Labor Market Trends for Health Physicists Through 2005
1999 Update Report

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Introduction

This report reviews labor market trends for health physicists through 2005. Job openings for new graduates are compared to the available supply of new graduates to assess relative job opportunities in the health physics labor market. The report includes jobs related to the nuclear energy and nuclear weapons fields but excludes positions in medical/health facilities and active duty military.[1]

Definition of Health Physics Employment. The employment (and job openings) data are for scientist level positions for health physicists and exclude health physics/radiation protection technologists and technicians.

A Note on Job Openings. Job openings for new graduate health physicists result from growth in health physicists' employment (that is, increases in the total number of positions) and from net replacement needs resulting from attrition of health physicists who retire or otherwise leave the labor force, or who switch to a different occupation (such as, business managers or technical sale representatives). While some of the health physics job openings are filled by workers moving in from other scientific or engineering occupations or by persons returning to the health physics occupation, most are filled by new graduates.

Actual labor force movements are complex and detailed data on attrition, occupational mobility, and replacement job openings do not exist. However, net replacement needs (the number of replacement jobs available for new graduates) can be estimated using methods developed by the U.S. Bureau of Labor Statistics as adjusted by the Oak Ridge Institute for Science and Education.

Definition of Available Supply of New Graduates. The annual number of health physics new graduates available for civilian, non-medical, U.S. based employment is estimated by subtracting from the total number of new graduates those who join the military, undertake further study, accept medical health physics positions, or accept foreign employment. Also excluded from the available supply of new graduates is an estimate of the number of graduates who are already employed as health physicists while completing their academic programs.

Summary: Current and Future Labor Market Conditions to 2005

1998-1999. By 1999 the total number of degrees earned in health physics was 215 or a decrease of over one-third in just two years.[2] Enrollments also decreased in a similar manner. In addition, the employment of health physicists appears to have stabilized or to be decreasing very slowly. Thus by 1999, the number of job openings appears to have been quite adequate to provide employment opportunities for the supply of new graduates. This is shown by the jump in the percentage increase in entry level salaries in 1999,[3] and also by information provided by the academic sector on job opportunities for their new graduates plus data on employment from several employers including some of the DOE national laboratories.[4]

1999-2005. Projections of employment trends, job openings, and the supply of new graduates through 2005, indicates that the relative number of job openings available for new graduates should continue to increase as the employment level stabilizes. At the same time, the decreases in enrollments experienced during the 1997 to 1998 academic years should result in

further decreases in the number of degrees granted for the next year or two. Thus, it is likely that the number of job openings may exceed the number of new graduates in the available labor supply by 10% or more during the next two or three years. The improving labor market should stabilize or prompt some increases in enrollments and degrees to help balance the labor market toward the end of the time period.

Summary: Past Labor Market Conditions, 1983 TO 1998

1983-1993. Throughout the latter half of the 1980s and the early 1990s, employment of health physicists increased in both the public and private sectors. At the same time, the annual number of graduates in health physics declined through 1990 and then increased between 1990 and 1993. With increasing demand and reduced supply, employers faced a severely limited supply of new graduates relative to the number of job openings.[5]

1993-1998. In the mid-1990s the growth in employment for health physicists ceased and between 1995 and 1999, employment declined by almost 10 percent from the peak in 1993. From 1993 through 1996 the annual number of degrees earned was approximately constant (between 330 and 350 annually). Thus, the number of job opportunities available to new graduates sharply decreased and a large excess supply of new graduates occurred. After 1996, the number of enrollments and degrees earned in health physics decreased substantially. Also by 1998, the employment decreases were much less than during the mid-1990s. Thus in 1998, the supply of new graduates appears to have been only slightly greater than the number of job openings available for new graduates.

Table 1. Health Physicists Employment Trends and Projections
(Excludes Medical Facilities and Active Duty Military)

Year	Employment
1991	4,050
1993	4,500
1995	4,400
1997	4,000
2000 projected	*3,900 to 4,000*
2005 projected	*3,800 to 3,900*

Table 2. Health Physics Enrollments, Degrees, and Estimated Available Supply

Year	Enrollments	Degrees	Available Supply
1990	893	247	130
1991	927	255	135
1992	1,011	265	140
1993	1,099	324	170
1994	1,129	348	180
1995	1,047	334	175
1996	920	329	170
1997	804	276	145
1998	698	215	110

Table 3. Annual Salary Increases for Entry Level Health Physics Positions
(Excludes Government, Military, Health Facilities, and Academic Institutions)

	1991 to 1992	1992 to 1993	1993 to 1994	1994 to 1995	1995 to 1996	1996 to 1997	1997 to 1998	1998 to 1999
B.S. Level:	6.0%	2.5%	4.5%	2.4%	2.1%	2.4%	2.0%	6.2%
M.S. Level:	8.5%	2.5%	3.5%	2.4%	2.4%	2.8%	1.9%	6.8%
Ph.D. Level:	5.6%	3.7%	5.2%	1.9%	2.2%	1.4%	3.2%	5.8%

