

**IDENTIFICATION AND ANALYSIS OF
HAZARDOUS WASTE 2019
UCLA COURSE ID# 842 350 200 EHS 258**

**WINTER QUARTER 4 UNITS TUESDAYS
4-6(7)(8) p.m., CHS 41-235**

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Aims: A course on the regulations, nature, identification, labeling, safe handling, safe transport, and analytical chemistry of hazardous wastes. The course involves lectures, literature assignments, and field trips. The course provides a critical understanding of analytical, health, and regulatory aspects, and practices of hazardous waste management

Learning Outcomes. The student will be able to understand, explain about, and define what hazardous and solid wastes are, how and why they are labeled, and what emergency responses are required in event of environmental emissions/spills in the workplace and during transport, and to prevent and cope with such events. The student will know how hazardous wastes are analyzed and quantified. Students will be able to locate and access the methods to analyze hazardous wastes, and to locate information on environmental pollution concerning these wastes, as well as appreciate environmental justice concerns. The student will understand the multi-agency interactions involved with the regulation of hazardous wastes, and the position of the United States relative to the international community. The role of hazardous wastes in occupational and environmental health and hygiene will be understood and be able to be explained to workers.

The environmental health competencies for Master of Science students are: A1 Retrieve and organize literature; synthesize and critically evaluate scientific literature in environmental health, public health and other relevant fields; A2 Use existing databases to provide background information or data to address research questions and draw appropriate inferences/estimates from environmental health data; A3 Evaluate seminars and presentations in environmental health and distill the critical and salient issues from them; B5 Be able to articulate interdisciplinary approaches to solving public health problems; C1 Use computer systems and analytic software packages; D1 Make reasonable inferences from results of analysis of observational and analytic studies; E1 Prepare presentation materials including outlines, posters, and Powerpoint presentations; E2 Deliver effective oral presentations individually and as part of a team; F4 Identify and implement appropriate safety controls and practices.

The EHS MPH competencies are: C1 Describe major direct and indirect human health and safety effects of major environmental or occupational agents;C2

Describe physiologic and psychosocial factors that affect susceptibility to adverse health outcomes following exposure to environmental hazards; C3 Describe federal and state regulatory programs, guidelines, and authorities that control environmental health issues; C5 Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety; C6 Identify key sources of data and use existing databases to provide background or supportive data to address environmental health questions; C7 Discuss various risk management and risk communication approaches, including their relation to issues of environmental justice and equality; C8 Develop a testable model of environmental insult.

The crosscutting competencies involved are: communication & informatics; diversity & culture; public health biology; professionalism; program planning; systems thinking

COURSE REQUIREMENTS: Written assignments will be every two weeks. The last assignment is integrative and will comprise 50% of the total mark and includes a final oral examination that will feature student presentations based on Assignments. All videos are expected to be viewed.

REQUIRED TEXTS [BIOMEDICAL BOOKSTORE; COEH Library CHS46-060-see CHS56-070 for access; Biomedical Library reserve]:

S.S. Que Hee: *Hazardous Waste Analysis*, Government Institutes, Rockville, MD, 1999.

U.S. Department of Transport: 2016 *Emergency Response Guidebook*, ISBN 978-0-16-079456-8. Free downloads from

<https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/ERG2016.pdf>

ACGIH: 2018 *TLVs and BEIs*, ISBN 978-1-607260-84-4, ACGIH, Cincinnati, OH, 2010.

OTHER READING LIST.

NIOSH: *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, Dept. Health and Human Services [NIOSH] No. 85-115, 1985.

<https://www.osha.gov/Publications/complinks/OSHG-HazWaste/all-in-one.pdf>

K. Hess: *Environment Site Assessment. Phase I: A Basic Guide*, CRC Press, Boca Raton, 2007.

EPA: RCRA Orientation Manual 2014, US EPA, Washington D.C.

<https://www.epa.gov/sites/production/files/2015-07/documents/rom.pdf>

EPA: Hazardous Waste WEBPAGE <https://www.epa.gov/hw>

CALEPA: Hazardous Waste WEBPAGE <https://www.dtsc.ca.gov/HazardousWaste/>

S Que Hee: *Biological Monitoring: An Introduction*, Van Nostrand Reinhold (now Wiley), New York, New York, 1993. Biomedical and COEH Library.

LECTURE SCHEDULE 2019:

Week 1 Jan 8 4-8p: Definitions, history, types and identification of hazardous wastes relative to RCRA, CERCLA, and SARA; Workplaces and hazardous waste. TEXT Chapters 1, 7-8, Section II

Week 2 Jan 15 4-6p: Continued

Week 3 Jan 22 4-8p: Continued

Week 4 Jan 29 4-6p: Labeling and transport of hazardous waste and toxics use

reduction, DOT labeling, manifests, emergency response. TEXT Chapters 2-6; ERG2016

Week 5 Feb 5 4-8p: Sampling hazardous wastes. TEXT Section III

Weeks 6 Feb 12 4-6p: Analytical chemistry of hazardous wastes. TEXT Section IV

Week 7 Feb 19: No lecture SCERC/UCLA COEH Advisory Committee meeting/Dinner

Week 8 Feb 26 4-8p: Analytical chemistry of hazardous wastes (cont'd)

Week 9 Mar 5 4-7p: Field Trip to various locations of UCLA's hazardous waste pickup and containment facilities

Week 10 Mar 12 4-6p: Safety and industrial hygiene considerations at hazardous waste sites and for hazardous wastes at worksites; Health effects at and around hazardous waste sites. Environmental justice. Brownfields. Risk assessment Wrap-up. TEXT Chapter 8; NIOSH Criteria Document

Final Oral Examination: MON MAR 18 8:00-11:00 A Room TBA Student Presentations

Videos: These must be viewed during the course. **Please rewind after use.**

All videos are located at the Reserve Desk of the Biomedical Library. They must be viewed within the Library and cannot be taken out.

1. *Waste Generation, Characterization, Collection, Transfer and Disposal*, Films for the Humanities and Sciences 11470, DVD. 45 min
2. *Airborne Contaminants Monitor*, Long Island Productions, 1992. X-AIR. 10 min.
3. *How Chemicals Move Through the Soil*, University of Arizona, 2001. 27 min.
4. *Sampling Soil & Water*, Core Media, 1994.X-QH3. 20 min.
5. *Environmental Impact Assessment*, Classroom Video, 2003. 23 min.
6. *The Poisoned Dream: The Love Canal Nightmare*, Films for the Humanities and Sciences 9031, 2004, DVD. 50 min.
7. *The Toxins Return: How Industrial Poisons Travel the Globe*, Films for the Humanities and Sciences, 2010, 41398, DVD. 44 min
8. UCLA LAB Hazardous Waste: <https://www.youtube.com/watch?v=0tLJFb3YrWA>
9. Hazardous Waste Manifest: <https://www.epa.gov/hwgenerators/hazardous-waste-manifest-system>
10. CALIFORNIA HAZARDOUS WASTE MANAGEMENT:
https://www.youtube.com/watch?v=OWYRvmW5_ho
<https://www.youtube.com/watch?v=jrwG6mmHy6U>