

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

Instructors: Noah Seixas, PhD                      Marty Cohen, ScD  
[nseixas@uw.edu](mailto:nseixas@uw.edu)                                      mcohen@uw.edu  
685-7189    543-9711

Time:                      Mondays 10:30 - 12:20 (with extensions for field trips)  
Place:                      HSB T-531 or field trip  
URL:                      <https://catalyst.uw.edu/workspace/pearca/15657/>

**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 Review:** A summary of each industry being visited will be due the week before 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 reports will be due, as none will be required for the first site visit. For more detail, see page 5 of the syllabus.
  - B. **Walk-Through Report:** One paper will be a technical report summarizing one of the tours. It should include a review of pertinent literature on key or major anticipated hazards in the industry as a whole. It should also describe the company, the company-specific production process, health and safety program structure, raw materials used, potential for exposures, and major hazards that are in need of evaluation or control (see attached guidance documents). This paper should be approximately 10-12 pages 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 paper is due during the last class. Please use the structure shown in the guidance document.

**Grading:** Industry summaries (40%, 10% each), Final paper (40%), and class participation (20%).

**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

**Disability Notice.** If you would like to request academic accommodations due to a disability, please contact Disability Resources for Students Office. 448 Schmitz, 543-8294 (voice) or 543-8295 (TTY). If you have a letter from Disability Resources for Students Office indicating you have a disability that requires academic accommodations, please present the letter to me so we can discuss the accommodations you might need for class.

## Class Schedule

| <b>Date</b>             | <b>Topic</b>  | <b>Readings/Assignment</b>                            |
|-------------------------|---|---|
| 9/30                    | Introduction/Walkthrough/ Hazard Recognition (NS)<br>Foundry Processes/Hazards (MC) | Read: Burgess, Chapter 1<br>Read : Burton, Chapter 31 |
| 10/7                    | <b>Factory Tour 1: Northstar Casteel Foundry</b>                                    | Burgess, Chapter 8                                    |
| 10/14                   | Review of Foundry Tour<br>Health and Safety Programs/Regulations (NS)               | Read: Roach and Rappaport, 1990                       |
| 10/21                   | <b>Factory Tour 2: Buse Lumber Co.</b>  | Lumber milling review due                             |
| 10/28                   | Review: Lumber milling<br>Control Strategies including Ventilation (MC)             | Read: Brauer. Machine Guarding                        |
| 11/4                    | <b>Factory Tour 3: Commercial Laundry</b>   | Laundry/dry cleaning review due<br>(NS Out)           |
| 11/11                   | <b>NO CLASS</b>   |   |
| 11/18                   | Review: Laundry hazards<br>Personal Protective Equipment (NS)                       | Read: Neitzel, HPD effectiveness                      |
| 11/25                   | <b>Factory Tour 4: Dyno Battery</b>   | Battery Mfg/lead Review due                           |
| 12/2<br>(last<br>class) | <b>Factory Tour 5: Sound Transit Tunnel</b>   | Tunnel Construction Review due                        |
| Week<br>of<br>12/9      | Review: Lead Battery and Tunneling<br>Wrap up presentations/discussion              | Final paper due                                       |
|                         |   |   |

## References

Burgess WA Recognition of health hazards in industry: a review of materials and processes. 2<sup>nd</sup> 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.

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.

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

## **SUGGESTED INDUSTRY REVIEW**

### **I. Definition of Industry**

- Products
- Employment
- Characteristic of the organizational or management structures

### **II. Process**

- Overview of Process Flow
- Raw Materials and Intermediates
- Component or Unit Processes
- Emissions of potential concern

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

- Industry-wide exposure and health effects
  - Include at least three epidemiologic or exposure assessment studies
- Unit Process Hazards
- Chemical-specific health effects

### **IV. Controls and Standards**

- Industry-Specific (Vertical) Health or Safety Standards
- Hazard-specific (horizontal) health or safety standards
- Engineering Controls tailored to this industry or process
- PPE required

# **RECOGNITION OF HEALTH AND SAFETY HAZARDS IN INDUSTRY**

## **SUGGESTED OUTLINE FOR WALK-THROUGH WRITE-UPS**

**Write-ups should be concise yet complete, written as a report (not bullet points), and should not exceed 15 pages (10-12 pages is best).**

### **I. Introduction**

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

### **II. Management structure**

- Personnel: number by area or job, salary and hourly, shifts, etc.
- Union/non-union; if union shop, which unions are represented
- Health and safety management organization
  - IH
  - Safety
  - Medical/nursing
  - Employee involvement through committees, etc.
  - Required employee training
  - Accident and injury rates; modification factor
  - OSHA or DOSH citations (check [www.OSHA.gov](http://www.OSHA.gov) website)

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

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

### **IV. Process details by unit**

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

### **V. Notable health or safety problems requiring attention**

- Potential hazard, location, conditions
- Applicable standards
- Known health effects, or possible result of injury
- Recommendations: program enhancements, evaluation, controls, on-going surveillance.