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Fourth Triennial Toxicology Salary Survey and Trends in the Toxicology Job Market

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The 1998 Triennial Toxicology Salary Survey was conducted as a joint project by the American College of Toxicology and the Society of Toxicology. In addition to the two parent organizations, 19 others (the Teratology Society, the Association of Government Toxicologists, and 16 of 17* regional chapters of the Society of Toxicology) supported the effort by providing mailing labels for their membership.

A total of 6360 survey instruments were mailed in June/July of 1998, with 143 of these eventually returned as undeliverable, making the effective mailing 6217. As of December 31, 2016 responses had been received, or a response rate of 33.8%. This is comparable to the response rates 1988 (Gad, 1989), 1991 (Gad, 1992) and 1995 (Gad, 1996). The survey instrument was a modification of that used in the previous three surveys, with the major change being an expansion of response categories for the upper end of the salary and bonus ranges. It should be noted that there continues to be a significant increase in the number of individuals reporting six-figure incomes and in those receiving significant sums as bonuses, as is reflected particularly in Tables 1 and 4. Survey methodology employed conformed to standard procedures (Rossi, Wright, and Anderson 1983), though the response rate for this survey remains high for such endeavors.

A total of 1608 of the respondents (1189 men and 419 women) were full-time employed holders of doctoral degrees in the US and Canada. Table 1 presents the mean mean salaries (\pm one standard deviation) for these individuals, sorted by years of experience after receipt of their degrees, sex, and field of employment. Salaries are in thousands of US dollars per year.

The mean salaries (\pm 1 SD) for the 153 master's-level respondents are presented in Table 2. Likewise, the results from the 128 bachelor's-level respondents are presented in Table 3. The remaining doctoral-level respondents were not employed full-time during the reporting period and are characterized as follows:

Graduate students	45
Working part-time	32
Unemployed	12
Retired	45
Postdoctoral	53

Table 4 presents a summary of data on those 662 (41% of all employed) doctoral recipients who received bonuses in addition to salary. Table 5 presents a summary of the geographic distribution of the doctoral-level survey respondents. Table 6 summarizes the major professional society memberships of the respondents. Many respondents belong to more than one society.

Table 7 summarizes, according to the National Research Council (NRC), the numbers of individuals who have received their doctorates in toxicology since 1983 (the first year that the degree was included in the NRC annual summary) (National Research Council, 1998). Also included is a summary of the number of doctoral respondents by years post-degree.

Table 8 provides a summary analysis of the influence of geographic location of place of employment on salaries for doctoral-level employees. Table 9 provides a summary of the influence of certification (either American Board of Toxicology or Academy of Toxicologic Sciences) on doctoral and master's-level salaries. Table 10 presents an overview of the number of individuals who have moved into self-employed consulting over the last 4 years.

It has been proposed that this survey be conducted by e-mail in the future. Respondents were asked if they had e-mail access for such a purpose. Of those employed full time that responded to the

question, over 92% (1405) of those with doctoral degrees, 87% (130) of those with master's degrees and 58% (73) of those with bachelor's degrees reported having e-mail access. However, as was widely pointed out, an e-mail based system would not provide anonymity.

Discussions and Conclusions

The 1998 survey results point to a number of different trends that deserve attention and add some insights into the job market, career path, and the conduct of future studies. First, although the situation has clearly improved for most entry-level and early-career positions, women continue to be compensated at a lower level than their male counterparts. Secondly, salaries as a whole have increased in the field, but the most impressive differences are not by geographic location of place of employment, but rather by type of employer. Finally, certification continues to play a significant positive role in compensation. Finally, the results over the course of surveys conducted since 1989 were analyzed to characterize the employment trends in the profession over this period. These are summarized in Table 11.

References

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Table 1. 1998 Doctoral-Level Salaries

Employer	Sex	Number of respondents	Years experience post-terminal degree					
			0-1	1-3	3-5	5-10	10-20	20+
Consumer product	M	58	65	85	68	83	109.9	133.3
	F	25	55	65	(55-75)	(75-105)	(85-123)	(98-135)
Pharmaceutical industry	M	214	61.6	72.5	79.3	86.9	111.6	144.3
	F	96	(35-105)	(63-92)	(65-95)	(78-116)	(89-135)	(115-185)
Consultants	M	45	-	63	-	83	101.4	103.9
	F	32	35	(45-85)	-	(68-105)	(75-124)	(85-125)
Consultants (self-employed)	M	64*	45	-	75	180	139.5	144
	F	15**	-	45	65	-	(85-200)	(85-195)
Chemical industry	M	130	60	65	70	83.6	99.5	119.1
	F	37	60	65	65	(75-95)	(85-115)	(95-145)
			(57-63)	(61-69)		77.5	88.9	116
						(70-90)	(70-100)	(80-160)

