

FINAL PERFORMANCE REPORT



PB98-130677

**University of Hawaii at Manoa
School of Public Health
Honolulu, Hawaii 96822**

Project Title: Occupational Health Training

Total Project Period: July 1, 1994 - June 30, 1997

Program Director: Arthur M. Kodama, Ph.D.

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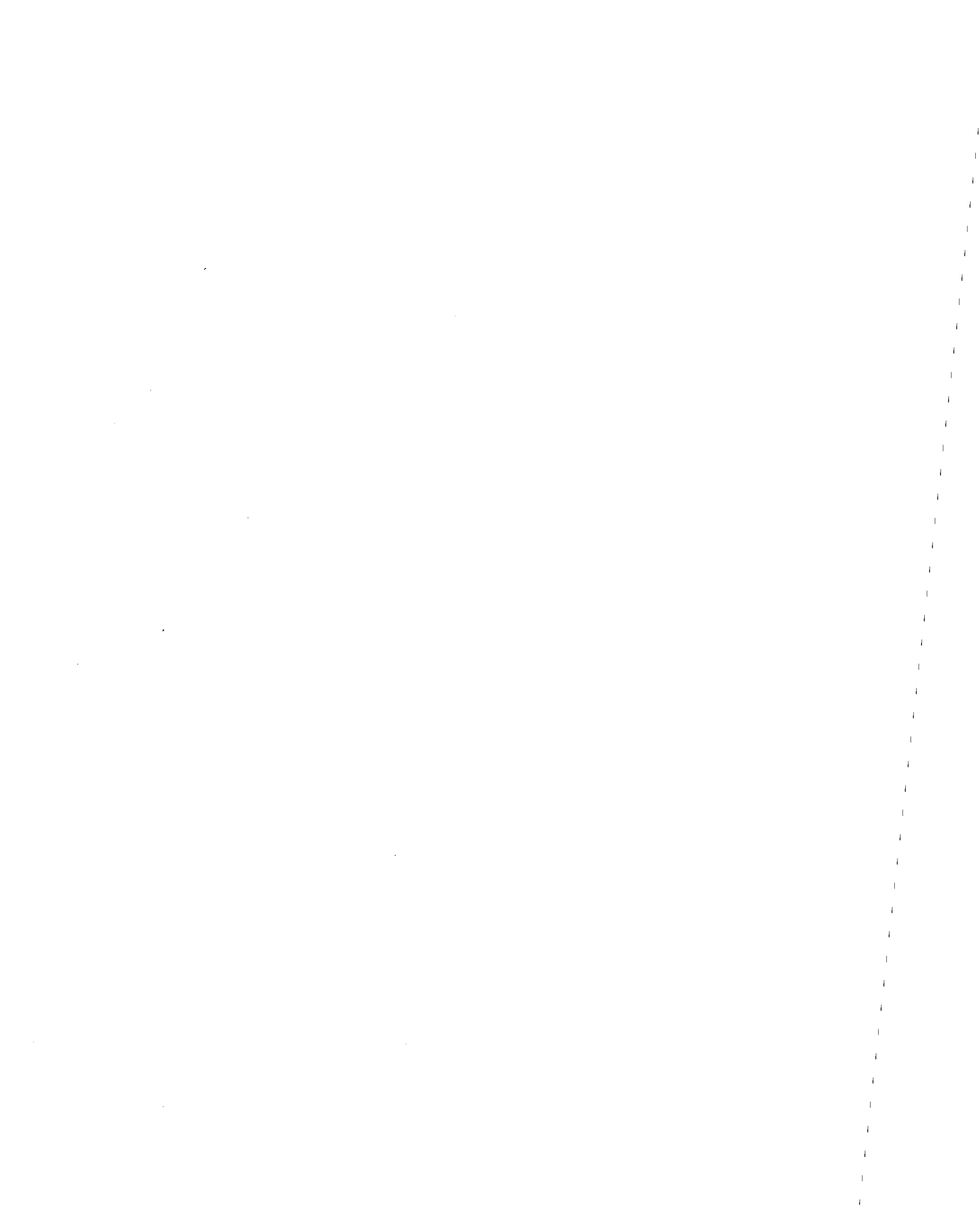


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Abstract

Award of the NIOSH renewal and continuation training grants for the period of this report (07/01/94 - 06/30/97) permitted the University of Hawaii School of Public Health to maintain an uninterrupted program emphasis in Occupational Health. Within the framework of a broadly based curriculum in public health, the program offered 12 occupational safety and health related courses. During the current reporting period, 407 students enrolled in the courses. Some 29 graduates of the School of Public Health during this time were considered to have had an emphasis in occupational health. Program faculty made 13 public presentations on occupational safety and health topics reaching more than 500 individuals in the community.

