639	4,529	26,936	29,400	32,000
Assistant Professor	57	25,031	3,535	23,000	25,000	27,500
MS Degree						
Full Professor	89	40,770	6,313	37,000	40,292	44,000
Associate Professor	37	31,890	5,054	29,938	32,000	35,000
Assistant Professor	27	26,969	3,625	25,000	26,500	29,000
Doctorate						
Full Professor	240	52,158	13,068	42,763	50,000	59,150
Associate Professor	80	35,424	5,669	32,000	35,000	39,723
Assistant Professor	82	29,343	3,574	26,900	28,700	31,300

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.7.2

SALARIES of PhD ACADEMIC CHEMISTS employed FULL-TIME
according to RANK, and TYPE OF INSTITUTION - 11 or 12 Month Contract
1987 ACS Salary Survey

Rank & Type of Institution	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Medical or Professional School						
Full Professor	52	65,889	17,594	52,270	61,864	72,630
Associate Professor	30	47,218	12,109	41,100	45,400	49,644
Assistant Professor	19	37,150	6,804	31,700	36,982	42,700
Instructor	17	35,476	11,870	25,000	31,800	47,300
Research Associate	15	27,853	8,228	21,000	24,000	35,500
BS Degree						
Full Professor	25	39,757	9,437	31,800	37,600	48,200
Associate Professor	15	31,860	7,490	28,500	30,535	35,000
MS Degree						
Full Professor	16	51,506	11,137	43,625	55,000	58,013
Doctorate						
Full Professor	109	62,651	15,742	51,000	62,000	73,000
Associate Professor	30	42,266	6,097	40,000	42,000	46,000
Assistant Professor	24	35,494	5,745	33,000	35,000	38,250
Instructor	16	34,819	9,890	30,200	32,018	37,688
Research Associate	51	32,876	9,644	24,000	33,000	40,280

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.8.1

SALARIES of PhD ACADEMIC CHEMISTS employed FULL-TIME
according to RANK and SEX - 9 or 10 Month Contract
1987 ACS Salary Survey

Rank & Sex	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Men						
Total	802	39,186	12,931	30,000	37,000	45,000
Full Professor	462	45,566	12,498	37,100	43,000	52,000
Associate Professor	159	33,133	5,717	29,000	32,811	36,500
Assistant Professor	150	27,524	4,121	25,000	27,000	30,000
No Ranks	19	37,178	17,733	29,000	32,350	42,000
Women						
Total	97	33,206	10,519	26,100	30,900	38,375
Full Professor	32	41,617	12,443	32,360	38,750	49,200
Associate Professor	31	30,850	6,812	26,600	31,000	35,000
Assistant Professor	20	27,064	3,241	24,500	27,200	30,200

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.8.2

SALARIES of PhD ACADEMIC CHEMISTS employed FULL-TIME
according to RANK and SEX - 11 or 12 Month Contract
1987 ACS Salary Survey

Rank & Sex	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Men						
Total	387	48,397	18,605	35,000	46,000	59,950
Full Professor	194	59,859	17,447	49,000	58,647	71,000
Associate						
Professor	70	42,676	10,278	36,400	42,000	46,100
Assistant						
Professor	41	34,506	7,619	28,500	34,000	39,000
Instructor	27	33,841	12,126	25,000	31,300	40,000
Research						
Associate	53	32,210	9,371	24,000	31,000	39,600
Women						
Total	62	36,703	14,120	26,200	35,000	44,000
Research						
Associate	15	31,012	11,048	21,000	28,000	42,000

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.9.1

SALARIES of PhD ACADEMIC CHEMISTS employed FULL-TIME
according to RANK and GEOGRAPHIC REGION - 9 or 10 Month Contract
1987 ACS Salary Survey

