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REPORT of

CHEMISTS' SALARIES

and EMPLOYMENT STATUS

Based on the 1974 Salary and Employment Status Survey of ACS Members

Office of Manpower Studies American Chemical Society Washington, D.C.

1974 REPORT OF CHEMISTS' SALARIES AND EMPLOYMENT STATUS

This report has been prepared as a service of the Department of Professional Relations and Manpower Studies, American Chemical Society.

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Acknowledgment

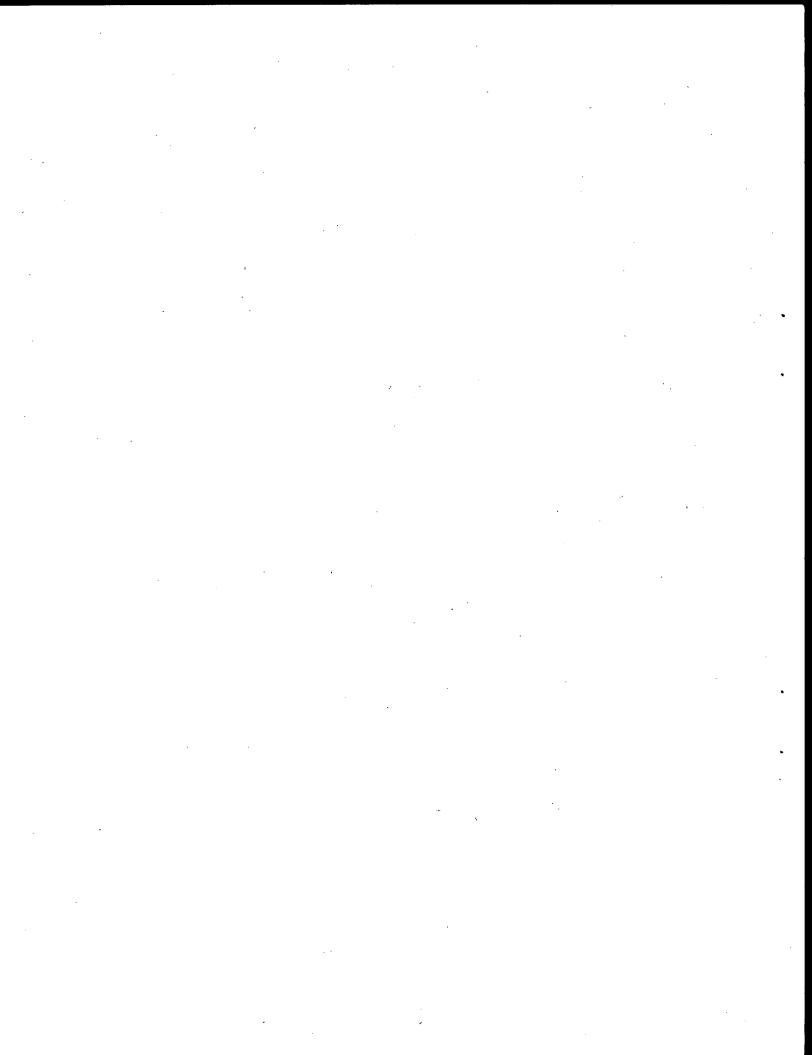
The 1974 Comprehensive Salary and Employment Status Survey was conducted by the Office of Manpower Studies in the American Chemical Society's Department of Professional Relations and Manpower Studies, Robert K. Neuman, Head, under the auspices of the ACS Committee on Economic Status, Alan L. McClelland, Chairman.

The supporting staff includes Maria D. Frizat, survey preparation, editing and analysis; Ronald J. Trubisky, computer programing staff supervisor; Frank Ford, production manager for ACS systems.

The Survey

The comprehensive salary survey program was initiated in 1941; in 1971 it was expanded to include questions about the employment status of the membership. In 1973 an additional question was incorporated to seek information on minority group classification.

Survey questionnaires were mailed in late February to approximately 20,500 members (1/4 of the domestic employable membership, selected at random). The survey reports data as of March 1, 1974. By mid-April 11,876 questionnaires, or 58%, had been returned and used in total or in part for this report. Analysis of the domestic membership, the selected sample, and survey responses is included in the appendix.



CONTENTS

Employment Status of the ACS Membership 1	
Employment Status of Minorities 3	
Unemployed by Sex and Age4	
Unemployed by Geographic Region 5	
Unemployed by Most Recent Employer 6	
Unemployed by Most Recent Work Activity 6	
Unemployed by Field of Specialty 6	,
Length of Unemployment 7	
Chemical Job Market Outlook (member opinion)	
Salaries 8	
Chemists' Salaries and Incomes by Percentiles 9	
Chemical Engineers' Salaries and Incomes by Percentiles	
Salaries and Incomes 1972 through 1974 11	
Chemists' Salaries by Work Activity 12	
Chemists' Salaries by Field of Specialty 13	
Chemists' Salaries by Employer	
Industrial Chemists' Salaries by Percentiles 15	
Chemists' Salaries by Geographic Region 16	
Chemists' Salaries by Sex 18	
Chemists' Salaries by Sex, Employer, Work Activity, and Field of Specialty 19	
Salaries of Minorities 20	
Minorities (comment on survey results)	
Percentage of Minorities in Survey Responses 22	
Distribution of Minorities by Sex 22	
Distribution of Minorities by Degree	
Distribution of Minorities by Degree and Field of Specialty 22	
/continued	١١

Contents (continued)

Distribution of Minorities, Women and all Chemists by Employer 2	:3
Distribution of Minorities, Women and all Chemists by Work Activity 2	23
Distribution of Minorities, Women and all Chemists by Field of Specialty 2	23
Appendix: Analysis of the ACS Membership, Random Sample and Survey Responses 2	25
Sex Distribution	27
Age Distribution 2	27
Geographic Distribution 2	27
Degree Distribution 2	38
Distribution by Field of Specialty 2	38
Employer Distribution 2	28
Survey Form	<u> 5</u>

Employment Status

Members were asked to give their employment status as of March 1, 1974.

Departing from previous years' practice, we did not include in the 1974 survey members over 64 years of age. This accounts for the drop in the "retired, not seeking employment" category when compared with previous years (table E-2).

Table E-1 shows that those with the bachelor's degree have the largest percentage of "retired, not seeking employment" -- 2.4% compared with 0.9% for doctors and 1.4% for masters. The same table shows the 1974 employment status of the membership by degree. Masters have the highest unemployment rate, 1.7% compared with 1.2% for doctors and 1.3% for bachelors.

A separate analysis of the employment status of minorities (table E-3), shows their unemployment rate to be 2.7% overall -- higher than the rate for all ACS members of 1.4% but lower than the 3.5% unemployment rate for females (table E-4).