Description of Training Program.

1. Background.

1.1. Purpose & Program Characteristics.

The purpose of the program is to train occupational health professionals at the Master's degree level. The program focuses on manpower and training needs for the State of Hawaii and the mainland U.S. The program also serves the broader Asia-Pacific region, including the U.S.-Associated Pacific Jurisdictions. The program has achieved much of its success because of a NIOSH-supported occupational health training grant which has been in place for nearly 20 years.

The Environmental and Occupational Health Program is located in the Department of Public Health Sciences, School of Public Health. The program requires 30-36 semester hours of classroom work and either a field practicum (for the MPH degree) or a research thesis (for the MS degree). The current training is centered on industrial hygiene, but also supports interests in occupational medicine, nursing, and safety. By virtue of its geographic location and institutional commitment to cross-cultural and international priorities, the program at the University of Hawaii offers special opportunities in occupational health training, research, and service. Most of the training is provided by classroom and laboratory instruction, which are tied together in seminars and in a supervised field practicum (MPH) or research thesis project (MS). The training includes breadth components in environmental health and public health.

1.2. History.

The University of Hawaii School of Public Health was awarded a NIOSH training grant in 1978 to develop a graduate level training program in occupational health. The grant enabled the School to broaden its existing instructional capacity in environmental health and to subsequently offer a program option or emphasis in occupational health. Continued NIOSH support over the years fostered a progressive growth of the training program with the most significant gains occurring between 1985-1989. At the present time there is a well-established program in place which offers occupational health training within the broader context of environmental health and public health education. All degrees awarded by the School are in Public Health, without departmental or programmatic identification.

1.3. Need.

The training program serves the continuing need for occupational health professionals in the State of Hawaii, the mainland U.S., the U.S.-Associated Pacific Jurisdictions, and the broader Asia-Pacific region. In April 1996, an informal needs assessment was conducted by surveying the membership of the Hawaii Section of the American Industrial Hygiene Association and other occupational health professionals in the State. The results reaffirmed the need for graduate occupational health training at the University of Hawaii. In response to the statement: *"There is a continuing need for a graduate level training program in Occupational Safety and Health in Hawaii and the Pacific region,"* the average score on a scale of 1 to 5, where 1 was "disagree" and 5, "agree," was 4.7. There were 110 respondents out of 128 mailings.

Another indicator of the need for occupational health training in Hawaii may be seen in the incidence rates for occupational injuries and illnesses in Hawaii, which are consistently higher than the national average. According to annual data from the Hawaii Department of Labor & Industrial Relations and the U.S. Department of Labor, the incidence rates for total occupational injuries and illnesses in the private sector for the years 1989-1993, were from 12% to 32% higher in Hawaii than in the mainland U.S. Construction is said to drive the local economy, and as elsewhere, occupational injuries are highest in the construction industry.

According to the Bureau of Health Professionals (BHP) of the U.S. Public Health Service, a large proportion of occupational health professionals are trained in accredited schools of public health. The University of Hawaii School of Public Health is one of only 26 accredited schools of public health in the U.S. Approximately one-third of the graduates of the School with an emphasis in occupational health have taken positions on the mainland U.S. The BHP expects the need for industrial hygienists will continue to increase. Thus, the University of Hawaii program serves national needs as well.

Occupational health is of particular significance in the U.S.-Associated Pacific Jurisdictions and the broader Asia-Pacific region where most developing countries are experiencing a rapid increase in occupational safety and health problems. The University of Hawaii School of Public Health has, from its inception, concentrated its academic interests on international and cross-cultural health problems and considers it part of its mission to help fill the need for occupational health training in the region.

The continuing need for occupational health training at the University of Hawaii is reinforced by the number of applications to the Environmental and Occupational Health Program of the School of Public Health. The program is currently among the largest in the School in terms of student enrollment and the number of yearly applications. Data on students receiving NIOSH stipend support and graduates of the program with an emphasis in Occupational Health are provided in a later section of the report.

