ChemCensus 2000

Analysis of the American Chemical Society’s Comprehensive 2000 Survey of the Salaries and Employment Status of its Domestic Members

Download full Report in PDF (4,400K)

Contents by Section:

Cover, Title Page, Acknowledgements
Preface
Summary
Mechanics of the Census
Demographics
Salaries
Employment Status
Job Satisfaction
Appendix: Survey Questionnaire
Recent CEPA Employment Studies Available from ACS
Analysis of the American Chemical Society's Comprehensive 2000 Survey of the Salaries and Employment Status of its Domestic Members
Every fifth year since 1985, ACS has conducted a census of its working members. This report presents detailed results of the 2000 ACS Comprehensive Salary and Employment Status Survey, ChemCensus 2000. An initial review and analysis of the census was published in the August 14, 2000, issue of Chemical & Engineering News and the September issues of Today’s Chemist at Work. Special publications to be produced from this survey include Women Chemists 2000, Industry Chemists 2000, and Academic Chemists 2000.

The ACS Council Committee on Economic and Professional Affairs (CEPA) and its Subcommittee on Surveys planned and provided general oversight of the survey, its analysis and the symposia presented at the Spring 2001 ACS National Meeting in San Diego. Members of the Subcommittee are Suzanne Blackburn, John Bingham, and H.N. Cheng. The Committee is grateful to the members who provided a valuable service to the profession by completing and returning the survey.

This report was written by Michael Heylin, Editor-at-Large, C&EN. Mary W. Jordan, senior research analyst of ACS’ Department of Career Services, conducted the survey and produced the data for the tables. She was ably assisted by program assistants, Kemie Smith and Pamela Steiner and intern, Gary Quiming.

James Long
Chair, CEPA Subcommittee on Surveys

Jean Parr
Head, ACS Career Services
The American Chemical Society is dedicated to providing programs and activities to facilitate the career development of chemical professionals and has a long history of effectively reporting on professional chemical employment. The ACS Committee on Economic and Professional Affairs (CEPA) is charged with fostering ongoing improvements in the economic and professional status of chemical scientists. To carry out this mission, CEPA conducts periodic fact-finding studies on supply and demand, compensation, and other matters that affect the economic status of the chemical profession and monitors the state of the economic and professional affairs of chemical scientists.

CEPA works with the ACS Department of Career Services (DCS) to provide programs, services, and publications to assist chemists in making career decisions. In particular, CEPA directs the development of work force studies about employment and industry trends and issues that affect the chemical profession. The published study reports are intended to provide hard data on the salaries and employment of chemists, to give an overview of trends in the chemical enterprise and to guide chemists to areas of emerging technologies and employment opportunities.

Because the decade leading up to the turn of the 21st Century was a very fluid time for the chemical profession, it is now more important than ever for chemists to have essential information about hiring trends and employment figures. During the decade of the 1990’s, chemists saw both the highest and lowest unemployment rates in 30 years. Diversity in the workforce grew rapidly. Employment for chemists in basic chemical manufacturing declined, while employment in pharmaceuticals climbed to the number one employer for chemists in business and industry. The introduction of new technologies increased dramatically.

Throughout these turbulent times for chemists, CEPA has been conducting studies and publishing a series of reports to give chemical practitioners a broad and detailed picture of employment in the chemical profession as it moved through the 1990s and into a changing and exciting era. A list of the most recent employment studies available from the ACS are listed on the inside back cover of this publication.
This report presents results and analysis of a survey of the salaries and employment status of American Chemical Society members who were in the domestic workforce as of March 1, 2000. As the survey polled the entire target population of more than 94,000 such members, it was really a census. Hence the title, ChemCensus 2000.

In recent years, ACS has conducted such a census every fifth year. In the intermediate years, smaller annual surveys are based on data gathered from random samples of about 20% of working members.

ChemCensus 2000 is based on a four-page questionnaire that has changed very little over the past decade. As a result, almost all data from the 1990, 1995, and 2000 censuses can be compared directly to trace the fortunes of chemical professionals over what turned out to be, for them, a lively and sometimes surprising decade.

ACS defines the workforce as those with full- or part-time jobs, on postdocs or fellowships, or unemployed but seeking employment. Excluded are the fully retired and those otherwise unemployed but not seeking employment.

The snapshot of the U.S. chemical community that ChemCensus 2000 presents is of a median base salary of $70,000 for chemists with permanent full-time permanent jobs – with bachelors at a median of $53,100, masters at $62,000, and doctorates at $79,000. It is also a snapshot showing 92.9% of ACS members in the workforce with full-time jobs, 3.0% working part-time, 2.1% on postdocs or fellowships, and 2.0% without a job but looking for one.

Comparisons of the results from the past three censuses indicate that:

- The median salary for ACS members with permanent full-time jobs has grown at a 3.5% average annual rate since 1990. This is the growth rate for all working chemists as a group. It is 0.7% higher than the 2.8% annual increase in the cost of living for the period. The median year-to-year salary gain for chemists as individuals has been substantially higher – hovering throughout the decade at close to 5%, more than 2% higher than inflation. [The median salary is that which is equaled or exceeded by one half of survey respondents. Medians avoid the distortions that relatively few very high salaries can bring to means.]
The overall salary advantage that male chemists, as a group, have traditionally held over their female colleagues is declining, especially for the lower age brackets. However, women are still disproportionately clustered in the lower paying activities of the chemical profession.

The job market for chemists may be undergoing some fundamental shifts as it adjusts to the new high-tech economy. As measured by the censuses, it was not as strong in early 2000 – when the longest economic expansion in U.S. history was still running at full bore – as it had been ten years earlier. However, it was substantially better than it had been in 1995, when it was surprisingly weak.

Almost all data from the 1990, 1995, and 2000 censuses can be compared directly to trace the fortunes of chemical professionals over what turned out to be, for them, a lively and sometimes surprising decade.

There have been shifts in where chemists work, what they do, and what type of job they have. These include a considerable drift of chemists’ jobs from chemical to drug manufacturing and a decline in chemical jobs in the Federal government. And there are trends toward more part-time work, especially for women, and toward more temporary, as opposed to permanent, full-time jobs, especially in academia.

The demographics of the chemical workforce have undergone dramatic and irreversible change toward greater diversity over the past decade with more women, more minorities, and more foreign born. And such changes will continue apace for the foreseeable future. Another major change over the decade has been a four-year increase in the median age of the chemical workforce.
For the 2000 census, 94,100 questionnaires were mailed. Just over 47,800 were returned for a response rate of 51%. This compares with 93,500, with a 53% response rate, in 1995 and 88,810, with a 44% response, in 1990.

Of the year 2000 responses, 2,200 were from retirees or others not employed and not seeking employment. This left 45,600 responses from members actually in the workforce. Of these, 41,900 were chemists.

Chemists are defined as those who fall into either of two categories. One is those who identify any one of 15 chemical sub-disciplines or specialties – such as analytical chemistry, biochemistry, and chemical education – enumerated in the survey questionnaire as being the most closely related to their current or most recent job. The other category is those who have their highest degree in chemistry and identify business administration, computer science, law, or “other non-chemistry” activities as their specialty. All those who identify chemical engineering as their specialty are considered as chemical engineers, even if their highest degree is in chemistry. Their data are analyzed separately.

Almost all the employment, salary, and demographic trends noted in this report are derived from comparison of data from the censuses. The huge data base gathered for these studies and the greater time interval between them render the trends they reveal more consistent and credible than such changes derived from the year-to-year comparisons of data that involve surveys using 20% random samples. This is especially true for subsets of the chemical workforce.

Analysis involving the smaller yearly surveys can yield quite erratic results in some cases. For instance, comparison of the date from the 1999 and 1998 surveys indicated that the median salary gains for chemists with permanent full-time jobs was 5.7% for masters as a group but only 1.0% for bachelors. It also indicated a 6.9% increase for chemists in government but only 1.9% for those in academia.

A parallel comparison of 2000 and 1999 survey data reverses all these differences, with masters 2000 salaries up only 1.6% from 1999, bachelors up an apparent 6.0%, government chemists up only 2.2%, and academic chemists up 5.5%.
The demographic data and trends revealed by the censuses are interesting and important in their own right. In addition, many of them are essential to making sense of the data on salary and employment and putting them into proper context.

Industry, to 62% in 2000, and a dropping back of the numbers in academia to 26% from an unusually high 28% in 1995 – a tough year for the chemical profession with many postdocs having to hang on to their positions, unable to find full-time jobs.

Age
Of the demographic changes that have occurred, one of the most striking is the increase in the age of working chemists. Those responding to the 2000 census had a mean age of 44.8. This was up from 41.3 for 1990 respondents. The median age moved up from 41 to 45.

Such a rapid rate of aging, if real and if continued, would have serious implications for career prospects and career paths in chemistry. And indications are that the 1990s increase was mostly real and not due to a statistical quirk. For instance, results from ACS surveys show that demand for chemists was at a low ebb for several years in the mid-1990s. This stemmed the flow of new graduates into the workforce, thus tending to push up its overall age.

Probably a larger factor, and one that transcends chemistry, is the passage of the baby boomers – those born between about 1947 and 1964 – as they age and move up.
According to the Bureau of Labor Statistics, the median age of the U.S. domestic labor force moved up from 36.4 in 1990 to 39.2 in 2000.

As far as chemistry is concerned, this boom is reflected in the consistently large bachelor chemistry graduating classes from the late 60s through the early 80s.