It is interesting to note that the percentage of minorities with postdoctoral positions is more than three times the percentage for all chemists -- 7.8% for minorities and 2.4% for all chemists.

We found some variation in unemployment rate by age. Those 24 years of age and under show no unemployment, but they represent only 0.7% of the toal responses. Apart from that, those in the age group 41 to 45 have the lowest unemployment rate (0.9%) while groups 46 to 50 and 51 to 55 show the highest, 1.8% (table E-5).

Unemployment by geographic region (table E-6) is seen to be lowest in the West North Central, 0.8%, while the Pacific region shows the highest, 1.7%. New England with 1.5% and Middle Atlantic with 1.6% have unemployment rates above the national average of 1.4%.

Other analyses of unemployed members include unemployed by most recent employer (table E-8), unemployed by most recent work activity (table E-9), and unemployed by field of specialty (table E-10). In the latter table we can see that chemical engineers and those in information science have the lowest rate

of unemployment -- 1.0% for both categories. Physical chemists have the highest, 2.2%.

7.3% of the total respondents indicated some unemployment during the past two years, with about 6 months as the average length of unemployment (tables E-11a and E-11b). When asked how they view the job market outlook for the next four years, almost half the respondents answered "fair." Chemical engineers were more optimistic -- 53% responded "good" (table E-12).

Table E-1 1974 Employment Status of the ACS Membership by Degree

	Bachelors	Masters	Doctors
Employed full-time	93.7%	93.9%	91.3%
Unemployed seeking employment	1.3	1.7	1.2
Temporarily or part-time employed	0.6	1.0	1.2
Subprofessionally employed	1.4	1.1	0.8
Postdoctoral or other fellowship	0.3	0.3	4.4
Retired, seeking employment	0.3	0.6	0.2
Retired, not seeking employment	2.4	1.4	0.9

Table E-2 Overall Employment Status of the ACS Membership 1971-1974

	1971	1972	1973	1974
Employed full-time	88.2%	88.0%	88.7%	92.5%
Unemployed seeking employment	2.8	3.1	1.7	1.4
Temporarily or part-time employed	2.3	1.5	1.3	1.0
Subprofessionally employed	2.5	2.8	2.0	1.0
Postdoctoral or other fellowship	1.6	2.0	2.9	2.4
Retired, seeking employment	<u> </u>	0.4	0.4	0.3
Retired, not seeking employment	2.6*	2.2	3.0	1.4**

^{*} Includes those retired but seeking employment

Table E-3 Employment Status of Minorities

	Black	American Indian	Oriental	Spanish Surnamed	Overall
Employed full-time	89.5%	93.8%	81.9%	95.6%	85.5%
Unemployed seeking employment	1.5	6.3	3.1	1.5	2.7 —
Temporarily/part-time employed	_	_	0.8	1.5	0.7
Subprofessionally employed	4.5	_	1.8	-	2.2
Postdoctoral/other fellowship	2.3	_	11.3	1.5	7.8
Retired, seeking employment		_	0.5		0.3
Retired, not seeking employment	2.3	_	0.5	-	0.8

^{**} Members over 64 years of age were not surveyed

Table E-4

Unemployed by Sex

	Percent in Category	Percent Unemployed
Male	92.7%	1.2%
Female	7.3	3.5
Overall	100.0	1.4

Table E-5

Unemployed by Age

	Percent in	Percent
	Category	Unemployed
≤ 24	0.7%	0%
25-30	9.8	1.3
31-35	17.0	1.2
36-40	14.2	1.7
41-45	13.2	0.9
46-50	14.5	1.8
51-55	14.2	1.8
56-64	16.4	1.0
Overall	100.0	1.4

Table E-6

Unemployed by Geographic Region

	Percent in Category	Percent Unemployed
Pacific	10.6%	1.7%
Mountain	3.2	1.1
West North Central	5.3	0.8
West South Central	6.8	1.0
East North Central	20.8	1.3
East South Central	3.6	1.2
Middle Atlantic	26.6	1.6
South Atlantic	15.9	1.0
New England	7.2	1.5
Overall	100.0	1.4

Table E-7 Unemployed by Geographic Region 1971-1974

•	1971	1972	1973	1974
Pacific Mountain West North Central West South Central East North Central East South Central Middle Atlantic South Atlantic New England	4.4% 2.6 2.9 2.8 2.2 2.0 2.5 2.1 3.6	4.6% 1.9 2.6 2.2 2.5 2.1 3.5 2.7 3.4	2.5% 1.6 0.9 1.5 1.3 3.0 1.7 1.5 2.0	1.7% 1.1 0.8 1.0 1.3 1.2 1.6 1.0 1.5
Overall	2.8	3.1	1.7	1.4

Table E-8 Unemployed by Most Recent Employer

	Percent in Category	Percent Unemployed
Industry	60.1%	1.5%
Education	22.9	1.2
Government	10.1	1.0
Self employed	1.3	1.4
Hospital/non-profit/other	5.6	1.5
Overall	100.0	1.4

Table E-9 Unemployed by Most Recent Work Activity

	Percent in Category	Percent Unemployed
Management/administration	28.4%	1.1%
Research/development	32.5	1.7
Marketing/production*	8.8	2.0
Teaching	16.7	0.7
Technical serv./writing/consulting	13.6	1.4
Overall	100.0	1.4

^{*} Includes sales and quality control

Table E-10 Unemployed by Field of Specialty

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ployed
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Table E-11a Have you been unemployed at any time since March 1, 1972?

Yes	7.3%
No	92.3
No report	0.4

If "yes" what was the length of unemployment?

1 Month 9.9% 9.9% 1-2 Months 15.9 25.8 2-3 Months 11.5 37.3 3-6 Months 20.0 57.3 6-12 Months 18.8 76.1 > 12 Months 22.4 98.5 No report 1.4 99.9			Cumulative
2-3 Months 11.5 37.3 3-6 Months 20.0 57.3 6-12 Months 18.8 76.1 >12 Months 22.4 98.5	1 Month	9.9%	9.9%
3-6 Months 20.0 57.3 6-12 Months 18.8 76.1 >12 Months 22.4 98.5	1-2 Months	15.9	25.8
6-12 Months 18.8 76.1 >12 Months 22.4 98.5	2-3 Months	11.5	37.3
>12 Months 22.4 98.5	3-6 Months	20.0	57.3
•	6-12 Months	18.8	76.1
No report, 1.4 99.9	>12 Months	22.4	98.5
	No report	1.4	99.9

In your opinion, what is the chemical job market outlook for 1974-1977?

	e	Excellent	Good	Fair	Poor
Chemists		2.9%	32.9%	50.3%	13.8%
Chemical E	ngineers	16.3	53.3	25.1	5.4
Others		4.7	43.8	39.2	12.2
Overall	•	4.5	36.0	46.7	12.8

Salaries

Salaries and incomes of only those respondents indicating full-time employment were analyzed. Separate analyses were made for chemists and chemical engineers.