Table 4. Entry Level Salary: Health Physics Versus Other Fields, Mid-1999[6]

	B.S. Level	M.S. Level	Ph.D. Level
Health Physics	$39,900	$44,300	$50,700
Nuclear Engineering	$42,900	$47,500	$52,600
Biological Sciences	$28,200	$33,700	$46,000
Chemistry	$34,500	$38,600	$59,400
Computer Science	$42,100	$51,000	not available

Estimates of Job Openings Versus Available Supplies for New Graduates

1983 –1993

Estimated annual health physics job openings for new graduates (for growth in employment positions plus net replacement needs) averaged over 240 positions during this ten year period. During the same time period, the average annual available supply of new graduates seeking health physics positions was only about 160. Thus, on average, there were only 66 graduates available for each 100 job openings over the decade.

Dividing 1983-1993 into two time periods indicates a growing inadequacy of supply of new graduates during the decade. For 1983-1989, the average was just over 90 available new graduates for each 100 job openings. During 1989-1993, the ratio decreased to an average of only 45 available new graduates for each 100 job openings. Thus, while the number of degrees and available supply were increasing during 1989-1993 the number of job openings increased even faster. These data indicate a small inadequacy of available supply of new graduates during the early and mid-1980s becoming a substantial inadequacy of available supply during 1989 through 1993.

Another indicator of labor market conditions is salary trends. The evidence of an increasingly insufficient available supply of new graduates during 1989-1993 is reinforced by the salary trends. Starting salaries of new health physics graduates increased fairly rapidly during this period (5 to 8 percent annually).

1993 -1997

During the middle 1990s the estimated number of job openings for new graduates decreased drastically to less than 100 annually. During the same time period, the average annual available supply of new graduates seeking health physics positions was approximately 175. Thus, on average over this four year period the data and statistical estimates indicate there were almost two new graduates available and seeking employment for each health physicist's job opening. Moreover, the data indicate that the number of job opportunities were considerably less for the 1995 and 1996 graduates than for the 1993 and 1994 graduates.

Other evidence supports the view that a large excess supply of new graduates has occurred in these years. During 1994 through 1997 the annual percentage increase in starting salaries for new health physics graduates averaged less than half the percentage increases that occurred during the late 1980s and early 1990s. Also, information provided by representatives of the Health Physics Society and by 15 of the contractor-operated U.S. Department of Energy facilities indicated that job opportunities decreased drastically during these years. (In 1997, only two of the fifteen contractor-operated DOE facilities planned to recruit for health physics positions.) Furthermore, between 1994 and 1996 enrollments in health physics programs declined by 18 percent indicating that students also perceived fewer opportunities in the field.

Before the shift in the late 1980s to inadequate supplies of new graduates in the health physics labor market, many bachelor's degree graduates obtained employment in the nuclear field as technologists or technicians. During the late 1980s and early 1990s health physics bachelor's graduates rarely had to accept a technician position and many employers hired

four-year or two-year college graduates with a wide variety of majors, and provided the training for them to become radiation protection technicians. Bachelor's graduates during the mid-1990s may have again found employment opportunities at the technician level. However, the data indicates that the number of radiation protection technician positions decreased by approximately 10 percent between 1993 and 1995.