1.4. Training Candidates.

1.4.1. Admission Criteria & Procedure.

Although the degrees are awarded in Public Health, admission to the School of Public Health is by program areas. The requirements for admission to the MPH and MS programs in Environmental and Occupational Health include a baccalaureate degree in engineering, biology, chemistry, or other natural science, with an upper-division grade point average (GPA) of 3.0 or better on a 4.0 scale. Selection is also based upon relevant work experience, letters of recommendation, and the applicant's statement of purpose.

1.4.2. Source of Trainees.

Approximately 1/3 of our students are from Hawaii, 1/3 from the mainland U.S., and 1/3 from foreign countries, mainly from the Asia-Pacific region.

Training opportunities are made available in certain special sectors and programs. The heavy military presence in Hawaii is well known. With so many military personnel and families stationed here, it is not surprising that some of them would wish to continue their education at the University of Hawaii. The School of Public Health is pleased to provide this opportunity for qualified military applicants. Over the duration of the NIOSH training grant, about 20 students with an occupational health emphasis were military personnel or spouses on assignment in Hawaii. Similarly, an average of one U.S. Public Health Service officer per year has been enrolled in the program.

The Preventive Medicine Residency (PMR) Program at the University of Hawaii (UH) resides in the School of Public Health. A number of PMR residents from the School as well as from military PMR programs have done their MPH-year at the UH with an emphasis in occupational health.

Several on-going programs within the School actively recruit disadvantaged and minority students, some of whom specialize in environmental and occupational health. A Health Careers Opportunity Program (HCOP) seeks to improve educational opportunities for disadvantaged minorities, particularly native Hawaiians. A USPHS Indian Health Service grant provides training opportunities for Native Americans.

2. Program.

2.1. Curriculum.

2.1.1. Coursework.

The occupational health training program at the University of Hawaii School of Public Health is centered on industrial hygiene, but also provides course offerings of interest to other occupational health professionals, such as physicians, nurses, and safety engineers. The training is designed primarily to prepare occupational health practitioners at the master's degree level and leads to either the Master of Public Health (MPH) degree or Master of Science (MS) degree. The program of study requires between three and four semesters with an intervening summer devoted to either a field practicum (MPH) or research (MS). Minimum degree requirements include 30 semester hours of course work, but a typical work load is closer to 36 semester hours. All students in the School of Public Health are required to take certain foundation (core) courses. The balance of the student's program is individualized to his/her interests and needs and is filled from a fairly large course selection menu.

Course selections in the MPH and MS curricula with an emphasis in occupational health are shown on the following pages:

**COURSE SELECTIONS IN MPH CURRICULUM WITH EMPHASIS
IN OCCUPATIONAL HEALTH**

Required Courses:

<u>Course</u>	<u>Units</u>	<u>Title</u>	<u>Sem.</u>	<u>Instructor</u>
PH 602	2	Fundamentals of Health Administration	F/S	Casken
PH 623	2	Social Science and Public Health	F/S	Grossman
PH 642	2	Health and Human Development	F/S	Baruffi
PH 654	3	Public Health Statistics	F/S	Grove
PH 663	2	Principles of Epidemiology	F/S	Katz
PH 681	2	Environmental Determinants of Health	F/S	Menon
PH 788	2	Seminar in Environ. & Occup. Health	F/S	staff
PH 791D	3	Advanced Public Health Practice (Fieldwork)	F/S	staff

Occupational Health Courses:

<u>Course</u>	<u>Units</u>	<u>Title</u>	<u>Sem.</u>	<u>Instructor</u>
PH 683	2	Occupational Health	F	Kodama
PH 684	3	Principles of Industrial Hygiene	S	Kodama/Menon
PH 687	3	Environmental Toxicology	F	Kodama
PH 691	2	Occupational Safety	F	Morris
PH 692	2	Industrial Hygiene Engineering	F	Hashimoto
PH 694	2	Hazardous Materials Management	S	Menon
PH 695	2	Ergonomics	S	Morris
PH 699	v	Directed Reading in Occupational Health	F/S	staff
PH 770	3	Environmental Epidemiology	F	Miller
PH 773	3	Measurement of Environmental Factors (Lab)	S	Kodama
PH 792D-2	2	Seminar in Occupational Medicine	F	Endicott
PH 792D-3	2	Advanced Industrial Hygiene Practice	S	UCB

Other Recommended Courses:

<u>Course</u>	<u>Units</u>	<u>Title</u>	<u>Sem.</u>	<u>Instructor</u>
PH 658	2	Computer Applications in Public Health		Chung
PH 661	1	Epidemiological Study Design Critique		staff
PH 673	3	Foundations in Community Education		Grossman
PH 686	3	Air Pollution, Toxics, and Control	F	Menon
PH 729	3	PH Aspects of Disaster Management	S	Burke

ABBREVIATIONS: PH 792 is a generic course number. D designates it as an Environ. & Occup. Health course; v is for variable units; F is for the fall semester; S is for the spring semester; UCB is for University of California, Berkeley.