Contract research	M	130	58.3 (35-85)	63.6 (44-86)	62.6 (55-75)	74.5 (55-95)	98.2 (75-125)	111 (92-130)
	F	36	-	52 (45-55)	65	75 (50-100)	82.7 (50-100)	83.9 (60-110)
Academic	M	308	25	48.3 (25-65)	43 (35-65)	50.3 (35-65)	77.2 (55-105)	99.8 (83-115)
	F	85	45	37.9 (25-65)	53 (45-65)	48.6 (45-55)	62 (45-75)	91.6 (65-115)
State/local government	M	47	40 (35-45)	40 (35-45)	50 (45-55)	57.5 (55-65)	76.9 (68-84)	95.6 (75-118)
	F	25	25	-	48.3 (45-55)	65 (55-75)	70 (65-75)	79.3 (65-85)
Federal government	M	154	50	60 (55-65)	55 (45-65)	58 (48-68)	74.6 (62-86)	89.8 (66-116)
	F	59	-	58.3 (45-75)	53.6 (45-55)	62.3 (55-65)	73.1 (65-85)	93 (85-105)
Petrochemical	M	9	-	-	-	85	98.3 (85-115)	105 (95-115)
	F	***	-	-	-	-	85	-
Others	M	31	45	52 (45-55)	60 (55-65)	85 (75-95)	100.4 (75-115)	135.9 (115-148)
	F	7	-	-	50	-	101 (80-110)	110 (105-115)

Note: Salaries are in thousands of US dollars: mean (range for ± 1 SD). In 37/49 cases, male salaries were higher.

* 47 earned more than \$100K

** 10 earned more than \$100K

*** Insufficient entries to allow separate analysis. Data pooled with chemical industry group.

Table 2. 1998 Master's-level salaries

		Number of respondents	Years experience post-terminal degree					
			0-1	1-3	3-5	5-10	10-20	20+
Consumer product	M	5	-	-	45	75	78 (75-85)	-
	F	7	35	40 (35-45)	55	-	70 (65-75)	-
Pharmaceutical industry	M	20	45	60 (55-65)	63	55	80 (65-105)	87.5 (75-105)
	F	19	50	45	52 (35-85)	59 (54-64)	85 (65-135)	85 (65-105)

Consultants	M	8	-	45	45 (35-55)	65 (55-75)	75	-
	F	17	35	45	75 (55-95)	58.3 (35-75)	-	-
Chemical industry	M	24	55	70	65	55	96.2 (75-105)	108.2 (85-154)
	F	11	-	-	65	-	73 (65-93)	80 (55-105)
Contract research	M	16		45	-	55	79 (55-105)	95 (55-115)
	F	14		47 (35-65)	35	55 (45-65)	52 (35-65)	65
Academic	M	5		-	25	25	30 (25-35)	
	F	1		55	-	-	-	
State/local government	M	4					55	65
	F	4					55 (45-65)	-
Federal government	M	5				55	50 (45-55)	
	F	6				58 (45-75)	55	
Others	M	7		65		65	85	105
	F	7		35		45	72 (45-95)	-

Note: Salaries are in thousands of US dollars: mean (range for ± 1 SD).

Table 3. 1998 Bachelor's-level salaries

Employer	Sex	Number of Respondents	Years experience post-terminal degree					
			0-1	1-3	3-5	5-10	10-20	20+
Consumer product	M	2	-		-	75	-	75
	F	4	20		55	75	-	-
Pharmaceutical industry	M	14		-	45	57.5 (55-65)	68.3 (65-75)	87.5 (65-105)
	F	31		40 (35-45)	45	53.9 (45-57)	57 (48-67)	62.5 (55-82)

Consultants	M	1		-		-	85	
	F	4		25		85	-	
Chemical industry	M	10		35		75	65	60 (55-65)
	F	12		-		49 (45-55)	45	89 (75-130)
Contract research	M	17	27 (19-35)	-		38	63 (45-85)	55
	F	14	25	25		-	-	56.6 (37-75)
Academic	M	1		20		-	59 (45-75)	
	F	2		-		25	40 (35-45)	
State/local government	M	1					25	
	F	1					-	
Federal government	M	4				-	45	92 (85-105)
	F	2				55	35	-
Others	M	6	30 (25-35)	35	35	-		85
	F	2		-	-	85		75

Note: Salaries are in thousands of US dollars: mean (range for ± 1 SD).

Table 4. 1998 Doctoral-level bonuses

		Number of recipients/ respondents ^a	Years experience post-terminal degree						
			0-1	1-3	3-5	5-10	10-20	20+	
Consumer product	M	35/58		-	12	3.5	8.4	31.1	31.2
	F	20/25		-	2	2.5	12.5	27.6	27
Pharmaceutical industry	M	196/214		2	6.1	10.3	12.7	20.1	26.7
	F	78/96		-	11.7	5.0	9.1	19.5	15.2
Consultants (employees)	M	16/44		-	2.5	10	6.7	9.8 8.9	8.4

	F	23/32		-	4	1.5	4.7		40
Chemical industry	M	100/130		5	5	-	10.1	15.2	31.2
	F	30/37		1.5	1	10	10	6.1	12.5
Contract research	M	66/128		1	0.9	3.2	5.5	11.4	25.3
	F	12/36		-	-	-	5.8	8.2	2
Academic	M	8/308		0.5			3.0	6.5	4.3
	F	1/85		-			-	5.0	-
State/local government	M	3/47				0.4		1.5	10
	F	0/25				-		-	-
Federal government	M	37/154				0.7	1.1	1.1	3.1
	F	11/58				-	2.3	1	1
Others	M	17/31					8	10.9	25.7
	F	2/7					-	37.5	-

Note: Bonuses are in thousands of US dollars: mean (range for \pm 1 SD).