Through the workforce. A review of ACS membership statistics would indicate that the aging of the chemical workforce has apparently not been due to any perturbation in the ability of ACS to attract and retain chemists, especially younger ones. Total ACS membership rose every year during the 1990s – bringing the total from 143,000 to 163,000 for a 14% gain. Recruitment was high by historic standards and reasonably steady, with between 10,700 and 14,800 new members every year. And the median age of newly recruited members remained at 28 or 29. In absolute numbers, the society had substantially more members under 36 years old in 2000, 36,300, than in 1995, 32,900.

The increase in the mean age was 5.0 years for government chemists, from 42.1 in 1990 to 47.1 in 2000. For industrial chemists the gain was 3.4 years, and for academics, 2.7 years. Men chemists remained close to six years older than women – a mean of 46.3 in 2000 versus 40.4 for women. This compares with 42.6 and 36.3 respectively in 1990.
**Gender**

Another major change over the past 10 years has been in the increasing penetration of women into the chemistry profession. In 1990 women represented 18.5% of the workforce. By 2000, this was up to 24.8%. This increase is in line with data from the censuses and elsewhere indicating that throughout the decade about one in three of those entering the chemical profession – and about one in ten of those retiring from it – were women. Of bachelor chemists in the workforce, 28% were women in 1990. This was up to 34% by 2000. For masters, the gain was from 26% to 33%. For doctorates, it was from 12% to 18%.

### Chemists by Degree/sex

<table>
<thead>
<tr>
<th></th>
<th>All Workforce Chemists</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelors</td>
<td>24.2%</td>
<td>24.3%</td>
<td>21.9%</td>
</tr>
<tr>
<td>Masters</td>
<td>17.2</td>
<td>16.8</td>
<td>17.2</td>
</tr>
<tr>
<td>Doctorate</td>
<td>58.2</td>
<td>58.6</td>
<td>59.9</td>
</tr>
<tr>
<td>Other</td>
<td>0.4</td>
<td>0.4</td>
<td>1.1</td>
</tr>
<tr>
<td>Total</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

### Women as percent of chemical workforce by degree

![Diagram showing the percentage of women in the chemical workforce by degree from 1990 to 2000.](image)
The demographics indicate that further advance of women into the chemical profession is inevitable and will continue for the foreseeable future. The influx of new graduates is continuing to become increasingly female. And for many years to come women will constitute a relatively very much lower – if slowly increasing – percentage of older chemists.

Today, women account for more than 40% of bachelors and masters graduating classes and more than 30% of new doctorates. And, according to ChemCensus 2000, 51% of workforce chemists who are two to four years beyond their bachelor degree are women, as are 41% of those five to nine years beyond their bachelors. In 1990, these levels were 42% and 33%, respectively.

At the other end of the career path, women make up only about 13% of chemists 30 or more years beyond their bachelor degrees in 2000 and so nearing retirement.
During the 1990s the white non-Hispanic male share of the chemical workforce tumbled from 74% to 64%. In addition to the increasing numbers of women, this change has been propelled by a dramatic influx of racial minorities – mostly Asians – into the chemical profession and workforce.

The 1990 census revealed that the domestic chemical workforce included an already disproportionately high 6.3% Asians. By 2000, this had surged to 11.0%.

Although blacks remain grossly under represented, they made progress in absolute terms during the decade, moving from 1.3% to 1.9%. The number of American Indians responding to ACS censuses has actually declined – from 120, or 0.4%, in 1990 to 78, or 0.2%, in 2000.

According to the Bureau of the Census, 4.0% of the U.S. population is Asian. This is up from 3.0% in 1990. Blacks have edged up – from 12.2% to 12.8%, as have American Indians, from 0.8% to 0.9%.

The growing Asian chemical workforce is particularly well qualified – 74% hold doctorates, only 10% are bachelors. An unusually high 6.6% are on postdocs and a high 69% work for industry. And this workforce is here to stay – 58% are U.S. citizens, 28% on permanent resident visas, and only 14% are on other visas.

The chemical workforce has also become a little more ethnically diverse. In response to a question separate from the chemical profession census, 3.7% of the workforce listed themselves as Hispanic in 1995, 4.3% in 1996, and 4.8% in 1997. Of this latter group, 2.6% were Native, 2.2% were Naturalized, 2.0% were Permanent Residents, and 0.0% were on other visas.
question on race, 1.4% of respondents to ACS’s 1990 census identified themselves as Hispanic. In 2000, 2.6% did. The Census Bureau puts Hispanics at 12.5% of the U.S. population today. This is up from 9.0% in 1990.

Citizenship is another parameter along which the profession of chemistry has become more diverse. In 1990, 12.3% of working chemists were not native-born Americans. By 2000 this was up to 20.5%. Big gains were posted by naturalized Americans, from 7.1% to 10.2%; by those on permanent visas, from 3.9% to 6.9%; and by those on other visas, from 1.3% to 3.4%. The 2000 total of 20.5% foreign born working chemists compares with 9.5% foreign born for the U.S. population.

**Degree Field and Work Specialty**

Response to a question asking for the field of the highest degree showed little variation over the 1990s. It identified the same six fields at the top of the ranking – and in essentially the same order – for the 1990, 1995, and 2000 censuses. Top was organic chemistry, which was at 27% in 2000. Following were general chemistry, 13%; physical and analytical chemistry, both at 11%; Biochemistry/Biotech and inorganic chemistry were at 9%. Analysis of responses to a parallel question using the same fields of chemistry but asking for identification of primary work specialty also revealed some stability. For instance, analytical chemistry was at the top, hovering in the 18 to 19% range for all three surveys. Second was organic chemistry at 12 to 13%. However, there was a distinct upturn for medicinal/pharmaceutical chemistry which moved up from 5% in 1990 to third place at almost 10% in 2000.

The 2000 work specialty data are not strictly comparable to the data from 1995 and 1990. The 2000 question offered an additional option – chemical education. It was chosen by 6.5% of respondents, thus depressing other responses somewhat and in an unknown way.

Analysis of the work specialty data illustrates how the progress made by women has not been uniform throughout the chemical profession. A high of 36% of those who identify chemical education as their work specialty are women, while a low of 16% of both physical chemists and organic chemists are women.

Women are also represented relatively well in biochemistry and analytical chemistry, where they comprise 31% and 29%, respectively, of the workforce. Joining physical and organic chemistry at the male-dominated end of the spectrum are polymer chemistry and materials science, both at 17% female, while inorganic chemistry is at 19%.

Data from ChemCensus 2000 confirms that chemists with their highest degree in a more specialized chemical field are more likely to work in the same field than are those with a degree in a core chemical discipline to work in theirs.
At the top of this ranking is environmental chemistry. Apparently 63% of those trained as environmental chemists end up working in the field. Also high are polymer chemistry and chemical education, both at 62%, and analytical chemistry at 59%. These rates compare with organic chemistry, 37%, physical chemistry, 31%, and inorganic chemistry 27%.
### Chemists by Work Specialty

#### Workforce 2000 Chemists

<table>
<thead>
<tr>
<th>Specialty</th>
<th>All Chemists</th>
<th>Men</th>
<th>Women</th>
<th>Women as % of Total in Specialty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chemistry</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analytical Chemistry</td>
<td>18.0%</td>
<td>16.8%</td>
<td>21.6%</td>
<td>29%</td>
</tr>
<tr>
<td>Organic Chemistry</td>
<td>11.8</td>
<td>13.0</td>
<td>7.9</td>
<td>16</td>
</tr>
<tr>
<td>Medicinal/Pharmaceutical</td>
<td>9.6</td>
<td>9.6</td>
<td>9.7</td>
<td>24</td>
</tr>
<tr>
<td>Polymer Chemistry</td>
<td>8.4</td>
<td>9.3</td>
<td>5.9</td>
<td>17</td>
</tr>
<tr>
<td>Environmental Chemistry</td>
<td>7.0</td>
<td>6.8</td>
<td>7.5</td>
<td>26</td>
</tr>
<tr>
<td>Chemical Education</td>
<td>6.5</td>
<td>5.5</td>
<td>9.5</td>
<td>36</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>5.3</td>
<td>4.8</td>
<td>6.6</td>
<td>31</td>
</tr>
<tr>
<td>Physical Chemistry</td>
<td>4.8</td>
<td>5.3</td>
<td>3.1</td>
<td>16</td>
</tr>
<tr>
<td>Materials Science</td>
<td>4.7</td>
<td>5.2</td>
<td>3.3</td>
<td>17</td>
</tr>
<tr>
<td>Biotechnology</td>
<td>3.4</td>
<td>3.4</td>
<td>3.5</td>
<td>25</td>
</tr>
<tr>
<td>Inorganic Chemistry</td>
<td>3.4</td>
<td>3.7</td>
<td>2.8</td>
<td>19</td>
</tr>
<tr>
<td>Ag/Food Chemistry</td>
<td>3.1</td>
<td>3.0</td>
<td>3.4</td>
<td>26</td>
</tr>
<tr>
<td>General Chemistry</td>
<td>2.8</td>
<td>2.5</td>
<td>3.6</td>
<td>32</td>
</tr>
<tr>
<td>Clinical Chemistry</td>
<td>0.8</td>
<td>0.8</td>
<td>0.9</td>
<td>27</td>
</tr>
<tr>
<td>Other Chemistry Sciences</td>
<td>2.7</td>
<td>2.6</td>
<td>3.0</td>
<td>17</td>
</tr>
<tr>
<td><strong>Non-Chemistry</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Administration</td>
<td>1.7%</td>
<td>2.0%</td>
<td>1.1%</td>
<td>15%</td>
</tr>
<tr>
<td>Computer Science</td>
<td>1.1%</td>
<td>1.2%</td>
<td>1.0%</td>
<td>21%</td>
</tr>
<tr>
<td>Law</td>
<td>0.6%</td>
<td>0.5%</td>
<td>0.6%</td>
<td>25%</td>
</tr>
<tr>
<td>Other Non-Chemical</td>
<td>4.2%</td>
<td>4.0%</td>
<td>5.1%</td>
<td>29%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

Data from ChemCensus 2000 confirms that chemists with their highest degree in a more specialized chemical field are more likely to work in the same field than are those with a degree in a core chemical discipline to work in theirs.
### Work Function

The raw census data on work function suggest there has been a strong trend toward analytical work and away from research activities for non-academic chemists since 1990. However, these apparently large shifts may be largely due to one of the few changes in the questionnaire.