**COURSE SELECTIONS IN MS CURRICULUM WITH EMPHASIS
IN OCCUPATIONAL HEALTH**

Required Courses:

<u>Course</u>	<u>Units</u>	<u>Title</u>	<u>Sem.</u>	<u>Instructor</u>
PH 655	3	Biostatistics I	F	Grove
PH 656	3	Biostatistics II	S	Grove
PH 663	2	Principles of Epidemiology	F/S	Katz
PH 664	3	Advanced Epidemiology	S	Morens
PH 681	2	Environmental Determinants of Health	F/S	Menon
PH 700	6	Thesis Research	F/S	staff
PH 788	2	Seminar in Environ. & Occup. Health	F/S	staff

Occupational Health Courses:

<u>Course</u>	<u>Units</u>	<u>Title</u>	<u>Sem.</u>	<u>Instructor</u>
PH 683	2	Occupational Health	F	Kodama
PH 684	3	Principles of Industrial Hygiene	S	Kodama/Menon
PH 687	3	Environmental Toxicology	F	Kodama
PH 691	2	Occupational Safety	F	Morris
PH 692	2	Industrial Hygiene Engineering	F	Hashimoto
PH 694	2	Hazardous Materials Management	S	Menon
PH 695	2	Ergonomics	S	Morris
PH 699	v	Directed Reading in Occupational Health	F/S	staff
PH 770	3	Environmental Epidemiology	F	Miller
PH 773	3	Measurement of Environmental Factors (Lab)	S	Kodama
PH 792D-2	2	Seminar in Occupational Medicine	F	Endicott
PH 792D-3	2	Advanced Industrial Hygiene Practice	S	UCB

Other Recommended Courses:

<u>Course</u>	<u>Units</u>	<u>Title</u>	<u>Sem.</u>	<u>Instructor</u>
PH 658	2	Computer Applications in Public Health	S	Chung
PH 661	1	Epidemiological Study Design Critique	F/S	staff
PH 673	3	Foundations in Community Education	F	Grossman
PH 686	3	Air Pollution, Toxics, and Control	F	Menon
PH 729	3	PH Aspects of Disaster Management	S	Burkle

ABBREVIATIONS: PH 792 is a generic course number. D designates it as an Environ. & Occup. Health course; v is for variable units; F is for the fall semester; S is for the spring semester; UCB is for University of California, Berkeley.

A TYPICAL MPH PROGRAM OF STUDY WITH AN EMPHASIS
IN OCCUPATIONAL HEALTH

<u>Course</u>	<u>Units</u>	<u>Title</u>	<u>Sem.</u>	<u>Instructor</u>
PH 602	2	Fundamentals of Health Administration	F/S	Casken
PH 623	2	Social Science and Public Health	F/S	Grossman
PH 642	2	Health and Human Development	F/S	Baruffi
PH 654	3	Public Health Statistics	F/S	Grove
PH 663	2	Principles of Epidemiology	F/S	Katz
PH 681	2	Environmental Determinants of Health	F/S	Menon
PH 684	3	Principles of Industrial Hygiene	S	Kodama/Menon
PH 687	3	Environmental Toxicology	F	Kodama
PH 691	2	Occupational Safety	F	Morris
PH 692	2	Industrial Hygiene Engineering	F	Hashimoto
PH 694	2	Hazardous Materials Management	F	Menon
PH 695	2	Ergonomics	S	Morris
PH 773	3	Measurement of Environmental Factors (Lab)	S	Kodama
PH 788	2	Seminar in Environ. & Occup. Health	F/S	staff
PH 791D	3	Advanced Public Health Practice (Fieldwork)	F/S	staff

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Relatively few students take the MS option, which would differ from the above only in the required foundation courses.

