

ENVH 564
RECOGNITION OF HEALTH AND SAFETY HAZARDS IN INDUSTRY
Autumn Quarter, 2015
2 Credits

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Time: Mondays 10:30 - 12:20 (with extensions for field trips)

Place: Gould Hall, Rm 436 or field trip

URL: <https://canvas.uw.edu/courses/989084>

Introduction: This course is designed to provide an introduction to the recognition of occupational safety and health hazards and approaches to controlling hazards, primarily through tours of representative local industrial facilities. Lectures consist of an introduction to hazard recognition and control strategies, and discussions will address the hazards of the various industries toured.

Learning objectives. At the conclusion of this course, students will be able to:

1. Identify hazards associated with specific industrial processes.
2. Identify alternative control options for several health and safety problems in a wide range of industrial processes.
3. Develop a strategy for conducting a walkthrough assessment of an industrial process.
4. Describe hazards in clear written language associated with industrial processes using specific field observations.
5. Communicate clearly health and safety hazards to various audiences.

Student Requirements:

1. Students must attend lectures and complete assigned readings in advance.
2. Students must be prepared and dressed appropriately for all field trips. If not dressed appropriately, student will not be allowed on site.
3. Students complete:
 - A. **Industry Reviews:** A summary of each industry being visited will be due the week of that site visit. The summary will include the following sections (please keep them in this order): Definition of Industry, Processes, Hazards, and Exposure Controls and Applicable Health and Safety Standards. Four of these industry reviews will be due, as none will be required for the first site visit. For more detail, see page 5 of the syllabus. These documents should be less than 2 pages in length, excluding references (please use multiple references). See page 5 of the syllabus for an outline.
 - B. **Walk-Through Report:** This technical report will summarize one of the tours. It should describe the company, their health and safety program structures, the company-specific production processes, raw materials used,

potential for hazards and exposures, and recommendations for controls. The report should be no longer than 10 pages (excluding references) and should include appropriate bibliographic citations, including primary research sources. Assignments for who will summarize which tours will be made on the first day of class. The report is due on December 14th, during finals week. Please use the structure shown in the guidance document where appropriate (page 6 of the syllabus) and submit the reports in the Assignment section for "Site Visit Report".

- C. **Hazard Identification Exercises:** These exercises will help the students develop skills in hazard and controls identification. These short exercises will be one page or less in length and due one week after the site visits. See page 7 of the syllabus for the questions. Only four of these will be required, as one will not be required for the site visit for which you write a site visit report.

- D. **There will be no final exam.**

Grading: Industry reviews (30%, 4 @ 7.5% each), Hazard identification exercises (30%, 4 @ 7.5% each), Walk-through report (30%), and Class participation (10%).

Text Book

Highly Recommended

Burgess, WA. Recognition of Health Hazards in Industry: A Review of Materials and Processes. 2nd edition, New York, John Wiley and Sons. 1995

Academic Integrity (<http://sph.washington.edu/students/academicintegrity/>)

Students at the University of Washington (UW) are expected to maintain the highest standards of academic conduct, professional honesty, and personal integrity.

The UW School of Public Health (SPH) is committed to upholding standards of academic integrity consistent with the academic and professional communities of which it is a part. Plagiarism, cheating, and other misconduct are serious violations of the University of Washington **Student Conduct Code** (WAC 478-120). We expect you to know and follow the university's policies on cheating and plagiarism, and the **SPH Academic Integrity Policy**. Any suspected cases of academic misconduct will be handled according to University of Washington regulations. For more information, see the University of Washington **Community Standards and Student Conduct** website.

Access and Accommodation (<http://depts.washington.edu/uwdrs/faculty-resources/syllabus-statement/>):

Your experience in this class is important to me. If you have already established accommodations with Disability Resources for Students (DRS), please communicate your approved accommodations to me at your earliest convenience so we can discuss your needs in this course.

If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), you are welcome to contact DRS at 206-543-8924 or uwdrs@uw.edu or disability.uw.edu. DRS offers resources and coordinates reasonable accommodations for students with disabilities and/or temporary health conditions. Reasonable accommodations are established through an interactive process between you, your instructor(s) and DRS. It is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law.

Class Schedule Fall 2015

<u>Date</u>	<u>Topic</u>	<u>Readings/Assignment</u>	<u>Reviews Due</u>	<u>Exercises & Reports Due</u>
10/5	Introduction/Walkthrough/ Hazard Recognition (MC) Resources & Foundry Processes/Hazards (MC)	Read: Burgess, Chapter 1		
10/12	Factory Tour 1: Northstar Casteel Foundry	Read: Burgess, Chapter 8		
10/19	Review: Foundry tour Health and Safety Programs/Regulations (NS)	Read: Roach and Rappaport, 1990 OSHA Whitepaper		Northstar Hazard ID exercise
10/26	Factory Tour 2: Canyon Creek Cabinets	Read: Brauer, Machine Guarding View video : Saw Stop https://www.youtube.com/watch?v=E3mzhvMgrLE	Woodworking	
11/2	Review: Cabinet shop Control Strategies including Ventilation (MC)	Read: Burton, Chapter 31		Canyon Creek Haz. ID exercise
11/9	Factory Tour 3: Commercial Laundry		Laundry/dry cleaning	
11/16	Review: Laundry hazards Personal Protective Equipment (MC)	Read: Neitzel, HPD effectiveness View video: Respirator fit		Consol. Laundry Haz. ID exercise
11/23	Factory Tour 4: Dyno Battery		Lead-acid battery Mfg	
11/30	Review: Battery hazards Heat stress (MC)	Read: Burgess, Chapter 2 Bernard, Chapter 12, Thermal Stress		Dyno Battery Haz. ID exercise
12/7	Factory Tour 5: Nucor Steel		Steel mill	
12/14 time TBA	Review: Steel Mill Hazard Communication/Wrap up presentations/discussion			Nucor Haz. ID exercise Site visit reports