Rank & Geographic Region	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Pacific						
Full Professor	61	54,185	14,640	45,000	50,000	68,000
Associate Professor	15	33,806	6,351	31,000	35,000	38,400
Mountain						
Full Professor	30	41,632	9,111	35,560	39,200	47,000
West North Central						
Full Professor	44	39,741	9,930	33,696	37,320	43,500
Assistant Professor	22	25,805	2,324	23,800	25,450	27,000
West South Central						
Full Professor	34	39,223	9,737	31,360	37,833	45,000
Associate Professor	17	33,354	5,156	30,000	31,500	37,060
East North Central						
Full Professor	99	45,591	12,952	37,000	42,000	52,000
Associate Professor	33	32,736	6,348	29,000	32,000	34,400
Assistant Professor	31	27,610	3,973	24,050	28,000	30,700
East South Central						
Full Professor	29	42,212	12,594	37,000	40,700	45,000
Associate Professor	16	29,399	5,104	27,668	29,450	32,800
Assistant Professor	15	25,425	3,750	24,400	25,000	27,400
Middle Atlantic						
Full Professor	94	47,253	12,289	40,000	45,000	55,000
Associate Professor	27	33,325	7,337	27,000	34,000	38,000
Assistant Professor	28	27,471	3,924	26,000	27,250	29,500
South Atlantic						
Full Professor	66	43,857	11,119	37,000	41,500	49,000
Associate Professor	44	33,554	5,801	30,000	33,777	36,741
Assistant Professor	34	27,634	5,371	23,275	27,250	30,600
New England						
Full Professor	31	44,454	8,739	39,200	45,000	47,500
Associate Professor	16	33,603	5,393	29,250	32,725	37,250

Note: Cells with fewer than 15 cases have been suppressed.

Table 1.9.2

SALARIES of PhD ACADEMIC CHEMISTS employed FULL-TIME
according to RANK and GEOGRAPHIC REGION - 11 or 12 Month Contract
1987 ACS Salary Survey

Rank & Geographic Region	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Pacific						
Full Professor	19	69,732	19,704	55,000	64,900	84,000
West North Central						
Full Professor	24	55,271	15,042	42,600	53,000	67,500
West South Central						
Full Professor	29	56,126	18,382	44,604	52,000	60,000
East North Central						
Full Professor	38	62,213	17,495	53,000	61,000	74,300
East South Central						
Full Professor	20	54,440	18,505	43,817	52,000	62,864
Middle Atlantic						
Full Professor	32	60,115	12,817	50,975	59,584	71,000
South Atlantic						
Full Professor	29	60,461	13,677	50,000	60,000	71,000
Associate Professor	16	42,609	7,563	38,300	42,750	46,000

Note: Cells with fewer than 15 cases have been suppressed.

Table 5.1.1

STIPENDS of POST-DOCTORAL FELLOWS
according to INSTITUTIONAL CONTROL and WORK SPECIALTY
1987 ACS Salary Survey

Institutional Control & Work Specialty	Count	Mean	Standard Deviation	25th %-ile	50th %-ile	75th %-ile
Biochemistry						
Total	30	19,980	6,126	17,000	20,000	23,000
Public	21	21,106	5,480	17,000	20,645	23,500
Chemistry						
Total	74	19,207	3,876	16,700	18,000	21,000
Public	49	19,077	3,591	16,200	18,000	21,000
Private	25	19,460	4,451	17,000	18,000	20,000

Note: Cells with fewer than 15 cases have been suppressed.



American Chemical Society

OFFICE OF THE
EXECUTIVE DIRECTOR

1155 SIXTEENTH STREET, N.W.
WASHINGTON, D.C. 20036
Phone (202) 872-4600

February 24, 1987

Dear Colleague:

Each year the American Chemical Society studies the economic status of the U.S. chemical profession by surveying a sample of ACS members. You are one of about 25,000 members I am asking to participate in this survey, conducted under the aegis of the Joint Board-Council Committee on Economic Status. This year, the ACS will conduct a special study of the economic status of member chemical engineers. This year's sample, therefore, includes more than the usual number of chemical engineers.

Because a high response rate is needed to assure accurate results, your participation is an important service to our colleagues. Please take a few minutes now to complete the questionnaire and return it in the enclosed business reply envelope. The procedure is confidential, and the information you provide will be reported only as a part of aggregated data.