As may be seen from the above, the occupational health program option or emphasis is broadly based in that it includes elements of environmental health and public health as well. Our intention is to produce practitioners who have the fundamental knowledge of their discipline but who also have the versatility to deal with the broader issues of environmental health and public health. We believe that beyond providing technical training, the responsibility of graduate education is to develop the basic skills of inquiry and problem solving.

2.1.2. New Modes of Instruction.

The Hawaii Interactive Television System (HITS) and other video networks provide the University of Hawaii with a powerful communications tool with which to equalize educational opportunities for residents of Hawaii who do not have ready access or time to participate in campus-based instructional programs. HITS can reach distant learners assembled in classroom sites on other islands, and through Cable TV may also reach learners in their homes and work sites. Three of the program faculty have already given courses on HITS: Professor Menon, the foundation course, Environmental Health (PH 681); Professor Morris, Ergonomics (PH 695); and Professor Hashimoto, Hazardous Materials Management (PH 694).

An exciting new development in curriculum enrichment took place during the current reporting period with the **import** of a special class titled, **Advanced Industrial Hygiene Practice (PH 792D-3)**, from the Center for Occupational and Environmental Health, School of Public Health, University of California, Berkeley and the Northern California NIOSH ERC. The course, made possible by small supplemental grants from NIOSH, was conceived and proposed by Dr. Robert Spear, Director of the Berkeley program, as a means of assisting the Hawaii program. The class, offered in Spring 1996 and Spring 1997, was arranged in two-week modules: a lecture video-taped in Berkeley the first week, followed by an "in-person" presentation and discussion in Hawaii the second week. There were 6-7 different speakers who shared their expertise on topics in industrial hygiene practice and/or research. The course was enormously successful and we believe it may be an effective model for NIOSH ERCs to help other TPG directors strengthen their course offerings.

2.1.3. Field Training & Student Research.

The University of Hawaii School of Public Health has since its inception provided "field training" as a significant period of supervised field work designed to support the learning objectives of the discipline and the learning goals of the student. Thus, field training is considered an important component of our program. Field training activities in occupational health often include research projects. Some examples from the current reporting period are given below:

- Lam, L.**
Musculoskeletal Injuries at a Honolulu Medical Center (1994).
- Chu, W.**
Noise Exposure Assessment of University Ground Maintenance Employees (1994).
- Blair, J.**
An Assessment of Total Fiber Release During Stripping and Buffing of Vinyl Resilient Floor Tiles (1995).
- Goob, T.**
The Epidemiology of Blood and Body Fluid Exposures at an Army Medical Center: An Assessment of Worker Exposures and Awareness (1995).
- Lin, Q.**
Exposure Assessment for 1,3-Dichloropropene in Air Resulting from Agricultural Application (1995).
- Endicott, J.**
Workers Compensation Cost Containment: An Analysis of a Restricted Work Activity Program at Honolulu Clinic & Hospital (1995).
- Feng, H.**
Evaluation of a Selectable Reporter System for the Detection of Genotoxic Effects of Environmental Carcinogens and Radiation (1996).
- Hossain, T.**
Injuries and Illnesses Among the Lifeguards of Oahu: A Retrospective Study (1996).
- Or, F.W.**
The Effect of Pesticides on Human Natural Killer Cell Function (1996).
- Foruw, T.**
Monitoring of Solvent Emissions in a University Duplicating Service Office (1996).
- Tuato'o, H.**
Entrance Skin Exposures (E.S.E.): A Survey of Intraoral X-Ray Machines in Hawaii Dental Offices (1996).
- Anderson, K.**
A Survey of Occupational Job Stress in a University Library System (1997).
- Wheeling, S.**
A Comparison of Noise Exposures Between Carpenters, Electricians, Masons, Plumbers, and Welders in Civilian Navy Workers (1997).

2.2. Faculty.

Arthur Kodama is in his 13th year as Program Director and is primarily responsible for training direction and development. The Program Director receives advice and guidance from (a) faculty in the Environmental and Occupational Health Program, (b) other colleagues at the University of Hawaii School of Public Health, (c) NIOSH Educational Resource Centers, and (d) the former Division of Training and Manpower Development, NIOSH. The program also obtains input from a community-based advisory committee comprised of four industrial hygienists, and one person each from occupational medicine, occupational health nursing, and safety engineering. Another valuable resource for assistance on curricular matters is the occupational safety and health expertise vested in the faculties of member institutions of the Asia-Pacific Academic Consortium for Public Health.