Overall, the median salaries for chemists have increased 5.2% since last year, while their incomes (basic salary plus any additional professional income) have gone up 5.7% (table S-3a and S-3b). These are weighted averages calculated from the percentage increases in each of the three degree categories. Similarly, for chemical engineers, overall salaries and incomes are up 4.9% and 4.8%, respectively (table S-3c and S-3d).

Analysis of salaries by degree and employer category (table S-6) shows self-employed masters and doctors to have the highest salaries, but they represent less than one percent of the respondents. In general, government employees are paid the highest salaries, followed by those in industry.

Table S-8 shows an analysis of chemists' median salary by geographic region.

On the average, Atlantic coast states pay salaries above the national level; these states also have the highest concentration of chemists -- 49.9% of all chemists. On the other hand, the West North Central, Mountain, and East South Central regions pay the lowest salaries and represent 12.4% of the total chemists in the country.

Analysis of chemists' salaries by sex and years of experience (table S-9) shows that on the average men earned \$5,300 more than women -- that is 36.8% more. The differential is biggest among older chemists; female doctors with 30 to 34 years of experience earned \$8,800 less than their male conterparts. On the other hand, bachelors with 2 to 4 years of experience show the smallest difference -- women earning \$800 less than men.

Comparisons of salaries of minorities with overall salaries for chemists by degree and years of experience show no great differences (table S-11); while younger minorities at the bachelors level reported slightly lower salaries, at the masters and doctors levels the differences are not significant.

Chemists' Salaries and Incomes by Percentiles and Experience

Salary+ Income* Salary Income	Troome Salary Income Salary In	## S-9 10-14 15-19 Thousands of Dollic Income Salary I	Park of Experience 10-14 15-19 15-24 25-24 25-24 10-14 15-19 15-19 10-24 25-24 15-25 10-24 15-25 10-24	Heat Figure Figure Heat Hea	Harmon Salary Income I	Feats of Experimental Experiments 15-0 12.5 14.0 14.5 16.0 16.2 17.0 17.0 17.0 17.0 17.0 18.5 18.5 18.0 19.0 19.0 19.0 19.0 19.5 1	Fears of Experience -4 5-9 10-14 15-19 20-24 25-29 30-34 35-3 Income Salary
Troome Salary Income Salary In	Troome Salary Income Salary In	## S-9 10-14 15-19 Thousands of Dollic Income Salary I	Park of Experience 10-14 15-19 15-24 25-24 25-24 10-14 15-19 15-19 10-24 25-24 15-25 10-24 15-25 10-24	Heat Figure Figure Heat Hea	Harmon Salary Income I	Feats of Experimental Experiments 15-0 12.5 14.0 14.5 16.0 16.2 17.0 17.0 17.0 17.0 17.0 18.5 18.5 18.0 19.0 19.0 19.0 19.0 19.5 1	Fears of Experience -4 5-9 10-14 15-19 20-24 25-29 30-34 35-3 Income Salary
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+ Basic annual salary
* Income includes salary plus bonuses, royalties, fees, honoraria, and the like na = not available

Chemical Engineers' Salaries and Incomes by Percentiles and Experience

										Years of	Experience	ce										
	7		2-4		8-9	•	10-14	4	15-19	6	20-24	_	25-29		30-34		35-39		402	^1	Overall	11
	l					Þ				Thousands	s of Dollars	ars										
Percentile rank	Salary+	Salary+ Income* Salary	Salary	Income	Salary	Income	Salary	Income	Salary	Income	Salary	Income S	Salary I	Income S	Salary I	Income Sa	Salary In	Income	Salary	Income	Salary	Income
LOWER 10% Bachelors Masters Doctors	na na	na na na	\$ 9.6 12.0 15.0	\$ 9.6 12.3 15.0	\$12.0 13.5 15.8	\$12.0 14.2 17.5	\$11.8 15.6 18.4	\$12.4 15.6 19.2	\$15.6 15.7 19.0	\$16.0 16.0 19.7	\$16.8 \$ 16.7 19.6	\$16.9 \$ 17.0 20.4	\$17.5 \$ 18.2 19.0	\$17.6 \$ 18.6 21.0	18.1 \$ 15.0 19.0	\$18.5 \$3 15.0 3	318.0 \$3 18.0 3	318.0 \$ 18.0 23.2	\$15.0 na na	\$15.0 na na	\$14.7 15.4 17.4	\$15.0 16.0 18.7
LOWER 25% Bachelors Masters Doctors	na na na	na na	10.1 13.0 17.7	11.0 13.0 17.7	13.8 16.0 18.0	14.0 16.0 19.4	14.7 16.8 20.0	15.2 17.0 20.8	18.4 18.1 23.4	19.0 19.2 24.0	18.9 20.2 22.5	19.4 20.6 25.0	20.0 21.0 23.5	20.0 21.0 24.8	20.2 22.8 24.0	21.0 22.8 24.8	19:5 20.0 24.0	20.0 22.0 27.5	18.2 na na	18.7 na na	18.0 18.0 20.0	18.4 19.0 21.0
MEDIAN Bachelors Masters Doctors	na na '	na na	12.0 14.2 18.3	13.0 14.2 18.6	15.3 17.6 20.4	15.5 17.8 21.0	17.4 18.1 23.0	18.0 18.9 24.0	20.6 21.3 26.0	22.0 21.5 27.8	21.0 24.0 26.8	22.0 24.9 29.0	22.3. 25.0 28.4	23.5 26.6 30.8	24.5 25.0 26.5	26.0 28.0 30.3	24.0 24.8 28.2	26.5 26.0 31.0	21.4 na na	26.0 na na	21.3 22.4 24.8	22.0 23.3 26.0
UPPER 25% Bachelors Masters Doctors	na na	na na	13.0 16.1 18:7	15.0 16.1 19.0	17.6 18.5 22.8	17.8 19.0 23.0	20.0 20.0 26.0	20.4 21.0 28.4	24.0 25.0 32.2	25.0 25.5 33.2	23.5 28.4 33.0	25.0 30.0 36.0	26.4 30.0 36.0	28.0 34.0 37.0	30.0	34.0 32.5 36.0	33.3 30.0 32.0	39.0 31.0 35.0	30.0 na na	33.9 na na	25.4 28.0 30.0	28.0 30.0 33.5
UPPER 10% Bachelors Masters Doctors	na na	na na	14.0 16.6 20.0	16.1 17.5 20.0	18.0 19.0 24.5	19.0 21.5 25.0	23.0 23.0 31.0	25.0 24.0 34.0	28.0 29.5 35.0	29.0 30.0 38.0	27.5 33.3 36.0	30.0 37.9 46.0	32.5 42.0 39.0	35.0 47.5 39.9	39.0 47.0 45.0	43.0 51.0 55.0	45.6 36.0 40.0	53.0 36.3 48.0	39.0 na na	43.0 na na	34.0 36.0 36.0	37.0 40.0 40.0