The only analytical-related work function offered as an option in the 1990 questionnaire was “Forensics and other lab analysis” and 4.5% of respondents chose it. In 1995 this was broken into two options – “Forensics” and “Other lab analysis.” These garnered responses of 0.8% and 6.0%, respectively, for a total of 6.8%.

In 2000, the “Other lab analysis” option was replaced with “Analytical services.” This received a 14.4% response. “Forensics” held steady at 0.8% for an analytical-related total of 15.2%. It is likely that the more inclusive nature of the phrase “Analytical services” had a lot to do with the big response it garnered.

Be that as it may, the additional 10.7% of non-academic chemists now identifying themselves as being primarily involved in analytical work had to come from somewhere. Possibly not too many of them came from the applied research function, which remained by far the biggest and actually increased its share marginally from 32.6% in 1990 to 33.7% in 2000.

The categories that apparently declined the most over the decade were basic research, from 12.6% to 7.9%, and R&D management, from 14.6% to 9.2%.

### Chemists by Work Function

<table>
<thead>
<tr>
<th>WORKFORCE</th>
<th>ALL NON-ACADEMIC CHEMISTS</th>
<th>MEN</th>
<th>WOMEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>0</td>
<td>32.6%</td>
<td>31.2%</td>
</tr>
<tr>
<td>1995</td>
<td>0.0</td>
<td>34.1%</td>
<td>31.4%</td>
</tr>
<tr>
<td>2000</td>
<td>0.0</td>
<td>33.7%</td>
<td>30.6%</td>
</tr>
<tr>
<td>1990</td>
<td>0</td>
<td>32.6%</td>
<td>31.2%</td>
</tr>
<tr>
<td>1995</td>
<td>0.0</td>
<td>34.1%</td>
<td>31.4%</td>
</tr>
<tr>
<td>2000</td>
<td>0.0</td>
<td>33.7%</td>
<td>30.6%</td>
</tr>
<tr>
<td>APPLIED RESEARCH</td>
<td>32.6%</td>
<td>34.1%</td>
<td>33.7%</td>
</tr>
<tr>
<td>FORENSICS AND OTHER LAB ANALYSIS</td>
<td>4.6</td>
<td>4.1</td>
<td>6.7</td>
</tr>
<tr>
<td>ANALYTICAL SERVICES</td>
<td>0.8</td>
<td>14.4</td>
<td>2.0</td>
</tr>
<tr>
<td>FORENSICS</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>OTHER LAB ANALYSIS</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>R&amp;D MANAGEMENT</td>
<td>14.6</td>
<td>16.4</td>
<td>6.6</td>
</tr>
<tr>
<td>BASIC RESEARCH</td>
<td>12.6</td>
<td>12.3</td>
<td>14.1</td>
</tr>
<tr>
<td>PRODUCTION</td>
<td>8.7</td>
<td>8.3</td>
<td>10.8</td>
</tr>
<tr>
<td>GENERAL MANAGEMENT</td>
<td>7.4</td>
<td>7.8</td>
<td>5.6</td>
</tr>
<tr>
<td>MARKETING/SALES</td>
<td>5.5</td>
<td>5.7</td>
<td>4.6</td>
</tr>
<tr>
<td>HEALTH/SAFETY</td>
<td>4.5</td>
<td>4.1</td>
<td>6.3</td>
</tr>
<tr>
<td>CONSULTING</td>
<td>2.9</td>
<td>2.8</td>
<td>3.2</td>
</tr>
<tr>
<td>CHEMICAL INFORMATION</td>
<td>1.2</td>
<td>0.8</td>
<td>2.8</td>
</tr>
<tr>
<td>COMPUTERS</td>
<td>0.9</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>PATENTS</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>TRAINING/TEACHING</td>
<td>0.4</td>
<td>0.3</td>
<td>0.6</td>
</tr>
<tr>
<td>OTHER</td>
<td>3.4</td>
<td>3.1</td>
<td>4.9</td>
</tr>
</tbody>
</table>
WOMEN AS PERCENT OF NON-ACADEMIC CHEMICAL WORKFORCE

1990–2000

WORK FUNCTION

PERCENT

0 10 20 30 40 50

All Non-Academic Chemists  Analytical Services  Applied Research  Basic Research  Chemical Information  Computers

WORK FUNCTION

PERCENT

0 10 20 30 40 50

Consulting  Forensics  Other Lab Analysis  General Management  Health & Safety  Marketing/Sales

WORK FUNCTION

PERCENT

0 10 20 30 40 50

Patents  Production  R&D Management  Training/Teaching
to 10.8%. Just how much of this big decline in non-academic research activity is due to respondents switching to the “Analytical services” category cannot be known with certainty, but part of it must be. With the large applied research category essentially stable, the remaining work function categories are too small to accommodate the almost 11% increase between 1990 and 2000 in those identifying with an analytical function in 2000.

It should also be noted that a major increase during the 1990s in the percentage of non-academic chemists who primarily function as chemical analysts would be at variance with other data from the censuses. There was no real growth in the percentage of those with analytical chemistry as their highest degree and an actual decline in those identifying analytical chemistry as their work specialty. Also, the percentage of those indicating they worked for an analytical laboratory dipped from 4.4% in 1995 to 3.4% in 2000.

Women tend to be more concentrated in the lab and teaching functions. At the same time, they are less concentrated in management areas.

Academia
The major demographic change in academia in the 1990s has been the increase in the representation of women – from 18.2% of all chemists in academia in 1990 to 26.0% in 2000. This growth is reflected in the percentage of all full chemistry professors who are women – up from 7% in 1990 to 12% in 2000. Similarly, the percentage of tenured chemists who are women has grown, from 11% to 18%. And there is a guarantee of further progress in the increasing number of women on the tenure track level – up from 23% of the total in 1990 to 34% in 2000.

However, despite these gains in absolute numbers, women in academic chemistry, as a group, aren’t a lot better off today than they were in 1990. Over the decade – which, in general, was a difficult one for academic chemistry with slow hiring and wage freezes on many campuses – the status of both men and women academics changed little. This left women at their traditional disadvantage.

For instance, in 1990 41% of academic chemists were full professors – 47% of the men and 15% of the women. By 2000, the overall rate had slipped to 35%, with men falling to 42% and women posting a marginal gain to a still very much lower 16%. Tenure showed the same pattern with the percentage of men who are tenured dropping from 62% to 57% but remaining much higher than for women who posted a small gain of from 34% to 36%.

<table>
<thead>
<tr>
<th>WOMEN AS PERCENT OF ACADEMIC CHEMICAL WORKFORCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>WORKFORCE</td>
</tr>
<tr>
<td>ALL ACADEMIC CHEMISTS</td>
</tr>
<tr>
<td>FULL PROFESSORS</td>
</tr>
<tr>
<td>ASSOCIATE PROFESSORS</td>
</tr>
<tr>
<td>ASSISTANT PROFESSORS</td>
</tr>
<tr>
<td>INSTRUCTORS/ADJUNCT</td>
</tr>
<tr>
<td>RESEARCH APPOINTMENT</td>
</tr>
<tr>
<td>WITH TENURE</td>
</tr>
<tr>
<td>TENURE TRACK</td>
</tr>
<tr>
<td>NOT TENURE TRACK</td>
</tr>
<tr>
<td>NOT APPLICABLE</td>
</tr>
</tbody>
</table>
## CHEMISTS BY STATUS IN ACADEMIA/SEX

<table>
<thead>
<tr>
<th>INSTITUTION</th>
<th>WORKFORCE</th>
<th>ALL ACADEMIC CHEMISTS</th>
<th>MEN</th>
<th>WOMEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA-GRANTING</td>
<td>6%</td>
<td>7%</td>
<td>7%</td>
<td>6%</td>
</tr>
<tr>
<td>BACHELOR-GRANTING</td>
<td>21</td>
<td>20</td>
<td>22</td>
<td>21</td>
</tr>
<tr>
<td>MASTERS-GRANTING</td>
<td>10</td>
<td>9</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>DOCTORATE-GRANTING</td>
<td>50</td>
<td>50</td>
<td>44</td>
<td>52</td>
</tr>
<tr>
<td>MEDICAL SCHOOL</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>HIGH SCHOOL</td>
<td>5</td>
<td>5</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>OTHER ACADEMIC</td>
<td>—</td>
<td>—</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>FULL PROFESSOR</td>
<td>41%</td>
<td>35%</td>
<td>35%</td>
<td>47%</td>
</tr>
<tr>
<td>ASSOCIATE PROFESSOR</td>
<td>15</td>
<td>13</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>ASSISTANT PROFESSOR</td>
<td>14</td>
<td>13</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>INSTRUCTOR</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>RESEARCH APPOINTMENT</td>
<td>12</td>
<td>15</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>OTHER NON-FACULTY</td>
<td>6</td>
<td>9</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>NO RANK</td>
<td>7</td>
<td>8</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>SECONDARY TEACHER</td>
<td>—</td>
<td>—</td>
<td>7</td>
<td>—</td>
</tr>
</tbody>
</table>