^a Receiving bonuses/total (%).

Table 5. Geographic distribution of employed doctoral respondents

State	Number of respondents	State	Number of Respondents
Alabama	9	New Hampshire	1
Alaska	0	New Jersey	125
Arkansas	17	New Mexico	9
Arizona	10	Nevada	8
California	132	New York	63
Colorado	22	North Carolina	134
Connecticut	41	North Dakota	3

District of Columbia	54	Ohio	68
Delaware	23	Oklahoma	6
Florida	14	Oregon	6
Georgia	12	Pennsylvania	86
Idaho	2	Puerto Rico	2
Illinois	70	Rhode Island	1
Indiana	20	South Carolina	6
Iowa	11	South Dakota	1
Kansas	17	Tennessee	11
Kentucky	22	Texas	107
Louisiana	11	Utah	8
Maine	3	Virginia	35
Maryland	102	Washington	26
Massachusetts	31	Wisconsin	18
Michigan	67	West Virginia	10
Minnesota	22	Wyoming	2
Missouri	19	Canada	27
Mississippi	13	Not reported	103
Nebraska	7		

Table 6. Society affiliations of doctoral respondents

Professional society	Number of national members responding
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Society of Toxicology	1381
American College of Toxicology	289
Teratology Society	184
Society of Environmental Toxicology and Chemistry	127
Environmental Mutagen Society	92
Society for Risk Assessment	54

Table 7. Recipients of doctoral degrees (and survey respondents) in toxicology by year

Year	Graduates	Survey years post-degree/respondents
		20 + /506
1983	60	
1984	97	
1985	98	
1986	104	
1987	115	
1988	111	
1989	91	10-20/660
1990	86	
1991	104	
1992	99	
1993	94	

1994	87	5-10/304
1995	84	3-5/82
1996	86	
1997	82	1-3/38
1998	80	0-1/18

Table 8. Geographic comparison: doctoral-level salaries

State	Sex	Number of respondents	Years experience post-terminal degree					
			0-1	1-3	3-5	5-10	10-20	20 +
California	M	95	52.1	63.8	69.9	75.2	109.5	115.3
	F	37	52.4	64	68.3	75.8	100.3	113.6
Illinois	M	49	61.7	76.6	71.7	76	106.8	120.9
	F	21	61.9	76.3	70.6	73.8	98.7	119.8
Maryland	M	76	56.2	58.9	55.6	70.4	96.2	109.6
	F	26	53.6	60	57.9	68.6	91.6	98.7
Michigan	M	50	58.4	72.2	74.4	82	106.8	120.5
	F	17	60	72.4	72.5	80	102.9	113.6
North Carolina	M	101	45.7	59.2	63.6	81.7	103	118.6
	F	33	46	57.1	61.4	78.3	100.2	110.7
New Jersey	M	93	68.6	88.7	77.4	98.7	116	137.1
	F	32	67.2	79.8	72.6	89.9	106.8	128.2
Texas	M	83	59	70.4	73.4	81.8	105.4	118.7

	F	24	57.4	68.8	71.3	78.9	100	112.4
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Note: Salaries are in thousands of US dollars: mean (range for \pm 1 SD).

Table 9. Certification and doctoral salaries

Years of experience	Overall	With certification	Without certification
0-1	59.5	NA	59.5
1-3	69.4	76.2	64.8
3-5	72.7	78.4	66
5-10	83	93.2	75.8
10-20	105.3	113.7	97.8
20+	122.4	128.1	119.9
Respondents	1068		

Table 10. Self-employed consultants: years so employed

Years self-employed	Respondents	
	Males	Females
1	6	2
2	6	1
3	4	1
4	2	1

Table 11. Trends in the Distribution of Employment of Doctoral Level Toxicologists 1989-1998

	1989	1991	1995	1998
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Academic	30.9%	27.8%	24.8%	24.4%
Pharmaceutical	14.0	13.5	16.4	19.3
Federal Government	11.9	16.9	13.2	13.2
Contract Research	10.3	8.5	8.3	10.4
Chemical Industry	9.9	9.1	9.6	10.4
Consumer Products	3.6	2.9	5.6	5.2
Consulting (self-employed)	1.8	2.7	4.2	4.9
Consulting (firms)	4.2	6.7	4.9	4.8
State & Local Governments	4.7	5.7	4.6	4.5
Petrochemical	NA	2.5	1.7	0.6
Other	2.6	3.7	6.4	2.4



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