⁺ Basic annual salary * Income includes salary plus bonuses, royalties, fees, honoraria, and the like na = not available

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Chemists' Overall Median Salaries

·	1972	1973	Change	1974	Change
Bachelors	\$15.6	\$16.8	7.7%	\$17.5	4.2%
Masters	16.3	17.5	7.4	18.4	5.1
Doctors	19.2	20.5	6.8	21.7	5.9
Weighted A	verage		7.2%		5.2%

Table S-3b

Chemists' Overall Median Incomes

	1972	1973	Change	1974	Change
Bachelors	\$16.0	\$17.0	6.3%	\$18.0	5.9%
Masters	17.0	18.0	5.9	19.0	5.6
Doctors	20.0	21.3	6.5	22.5	5.6
Weighted A	verage		6.3%		5.7%

Table S-3c

Chemical Engineers' Overall Median Salaries

	1972	1973	Change	1974	Change
Bachelors	na	\$20.2	na	\$21.3	5.4%
Masters	na	22.0	na	22.4	1.8
Doctors	na	23.1	na	24.8	7.4
Weighted Av	erage				4.9%

Table S-3d

Chemical Engineers' Overall Median Incomes

	1972	1973	Change	1974	Change
Bachelors	. na ·	\$21.0	na .	\$22.0	4.8%
Masters	na	22.5	na	23.3	3.6
Doctors	- na	24.5	na	26.0	6.1
Weighted	Average				4.8%

Table S-3e

1974 Salary-Income Differentials Compared

	Salary	Income	Differential
CHEMISTS			• .
Bachelors	\$17.5	\$18.0	2.9%
Masters	18.4	19.0	3.3
Doctors	21.7	22.5	3.7
Weighted Average			3.4%
CHEMICAL ENGINEERS		•	
Bachelors	21.3	22.0	3.3
Masters	22.4	23.3	4.0
Doctors	24.8	26.0	4.8
Weighted Average			4.0%

Chemists' Salaries by Work Activity

Years of Experience

	7 1	2-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	407	Overal1
			Ē	Thousands of	Dollars					•	
Management/Administration (28.2%)* Bachelors Masters Doctors	na na na	na na 18.5	\$15.0 16.6 22.0	\$18.0 19.0 25.0	\$21.4 22.0 26.7	\$22.9 24.9 29.0	\$26.0 26.3 31.0	\$25.0 25.8 31.8	\$26.3 25.0 31.0	na na	\$22.2 24.0 27.0
Research/Development (32.3%) Bachelors Masters Doctors	na na na	11.2 12.2 17.5	13.5 15.1 20.0	16.3 17.0 22.0	16.8 18.8 23.9	18.5 21.0 24.8	18.6 21.6 24.6	19.5 21.3 25.0	20.0 17.9 25.0	na na	16.1 17.6 21.5
Teaching (18.5%) Bachelors Masters Doctors	na na	na na .12.5	na 12.0 14.1	na 13.5 - 16.7 ·⊤	na 14.0 18.7	na 15.0 20.0	na 17.5 22.1	na 18.2 22.0	na 16.0 -24.3	na na na	11.0 13.4 16.8
Marketing/Sales Prod./Quality Control (8.6%) Bachelors Masters Doctors	na na	11.9 na 17.6	14.0 15.5 20.3	15.9 18.6 22.4	18.1 22.0 na	19.0 21.0 24.0	18.0 22.9 26.3	19.0 na na	19.6 na na	eu u eu	17.0 19.1 23.0
Other (12.4%)• Bachelors Masters Doctors	na na	10.8 13.3 16.0	13.7 14.7 19.7	15.6 16.0 20.0	16.6 18.1 22.0	17.7 17.5 24.1	18.0 17.5 na	18.0 20.0 24.6	20.0 21.9 25.2	na na	15.5 16.1 20.3

Proportion of respondents in each category

Includes technical services, laboratory analysis, writing, editing, abstracting, consulting na = not available

Years of Experience

	٠.	V	2-4	6-5	5-9 10-14 15-19		20-24	25-29	30-34	30-34 35-39 40≥ Overall	407	Overal
		,										-
				Thou	Thousands of Dollars	Dollars						

•	Analytical Chemistry (19.0%) * Rachelors	na	\$11.3	\$13,3	. 10		΄ α	\$19.1	· ∞	\$18.0	na	
	Masters	na	12.8	15.0	16.6	19.2	19.3	21.3	21.2	23.4	na	18.0
	Doctors	na	16.2	18.1	6	•	÷	25.0	er.	25.3	na	•
							•					
	Biochemistry (13.3%)										-	
	Bachelors	na	9.5	.14.1	15.0	15.4	18.8	18.2	19.0	na	na	15.0
	Masters	na	na	13.0	16.5	17.5	ij	20.5	na	na	na	15.1
	Doctors	na	15.0	18.4	20.8	24.0	7.	27.8	26.5	30.8	na	21.5
									,			
	Inorganic Chemistry (6.7%)									•		
	Bachelors	na	10.6	13.2	16.2	17.0	20.8	24.0	ពឧ	na	na	19.0
	Masters	na	na	.13.0	14.4	17.3	18.6	•	na	na	na	16.0
	Doctors	na	13.0	14.6	20.5	21.0	23.4	•	22.2	na	na	18.5
7.						٠				,		
	Organic Chemistry (19.0%)											
		na	11.1	14.0	16.9	19.0	20.6	20.5	22.2	21.6	na	18.4
	Masters	na	12.2	14.4	17.5	19.4	20.0	23.0	23.8	22.3	na	18.0
	Doctors	na	16.0	19.6	21.0	23.3	24.4	25.3	28.0	26.5	na	-
					4							
	Physical Chemistry (9.9%)									•		,
	Bachelors	na	na	12.8	18.0	18.4	19.0	na	na	na	na	18.0
	Masters	na	na	na	15.0	16.9	20.2	24.8		na	na	18.0
	Doctors	na	17.0	17.4	19.6	23.0	26.0	27.5	25.0	na	na	21.0
	`										.;	
	Polymer Chemistry (13.8%)			٠	•				4	(
	Bachelors	na	11.5	15.0	17.6	19.5	20.6	20.3	21.1	22.0	na	18.9
	Masters	na	na	15.8	19.7	20.3	22.0	24.9	22.9	na	na	20.5
	Doctors	na	17.8	21.0	22.7	24.0	27.0	30.0	29.1	28.7	na	23.7
			٠								ű	
	Other Specialties (18.3%)									•		,
	Bachelors	na	11.1	14.4	16.0	19.5	21.0	21.0	24.0	22.0	na	19.1
	Masters	na	13.0	14.1	17.8	18.0	_ا	24.0	23.5	24.0	na	19.0
	Doctors	na	17.3	20.4	23.4	25.2	9	26.4	30.0	7.97	na	74.I
	* Droportion of respondents in category	at egg.	2									