### RANK

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TENURED</td>
<td>57%</td>
<td>49%</td>
<td>52%</td>
<td>62%</td>
<td>56%</td>
<td>57%</td>
<td>34%</td>
<td>28%</td>
<td>36%</td>
</tr>
<tr>
<td>TENURE TRACK</td>
<td>15</td>
<td>13</td>
<td>15</td>
<td>14</td>
<td>12</td>
<td>13</td>
<td>19</td>
<td>17</td>
<td>19</td>
</tr>
<tr>
<td>NOT IN TENURE TRACK</td>
<td>11</td>
<td>12</td>
<td>14</td>
<td>9</td>
<td>10</td>
<td>12</td>
<td>19</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>NOT APPLICABLE</td>
<td>18</td>
<td>25</td>
<td>20</td>
<td>15</td>
<td>22</td>
<td>18</td>
<td>28</td>
<td>35</td>
<td>26</td>
</tr>
</tbody>
</table>
**Demographics**

**Marital Status**

Women chemists remain more likely to be unmarried than men – 31.0% versus 15.8% in 2000. However, this difference is declining. In 1990, 38.2% of women and 17.5% of men were unwed.

<table>
<thead>
<tr>
<th>MARITAL STATUS</th>
<th>ALL WORKFORCE CHEMISTS</th>
<th>MEN</th>
<th>WOMEN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YEAR</td>
<td>YEAR</td>
<td>YEAR</td>
</tr>
<tr>
<td>NEVER MARRIED</td>
<td>21.4%</td>
<td>21.1%</td>
<td>19.5%</td>
</tr>
<tr>
<td>PREVIOUSLY MARRIED</td>
<td>15.4</td>
<td>15.1</td>
<td>13.3</td>
</tr>
<tr>
<td>TOTAL MARRIED</td>
<td>78.7%</td>
<td>78.8%</td>
<td>80.4%</td>
</tr>
<tr>
<td>TO CHEMIST</td>
<td>10.3</td>
<td>11.5</td>
<td>12.6</td>
</tr>
<tr>
<td>TO NON-CHEMIST SCIENTIST</td>
<td>11.9</td>
<td>13.3</td>
<td>15.4</td>
</tr>
<tr>
<td>TO NON-SCIENTIST</td>
<td>56.5</td>
<td>54.0</td>
<td>52.4</td>
</tr>
</tbody>
</table>

And married women chemists remain much more likely than men to have a spouse who is a scientist – 56% of women compared with 29% of men.
Salaries quoted in this report are base pay for respondents’ primary job. Excluded is any extra professional income. Bonuses and income from consulting are reported separately. The full-time salaries quoted are for permanent jobs only.

Analyzing salary data for trends, as well as for meaningful comparisons among different subsets of the profession, is a tricky business. Salaries depend on a host of factors, some of them overlapping. The most important of these is experience. In ACS surveys, this is usually measured in terms of years since the bachelors degree. Also significant are highest degree; work function, especially the supervisory function; nature of employer; size of employer; geographic location; and, to a slowly decreasing extent, gender.

The Big Picture

The growth in the median salary for all chemists over the past decade needs particularly careful analysis. In the 2000 census, the median for those with full-time permanent jobs of $70,000 was 41% higher than the corresponding median of $49,700 from the 1990 census. Over the same period, the consumer price index for urban consumers rose 33%. This implies a useful 8% salary gain in excess of inflation for chemists as a group over the decade. However, this gain must be assessed with the four-year increase in the median age of the chemical workforce during the decade.

The rise in the median full-time salary for men as a group from 1990 to 2000 was 43% – from $51,800 to $74,200. This percentage gain was almost identical to that for women – from $39,000 to $56,000. The gain for all chemists as a group was a lower 41%. This seeming anomaly is due to the increase in the percentage of the chemical workforce that is women, who, as noted, are younger than men and less well paid.

By degree, doctorates did the best over the decade with a 44% salary gain. Masters and bachelor chemists posted 38% and 36% increases respectively. 

By type of employer, chemists working in industry are paid the highest with 2000 medians of $86,200 for doctorates, $65,500 for masters, and
Salaries of government chemists rank third, but they are still quite close to those of industrial chemists. Trailing the field are chemists in academia. Salaries of full professors are quite competitive with higher level colleagues in industry and government. But the overall academic median is pulled down by the relatively poor pay of those on the lower rungs of the academic ladder.

ChemCensus 2000 indicates a median salary of $106,100 for full professors with 11-to-12 month contracts at Ph.D. granting schools. The corresponding median for assistant professors is $56,800.

There is a strong correlation between chemists’ median salaries and the size of their employers. For instance, the 2000 medians for doctorates increased stepwise from $75,000 for those working for employers with fewer that 50 employees...
to $90,600 for those working for operations with 25,000 or more employees. The parallel range for masters was from $59,300 to $68,100 and for bachelors of from $48,800 to $54,000.

The bare bones numbers indicate that, as a group, chemists working for government clearly made large gains from 1990 to 2000 with a 49% increase in their median full-time salary. However, again, this increase is partly due to an extraordinarily big 5.0-year increase in their mean age over the decade. This age gain is in line with the drive for smaller government and the slow federal hiring of scientists in recent years. This is reflected in the decline in the number of census respondents working in the federal government – from 8.3% of the chemical workforce in 1990 to 6.4% in 2000.

Academic chemists are at the other end of this salary increase/age increase axis. Their median salary, as a group, rose a smaller 32% between 1990 and 2000. However, the mean age of such chemists remained relatively steady – up only 2.7 years. Industrial chemists fall into the midrange with a 43% salary increase over the decade and a 3.4-year increase in mean age.

Women vs. Men

The median salaries from the 2000 census of $74,200 for men and $56,000 for women suggest that women still earn only a disturbing low 75% as much as men.

However, women chemists are on average about six years younger than men. Making allowance for this difference by applying the 3.5% annual increase in the median salaries that has prevailed since 1990, brings the median salary for women close to a more respectable 90% of that for men. And allowing for the fact that women are less likely than men to have a doctorate – 45% compared with 65% – would contribute toward closing the remaining gap further.

But this is not the entire story. An analysis of the work function of chemists shows that women are still under the handicap of an inability to share fully in the higher paying functions of the chemical profession. They remain disproportionately concentrated in the lower paying ones.

For example, according to ChemCensus 2000, the two highest paid functions for industrial doctoral chemists are general management, with a median salary of $110,200, and R&D management with a median of $108,900. These are the two areas in which women have made the least progress. Only 17% of general managers are women, as are 14% of R&D managers. On the other hand, chemical information, the lowest paid function, with a median
2000 salary of $74,500 for doctorates, is 39% women. The next lowest paid, analytical services at $79,000, is 32% women. This pattern is even stronger in academia where only 12% of full professors, who are relatively well paid, are women.

So, regardless of the progress that has been made, gender equality has not been fully realized in the chemical profession and won’t be for another generation at least. For many years, starting salaries have been gender neutral. And near-equality for younger women chemists is slowly oozing up through the age and experience brackets. But it still has a way to go. Women chemists in mid- and later career – the time when the impact of promotions and job function comes into full effect – are still at a considerable salary disadvantage and will remain so, as a group, for the rest of their careers.

Salary Gains for Individuals

The year-to-year salary gains for chemists as individuals are garnered from responses to the question that asks respondents to every survey to give their salaries as of March 1 of both the current year and previous year. As such data cover both years and come from exactly the same set of respondents to the same survey, they yield a reliable and consistent measure of individual salary gains. This is true even for the smaller annual surveys.

Census 2000 indicates a median 5.3% 1999-2000 increase for bachelor chemists with the same employer both years.
For masters, the corresponding gain is 4.8% and for doctorates, 4.8%. These growth rates are very close to those from the 1999 survey – 5.3%, 4.8%, and 4.7% respectively – and from the 1998 survey – 5.1%, 4.8%, and 5.0%. This roughly 5% pace was the same as for the previous years of the decade.

Every year, this analysis indicates that the largest percentage salary increases for individuals come early and tend to taper off with age. For instance, ChemCensus 2000 indicates a median 8.2% 1999-2000 salary increase for 20 to 29 year-olds and a 3.8% increase for 60 to 69 year olds.

The simplest way to explain why year-to-year salary gains are consistently larger for chemists as individuals than for chemists as a group is to point out that the virtual median chemist respondent to the 1990 census was 41 years old. In 2000 the virtual median chemist was 45. However, real live chemists who were 41 years old in 1990 were 51 in 2000.

Another way of looking at it: Median salary increases for chemists as individuals give full credit for the gains due to their growing experience, skills, and responsibilities as they progress through their careers. Median salaries of groups of chemists don’t do this.