Findings will be reported to ACS members in several ways. Preliminary results will be presented at the spring meeting in Denver; early in the summer, the ACS will publish detailed analyses as Salaries 1987. At about the same time, Chemical and Engineering News will publish a cover story on the salaries and employment status of chemists and chemical engineers.

Please feel free to use the back of the questionnaire for whatever comments or suggestions you might care to make.

Thank you for your assistance.

Sincerely,

A handwritten signature in cursive script that reads "John K. Crum".

John K. Crum

Encl.

1987 Comprehensive Salary and Employment Status Survey

I. EDUCATION AND EMPLOYMENT STATUS

A. PLEASE INDICATE THE YEAR IN WHICH YOU EARNED ANY OF THE FOLLOWING DEGREES:

Bachelor's	19 ___	1-2
Master's	19 ___	3-4
Doctorate	19 ___	5-6

B. PLEASE CHECK THE APPROPRIATE BOX IN EACH COLUMN.

Field of highest degree	ONE specialty most related to your current or most recent job	
Chemical engineering	<input type="checkbox"/> 01	<input type="checkbox"/> 01
Biochemistry	<input type="checkbox"/> 02	<input type="checkbox"/> 02
General chemistry	<input type="checkbox"/> 03	<input type="checkbox"/> 03
Agricultural/food chemistry	<input type="checkbox"/> 04	<input type="checkbox"/> 04
Analytical chemistry	<input type="checkbox"/> 05	<input type="checkbox"/> 05
Clinical chemistry	<input type="checkbox"/> 06	<input type="checkbox"/> 06
Environmental chemistry	<input type="checkbox"/> 07	<input type="checkbox"/> 07
Inorganic chemistry	<input type="checkbox"/> 08	<input type="checkbox"/> 08
Materials science	<input type="checkbox"/> 09	<input type="checkbox"/> 09
Medicinal/pharmaceutical chemistry	<input type="checkbox"/> 10	<input type="checkbox"/> 10
Organic chemistry	<input type="checkbox"/> 11	<input type="checkbox"/> 11
Physical chemistry	<input type="checkbox"/> 12	<input type="checkbox"/> 12
Polymer chemistry	<input type="checkbox"/> 13	<input type="checkbox"/> 13
Other chemical science	<input type="checkbox"/> 14	<input type="checkbox"/> 14
Business Administration	<input type="checkbox"/> 15	<input type="checkbox"/> 15
Other Non-chemistry	<input type="checkbox"/> 16	<input type="checkbox"/> 16

C. Were you unemployed at any time during the calendar year 1986?

No 1 Yes 2 11

If yes, how many total weeks were you not employed and actively seeking employment during calendar year 1986?

___ weeks (ENTER A NUMBER FROM 1 TO 52) 12-13

D. PLEASE ENTER YOUR PRIMARY EMPLOYMENT STATUS AS OF MARCH 1, 1987. CHOOSE THE ONE CATEGORY THAT BEST FITS YOUR SITUATION.

Employed full-time (35 hours or more per week)	<input type="checkbox"/> 1
Employed part-time	<input type="checkbox"/> 2
Postdoctoral or other fellowship	<input type="checkbox"/> 3
Not employed but actively seeking employment	<input type="checkbox"/> 4
Not employed and NOT seeking employment	<input type="checkbox"/> 5

14

G. If you were UNEMPLOYED on March 1, how long had you been unemployed?

Less than 1 month	<input type="checkbox"/> 1
1 to 3 months	<input type="checkbox"/> 2
4 to 6 months	<input type="checkbox"/> 3
7 to 12 months	<input type="checkbox"/> 4
More than 1 year	<input type="checkbox"/> 5

15

H. If you were EMPLOYED on March 1, what are the first three digits of the zip code where you work?

___ 16-18

II. QUESTIONS ABOUT YOURSELF

A. Your sex:

Male 1 Female 2 19

B. Your marital status:

Single 1 Married 2 20

C. Age at last birthday before March 1, 1987:

___ years old 21-22

D. Citizenship or visa status:

U.S. native	<input type="checkbox"/> 1
U.S. naturalized	<input type="checkbox"/> 2
U.S. permanent resident visa	<input type="checkbox"/> 3
Other visa	<input type="checkbox"/> 4