^{*} Proportion of respondents in category na = not available

Chemists' Overall Median Salaries by Employer

	1973	Bachelors 1974	Change	1973	Masters 1974	Change	1973	Doctors 1974	Change
				Thousa	Thousands of Dollars	llars			i
Industry (59.9%)	\$16.9	\$17.5	3.6%	\$18.0	\$19.7	9.48	\$22.0	\$23.3	5.9%
Self-employed (0.9%)	16.0	15.0	-6.3	17.5	22.0	25.7	24.5	25.0	2.0
Educational Inst. (23.0%)	9.8	10.8	10.2	12.5	13.3	6.4	17.0	17.2	1.2
Government (10.7%)	17.9	18.1	1.1	19.5	19.0	-2.6	23.0	24.0	4.3
Non-profit (4.3%)*	14.6	15.0	2.7	16.0	15.1	-5.6	21.0	20.7	-1.4
Other (1.2%)	na	14.3	na	na	17.7	na	na	21.0	na

^{*} Includes hospital and independent laboratory

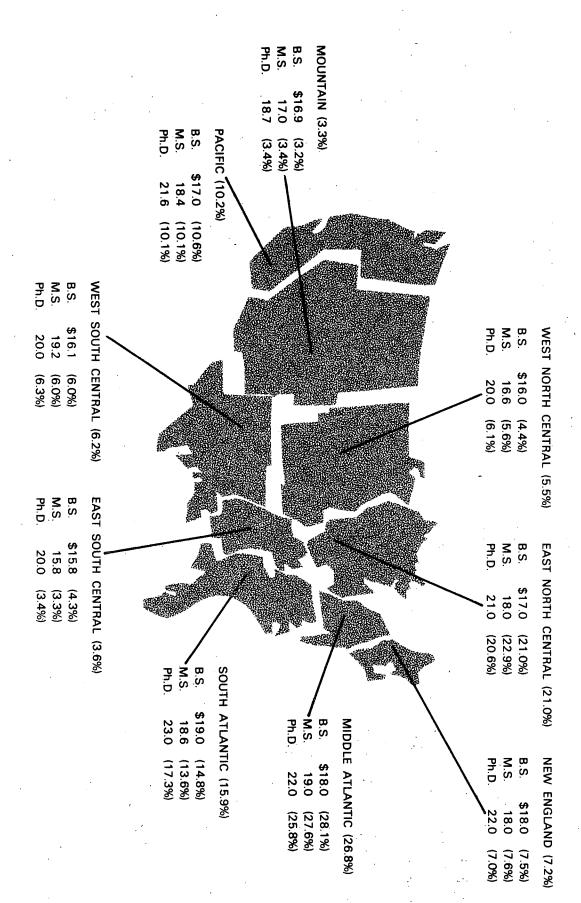
na = not available

Years of Experience

													٠			•		•			
Overall		\$12.0	13.2	17.9		14.5	16.0	20.0		17.8	19.9	23.5		22.0	24.5	28.0		28.2	31.3	35.0	
4 07		\$16.7	18.2	na		18.0	22.0	na		23.0	25.0	na		32.0	34.3	na		40.0	0.04	na	
35-39		\$14.6	14.5	20.3	•	18.0	17.7	23.0		21.6	23.5	28.0		28.8	30.0	36.0		40.0	34.0	45.0	
30-34		\$14.6	16.8	20.0		16.8	20.0	24.0	`	21.0	23.5	29.1		25.3	27.5	35.5		33.0	35.0	44.4	
25-29	lars	\$14.7	16.2	20.5		17.0	20.0	24.0		20.0	24.0	27.5		25.3	30.0	33.2		31.0	37.0	40.0	
20-24	Thousands of Dollars	\$14.2	16.0	20.5		16.5	19.0	23.8		19.9	22.0	26.5		23.3	26.0	31.5		28.0	32.7	38.0	
15-19	Thousan	\$13.5	15.2	20.0		16.0	17.5	22.5		18.0	19.8	25.0		22.0	22.5	28.7		26.5	27.2	35.0	
10-14		\$12.0	13.2	18.8		14.4	15.8	21.0		16.2	18.0	23.5		18.3	20.7	26.0		22.0	24.0	29.0	
5-9		\$11.3	10.3 12.0	17.8		12.5	14.0	19.2		14.0	15.3	21.0	,	16.0	17.0	23.0		18.0	18.8	25.0	
£ 1 2-4 5-9	`	\$ 9.5	10.3	15.6	•	10.6	11.9	16.7		11.5	13,0	718.0		13.0	14.5	19.3		14.8	15.8	20.8	
41		na	na	na		na	na	na		na	na	na	•	na	na	na		na	na	na	
		LOWER 10% Bachelors	Masters	Doctors	LOWER 25%	Bachelors	Masters	Doctors	MEDIAN	Bachelors	Masters	Doctors	UPPER 25%	Bachelors	Masters	Doctors	UPPER 10%	Bachelors	Masters	Doctors	*

na = not available

Chemists' Median Salaries by Geographic Regions*



How to read: Using New England as an example, 7.2% of responding chemists work in the U.S. census division; 7.5% of all B.S. chemists work there and they reported an overall median salary of \$18.0 in 1974.

1. Pacific

Washington Oregon California Alaska Hawaii

2. Mountain

Montana
Idaho
Wyoming
Nevada
Utah
Colorado
Arizona
New Mexico

3. West North Central

North Dakota Minnesota South Dakota Iowa Nebraska Kansas Missouri

4. West South Central

Oklahoma Arkansas Texas Louisiana

5. East North Central

Wisconsing Michigan Illinois Indiana Ohio

6. East South Central

Kentucky Tennessee Mississippi Alabama

7. Middle Atlantic

New York Pennsylvania New Jersey

8. South Atlantic

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

9. New England

Maine New Hampshire Vermont Massachusetts Connecticut Rhode Island

\$19.7 \$14.4

Male average salary Female average salary

Distribution Men Women	,	16.7%	11.0	6.6	9.5	8.5	7.4	7.3	7.3	7.0	7.0	7.0
Distr: Men		83.3%	89.0	90.1	8.06	91.5	95.6	92.7	92.7	93.0	93.0	93.0
Doctors en Women		na	\$14.5	14.6	18.0	19.7	21.0	21.3	18.7	na	na	16.8
Doc Men		na	\$16.5	19.2	21.2	24.0	25.7	26.8	27.5	27.3	25.6	22.0
Masters en Women	s of Dollars	na	\$11.3	12.5	14.0	15.2	17.0	15.7	16.5	na	na	13.5
Mas	Thousands	na	\$12.8	15.0	17.4	19.5	21.5	23.4	23.0	22.5	24.5	19.0
lors Women		na	\$10.6	12.0	14.0	15.0	15.7	16.0	16.3	18.3	na	13.0
Bache. Men		na	\$11.4	14.0	16.5	18.0	20.0	20.9	21.8	21.6	23.0	18.0
Years		71	7-6	ر 1 - د	10-14	15-19	70-07	25-29	30-34	35-39	^ 07	Overall