**Salary by Experience**

A superficial look at the data on the relationship between the median salary of chemists and their experience – as measured by years since bachelor degree – would suggest that older chemists earn twice as much as younger ones. The median for those two to four years beyond bachelors is $38,000. This compares with $82,500 for those 35 to 39 year beyond, a 117% gain.

However, a number of factors play a role in this 117% differential. For instance, the group of workforce chemists two-to-four years beyond their bachelors comprises 93% bachelors, 7% masters and 0% doctorates. The 35 to 39 year group is 10% bachelors, 13% masters, and 77% doctorates.

Making the comparison degree by degree gives a more realistic picture of the situation. For bachelors, the difference between the median of $37,300 in the two to four year group and the $70,000 for the 35 to 39 year group does still indicate a near doubling.

However, the difference in the median for masters is between $49,100 for those in the five to nine year group – when most masters enter the workforce – and $70,000 for the 35 to 39 year
experience group. This represents a 43% gain. For doctorates the difference between the ten to 14 year group – again, when most of them enter the work-
force – and the veterans of the 35 to 39 year group is between $66,400 and $88,000 – an even more modest difference of 33%.

<table>
<thead>
<tr>
<th>SEX</th>
<th>WORKFORCE 2000 CHEMISTS</th>
<th>$ THOUSANDS</th>
<th>YEARS SINCE BACHELORS DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ALL WORKFORCE CHEMISTS</td>
<td></td>
<td>2-4</td>
</tr>
<tr>
<td></td>
<td>$38.0</td>
<td>$48.9</td>
<td>$60.0</td>
</tr>
<tr>
<td>MEN</td>
<td>$38.0</td>
<td>$50.0</td>
<td>$61.8</td>
</tr>
<tr>
<td>WOMEN</td>
<td>37.6</td>
<td>46.7</td>
<td>55.0</td>
</tr>
<tr>
<td>BACHELOR</td>
<td>$37.3</td>
<td>$44.0</td>
<td>$52.8</td>
</tr>
<tr>
<td>MASTERS</td>
<td>$43.5</td>
<td>49.1</td>
<td>55.0</td>
</tr>
<tr>
<td>DOCTORATE</td>
<td>—</td>
<td>63.6</td>
<td>66.4</td>
</tr>
<tr>
<td>INDUSTRY</td>
<td>$39.0</td>
<td>$50.2</td>
<td>$65.0</td>
</tr>
<tr>
<td>GOVERNMENT</td>
<td>34.8</td>
<td>44.4</td>
<td>56.4</td>
</tr>
<tr>
<td>OTHER NON-ACADEMIC</td>
<td>33.1</td>
<td>44.5</td>
<td>63.0</td>
</tr>
<tr>
<td>ACADEMIA</td>
<td>30.0</td>
<td>39.0</td>
<td>43.5</td>
</tr>
<tr>
<td>BACHELORS, 90%</td>
<td>$49.0</td>
<td>$58.0</td>
<td>$71.0</td>
</tr>
<tr>
<td>75%</td>
<td>43.5</td>
<td>51.1</td>
<td>61.4</td>
</tr>
<tr>
<td>50%</td>
<td>37.3</td>
<td>44.1</td>
<td>52.8</td>
</tr>
<tr>
<td>25%</td>
<td>31.8</td>
<td>37.6</td>
<td>44.0</td>
</tr>
<tr>
<td>10%</td>
<td>27.3</td>
<td>32.0</td>
<td>37.0</td>
</tr>
<tr>
<td>MASTERS, 90%</td>
<td>$53.1</td>
<td>$61.0</td>
<td>$74.0</td>
</tr>
<tr>
<td>75%</td>
<td>50.2</td>
<td>55.0</td>
<td>64.1</td>
</tr>
<tr>
<td>50%</td>
<td>43.5</td>
<td>49.1</td>
<td>55.0</td>
</tr>
<tr>
<td>25%</td>
<td>36.0</td>
<td>40.8</td>
<td>46.5</td>
</tr>
<tr>
<td>10%</td>
<td>30.0</td>
<td>33.0</td>
<td>37.3</td>
</tr>
<tr>
<td>DOCTORATE, 90%</td>
<td>—</td>
<td>$79.5</td>
<td>$86.5</td>
</tr>
<tr>
<td>75%</td>
<td>—</td>
<td>72.6</td>
<td>77.4</td>
</tr>
<tr>
<td>50%</td>
<td>—</td>
<td>63.6</td>
<td>66.4</td>
</tr>
<tr>
<td>25%</td>
<td>—</td>
<td>46.0</td>
<td>49.1</td>
</tr>
<tr>
<td>10%</td>
<td>—</td>
<td>37.0</td>
<td>38.8</td>
</tr>
</tbody>
</table>
**Salary by Region**

Regional variations in chemists’ salaries are probably substantially due to factors that transcend chemistry – such as differences in the cost of living. However, they can apparently be quite considerable. The best paid chemists are those in the Middle Atlantic regions with the top median salaries at all degree levels – $55,500 for bachelors, $65,000 for masters, and $83,700 for doctorates. Chemists in the Pacific region are paid almost as well – $55,100, $62,000, and $81,000 respectively.

The salary lows are $48,000 for bachelors in the West North Central region, $54,100 for masters in the Mountain region, and $66,000 for doctorates in the East South Central.

---

**NOTE:** Median salaries in thousands of dollars as of March 1, 2000.
Part-time and Postdoc Salaries

The median salary of the 3.0% of respondents to ChemCensus 2000 working part-time was $30,000. For men it was $32,000 and for women, $27,000. Government paid the highest, $42,300, and academia the lowest, $17,000.

The median chemistry postdoc stipend in 2000 was $30,000 for both men and women. This was a 36% gain from $22,000 in 1990. The best paid postdocs were government ones, a median of $48,000, and those from industry $42,500.

Extra Professional Income

In addition to asking for base salary as of March 1 the current and previous year, ACS surveys also ask for total professional income for the previous year. Such data cannot be compared directly to give a precise measure of extra professional income because one data set gives salary rates as of specific dates while the other set gives the income actually received over a calendar year. However, these data confirm, in a qualitative way, that for most chemists extra profession income beyond their base salaries is either zero or modest at best.

For instance, the median March 1, 2000, salary of all chemists of $70,000 is within $1,600 of the median of $71,600 for total professional income for all of 1999. And this difference remains small for all degree levels – $900 for bachelors, $1,100 for masters, and $2,000 for doctorates.

More detailed data on bonuses and extra consulting income confirm that they are relatively modest. Of all respondents to ChemCensus 2000, 47% indicated they were eligible for a bonus in 1999 and that 42% actually got one. Bonuses were more common for industrial chemists with 61% getting one. This compares with 25% of government chemists and only 7% of academics.
The median bonus for all chemists would be zero, as more than half did not get one. The median bonus for those who did get one was $5,000 for those in industry, $1,500 for those in government and $2,000 for the few in academia.

Extra income from consulting is equally modest overall. Only 11% of respondents to ChemCensus 2000 indicated they consulted during 1999. They received a median income of $5,000. The median was considerably higher, $33,000, for those in the “other non-academic category” – a grouping that includes the self-employed.

Further analysis of the self-employed indicates that 69% had full-time jobs in 1999 and that 66% did consult with a median income of $45,000.

**Of all respondents to ChemCensus 2000, 47% indicated they were eligible for a bonus in 1999 and that 42% actually got one.**

---

### Chemists’ Bonuses

<table>
<thead>
<tr>
<th>Workforce Chemists</th>
<th>Eligible for Bonus</th>
<th>Actually Received Bonus*</th>
<th>Median Amount**</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ALL CHEMISTS</strong></td>
<td>46% 48% 47%</td>
<td>88% 88% 91%</td>
<td>$3.0 $3.5 $5.0</td>
</tr>
<tr>
<td><strong>MEN</strong></td>
<td>47% 50% 48%</td>
<td>88% 88% 91%</td>
<td>$3.5 $4.0 $5.4</td>
</tr>
<tr>
<td><strong>WOMEN</strong></td>
<td>39 42 43</td>
<td>89 90 93</td>
<td>1.6 2.0 3.0</td>
</tr>
<tr>
<td><strong>BACHELORS</strong></td>
<td>45% 46% 55%</td>
<td>88% 88% 91%</td>
<td>$2.0 $3.5 $3.0</td>
</tr>
<tr>
<td><strong>MASTERS</strong></td>
<td>44 49 52</td>
<td>87 88 92</td>
<td>2.5 2.0 4.0</td>
</tr>
<tr>
<td><strong>DOCTORATE</strong></td>
<td>47 50 42</td>
<td>88 89 91</td>
<td>4.3 3.0 6.6</td>
</tr>
<tr>
<td><strong>INDUSTRY</strong></td>
<td>47% 55% 66%</td>
<td>89% 90% 92%</td>
<td>$3.0 $4.0 $5.0</td>
</tr>
<tr>
<td><strong>GOVERNMENT</strong></td>
<td>27 31 30</td>
<td>84 76 83</td>
<td>2.0 1.1 1.5</td>
</tr>
<tr>
<td><strong>OTHER NON-ACADEMIC</strong></td>
<td>44 22 31</td>
<td>83 80 80</td>
<td>5.0 2.4 5.0</td>
</tr>
<tr>
<td><strong>ACADEMIA</strong></td>
<td>19 15 8</td>
<td>82 80 85</td>
<td>2.0 2.0 2.0</td>
</tr>
</tbody>
</table>