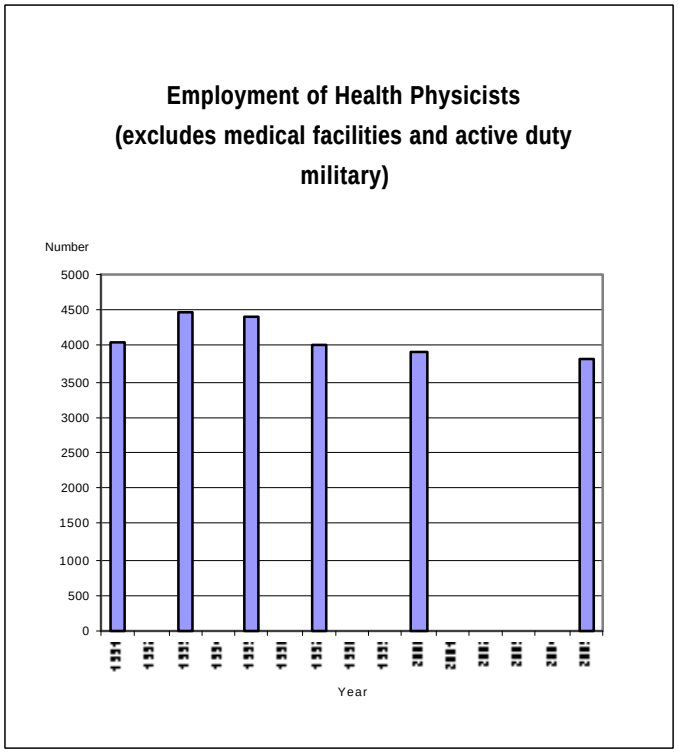
1998 – 1999

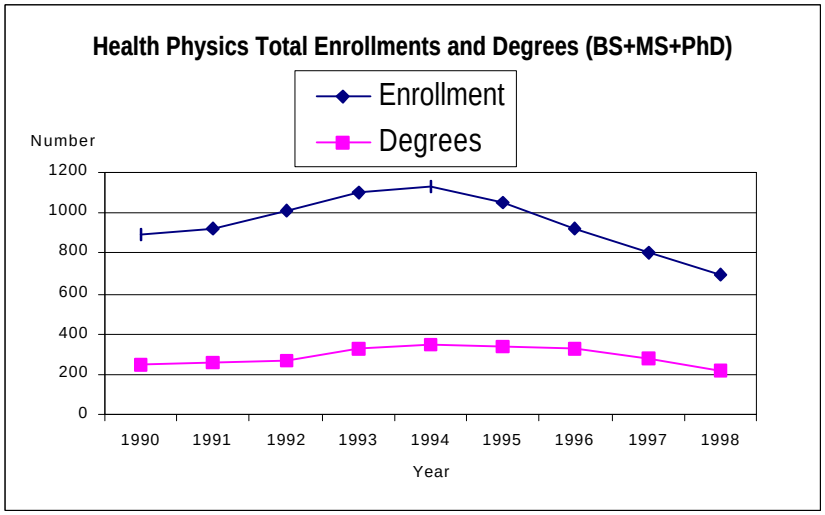
The continuing decreases in enrollments and degrees in the late 1990s resulted in just over 100 new graduates entering the labor supply annually. At the same time, employment stabilized or decreased only slightly in 1998 and 1999, providing approximately 100 job openings annually for new graduates during 1998 and 1999. Thus, after several years of somewhat excess supply of new graduates, the demand for and supply of new graduates now appears to be fairly balanced. This view is supported by the larger increases in starting salaries in 1999 for new graduates and by information provided about job openings and employment by the academic community and several employers including some of DOE's national laboratories.

1999 – 2005

Looking further ahead, the number of job openings for new graduates during 2000-2005 should increase to approximately 100 to 135 per year depending on whether the employment level experiences a slight decline or is stable. Factors complicating these projections are future declines in federal funding for waste management and decommissioning work, the future of nuclear electric power development in the United States, and the effect of deregulation on the electric utility industry.

If the number of degrees continue to decrease in line with recent enrollment decreases then the available supply of new graduates would average about 100 to 115 per year during 2000 through 2005. Thus, during 2000-2005 the number of new graduates in the available labor supply is likely to be slightly less than the number of job openings for new graduates and could be as low as 90% of the job openings. This projection is dependent on the number of degrees earned annually continuing at current levels, and on a return to stable employment levels for health physicists.


Employment of Health Physicists
(excludes medical facilities and active duty military)
Number
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Year


Health Physics Total Enrollments and Degrees (BS+MS+PhD)
Enrollment
Degrees
Number
1200
1000
800
600
400
200
0
1990
1991
1992
1993
1994
1995
1996
1997
1998
Year

ENDNOTES

1. The nuclear energy/nuclear weapons fields include: nuclear electric utilities; vendors; consultants; fuel cycle; reactor and instrument design and manufacture; facility architectural design; retrofit, backfit, and betterment; civilian and defense decontamination and decommission; civilian and defense waste management and environmental restoration; nuclear energy research and development; nuclear weapons research, development, and design; nuclear weapons maintenance and production; Department of Energy; and federal, state, and local government agencies. In addition, employment in academic institutions is included.

2. DOE Manpower Assessment Brief. U.S. Department of Energy. No. 45. Prepared by Oak Ridge Institute for Science and Education. May 1999.

3. "Salary Information for Health Physicists and Nuclear Engineers, June 1999. Summary Report." Oak Ridge Institute for Science and Education. Prepared for the U.S. Nuclear Regulatory Commission. October 1999.

4. Information provided by participants at several health physics-related meetings held during 1998 and 1999, plus data provided by employers responding to the June 1999 salary survey.

5. Labor Market Trends for Health Physicists Through 2005. Oak Ridge Institute for Science and Education. Prepared for the U.S. Department of Energy and the U.S. Nuclear Regulatory Commission. October 1997.

6. Data on occupations other than health physics and nuclear engineering are from the Salary Survey, July 1999. Vol. 38. Issue 3. National Association of Colleges and Employers.