



AN EVALUATION OF THE
CALIFORNIA STATE UNIVERSITY, SAN BERNARDINO
BACHELOR OF SCIENCE DEGREE, HEALTH SCIENCE
ENVIRONMENTAL HEALTH SCIENCE CONCENTRATION



CALIFORNIA DEPARTMENT OF PUBLIC HEALTH
Environmental Health Specialist Registration Program

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1. INTRODUCTION AND EVALUATION PROCESS

The California Department of Public Health (CDPH), Registered Environmental Health Specialist (REHS) Program is responsible for the review and approval of environmental health degree programs offered by universities and colleges in California. The intent of this review is to ensure that the educational requirements for registration as an environmental health specialist described in the California Health and Safety Code, Section 106635 are satisfied through the environmental health curriculum of the university.

Option V of Section 106635 describes the minimum coursework for an environmental health degree program. Students majoring in environmental health need a quality undergraduate or graduate education that includes a solid background in the sciences. Students graduating from undergraduate or graduate environmental health programs with curricula approved by CDPH are eligible to take the environmental health specialist registration examination upon graduation.

The evaluation process consists of a review of the self survey information provided by the university and a site visit by members of the Environmental Health Specialist Registration Committee (Committee) and CDPH staff. A copy of the draft report is shared with the university. The final report may be amended based on comments and factual errors identified by the university. The Committee will review the final report and provide concluding recommendations.

2. ORGANIZATIONAL STRUCTURE

California State University, San Bernardino (CSUSB) is part of the California State University system, the largest system of higher education in the country. Its 23 campuses and five off-campus centers, serving more than 400,000 students, extend from Humboldt State in Arcata in the north to San Diego State in the south.

CSUSB's service area includes San Bernardino and Riverside counties which covers 27,000 square miles. More than 65,000 students have graduated from CSUSB including many who work in Southern California and make a major positive impact on the economy. Founded in 1965, CSUSB currently enrolls more than 17,500 students and employs more than 2,100 faculty and staff.

Located equidistant between Los Angeles and the Palm Springs area, the university offers more than 70 traditional baccalaureate and master's degree programs and a wide variety of education credential and certificate programs including many that have earned national recognition. Its business and entrepreneurship programs are nationally respected as evidenced by CSUSB's 2006 ranking of fourth in the United States for graduate entrepreneur programs. CSUSB is distinguished as the first Inland Empire university with prestigious national accreditation for its College of Business and Public Administration.

CSUSB was most recently accredited by the Western Association of Schools and Colleges in April 2006. Accreditation certifies to the educational community and to the general public that all of the university's degree programs and educational activities meet or exceed established standards and the goals of the campus.

The environmental health degree program is offered through the Department of Health Science and Human Ecology which is organized within the college of Natural Sciences. The specific degree granted to the student of environmental health is a Bachelor of Science in Health Science with a concentration in Environmental Health Science. CSUSB offers Bachelor of Science degrees in Health Science with three concentrations: Environmental Health Science, Health Care Management and Public Health Education. Graduate degrees offered by the Health Science Department include a Master of Public Health in Community Health and Master of Science in Health Services Administration.

According to the course catalog, "The Department of Health Science and Human Ecology provides courses of instruction for personal growth, community service, intellectual stimulation and professional career opportunities in the public health and environmental fields. The department emphasizes an ecological approach to health and attempts to provide the student with the tools necessary to understand factors contributing to the promotion of general health and well-being and elimination of population health disparities."

As part of the REHS program evaluation CSUSB was asked to complete an environmental health program self survey. The completed self survey includes information on the resources, organization and facilities used by the environmental health program and is included in the Appendix. The last update review and approval of the environmental health program by CDPH was in 2007. The last full site visit was in 2004. The university is on a quarter system. Each quarter lasts 11 weeks and three hours of lab or one hour of lecture earns one unit of credit. Specific courses in environmental health

beyond the basic science courses total 58 quarter units. The environmental health program does not include a minor degree.