* Percentage of Those Eligible
** $ Thousands
Salaries

### Chemists by Status of Self-Employed

<table>
<thead>
<tr>
<th>Workforce</th>
<th>Self-Employed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>FULL-TIME JOB</td>
<td>69%</td>
</tr>
<tr>
<td>PART-TIME JOB</td>
<td>26</td>
</tr>
<tr>
<td>POSTDOC</td>
<td>1</td>
</tr>
<tr>
<td>SEEKING EMPLOYMENT</td>
<td>4</td>
</tr>
</tbody>
</table>

| YES | 66% |
| LESS THAN 20 HOURS PER MONTH | 32% |
| MEDIAN CONSULTING INCOME | $45,000 |

---

### Chemists Consulting and Consulting Income

<table>
<thead>
<tr>
<th>Workforce Chemists</th>
<th>Workforce Chemists</th>
<th>Workforce Chemists</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES, CONSULT</td>
<td>LESS THAN 20 HOURS PER MONTH</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEX</th>
<th>ALL CHEMISTS</th>
<th>MEN</th>
<th>WOMEN</th>
<th>BACHELORS</th>
<th>MASTERS</th>
<th>DOCTORATE</th>
<th>INDUSTRY</th>
<th>GOVERNMENT</th>
<th>OTHER NON-ACADEMIC</th>
<th>ACADEMIC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18%</td>
<td>11%</td>
<td>81%</td>
<td>73%</td>
<td>5.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEN</td>
<td>20%</td>
<td>12%</td>
<td>82%</td>
<td>73%</td>
<td>5.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WOMEN</td>
<td>11</td>
<td>7</td>
<td>78</td>
<td>72</td>
<td>3.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BACHELORS</td>
<td>12%</td>
<td>6%</td>
<td>72%</td>
<td>59%</td>
<td>8.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MASTERS</td>
<td>14</td>
<td>8</td>
<td>73</td>
<td>61</td>
<td>5.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOCTORATE</td>
<td>21</td>
<td>14</td>
<td>85</td>
<td>76</td>
<td>5.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INDUSTRY</td>
<td>9%</td>
<td>5%</td>
<td>79%</td>
<td>67%</td>
<td>6.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GOVERNMENT</td>
<td>12</td>
<td>5</td>
<td>90</td>
<td>67</td>
<td>4.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OTHER NON-ACADEMIC</td>
<td>42</td>
<td>36</td>
<td>43</td>
<td>39</td>
<td>33.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACADEMIC</td>
<td>32</td>
<td>22</td>
<td>92</td>
<td>85</td>
<td>4.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* $ Thousands
The broad brush stroke picture of working chemical engineers that can be derived from ChemCensus 2000 is that, compared with chemists, they are more likely to work in industry; less likely to have a doctorate; and less likely to be female. They are also generally better paid, with an overall median salary of $81,000 compared with the $70,000 median for all chemists responding to the survey. And their employment status as of March 1, 2000, was very similar to that for chemists.

Of the 47,800 ACS members responding to ChemCensus 2000, 2,156, or 4.5%, identified "chemical engineering" as their primary work function. Of these, 137 were fully retired or otherwise unemployed but not seeking employment. This left 2019 chemical engineers in the workforce as of March 1, 2000.

Demographics
By degree, 53% of the workforce chemical engineers were doctorates, with bachelors and masters both at 23%. By gender, only 12% were women. This compares with almost 25% for chemists. By degree, 18% of the bachelors chemical engineers were women as were 13% of masters and 9% of doctorates.

Median age of chemical engineers was 45, the same as for chemists, with men at 46, women at 37. By employer, 75% of chemical engineers, compared with 62% of chemists, had jobs in industry, and 15%, compared with 26% of chemists, were in academia. Of the other chemical engineers, 5% held government positions and another 5% were in other non-academic situations.

As with chemists, the most common work function for chemical engineers was applied research – 38% of chemical engineers, 34% of chemists. Next in the ranking for chemical engineers were production, 12%; R&D management, 10%; and general management, 8%.

Not surprisingly, only 1% of chemical engineers identified with analytical services, the second most common work function of chemists at 14%.

Employment Status
The employment situation for chemical engineers was similar to that for chemists with 93.0% with full-time jobs. This is almost identical with the 92.9% of chemists. However, chemical engineers were less likely to be on postdocs, 0.9% compared with 2.1% of chemists, and slightly more likely to hold part-time jobs – 3.6% compared with 3.0% of chemists.

Of the chemical engineers working part-time, 67% of the men and 39% of the women were doing so by choice. Of women, another 39% were doing so due to their family or marital status. This was so for only 2% of men.
Salaries/Income
The salary edge that chemical engineers have over chemists is pervasive. At the bachelor level it is 27%, with a median of $67,000 compared with $53,100 for chemists. This reflects the broader acceptance of the bachelor’s degree in chemical engineering as a terminal professional qualification.

Salary increases for chemical engineers as individuals in 2000 were very similar to those for chemists. The median gain over 1999 were 4.7% for chemical engineers and 4.9% for chemists. The mean gains were 7.0% and 7.7% respectively.

The salary difference is apparently largest in academia, with chemical engineers at a median of $80,000 and chemists at $56,800. However, this difference is, in substantial part, due to the fact that academic chemical engineers who are members of ACS are considerably more likely to be full professors, 57%, than are academic chemist members, 35%.

Chemical engineers also have a slight advantage in terms of extra professional income. For instance, 55% were eligible for a bonus in 2000 and 49% actually received one. This compares with 47% and 42%, respectively, for chemists. And the median bonus amount for chemical engineers who received one was $6,000, a little more than the $5,000 for chemists.

Chemical engineers are also a little more likely than chemists to consult – 15% compared with 11% – with a median consulting income from such extra activity of $10,000 compared with $5,000 for chemists.
Results from the 1990, 1995, and 2000 censuses indicate that the job market for chemists has gone through some strange, even counter current, gyrations during the past ten years. The employment status data from the 2000 census do not fit the pattern established over the previous 30 years of ACS surveys. They may indicate some fundamental shifts in what chemists can now expect in the job market as well as in their attitude and approach to it.

To put the 2000 situation into perspective, the 1990 census revealed an employment situation for chemists that was about as good as it had ever been with 95.2% employed full-time. Of the others, 1.5% had a part-time job, 2.2% were on postdocs, and only 1.1% were unemployed but seeking a job. By 1995, the number of chemists without a full-time job had almost doubled to 8.9%. This was very high by historic standards, with 2.7% employed part-time, 3.6% on postdocs, and 2.5% unemployed but seeking.

1995 and 1996 were particularly tough years for the chemical profession. As the overall U.S. economy was generating a head of steam in what eventually became the longest expansion in history and overall unemployment was starting to plunge, the job market for chemists was staggered by the restructuring and downsizing of the chemical industry, uncertain R&D funding, fiscal constraints on many campuses, and a stagnation of government science jobs.

Historically, the unemployment rate for chemists, as measured by ACS’s surveys, has fluctuated within a narrow range of very close to 1.0% in good times for the profession and close to 3.0% in really bad times. Both rates may understate actual unemployment a little because of a presumed greater reluctance of

<table>
<thead>
<tr>
<th>Chemist’s Employment Status as of March 1, by Sex/Employer/Degree</th>
<th>All Workforce Chemists</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year</td>
<td>Year</td>
<td>Year</td>
</tr>
<tr>
<td>Full-Time</td>
<td>95.2%</td>
<td>91.1%</td>
<td>92.9%</td>
</tr>
<tr>
<td>Part-Time</td>
<td>1.5%</td>
<td>2.7%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Postdoc</td>
<td>2.2%</td>
<td>3.6%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Seeking Job</td>
<td>1.1%</td>
<td>2.5%</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Industry</th>
<th>Government</th>
<th>Academia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>Year</td>
<td>Year</td>
</tr>
<tr>
<td>Full-Time</td>
<td>97.6%</td>
<td>96.2%</td>
</tr>
<tr>
<td>Part-Time</td>
<td>0.7%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Postdoc</td>
<td>0.5%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Seeking Job</td>
<td>1.2%</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bachelors</th>
<th>Masters</th>
<th>Doctorate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>Year</td>
<td>Year</td>
</tr>
<tr>
<td>Full-Time</td>
<td>97.2%</td>
<td>92.6%</td>
</tr>
<tr>
<td>Part-Time</td>
<td>1.5%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Postdoc</td>
<td>0.1%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Seeking Job</td>
<td>1.2%</td>
<td>2.9%</td>
</tr>
</tbody>
</table>
unemployed members to respond to surveys. However, the ACS-determined rates have traditionally provided a sensitive and reliable barometer of the status of the chemical job market. They have always been generally in line with other indicators of the status of the chemical job market. These include the demand for chemists, the level of recruiting activity, the frequency of lay offs, overall R&D funding, and anecdotal evidence.

In 2000, with the longest economic expansion in U.S. history still at full throttle, the demand for chemists strong, recruiting activity for chemists very high, and the largest volume of employment advertising ever running in C&EN, the ACS census revealed that a substantial 7.1% of workforce chemists were without full-time jobs – with 3.0% working part-time, 2.1% on postdocs, and 2.0% unemployed but looking for a job.

### New Standard

The questions that arise from these 2000 data are: Do they indicate that chemists will never again enjoy the optimum job situation of earlier years with only 1.0% unemployed? Or does the 2.0% unemployment rate for 2000 set the new standard for a strong job market for chemists in the so-called new economy? It is not possible to answer definitively.

