

EHS 454: Health Hazards in Industrial Processes

Winter 2015

Instructor: Shane Que Hee, CHS 56-071A, squehee@ucla.edu, *67388

Lectures: Thursdays, 8:00 – 9:50, Room CHS 61-262

Field Visits: Fridays, 8a- 2p unless otherwise indicated

Lecture Date/Topic /Plant Visit/Date,(Schedule subject to change per facility availability)

The objective of this course is to cover the major unit processes in the workplace relative to exposure hazards, and to observe and assess specific representative workplace operations to gain an immediate understanding of their potential for excessive workplace exposure(s) to chemicals, physical agents, biological agents, and stresses from ergonomic and safety situations and their control and future prevention ; to observe and assess workplace operations to determine their potential for injuries related to ergonomics; and to observe and record safety hazards (e.g. unguarded or ineffectively guarded production equipment) or workplace conditions (e.g. wet floors; poor housekeeping) that could result in incident or injury.

Reports: All field trips require a full field visit report.

01/08 Introduction (surveys, field trips & reports), process flow charts, generalized unit operations, cradle to grave; feedstocks; wastes; safety; checklists; Burgess: pp3-9; 277-302; 01/09 No Trip

01/15 Ergonomics/Lock-Out Tag Out; machines and guarding; vehicles; safety ; 01/16: UCLA Co-generation Plant, 731 Charles E Young Jr S, Ste 3120B, Los Angeles CA 90095-1526, 8a-10a

01/22 Smelting Burgess pp.13-32;435-442; 01/23: Meet 9:45a at CHS 56-071A.

01/29 Metal operations Burgess pp. 33-48; 81-246;458-463; 01/30: UCLA Hazardous Waste Bulking and Storage Center –Meet 9:45a at CHS 56-071A.

02/05 Metal Cleaning Burgess pp. 49-80; 02/06: Meet 9:45a at Lot 9 parking lot driveway near that space's bicycle rack for the Rendezvous at Hedrick dining facility ergonomics field trip. We are being picked up. See map: <https://housing.ucla.edu/media/dining-pdfs/dining-locations-map-2014-15>

02/12 No lecture; 02/13: No field trip

02/19 Petroleum Refining and Byproducts Burgess pp. 303-317;452-457 02/20: UCLA Morgue and Anatomy classroom, 10a-12 noon. Meet 9:45a at CHS 56-071A.

02/26 Plastics, Rubbers, Paints, Composites Burgess pp. 318-337;347-371; 02/27: UCLA Machine Shop, Boelter Hall, Engineering, 10a-12 noon. Meet 9:45a at CHS 56-071A

03/05 Semiconductors Burgess pp375-408; 03/06:UCLA Fleet Services. Charles Young Drive South and West, 10a-12 noon. Meet 9:45a at CHS 56-071A

03/12: Mining and Milling; Burgess 275-276;411-434; 03/13: Oral Examination

Trip reports: They shall be organized per standards discussed in class, and shall include a title page, abstract, introduction, walk through survey details, site map , observations, discussion (operation, hazard, control, what was good, what was bad, opportunities for improvement, prioritized recommendations, relevant guidelines , references, and appendices (materials provided before field trip).

Reports are due the Thursday following the field visit. The body of the field visit report shall be typed, double spaced, and no longer than 5 or 6 pages in length.

Final Examination: Oral. The presentation topic shall be chosen randomly at the time of the exam. The presentation will be without notes, however the student can illustrate concepts on the board. The presentation shall include process descriptions, recognized hazards and their control. The instructor will ask questions following the presentation, seeking clarity and the student's appreciation for the most important health and safety risks and their control.

Textbooks:

Burgess, W.A., Recognition of Health Hazards in Industry, 2nd Edition, Wiley-Interscience, New York (1995)—required.

Anna, DH (ed.): The Occupational Environment, Its Evaluation, Control and Management, 3rd edition, AIHA Press, Fairfax, VA 2003. Chapters 30 (Ergonomics); 33 (Occupational Health Psychology); 46 (Confined Spaces); 48 (Hazardous Waste Management); 50 (Occupational Health Programs); 51 (Report Writing); 52 (Occupational Safety);

Plog, B.A. and Quinlan, P.J. (eds.): Fundamentals of Industrial Hygiene, 5th edition, National Safety Council, 2002, Chapter 15 (Evaluation), 29 (History of Federal OSHA).