23

E. Race or ethnic group:

American Indian or Alaskan Native	<input type="checkbox"/> 1
Asian or Pacific Islander	<input type="checkbox"/> 2
Black (not of Hispanic origin)	<input type="checkbox"/> 3
Hispanic	<input type="checkbox"/> 4
White	<input type="checkbox"/> 5
Other race or ethnic group	<input type="checkbox"/> 6

24

F. Please enter the two-letter post office abbreviation for the STATE in which you live.

___ 25-26

IF YOU ARE NOT CURRENTLY EMPLOYED, PLEASE SKIP TO SECTION IV, MOST RECENT OR CURRENT JOB.

III. CURRENT INCOME

A. If you are CURRENTLY EMPLOYED, how long have you worked for your current employer?

___ years ___ months 27-30

B. BASE ANNUAL SALARY from PRINCIPAL JOB as of March 1, 1987. (DO NOT INCLUDE payments for bonus, second job, overtime work, summer teaching, or other supplemental earnings or employment.) If zero, please indicate. If on a 9 or 10 month contract, report the 9 or 10 month salary rather than an annualized salary.

\$ _____ per year 31-36

C. TOTAL PROFESSIONAL INCOME during calendar year 1986. (INCLUDE consulting fees, base annual salary, income from second job, bonuses, payments for overtime, summer teaching, and other supplemental earnings.)

\$ _____ per year 37-42

D. If you are currently employed, does your employer pay your ACS dues?

Yes 1 No 2 43

IV. DESCRIBE YOUR CURRENT OR MOST RECENT JOB.

IF YOUR CURRENT OR MOST RECENT EMPLOYER IS NOT AN ACADEMIC INSTITUTION, GO TO SECTION V AT THE TOP OF THE NEXT COLUMN.

CURRENT OR MOST RECENT EMPLOYMENT IS IN AN ACADEMIC INSTITUTION.

- A. Current (or most recent) principal employer.**
1. Public institution 1 Private institution 2 44
2. High school 1
 Medical or professional school 2
 College or university where the highest degree offered in chemical science is:
- Associate 3
 Bachelor's 4
 Master's 5
 Doctorate 6 45
- B. Your academic rank:**
- Full professor 1
 Associate professor 2
 Assistant professor, tenure track 3
 Instructor, lecturer, or non-tenure track 4
 Non-teaching research associate 5
 My institution does not have ranks 6 46
- C. Have you been granted tenure?**
- Yes 1 No 2 47
- D. Your basic contract is for a period of:**
- 9 or 10 months 1
 11 or 12 months 2 48
- E. About what fraction of your total academic year assignment is devoted to:**
- | | 1/4 or less | 1/3 | 1/2 | 2/3 | 3/4 | full-time | |
|----------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----|
| Teaching | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 49 |
| Research | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 50 |
| Administration | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 51 |
| Other | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | <input type="checkbox"/> 6 | 52 |
- F. What was your principal professional activity during the SUMMER OF 1986?**
- Teaching 1
 Funded research or study 2
 Unpaid scholarly/academic 3
 Administration 4
 Consulting 5
 Non-academic employment 6
 Other 7 53

THANK YOU. YOU HAVE COMPLETED THE QUESTIONNAIRE. PLEASE USE THE BLANK SPACE ON THE BACK OF THIS QUESTIONNAIRE FOR COMMENTS.