2.2.1. School of Public Health Faculty.

The key instructional faculty for the program include:

Harlan Hashimoto, M.S., D. Env.
Arthur Kodama, M.P.H., Ph.D.
Premlata Menon, M.S., Ph.D.
DeWolfe Miller, M.S., M.P.H., Ph.D.
Julius Morris, Ph.D., C.S.P.

The specific instructional contributions of the individuals are shown in the COURSE SELECTION tables above.

Since the occupational health program option or emphasis resides in the framework of a school of public health, numerous faculty from other disciplines within the School contribute essential elements to the training supported by the NIOSH grant. Thus, faculty in other environmental health specialization areas as well as those in biostatistics, epidemiology, health education, public health management, etc., also comprise the instructional faculty.

2.2.2. Clinical Faculty.

Clinical faculty are non-compensated and lecture in the various occupational health courses as well as serve as resource persons and field training preceptors for students. The clinical faculty provide the “real world” component of the students’ learning experience in the program. The individuals listed below are long-time and regular contributors to the program:

William Albrecht, M.P.H., Ph.D., C.I.H. (Industrial Hygiene & Toxicology)
Thomas Cashman, M.D., M.P.H. (Occupational Medicine & Epidemiology)
Fred Hertlein, M.S., C.I.H. (Industrial Hygiene)
John Endicott, M.D., M.P.H. (Occupational Medicine)
Judith Merritt, M.P.H., C.O.H.N. (Occupational Health Nursing)
Miles Onishi, P.E. (Ventilation Systems Design)
Jennifer Shishido, C.I.H. (Industrial Hygiene)
Roy Takekawa, M.P.H., C.I.H. (Industrial Hygiene)

Other Contributors:

A number of other occupational medicine physicians and industrial hygienists from the community contribute to the training program mainly as guest speakers, but do not hold formal appointments as clinical faculty.

2.3. Linkages.

The School of Public Health has been named as a U.S. Collaborating Center of the World Health Organization to serve as a focus for health leadership development. The charter of the Center calls for the School to strengthen leadership in areas of priority health needs. These include primary health care, nutrition, environmental management, and occupational health.

This charter also links with a State of Hawaii initiative generated by the Governor, which creates a Pacific Health Promotion and Development Center to provide *pro bono* health service and education in the U.S.-Associated Pacific Jurisdictions. The School of Public Health serves as the Secretariat for that Center. One of the priority areas for action is in environmental health, including occupational health.

The WHO Collaborating Center and the Pacific Health Promotion Center serve to attract students from the Asia-Pacific region to the University of Hawaii School of Public Health and provide unique opportunities for field training in the international arena.

Both for reasons of personal ties and geographical proximity, we would like to take advantage of opportunities to strengthen linkages with the industrial hygiene group at the University of California, Berkeley. Important curricular gains would accrue to our program if the instructional arrangements described above in Section 2.1.2. can be continued and expanded.

Within the University of Hawaii, the School of Public Health has for many years enjoyed close ties with the College of Engineering. Although the linkage has been mostly the natural one between environmental engineering and environmental health, there has been a long standing interest among some of the engineering faculty to expand the occupational health connection in the spirit of NIOSH's Project SHAPE. We have on average, 5-6 engineering graduate students per year enrolled in our occupational health courses.

3. Performance Outcomes.

3.1. Courses Offered.

The following courses were offered during the current reporting period. The total number of students enrolled in the classes over the three years are indicated in parenthesis.

PH 683	Occupational Health (67)
PH 684	Principles of Industrial Hygiene (38)
PH 686	Air Pollution, Toxics, and Control (7)
PH 687	Environmental Toxicology (64)
PH 691	Occupational Safety (37)
PH 692	Industrial Hygiene Engineering (53)
PH 695	Ergonomics (37)
PH 699	Directed Readings in Occupational Health (35)
PH 770	Environmental Epidemiology (6)
PH 773	Measurement of Environmental Factors (28)
PH 792D-2	Occupational Medicine (16)
PH 792D-3	Advanced Industrial Hygiene Practice (19)

The courses with single digit totals were not available every year of the reporting period.

The enrollments above included 245 students not considered to have had an occupational health emphasis. Thus the courses added breadth to the training of other students in environmental health and from elsewhere in the School and University.