However, it is conceivable that broadening challenges in pharmaceuticals and an array of new fast-moving fields are giving chemists more opportunities. This could engender more confidence for chemists in their career choices and lead, in turn, to a more active job market with higher job turnover.

Another factor that could be contributing to the higher than expected unemployment rate in 2000 may be what is happening with older chemists. Many chemists are receiving pensions early due to voluntary or involuntary terminations. However, many of those with pensions are staying in the work force in one way or another and so possibly contributing to higher job turn over. A recent ACS study of mature chemists, indicates that while 46% of 65 to 69-year old chemists are receiving a pension, only 28% are fully retired.

One indicator of growing job opportunities for chemists is the shifting profile of what they do. In 1990, 27.5% of non-academic chemists were involved in chemical manufacturing. Another 12.9% were in chemically related manufacturing for a total of 40.4%. By 2000 this was down to 31.9% – 20.9% chemical and 11.0% chemically related. The exodus had apparently been largely to drug and cosmetics manufacturing – up from 14.7% to 23.3%.
This all means that in 1990 close to three times as many chemists were involved in making chemicals as were in making drugs. By 2000 this differential was down to less than 40%.

**Lost Advantages**

One thing that is certain from the censuses is that during the economically ebullient 1990’s the clear advantage that chemists had traditionally held – at least on paper – in terms of unusually low unemployment rates has substantially dissipated. While the rate for chemists was jumping from 1.1% in 1990 to 2.0% in 2000 – with an intermediate high of 3.0% in 1996 – the unemployment rate for the civilian labor force was plunging from 5.5% in 1990 and an intermediate high of 7.2% in 1992 to 3.7% in 2000. This was the lowest level in more than a generation. Over the decade, unemployment for the Bureau of Labor Statistics’ managerial and profession category also declined – from 2.2% to 1.7%

**Gender Differences**

ChemCensus 2000 data indicate that 10.2% of women in the workforce did not have a full-time job. This compares with 6.1% of men. This gender difference has persisted over the years. It is due to two factors. The largest of these is a higher percentage of women with part-time jobs – 5.9% in 2000 compared with 2.1% of men. The other factor is the slightly higher percentage of women than men on postdocs or fellowships. This is not unexpected in light of the lower median age of the women.
Another gender difference comes up with the occurrence of career interruptions. ChemCensus 2000 indicates that 24% of women respondents but only 14% of men have had at least one career hiatus. A hiatus is defined as a period of six months or more neither working in chemistry nor attending school. For almost half, 48%, of the women, but for only 2% of the men, the reason was related to children and family matters. The main reason for men, 57%, was getting fired.

A more positive indicator for women, is that increased numbers of them are supervising. In 1990, 9% of chemists were supervised by a woman. By 2000 this was up to 14%. Of men chemists, 12% had a woman supervisor in 2000, as did 21% of women chemists.

Two Job Market Changes

ChemCensus data indicate a couple of job market shifts that may be transient and peculiar to conditions in 2000. However they could turn out to be indicative of things to come. One is the 3.0% of all workforce chemists who have part-time jobs. This is the highest it has ever been during a generally favorable economic time. During earlier good times it has been at about 1.5%. And 43% of men with part-time jobs in 2000 indicated they had them by choice. Incidentally, for women, the major single reason for having a part-time job, 37%, is related to their family and marital status. This is a factor for only 4% of the men.
The question is: Is this modest movement toward more part-time employment one indicator of a broadening of the classic ideal of a nine-to-five permanent job toward a more flexible approach to making work and personal life style more compatible?

The other shift is the increasing number of jobs that are not permanent. Of all full-time jobs in chemistry, the number that were temporary grew from 4.9% to 7.0% between 1995 and 2000. This is largely a phenomena of academia. In 2000, only 2.0% of industry jobs were not permanent. For government, it was 8.0%. But in academia it was 17.4%, up from 13.0% in 1995. To what extent might this trend reflect an evolving employers’ version of a broadened approach to the ideal employment situation?

**Discrimination**

ChemCensus 2000 asks respondents if they have ever experienced adverse professional treatment because of their gender, age, race, or ethnicity. Of women, 43% indicated they had experienced sex discrimination, as did 4% of men. A disturbingly high 55% of African Americans and a substantial 38% of Asians and 22% of American Indians reported race discrimination. Also 24% of Hispanics felt they had been discriminated against.

As to age discrimination, 15% of 20 to 29 year olds reported it. It is likely that such experiences will soon be forgotten as only 6% of chemists between 30 and 49 indicate they have ever been so discriminated against. But age discrimination rears its head again with growing age to 15% of 60 to 69 year olds and 23% of those 70 or older.
Despite the ups and downs of the 1990s, the level of satisfaction that chemists have with their jobs declined only marginally over the decade, although, in some cases, it did dip a little in the tough year of 1995.

In 1990, 77% agreed that their employers paid them “fairly in comparison with employees who have similar duties and responsibilities.” For both 1995 and 2000 the response was 76%. Agreement with the statement that “my chances for professional advancement within my company or organization are as good as those of other employees with equivalent qualifications and experience” varied only from 76% in 1990 to 73% in 1995 and 74% in 2000. Agreement with a parallel statement on managerial or administrative advancement elicited responses of 71%, 66%, and 67%, respectively for the three years.

Responses from women were generally less positive than those from men. But the difference declined over the period. For instance, in 1990 64% of women, compared with 72% of men, agreed on the managerial advancement question – an eight percentage points difference. By 2000 this was down to three percentage points – 65% for women compared with 68% for men.

By degree, doctorates were generally more positive overall, but not by much. For instance, their response on getting fair pay was either 77% or 78% over the three years, while the response from bachelors was 73% or 74%.
1. What is the highest degree you have received to date? Fill in one.
   - Less than Bachelor's
   - Bachelor's
   - Master's
   - Doctorate
   - Other (specify)

2. Please indicate the year for each degree you have earned.
   - Bachelor's
   - Master's
   - Doctorate

3. Please indicate the one field of the highest degree you have earned and the one specialty most related to your current or most recent job using the appropriate column below. Fill in one response for each column.
   - Chemical engineering
   - Agricultural/food chemistry
   - Analytical chemistry
   - Biochemistry
   - Biototechnology
   - Chemical education
   - Clinical chemistry
   - Environmental chemistry
   - General chemistry
   - Inorganic chemistry
   - Materials science
   - Medicinal/pharmaceutical chemistry
   - Organic chemistry
   - Physical chemistry
   - Polymer chemistry
   - Other chemical science
   - Business administration
   - Computer science
   - Law
   - Other non-chemistry

4. Please indicate your primary employment status as of March 1, 2000. Choose the one category that best fits your situation.
   - Employed full-time (35 hours or more per week) (Go to 6)
   - Employed part-time (Go to 6)
   - Postdoctoral or other fellowship (Go to 6)
   - Not employed but actively seeking employment (Go to 10)
   - Not employed and not seeking employment (Go to 5)
   - Fully retired (Stop Here and Return Survey)

5. If you are not employed and not seeking employment on March 1, 2000, what is the most important reason for not seeking work?
   - Temporary health or personal reasons
   - Tending to family responsibilities
   - Suitable job not available
   - Student
   - Other, please specify
   (Go to 42)

6. If you are currently employed, how long have you worked for your current employer? Fill in one.
   - Less than 1 year
   - 1 to 4 years
   - 5 to 9 years
   - 10 to 19 years
   - 20 or more years

7. If you are currently employed, is your job permanent or temporary? Fill in one.
   - Permanent
   - Temporary
   - Agency temp
   - Fixed term contract

8. If your current job is part-time, please indicate the amount of weekly hours that best describes that position.
   - Less than 10 hours
   - 10 to 19 hours
   - 20 to 29 hours
   - 30 to 34 hours

9. If your current job is part-time, what is the main reason for that status?
   - Prefer part-time work
   - Full-time work not available
   - Constraints due to family or marital status
   - Other, please specify
   (Go to 12)

10. If you were not employed but actively seeking employment on March 1, 2000, how long had you been unemployed? Fill in one.
    - Less than 1 month
    - 1 to 3 months
    - 4 to 6 months
    - More than 6 months

11. If you were not employed but actively seeking employment on March 1, 2000, was your job search restricted by:
    - Inability to relocate
    - Family responsibilities
    - Need for part-time employment
    - Other, please specify
    - No restrictions

12. Regardless of your current status, was there any period when you were not employed but actively seeking employment in calendar year 1999? Fill in one.
    - Yes (Go to 13)
    - No

If yes, how many total months were you not employed but actively seeking employment in calendar year 1999? Fill in one.
    - Less than 1 month
    - 1 to 3 months
    - 4 to 6 months
    - 7 to 11 months
    - 12 months
13. Has there been any time in your professional career during which you were not working or attending school full-time for more than six months?
   ✔ No, Go to 16  ✔ Yes, I had leave without pay
   ✔ Yes, I was unemployed  ✔ Yes, I had paid leave—vacation
   ✔ Yes, I was working outside my profession  ✔ Yes, other, please specify
   
   If yes, how many hiatuses?
   1  2  3  4  5 or more

14. What was the reason for the one most significant hiatus? Please fill in the one most significant
   ✔ Involuntary termination  ✔ Elder care
   ✔ Voluntary termination  ✔ Personal/health
   ✔ Child care/maternity  ✔ Other, please specify
   ✔ Spousal care

15. Do you feel this hiatus had an effect on your career?
   ✔ No effect on my career  ✔ Yes, it helped my career
   ✔ Yes, it hurt my career

16. In your professional career, have you ever held a post-doctoral position?
   ✔ Yes  ✔ No—Go to 17
   If yes, how many post-doctoral positions have you held?
   1  2  3  4  5 or more

17. What are the first three digits of the zip code of your current or most recent place of employment?

II. CURRENT INCOME AND JOB EVALUATION

If you are employed, either full-time or part-time, please answer current income and job evaluation.