na = not available

		Bachelors	ors			Masters	ers			Doctors	ors		Overal	Overall Dist.
	Me		Women	en	Men		Women	ue	Men	g	Women	r.	Men	Women
	Salary	+,,	Salary	ою	Salary	æ	Salary	οkρ	Salary	ф	Salary	оф		
					Thousands of		Dollars							
EMPLOYER	0 8 5	78.5	\$13.2	56.4	\$20.0	68.0	\$14.4	43.5	\$23.4	50.8	\$21.0	18.7	61.48	40.3%
	15.1	9		1.2	22.0	1.2	na	0	25.0	9:0	na	0.9	6.0	0.7
Sell-employed	הינו		6	10.0	14.0	13.6	11.0	32.7	17.5	34.8	15.0	53.4	22.4	31.0
Educational inst.	18.7	12.9	15.2	20.0	19,5	11.8	15.0	13.6	24.0	8.6	20.9	14.6	10.3	16.3
GOVERNMENT.	. מ י	3.0	11.0	10.4	16.3	3.8	12.1	8.9	21.0	4.3	17.0	11.4	3.8	10.2
Non-profit Other	14.7	1.4	na	2.0	17.9	1.6	na	1.4	21.2	1.0	na	6.0	1.2	1.5
אייייייייייייייייייייייייייייייייייייי														
WORN ACIIVIII	7 66	30.1	15.0	10.6	24.1	30.5	18.0	9.7	27.0	28.6	23.0	14.4	29.4	11.6
Mailay Emelic/ admirii.	16.6	27.3	13.2	33.6	18.3	30.9	14.0	36.9	21.6	35.2	18.0	26.5	32.3	32.3
Reseat til/ deve topment	10.0		פני	4.3	14.0	11.6	11.2	25.7	17.0	28.1	14.5	45.1	18.0	24.4
reaching	•	•	\$))) 									
marketing/sales		20.7	12.0	11.1	19.1	11.8	na	1.0	23.4	2.3	na	0.5	0.6	4.4
other	16.0	20.3	12.8	40.4	17.0	15.2	12.8	26.7	21.0	5.7	18.4	13.5	11.3	27.3
FIELD	. 1	(,	•	((٥ ٧ ٢	٠ ،	000	7.5	14.1	10.2	18.5	25.0
Analytical	16.0	32.6	14.1	40.4	10.0	6.22	7 · C	. 92	0.00	. מר כ	17.4	37.2	12.5	23.6
Biochemistry++	16.0	4.9	10.5	12.	10.5	0	12.0	† · ·	77.	1	10.5		9	α ν
Inorganic	19.2	5.3	na	5.6	17.0	8	12.0	70.7	13.0	0.0	13.0	71.5		, ,
Organic	19.0	12.1	12.7	8.5	18.6	15.9	12.5	15.0	21.2	24.4	16.8	14.9	19.0	17.7
Physical	18.2	3.5	na	5.6	18.5	5.6	na	2,3	21.2	14.9	15.6	ω. Ω	10.2	ρ (I
DOTEMBET	19.0	17.4	na	3.0	21.0	15.7	na	3.9	23.8	12.9	na	4.2	14.6	3.7
colymer Other**	20.0	24.3	13.3	26.8	20.3	25.3	13.8	24.8	24.7	12.6	18.0	12.6	18.0	21.5

Percent in category

Includes hospital and independent laboratory

Includes technical services, laboratory analysis, writing, editing, abstracting, consulting

Includes clinical and medicinal chemistry

^{**} Includes literature, information science

na = not available

Comparison of Median Salaries of Minorities and Overall Chemists' Salaries

Table S-11

Doctors	Minorities	•	na	16.5	19.1	1, 00	7.77	24.8		0.62	26.1	† (na	na		114	20.0	
Doc	All Chemists		na	16.3	19.0	0 10	21.0	0.45) 1 - 1 1 (25.5	7 76	0.02	50.9	27.0		7.47	21 7	
IIS	Minorities		na	na	0 31	17.0	17.0	. 7 81	1.01	23.0	1	IIG	na	q	וומ	na	7 71	0.01
Masters	All Chemists	Thousands of Dollars	138	12.5		14.0	17.0	0 0 0	19.0	21.1	1 0	23.0	22.3	7 00	†•77	0.46) · ()	18.4
Bachalore	Minorities	Ţ		10.01	O. 0.	13.0	15.1		19.1	10.0	0.61	na	ç		na	. ເ	1110	15.4
Bach	All Chemists		(na	7.11	14.0	16.1	7.07	18.0	0	19.0	20.0	21.3	617	21.5		7.77	17.5
•	Years		,	7.7	2-4	5-9		10-14	15-19		20-24	25-29	7 6	30-34	35-39		₹ 0 ≯	Overall

na = not available

Note: Minorities reported an average of 10-14 years of experience. All chemists reported an average of 15-19 years of experience.

Minorities

The 1974 survey is the second consecutive annual ACS survey to include a question on minorities -- those classifications recognized by the Equal Employment Opportunity Commission (EEOC): Black, American Indian, Oriental (defined by EEOC to include those of Chinese, Japanese, Korean or Taiwanese origin), Spanish-Surnamed American (defined by the EEOC to include those of Mexican, Puerto Rican, Cuban or Spanish origin).

Almost 9% of the respondents failed to answer this question. Possibly some respondents were confused because they had five choices -- the four minority categories plus "None of the categories above." The latter was intended for all those minorities not recognized by the EEOC as well as non-minorities. Some non-minority respondents indicated they were not sure whether to skip this question or check category five. We believe this to be the reason why the percentage of no responses is higher this year (table M-1).

Table M-2 gives us a breakdown of minorities by sex; all other analyses were made regardless of sex.

Tables M-5 through M-7 show distribution of chemists by employer, work activity, and field of specialty. Comparisons were made independently for all chemists, regardless of sex and minority group classification; women, regardless of minority group classification; and minorities, regardless of sex.