3.2. Graduates.

During the three years of the current reporting period, the following students graduated from the program with an emphasis in occupational health.

1994-95	1995-96	1996-97
Baardsen, Shanette	Ancheta, Andrew	Aspera, Gary
Benzing, Raymond	Ding, Shao-Xuan	Bagaoisan, Apolla
Blair, Jennifer	Endicott, John	Carl, Robyn
Kwong, Neuman	Feng, Hiujie	Culp, Kevin
Lam, Lily	Goob, Thomas	Jenkin, Frederick
Leung, Daniel	Hossain, Tanvir	Or, Fung Wa Benny
Lucas, Pauline	Ikeda, Kenneth	Tuato'o, Harold
Oyama, Jody	Pereira, Albino	Wheeling, Shelley
	Ragual, James	Wong, Judy
	Ravelo, Ricardo	Wun, Chiyun
	Su, Hui-I Chen	

Graduates of the program with an emphasis in occupational health most commonly obtain industrial hygiene positions in government and the private sector. Some assume positions in loss control for insurance companies. A number of physicians and nurses have taken the MPH degree with an emphasis in occupational health as part of their certification credentials in occupational medicine and occupational health nursing. The program has done well in training "generalists," if not "specialists" in industrial hygiene. Although many graduates have the opportunity to pursue careers in industrial hygiene, others take positions with environmental health titles, which also require them to assume occupational health responsibilities.

Although their training is not considered part of NIOSH's primary mission, our foreign graduates, by virtue of returning directly to key posts in academia and health and labor ministries have the potential for making a greater impact on behalf of occupational safety and health in their home countries than most of their American counterparts in the U.S.

3.3. Outreach & Service.

During the current reporting period, program faculty made thirteen 1-2 hour seminar/workshop presentations on various occupational safety and health topics. A total of 551 persons attended these sessions.

Program faculty continue to be active in local safety and health organizations.

4. Evaluation of Program.

Just prior to the current reporting period, a survey was conducted of graduates of the program to assess their impressions of occupational health training at the University of Hawaii. Questionnaires were mailed to all U.S. graduates for whom current addresses could be obtained.

**SURVEY OF GRADUATES (1978-1993) WITH AN EMPHASIS
IN OCCUPATIONAL HEALTH**

Number surveyed = 74

Number respondents = 64

Ratings expressed as percent of respondents.

Assessment Criterion	Rating			
	<u>Poor</u>	<u>Fair</u>	<u>Good</u>	<u>Excellent</u>
Quality of instruction	0 %	6 %	48 %	46 %
Knowledge of faculty	0 %	5 %	38 %	57 %
Range of courses	5 %	32 %	43 %	20 %
Quality of courses	0 %	14 %	58 %	28 %
Quality of field training	5 %	26 %	44 %	25 %
Academic advising	0 %	14 %	28 %	58 %
Overall rating of program	0 %	9 %	53 %	38 %
Adequacy of program for present job	2 %	10 %	55 %	33 %

The findings are consistent with our own assessment of the program. While the quality of instruction and the quality of courses are highly rated, the range of courses is limited by the available faculty. Still, nearly 2 out of 3 graduates scored the range "good" to "excellent." Meanwhile, the range of courses offered has been improved by the addition of a new course on *Air Pollution, Toxics, and Control*, and by the import of a course titled, *Advanced Industrial Hygiene Practice*. The overall rating of the program and its adequacy in preparation for jobs were very positive.

5. Program Benefits from Grant.

Award of the renewal and continuation grants for the period of this report (07/01/94 - 06/30/97) permitted the University of Hawaii School of Public Health to maintain an uninterrupted program emphasis in Occupational Health.

The grants enabled the program to provide token compensation each budget year for several part-time instructors and support a graduate teaching assistant for industrial hygiene laboratory instruction.

Small stipends were made available for students with an expressed or demonstrated interest in occupational health. Over the period of this report, 23 students received a year of stipend support of between \$3,000 - \$4,000.

The cost of laboratory supplies and equipment repair were partially defrayed by grant monies.

In summary, without the recent NIOSH training grant awards, instruction in occupational health at the University of Hawaii School of Public Health would have reverted back to pre-1985 levels; i.e., where a number of occupational health courses would have been offered, but not in sufficient numbers to represent a program. Thus, continued NIOSH-support has been very important for the maintenance of the quality of the program.

End of Report