(If you are not currently employed, please go to Section III).

In filling out questions, please follow example below:

18. What was your base annual salary from your primary employer as of March 1, 2000? Do not include bonuses, earnings from second employer, overtime work, summer teaching, or other supplemental earnings. If on a 9 or 10 month contract, report the 9 or 10 month salary rather than an annualized salary. If none, enter zero.

   $ 4 7 3 2 9 Annual As of 3/1/00

   ✔ 100 +
   ✔ 50 - 99
   ✔ 20 - 49
   ✔ 10 - 19
   ✔ Less than 10

19. What was your base annual salary from your primary employer as of March 1, 1999? Do not include bonuses, earnings from second employer, overtime work, summer teaching, or other supplemental earnings. If on a 9 or 10 month contract, report the 9 or 10 month salary rather than an annualized salary. If none, enter zero.

   $ 4 7 3 2 9 Annual As of 3/1/99

   ✔ 100 +
   ✔ 50 - 99
   ✔ 20 - 49
   ✔ 10 - 19
   ✔ Less than 10

20. What was your total professional income during calendar year 1999? Include consulting fees, base annual salary, bonuses, earnings from second employer, overtime, summer teaching, and other supplemental earnings.

   $ 4 7 3 2 9 Calendar Year 1999

   ✔ 100 +
   ✔ 50 - 99
   ✔ 20 - 49
   ✔ 10 - 19
   ✔ Less than 10

21. Were you eligible for bonus during calendar year 1999?

   ✔ Yes  ✔ No—Go to 22

   If Yes, did you receive a bonus?

   ✔ Yes  ✔ No—Go to 22

   If Yes, please indicate amount $ 4 7 3 2 9 Calendar Year 1999

   ✔ 100 +
   ✔ 50 - 99
   ✔ 20 - 49
   ✔ 10 - 19
   ✔ Less than 10

22. Did you do any consulting in 1999? Fill in one.

   ✔ Yes  ✔ No—Go to 25

   If yes, how many hours did you consult per month?

   Fill in one.

   ✔ Less than 10 hrs  ✔ 20 – 39 hrs  ✔ 100 or more hrs

23. If you did any consulting, what was your approximate hourly rate?

   $ 4 7 3 2 9 Per hour

   ✔ 100 +
   ✔ 50 - 99
   ✔ 20 - 49
   ✔ 10 - 19
   ✔ Less than 10
24. What was your total consulting income during calendar year 1999? 

<table>
<thead>
<tr>
<th>$</th>
<th>Calendar</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

25. Do you serve as a member of any corporate board of directors? 
- Yes 
- No

26. My employer pays me fairly in comparison with other employees who have similar duties and responsibilities. 
- Strongly agree 
- Disagree 
- Agree 
- Strongly disagree

27. My chances for professional advancement within my company or organization are as good as those of other employees with equivalent qualifications and experience. 
- Strongly agree 
- Disagree 
- Agree 
- Strongly disagree

28. My chances for managerial or administrative advancement within my company or organization are as good as those of other employees with equivalent qualifications and experience. 
- Strongly agree 
- Disagree 
- Agree 
- Strongly disagree

29. During your professional career, have you ever experienced adverse professional treatment because of your (Mark all that apply): 
- Sex 
- Age 
- Race/Ethnicity 
- Disability

III. CURRENT OR MOST RECENT PRIMARY JOB

If your most recent employer is not or was not an academic institution, go to Section III. B. Question 36

A. Academic employer.

30. Please indicate your current or most recent primary academic employer: Fill in one. 

College or university excluding medical schools where the highest degree offered in chemistry or chemical engineering is: 
- Associate's 
- Bachelor's 
- Master's 
- Doctorate 
- University medical or professional school 
- High school 
- Other academic, please specify

31. What is or was your academic employer? Fill in one. 
- Public institution 
- Private institution

32. What is or was your academic rank? Fill in one. 
- Full professor 
- Associate professor 
- Assistant professor 
- Visiting or adjunct professor, instructor, lecturer 
- Non-teaching research appointment 
- Other non-faculty 
- My institution does not have ranks 
- Secondary Teacher

33. Have or had you been granted tenure? Fill in one. 
- Yes 
- Not tenured, in tenure track 
- Not tenured, not in tenure track 
- Not Applicable

34. What is or was your basic contract period? Fill in one. 
- 9 or 10 months 
- 11 or 12 months

35. About what fraction of your total working time in your contract period is or was devoted to: Fill in all that apply. 

- Teaching, undergraduate 
- Teaching, graduate 
- Research 
- Administration 
- Other 
- Go to 41

B. Non-academic employer.

36. Please indicate current or most recent principal employer: Fill in one only. 

Self-employed 
- Non-manufacturing: 
  - Analytical service laboratory 
  - Contract research firm 
  - Utility company 
  - Other non-manufacturing, please specify

Manufacturing company primarily involved in: 
- Aerospace 
- Agricultural chemicals 
- Basic commodity chemicals 
- Biochemical products 
- Building materials 
- Coatings/paints/inks 
- Electronics/computers/semiconductors 
- Food 
- Instruments 
- Medical devices/diagnostic products 
- Metals/minerals 
- Paper 
- Personal care 
- Petroleum/natural gas 
- Pharmaceuticals 
- Plastics 
- Rubber 
- Soaps/detergents/surfactants 
- Specialty/fine chemicals 
- Textiles 
- Other manufacturing, please specify

Government: 
- Federal (civilians) 
- Military 
- State or local 
- Other government, please specify

Other non-academic employer: 
- Hospital or independent laboratory 
- Non-profit organization, other research institution 
- Other non-academic, please specify
37. Employer's approximate number of employees (total for the whole organization/parent company):

- Less than 50
- 50 to 99
- 100 to 499
- 500 to 2,499
- 2,500 to 9,999
- 10,000 to 24,999
- 25,000 or more

38. Please indicate the one work function that best describes your job: Fill in one.

- Analytical services, other than forensics
- Chemistry information services
- Computer programming, analysis, design
- Consulting
- Forensic analysis
- General management or administration (other than R&D)
- Health and safety/regulatory affairs
- Marketing, sales, purchasing, technical service, economic evaluation
- Patents, licensing, trademarks
- Production, quality control
- Research and Development: Applied research, development, design
- Basic research
- Management or administration of R&D
- Training or teaching
- Other (specify)

39. How is your job classified? Fill in one.

- Manager or administrator
- Scientist or engineer
- Chemical or engineering technician
- Other (specify)

40. How many people do you supervise, directly or indirectly? Fill in all that apply.

- Scientist or engineers:
  - 0
  - 1-2
  - 3-9
  - 10-14
  - 15-29
  - 30-49
  - 50 or more

- Chemical or engineering technicians:
  - 0
  - 1-2
  - 3-9
  - 10-14
  - 15-29
  - 30-49
  - 50 or more

- Others, including production workers:
  - 0
  - 1-2
  - 3-9
  - 10-14
  - 15-29
  - 30-49
  - 50 or more

41. Is your immediate supervisor a:

- Man
- Woman
- No supervisor

IV. QUESTIONS ABOUT YOURSELF

42. What is your sex?

- Male
- Female

43. What is your age on March 1, 2000?

44. What is your citizenship or visa status? Fill in one.

- U.S. native
- U.S. naturalized
- U.S. permanent resident visa
- Other visa

45. Are you of Hispanic or Latino origin or descent?

- Yes
- No

Fill in the one race with which you most identify, plus the one or more races that you consider yourself to be.

- One most identify
- All that apply

- White
- Black or African American
- American Indian or Alaskan Native
- Asian Indian
- Chinese
- Japanese
- Korean
- Vietnamese
- Other Asian
- Native Hawaiian or Other Pacific Islander
- Other Race

46. Your Marital Status:

- Single, never married
- Single, previously married
- Currently married/partnered to a chemist
- Currently married/partnered to a scientist, non-chemist
- Currently married/partnered to a non-scientist

If married/partnered, is spouse/partner working for a paycheck?

- Yes
- No

47. Do you have any dependent children living at home?

- Yes
- No

If yes, please indicate the number of dependent children you have in each category:

- Less than 6 years old
- 6 to 17 years old
- 18 years old or older

48. Do you have any elder dependents living at home?

- Yes
- No
Recent CEPA Employment Studies Available from ACS

- **Current Trends 1998** – A study of trends in chemical employment, as reported from interviews with employers and researchers, with emphasis on the technologies and skills necessary for chemical professionals.


- **Industrial Chemists 2000** – A look at the decade of the 1990s through comparing data on industrial chemists from the 1990, 1995, and 2000 ACS censuses of working members.

- **Academic Chemists 2000** – A look at the decade of the 1990s through comparing data on academic chemists from the 1990, 1995, and 2000 ACS censuses of working members.


Contact: Office of Society Services
American Chemical Society 1155
Sixteenth Street, NW
Washington, DC 20036
800.227.5558 Fax:
202.872.6067 E-mail:
help@acs.org