Table M-1 Percentage of Minorities in Survey Responses

	1973	1974
Minorities	4.8%	5.1%
Non-minorities	93.1	86.2
No response	2.1	8.7

Table M-2

Distribution of Minorities by Sex

	Black	American Indian	Oriental	Spanish- Surnamed
Male (4.4%) ⁺ Female (0.7%)	91.0%	82.4%	84.6%	91.2%
	9.0	17.6	15.4	8.8

⁺ Percent of total responses

Table M-3

Distribution of Minorities by Degree

	Overall	Bachelors	Masters	Doctors
Black	1.1%	1.6%	1.4%	0.8%
American Indian	0.1	0.2	0	0.2
Oriental	3.2	1.6	3.0	4.3
Spanish-Surnamed	0.6	0.6	0.8	0.5
All minorities	5.1	4.1	5.2	5.7

⁺ Percent of total responses in degree category

Table M-4

Distribution of Minorities by Degree and Field of Specialty

	Overall	Bachelors	Masters	Doctors
Analytical	17.8%	40.5%	19.1%	7.6%
Biochemistry	19.9	11.2	13.0	26.4
Inorganic	6.1	5.2	6.1	6.5
Organic	14.8	10.3	10.4	18.5
Physical	9.5	3.4	4.3	14.1
Polymer	10.1	8.6	8.7	11.2
Engineering	8.5	5.2	20.0	5.1
Other	13.4	15.5	18.3	10.5

Percent in category

^{*} Percent in category

Table M-5

Distribution of Full-time Employed Chemists by Employer

	All Chemists	Women	Minorities
Industry	59.9%	40.3%	53.1%
Self-employed	0.9	0.7	1.2
Educational Institution	23.0	31.0	21.1
Goverment	10.7	16.3	17.4
Hospital/non-profit	4.3	10.2	6.3
Other	1.2	1.5	0.8

Table M-6

Distribution of Full-time Employed Chemists by Work Activity

•	All Chemists	Women	Minorities
Management	28.2%	11.6%	21.3%
Research & Development	32.3	32.3	43.8
Teaching	18.5	24.4	14.0
Marketing/Sales Production/Quality Cont Other	. 8.6	4.4	6.7
	12.4	27.3	14.2

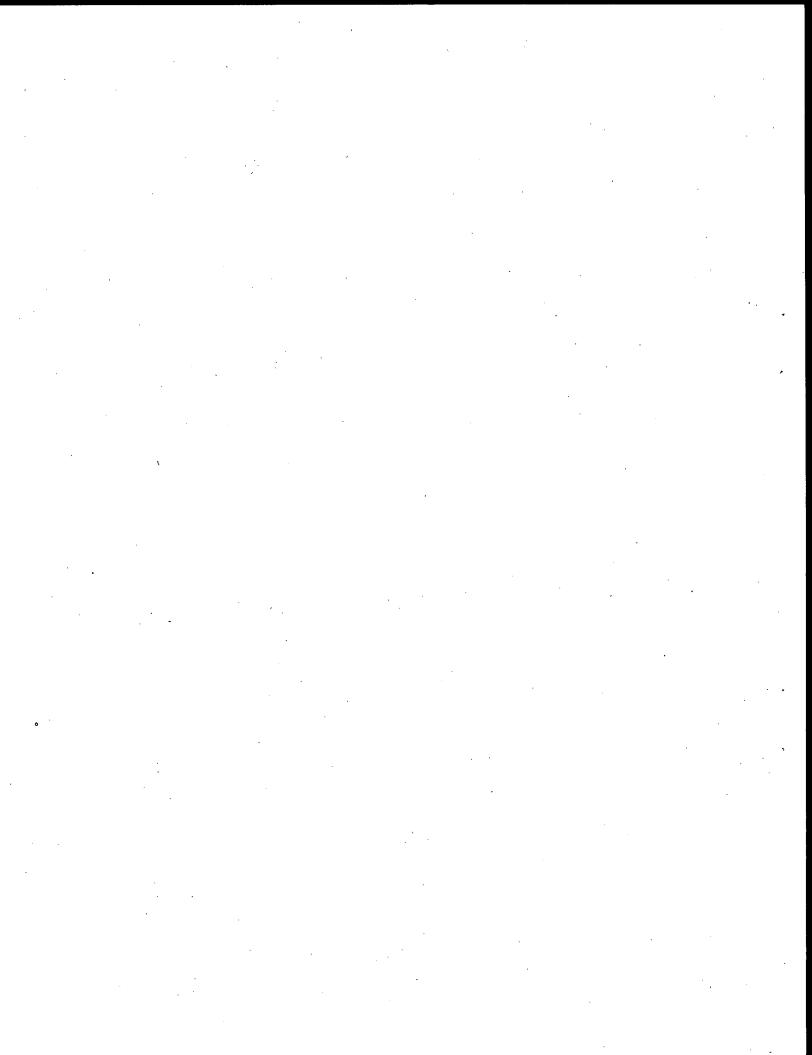
Table M-7

Distribution of Chemists by Field of Specialty

	All Chemists	Women	Minorities
Analytical	18.6%	25.0%	19.4%
Biochemistry/Medicinal	13.8	23.6	21.8
Inorganic	6.7	7.8	6.7
Organic	19.4	12.7	16.2
Physical	9.9	5.8	10.3
Polymer	13.4	3.7	11.0
Other	18.1	21.5	14.7

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APPENDIX



Analysis of the ACS Membership, Selected Sample and Survey Responses

One quarter of the ACS domestic membership (exclusive of students, emeriti, and those over 64 years of age) was selected at random for this survey. Tables A-1 through A-5 show an analysis of the ACS membership as it compares with the random sample and survey respondents.

It is interesting to observe that when comparing the total ACS membership with the sample selected for this survey, variations are only fractions of one percent. When comparing the sample with the respondents, those characteristics that do not change (i.e., sex and year of birth) show a maximum variation of one percent for those in age groups 25 to 30 and 31 to 35. Analysis of the geographic distribution (information for the ACS membership was based on the address reported by the members and presumably up-dated soon after a change of address occurs) also shows variations of less than one percent. We consider these variations to be statistically insignificant, and the survey therefore is representative of the total ACS membership.

When comparing highest degree earned, we note a discrepancy between information on the member's record, and information obtained from the survey responses. For example, the membership data file shows 44% of the total membership hold a doctors degree compared with 51% of those responding to the survey. The difference may be attributed to two factors or a combination of both: a) the membership record does not have the latest information; b) doctors respond to the survey at a higher rate. The opposite can be said for bachelors.

Comparison of field of specialty -- chemistry, chemical engineering, others (by "others" we mean those who have obtained their highest degree in a field other than chemistry, i.e., medicine, law, business administration, etc.) -- shows a difference in the number of chemical engineers and "others" responding to the survey when compared with the membership record. This discrepancy could be attributed to the different bases used in surveying and in obtaining information for the member's record -- while the survey asks for field of specialty associated

with the member's latest employment, the membership application form seeks information about the field of highest degree earned.