3. SITE VISIT

The purpose of the site visit is to gather additional information about the university and to acquaint the survey team with the environmental health program so that CDPH may have a clear and complete picture of the university facilities, resources and faculty. The survey team is charged with the responsibility of becoming acquainted with all aspects of the environmental health curriculum, evaluating the status of the program and estimating the strength of supporting departments. The survey team usually will concentrate on areas that contradict statutory requirements or need further clarification.

The survey team consisted of Todd Frantz, REHS, Principal Food Safety Manager, Disneyland Resorts; Antonio Machado, PhD, REHS, Associate Professor, California State University, Northridge; Terri Williams, REHS, Director of Environmental Health for San Bernardino County; Deann Kanenaga, Continuing Education Coordinator, CDPH and Margaret Blood, REHS Program Administrator, CDPH. After a thorough review of the documents submitted in the self survey form for the survey team visited CSUSB on November 16 and 17, 2010.

The team met with the Dr. Lal Mian, program coordinator, and Dr. Robert Phalen to discuss general aspects of the program and the itinerary planned for the next two days. These discussions provided an introduction for the team regarding student enrollment and job placement.

Dr. Ted Coleman, Chair of the Health Science and Human Ecology Department, met with the site team and described the environmental health program as solid and well structured. Dr. Coleman admired the hard work by Dr. Mian and Dr. Phalen in the development of a superior environmental health program. He acknowledged their meticulous attention to detail has increased the program's ability to provide excellent service to environmental health students. Students of the environmental health program are easily able to obtain jobs in their field upon graduation.

Dr. Robert Carlson, College of Natural Sciences Dean, recognized the importance of the role the university plays in preparing students to meet local employers' workforce requirements. The number of majors offered by CSUSB has increased over the last ten years from 2100 to 4600. This increase has paralleled an increasing respect for scientific study. Targeted grant funding is available for Science, Technology, Engineering and Math

disciplines of which environmental health is a part. As a regional rather than a destination campus, CSUSB recruits graduating high school seniors by offering the top 1% in their class a full scholarship. Dr. Carlson called the environmental health program a jewel but undiscovered for many. He also observed that diminishing class sizes will limit course offerings.

The team met with Dr. Jenny Zorn, Associate Provost, to discuss the overall aspects of the program. In these discussions we heard that there are currently 35 students majoring in environmental health at CSUSB and that 95% of the students in the program transferred from another major. The site team discussed with Dr. Zorn possible ways other science students can be introduced to environmental health earlier in their college careers. The administration expressed sincere support for the environmental health program and recognized the importance of the study of environmental health.

The team met with the environmental health students and alumni. Two members of the site team also graduated from the environmental health program and were able to add a historical perspective. The current students spoke very highly of the faculty and described them as dedicated, knowledgeable and inspiring. They agreed that the small class sizes helped them get individual attention. There also was consensus that exposure to practical applications and experience was complementary to their academic study. Their only complaint was that they heard about environmental health after they were in their junior and senior years. This is a problem since the California State University system has limited the total number of units a student can take.

4. FACULTY

The program is served by two full time professors with assistance from full time faculty members within the department. Both professors expressed their dedication and enthusiasm for environmental health and the REHS credential during the site visit. The faculty has the depth and breadth of knowledge and experience to address the diversity of program areas in environmental health. They are highly respected by the students and the administration.

Dr. Lal Mian, Ph.D., REHS, Professor, Environmental Health Science, CSUSB. Dr. Mian has taught environmental health students at CSUSB since 1999. He has extensive publications in the area of mosquito and vector control. He has presented at national and statewide associations on a variety of environmental health topics.

Dr. Robert Phalen, Ph.D., CIH, Assistant Professor, Environmental Health Science, CSUSB. As a full time tenure tract professor since 2006, Dr. Phalen

has taught environmental health courses with an emphasis on industrial hygiene and hazardous materials. Dr. Phalen has published peer reviewed articles on personal protective equipment and presented at a number of American Industrial Hygiene Conferences.