- **All reviews are required**
- **One site visit report is required for one of the middle three site visits**
- **4 of the 5 Hazard ID Exercises are required. One is not required for your site visit report site.**

References

Burgess WA Recognition of health hazards in industry: a review of materials and processes. 2nd edition. 1995. New York:John Wiley.

Burton JD. “General Methods for Control of Airborne Hazards” Chapter 31. In The Occupational Environment: its evaluation, control, and management. DiNardi (ed). AIHA, Fairfax, VA.

Brauer, RL. Chapter 13, Tools and Machines, in *Safety and Health for Engineers*. 1990, Van Nostrand Reinhold, New York., 1990.

Neitzel R, Seixas, N. The Effectiveness of Hearing Protection Among Construction Workers. *J Occup Environ Hyg* 2: 227–238, 2005.

Bernard, T. Chapter 12, Thermal Stress, in *Fundamentals of Industrial Hygiene*. National Safety Council Press, 5th Edition, 2002.

Roach SA and Rappaport SM. “But they are not Thresholds: a critical analysis of the documentation of threshold Limit Values”. *American Journal of Industrial Medicine*. 1990. 17:727-753.

SUGGESTED OUTLINE FOR INDUSTRY REVIEWS

Reviews should be no longer than 2 pages in length; excluding references (please use multiple references).

The purpose of these documents is for you to learn about the industry in general, **NOT** the specific company that we'll be visiting. If you write about the specific company, that is incorrect.

I. Definition of Industry

- a) Products
- b) Employment
- c) Characteristic of the organizational or management structures (if possible)

II. Process

- a) Overview of processes
- b) Flow of raw materials, intermediates (if any), and end product

III. Health and Safety Hazards (Focus on high priority risks and hazards unique to this industry)

- a) Process-specific hazards (health, safety and musculoskeletal disorder hazards)
- b) Potential outcomes from hazards

IV. Controls and Standards

- a) Industry-specific (vertical) health or safety standards
- b) Hazard-specific (horizontal) health or safety standards
- c) Engineering controls tailored to this industry or process
- d) PPE required

V. References

SUGGESTED OUTLINE FOR WALK-THROUGH REPORTS

Write-ups should be concise yet complete, written as a report (not bullet points), and should not exceed 10 pages. Not all listed sub-sections may be applicable to your chosen sites.

The purpose of this document is to help the company understand some of their exposures and methods to control those exposures. Consider it like a consultation report to the company, so it should cover the company's specific processes and hazards. All figures and tables need titles and need to be referred to in the text of your document.

I. Introduction

- a) Company name, location and contact persons
- b) Purpose and scope of walk-through
- c) Summary of your pre-walk through process review

II. Managing Health and Safety

- a) Personnel: number by area or job, salary and hourly, shifts, etc.
- b) Union/non-union; if union shop, which unions are represented
- c) Health and safety management organization
 - IH and Safety
 - Medical/nursing
 - Employee involvement through committees, etc.
- d) Required employee training
- e) Health and safety programs
- f) Accident and injury rates; workers compensation modification factor
- g) OSHA or DOSH citations (aka. Violations)

III. Overview of site and process (sketches or maps may be helpful)

- a) Site layout, size and construction of buildings
- b) Process Flow
- c) Raw Materials, Intermediates, Products, Waste or By-products

IV. Process details

- a) Machine descriptions
- b) Work station design
- c) Personnel present / tasks or responsibilities
- d) Potential hazards identified or expected (emissions, safety hazards, etc.)
- e) Observed controls

V. Notable health or safety hazards/exposures (Choose 2-3 processes or hazards in IV, d and provide more detail)

- a) Potential hazard, location, conditions
- b) Applicable standards or guideline
- c) Known health effects, or possible result of injury
- d) Recommendations: program enhancements, evaluation, controls, on-going surveillance

VI. References

Hazard Identification Exercise

(One page or less, brevity is good, explain each response from observed evidence)

For the previous site visit, answer the following questions (be sure to put the company name in the header of your work):

- 1) List 3 abated or unabated hazards observed during the site visit.
- 2) For each of the hazards listed in 1), list a control used or one that could be used to reduce the hazard.
- 3) Which of the 3 hazards would you prioritize for immediate attention and why?
- 4) List a management, demographic, or social issue that may positively or negatively impact the workers' health and safety at the site.