V. CURRENT OR MOST RECENT EMPLOYMENT IS NOT IN AN ACADEMIC INSTITUTION.

- A. Current (or most recent) principal employer.**
- Self-employed 01
 Private industry 02
 Non-manufacturing 02
 Manufacturing 03
 Basic chemicals 03
 Specialty chemicals 04
 Agricultural chemicals 05
 Biochemical products 06
 Coatings and paints 07
 Electronics 08
 Food 09
 Glass, ceramics 10
 Paper 11
 Petroleum/natural gas 12
 Pharmaceuticals, personal care 13
 Plastics 14
 Rubber 15
 Soaps, detergents, surfactants 16
 Steel or ferrous metals 17
 Other metals, minerals 18
 Other manufactures (specify) 19
 Government 20
 Federal (civilian) 20
 State or local 21
 Military 22
 Other non-academic 23
 Hospitals, independent laboratory 23
 Non-profit organization, other research institution 24
 Other employment 25 54
- B. Check the ONE work function that best describes your job.**
- Research and Development 01
 Management or administration of R&D 01
 Basic research 02
 Applied research, development, design 03
 General management, administration (other than research and development) 04
 Marketing, sales, purchasing, technical service, economic evaluation 05
 Production, quality control 06
 Forensic analysis, other laboratory analysis 07
 Writing, editing, abstracting 08
 Chemistry information services 09
 Computer programming, analysis, design 10
 Consulting 11
 Other 12 57
- C. Were you eligible for a bonus during calendar 1986?**
- Yes 1 No 2 58
- D. Did you receive a bonus during calendar 1986?**
- Yes 1 No 2 59
- IF yes, please indicate amount
 \$ _____ 64

VI. LEVEL OF RESPONSIBILITY:

Please examine the statements within each of the four groups (Duties, Technical Decisions and Recommendations, Supervision Received, and Supervision Exercised) and, within each group, check the box of the statement that most closely corresponds to your responsibility on the job.

A. Duties:

- I receive on-the-job training working on simple projects or assisting more senior staff. 1
- I perform responsible and varied assignments within projects 2
- I plan, conduct, and coordinate projects of some complexity 3
- I undertake long-term and short-term planning and supervision of projects. I make decisions on work programs and have budgetary control of projects 4
- I have full managerial responsibility for a function with full responsibility for the operation of a budget and long term planning 5

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B. Technical Decisions and Recommendations:

- I am responsible for minor technical details only, all other matters being checked. 1
- I am responsible for technical detail which is reviewed overall 2
- I am responsible for technical matters but am subject to occasional review. 3
- I have full technical responsibility for projects. 4
- I am responsible for all technical matters including the delegation of responsibility 5

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C. Supervision Received:

- My work is assigned with detailed instructions, guidance being always available. My results are subject to close scrutiny 1
- My work is assigned in terms of detailed objectives and priorities, guidance being available on problems and unusual features. My work is subject to scrutiny. 2
- My work is assigned in terms of general objectives and priorities, guidance being available on policy or unusually complex problems. My work is reviewed for effectiveness only 3
- My work is such that I receive executive instruction on broad overall objectives and it is reviewed only for its general effectiveness and adherence to policy 4
- My work is unsupervised, other than I comply with the policy decided within the governing body. 5

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D. Supervision Exercised:

- I have no authority but may give technical guidance to juniors working on the same project. 1
- I have no managerial responsibilities for qualified staff but may be assigned graduates, technicians, or other juniors as assistants from time to time 2
- I supervise a group of qualified staff, technicians, and other employees. I assign and review their work. I can recommend on the selection, discipline, rating, training, and perhaps rate of pay 3
- I am responsible for leaders of groups containing qualified staff, technicians, and other employees. I give guidance on policy and complex technical matters delegating responsibility for discipline, rating, training, and rates of pay 4
- I have full control over senior staff who are in turn responsible for groups of qualified staff and other employees 5

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THANK YOUR FOR YOUR PARTICIPATION.

**PLEASE RETURN THIS QUESTIONNAIRE TO
ACS STATISTICAL SERVICES,
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ACS OFFICE OF STATISTICAL SERVICES PUBLICATIONS

Salaries: The Office of Statistical Services annually surveys the ACS membership, gathering detailed information on member chemists and chemical engineers. The reports based on this survey contain statistical tables describing the respondents' employment status, employer, work function and specialty, salaries, and demographic characteristics.

Reports are available for each year from 1973 through the current year. In 1987, four separate reports are available: *1987 Salaries of Non-Academic Chemists*, *1987 Salaries of Non-Academic Chemical Engineers*, *1987 Salaries of Academic Chemists*, and *1987 Employment Status and Demographic Characteristics of ACS Members*.