5. LABORATORY and LIBRARY RESOURCES

The new location for environmental health classes is in the Physical Science building. The remodeled environmental health classroom is a state of the art teaching lab. Additionally, three new research labs are thoughtfully designed and well equipped. These laboratories are available for student learning and designated for general and specific environmental health research. Each professor has his own office for classroom preparation and student advisement. Storage space is adequate for the monitoring and collection equipment needed in the environmental health program.

A complete listing of monitoring and laboratory equipment is provided in the Appendix.

The team met with Library Dean Cesar Caballero and academic librarian Bonnie Pietry in the John Pfau Library which serves as the university's central library. It is open 86 hours a week during the academic year and 64 hours a week during summer session. The library has comprehensive holdings in many forms and has successfully integrated current technologies and electronic resources into their existing library system. An important recent advancement for students and faculty is easy access to all databases from off campus via the web providing a 24 hour a day research environment. Students and faculty also have access to a live academic librarian for research assistance 24 hours a day 7 days a week. The library also provides monographs and research reports to students. The Interlibrary loan system can be accessed on line and is a resource for all University of California and California State University campuses.

The library recently added an archival collection from the Water Resources Institute which was originally established by William Aguilar. These records include maps and the history of the water basin in the Central Valley.

6. CURRICULUM

The objectives of the environmental health program are to train students for work in the environmental health field, satisfy the State requirements to become a REHS, introduce students to environmental health activities, prepare students for upward and lateral mobility, and prepare students for graduate programs. The purpose of the program is to provide the intellectual

stimulation and practical expertise necessary to establish leadership in the environmental health field and to provide a philosophical base for the pertinent changes in the area of human ecology.

The basic science courses of biology, chemistry, physics, microbiology and math required for the major are rigorous and fully meet the requirements established in statute. Courses in public administration, epidemiology, statistics, and a field orientation class fulfill the statutory requirements. Courses required by the university specific to environmental health equal a minimum of 29 quarter units compared to the 23 quarter units required. Additionally, courses are required by CSUSB in health behavior and disease mechanisms. Total quarter units required in the major are 180.

California State University, San Bernardino
 Bachelor of Science degree in Health Science with a concentration in
 Environmental Health Science
REQUIREMENTS FOR OPTION V

The courses listed below are limited to those specifically required by Section 106635 of the Health and Safety Code for Option V graduates with an approved degree in environmental health.

Basic Science Courses – all courses are in quarter units:

REHS Course Requirement	CSUSB Course No.	Title	Units
General Biology	BIOL 200 and	Biology of the Cell	5
	BIOL 201 and	Biology of Organisms	5
	BIOL 202	Biology of Populations	5
Microbiology	BIOL 220 or	Principles of Microbiology	5
	BIOL 320	Microbiology	6
General Chemistry	CHEM 215 and	Gen. Chem. I: At. Struc.& Chem. Bonding	6
	CHEM 216	Gen. Chem. II: Prin. Of Chem. React.	6
Organic Chemistry minimum 5 units	CHEM 206 or	Fund. Of Chem. II: Org. Chem.	5
	CHEM 221AB, 222AB & 223AB or	Organic Chemistry I, II, & III	12
	CHEM 321, 322, 323	Principles of Organic Chemistry I, II, & III	15
Algebra/Calculus	MATH 192 or	Methods of Calculus	4
	MATH 211	Basic Concepts of Calculus	4
Physics	PHYS 121, 122, 123	Basic Concepts of Physics I, II & III	13
	PHYS 221, 222, 223	General Physics I, II, & III	15

Option V Requirements

REHS Course Requirement	CSUSB Course No.	Title	Units
Epidemiology	HSCI 451	Principles of Epidemiology	4
Public or Environmental Health Administration	HSCI 480	Health Service Management	4
Statistics	HSCI 315	Statistics for Health Sciences	4
Field Orientation	HSCI 496	Internship in Environmental Health	4

Environmental Health Electives, a minimum of 23 quarter units chosen from the following:

CSUSB Course No.	Title	Units
HSCI 322	Air Pollution	2
HSCI 324	Radiological Health and Safety	2
HSCI 352	Principles of Environmental Health	4
HSCI 354	Solid Waste Management	2
HSCI 356	Housing and Institutions	2
HSCI 358	Water Quality and Pollution Control	4
HSCI 380	Toxicology	4
HSCI 381	Occupational Safety	4
HSCI 401	Advanced Environmental Health	5
HSCI 402	Principles of Occupational Health	5
HSCI 403	Vector-borne Disease Control	5
HSCI 477	Environmental Health Engineering	4
HSCI 478	Environmental Health Management	4
HSCI 530	Food/borne Illnesses and Their Prevention	4
HSCI 531	Bioterrorism	4
HSCI 557	Hazardous Material Control	4
HSCI 558	Management of Water Quality	4

The internship program is taken in the senior year and consists of up to 200 contact hours with credit for 1 to 6 quarter units. The student works with the instructor to identify a preceptor that is usually a public environmental health agency. The purpose is to gain applied or research experience. Once the letter of understanding is processed by the agency through the instructor, the student may begin their internship. In addition to the exposure to field practices the student is required to complete a major project for the agency and describe it in a report to the agency and the instructor. Each student receives a letter grade for this class

7. ADVISORY COMMITTEE

The environmental health advisory committee serves to maintain a strong partnership with the community and also helps to meet the educational needs of the students. The committee meets once a year in December. The committee members represent different facets of environmental health and serve as a resource for providing input regarding curriculum changes, sponsoring of student internships, and promoting the program as a whole.

The committee members are:

1. Dr. Jeffery Beehler, Ph.D., Environmental Projects Manager, Santa Ana Water Power Authority, Riverside
2. Dr. Min-Lee Cheng, Ph.D., Manager, West Valley Mosquito and Vector Control District
3. Dr. Major Dhillon, Ph.D., Manager, Northwest Mosquito and Vector Control District, Corona
4. Eldon Heaston, Executive Director, Mojave Desert Air Quality Management District, Victorville
5. Dr. Bronka Lothrop, Manager, Coachella Valley Mosquito and Vector Control District
6. Dr. Michael Lysak, Professor, San Bernardino Valley Community College
7. Ionie Wallace, Supervisor, Hazardous Material Division, San Bernardino County Fire Department
8. Terri S. Williams, REHS, Division Chief, Environmental Health Services, San Bernardino County Department of Public Health, San Bernardino
9. Dr. Robert Phalen, Ph.D., CIH, faculty member, Environmental Health Science Program, Department of Health Science and Human Ecology, CSUSB
10. Dr. Lal Mian, Ph.D., REHS, Program Coordinator/Committee Chair, Environmental Health Science Program, Department of Health Science and Human Ecology, CSUSB
11. Dr. Ted Coleman, Ph.D., Chair, Department of Health Science and Human Ecology, CSUSB
12. Environmental Health Science Club representatives, CSUSB

8. RECOMMENDATIONS

The environmental health program continues to enjoy the full support of the university, the College of Natural Sciences, and the Department of Health Science and Human Ecology. Faculty members and administration staff provide the inspiration and resources that prepare the students for a professional career or further education in environmental health. As noted by Dr. Carlson the program is a jewel, unfortunately without the recognition it deserves.

The following recommendations are made to assist the CSUSB in continuing to offer a comprehensive environmental health program of a very high quality and to attract a greater student population.

1. Each graduate that applies to the State for registration as an environmental health specialist shall provide official transcripts with the university's advisement form that identifies all the classes they have completed to satisfy the educational requirements including the academic institutions where they were taken.
2. Changes in faculty staffing and/or curriculum shall be forwarded to the REHS Program as necessary each catalog year.
3. Offer a general education course in environmental health or redesign the health science course, HSCI 120 Health and Society, An Ecological Approach, to include a significant discussion of environmental health and environmental health careers.
4. Recruit community members to the advisory committee with private industry experience and REHS credentials.

Students graduating from the CSUSB with a Bachelor's of Science in Health Science, Environmental Health Concentration meet the educational requirements described in California Health and Safety Code, Section 106635.