The employer classification -- industry and non-industry -- shows a discrepancy between the ACS membership file and the survey responses concerning the number employed in industry. This might be attributed to either or both of two factors: industrial chemists may respond to the survey at a higher rate than non-industrial chemists (although there is no basis for this assumption), and the information obtained in the survey is more up to date. An effort is made to update employer information in the ACS member records by means of a small questionnaire sent every year to 1/3 of the total membership; thus members changing employers have an opportunity to update their records every three years. At any given time, however, a significant percentage of the members may not have current employer information in the ACS file.

Table A-1

Sex Distribution

•	Male		Fema	11e	Total
	No.	%	No.	%	
ACS membership Random sample Survey responses	75780 18952 10985	92.5 92.6 92.7	6140 1522 864	7.5 7.4 7.3	81920 20474 11849

Table A-2

Age Distribution

Membership	Random Sa No.	umple %	Survey No.	Responses %
 131 14.1 101 14.2 136 14.9 102 14.5 121 16.9	100 1763 3214 2891 2800 3063 2896 3407 20134	0.5 8.8 16.0 14.4 13.9 15.2 14.4	78 1129 1963 1642 1528 1674 1632 1893 11539	0.7 9.8 17.0 14.2 13.3 14.5 14.2 16.4

Table A-3

Geographic Distribution

	ACS Me	embership %	Random No.	Sample %	Survey No.	Responses %
Pacific Mountain West North Central West South Central East North Central East South Central Middle Atlantic South Atlantic New England Total	8609 2476 4300 5741 16813 2996 22359 12638 5930 81862	10.5 3.0 5.3 7.0 20.5 3.7 27.3 15.4 7.2	2153 619 1075 1435 4204 749 5590 3159 1482 20466	10.5 3.0 5.3 7.0 20.5 3.7 27.3 15.4 7.2	1237 372 619 791 2434 418 3108 1856 840 11675	10.6 3.2 5.3 6.8 20.8 3.6 26.6 15.9

Degree Distribution

Table	A-4	1
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	Bachelors		chelors Masters		Docto	Less Than Bachelors		Total	
	No.	%	No.	%	No.	%	No.	%	
ACS membership Random sample Survey responses	28405 7100 3326	36.7 36.7 28.3	13593 3444 2355	17.6 17.8 20.1	34353 8583 5987	44.4 44.3 51.0	953 233 72	1.2 1.2 0.6	77304 19360 11740

Table A-5

Distribution by Field of Specialty

				er			
	Chemi	sts	Chemica	l Engineers	(non ch	nemical)	Total
1 (No.	%	No.	%	No.	%	,
ACS membership	5838 5	81.8	10113	14.2	2904	4.1	71402
Random sample	14666	82.0	2513	14.1	706	3.9	17885
Survey responses	9573	81.1	1270	10.8	954	8.1	11797

Table A-6

Employer Distribution

	Industry		Non-Ir	Non-Industry			
•	No.	%	No.	%	1	•	
ACS membership	34846	48.5	36983	51.5		71829	
Random sample	8794	48.8	9221	51.2		18015	
Survey responses	7115	60.1	4721	39.9		11836	

AMERICAN CHEMICAL SOCIETY 1974 Comprehensive Salary and Employment Status Survey

1	Α.	Sex: (1) Male (2) Female 2-3 B. Year of birth	
4	c.	(1) Pachelors (2) Masters (3) Doctors (4) Less than bachelors	
·- (.	D.	7-8 E. Year of bachelors degree:	
- 10	F.	11-15 G. Zip Code	
17	н.	(was riserity) gategory in which you are included:	
	n.	(1) Black/Negro (4) Spanish-American (those of Mexican, Puert (2) American Indian (3) Oriental (those of Chinese, Japanese, Korean or Taiwanese origin) (5) None of the categories above	•
	V	Please check the one response in each question which most aptly describes your status as of March 1, 19	74.
ĮН	ı.	. Current Employment Status:	
		(1) Employed full-time (5) Employed subprofessionally (2) Unemployed and seeking employment (6) Retired, seeking employment (3) Temporarily or part-time employed (7) Retired or otherwise not seeking employment (4) Postdoctoral or other fellowship	nt
2(0)	J.	. Current, or most recent full-time professional employer:	
		(1) Industry (6) Self employed (2) College or university (7) Hospital, independent laboratory (3) High school or other school (8) Other non-profit organization (4) Federal government (9) Other (specify)	
24	κ.	. Category which most closely approximates your present, or most recent principal employment:	
		(1) General management/administration (6) Production/quality control (2) Management, research/development (7) Technical services/lab. analysis (3) Research/development (non-managerial) (8) Writing/editing/abstracting (4) Teaching (9) Consulting (5) Marketing/sales (0) Other (specify)	
.12	L.	Specialty which is most closely related to your present, or most recent principal employment:	
		(1) Analytical (6) Polymer (2) Inorganic (7) Chemical engineering (3) Organic (8) Literature, information science (4) Physical (9) Other chemical field (5) Biochemistry/clinical/medicinal (0) Non-chemical function	
1 - 27		M. Basic annual salary associated with your principal professional employment, to the nearest \$100. \$	
3 3,	N.	N. 1974 estimated gross annual income from all professional activities, to the nearest \$100. \$ [Income is ALL payment for professional activities including basic salary, plus bonuses, royalties, fe honoraria, etc.)	es,
13	o.	O. How many years of professional work experience, including postdoctoral study, have you had?	
	Р.	P. Have you been unemployed at any time since March 1, 1972? (1) Yes (2) No (Students, graduate assistants, or postdoctorals are not considered as unemployed for this survey.)	
		If "Yes," what was the length of unemployment (use average if more than one occurrence):	
		(1) Less than 1 month (2) 1-2 months (3) 2-3 months (4) 3-6 months (5) 6-12 months (6) More than 12 months	`,
37	Q.	Q. Have you changed jobs or employers since March 1, 1972? (1) Yes (2) No	
311		If "Yes," was this change: (1)Voluntary (2)Involuntary, e.g., due to layoff, forced retirement, etc. (3)Due to voluntary retirement (4)Other (specify)	
. (1)		Was your new position in the same field or one closely allied to your previous position? (1) Yes	2)No
40		Was specialized retraining required for the new position? (1) Yes (2) No	
-11	R	R. In your opinion, what is the chemical job market outlook for 1974-1977?	
		(1) Excellent (2) Good (3) Fair (4) Poor	
		(We would appreciate having your opinions, comments, or suggestions on the reverse side of this page. Survey responses will be treated anonymously for reporting purposes.)	

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