Starting Salaries: The Office of Statistical Services also surveys new graduates in chemistry and chemical engineering each summer, and publishes reports detailing the graduates' employment status, post-graduation plans, starting salaries, and other employment and demographic characteristics.

Reports are available for each year from 1975 through the current year.

Professionals in Chemistry: The *Professionals in Chemistry* series compiles information concerning chemists and chemical engineers from ACS, government, and private industry sources. It details information on demography, employment, salaries, education, and supply and demand for the entire chemical profession.

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Special Reports:

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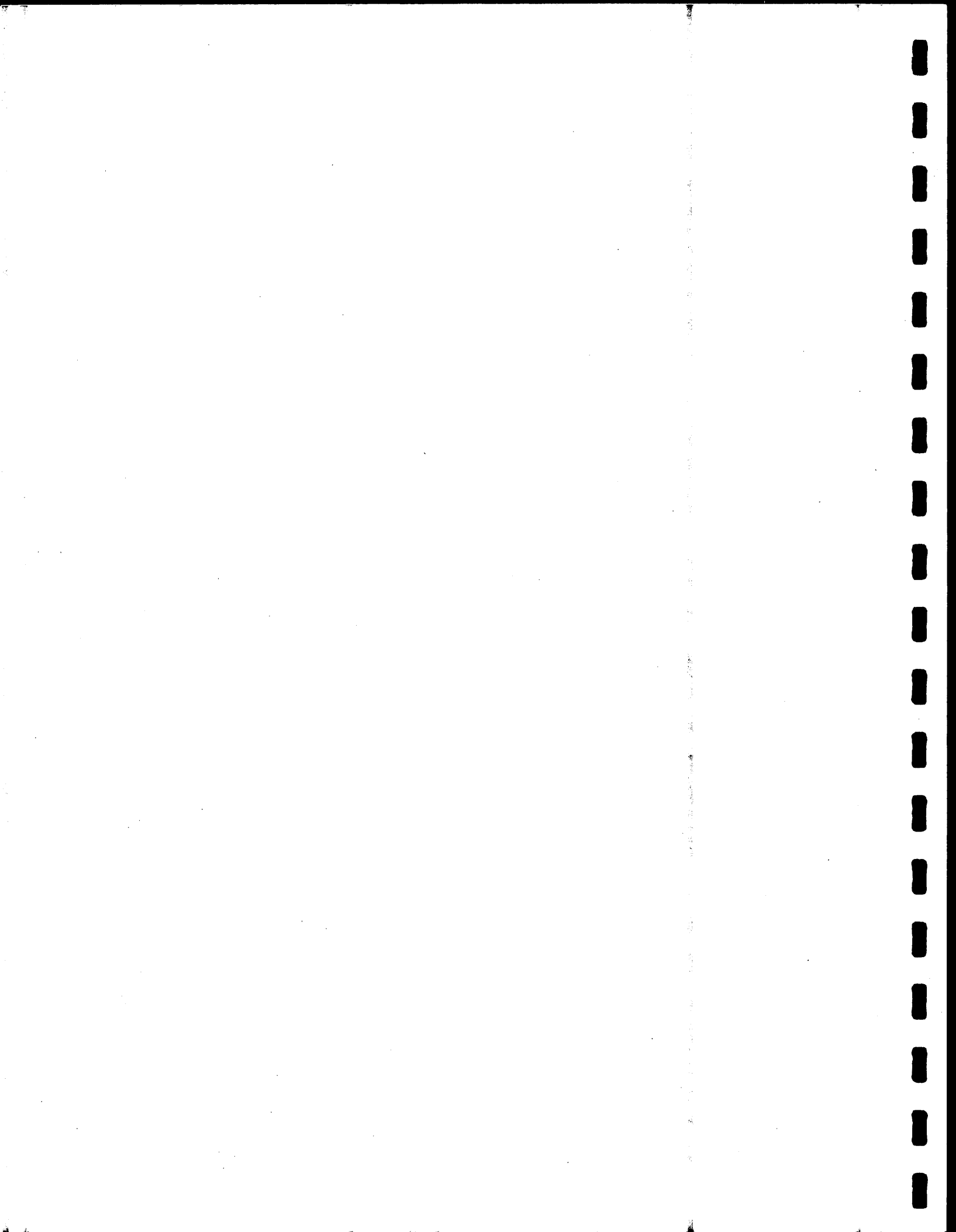
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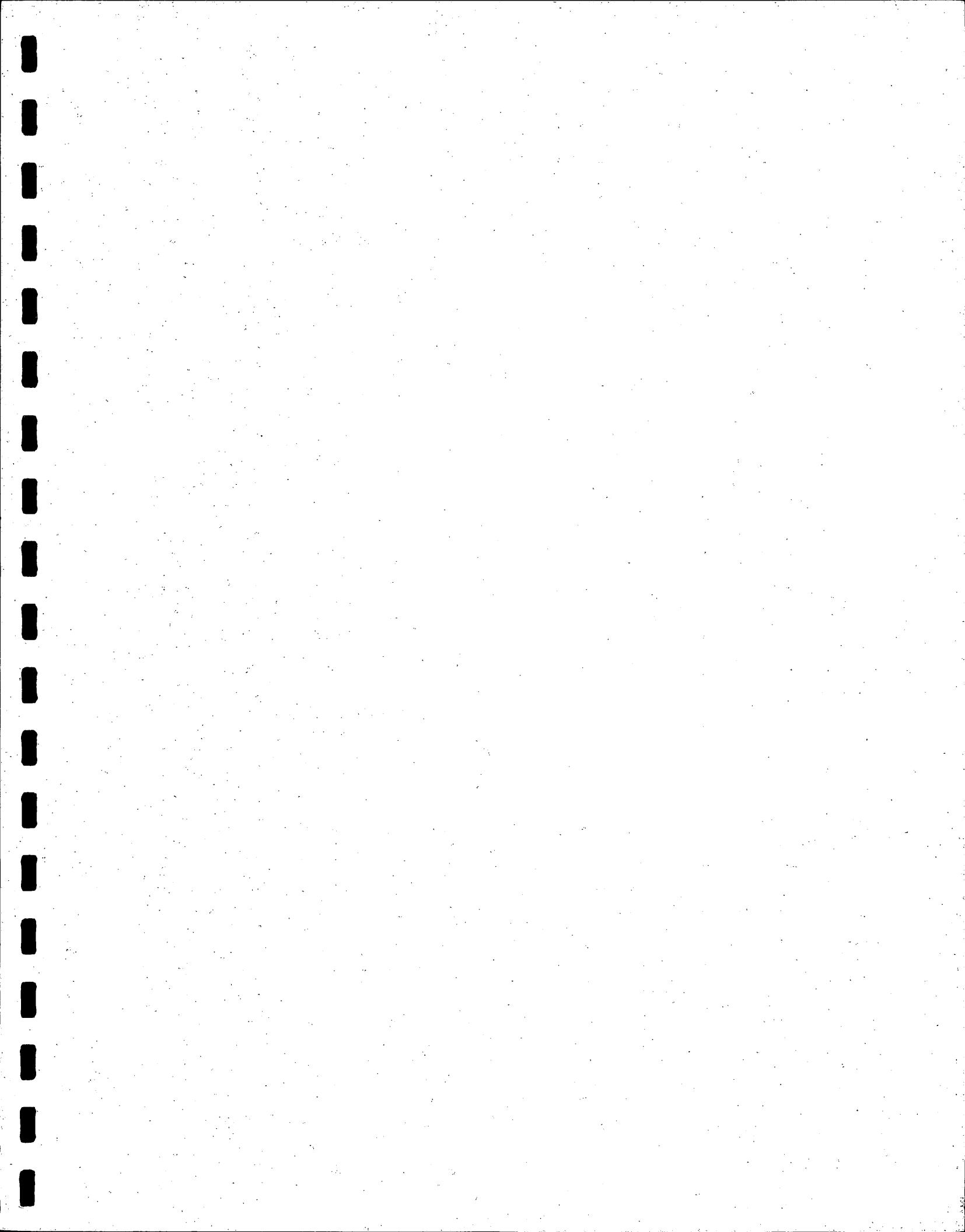
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