

Revised 4/27/11

ENVH 554.  
**BIOLOGICAL MONITORING FOR CHEMICAL EXPOSURES**

Spring, 2011

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Schedule Line Number: 13404  
2 credits, to be graded C/NC

Pre-requisites: Either ENVH 431 or ENVH 551

**Schedule:**

Room:            HSB T478  
Time:            Fridays, 11:30-1:20

**Course description:** An advanced seminar on biological monitoring for assessment of chemical exposure and health risks from environmental agents. The course will consider applications and interpretation of results from analysis of biological specimens taken from persons exposed to chemicals in the work place and the general environment.

**Course Learning objectives:**

At the end of this course, students should be able to accomplish the following:

1. Describe the scientific basis for biological monitoring as a means of assessing exposure and risk from chemical agents in the environment.
2. Identify literature sources of exposure biomarker data, including normative values.
3. Critically evaluate the reliability of exposure biomarker measurements.
4. Describe the value of biological monitoring as an adjunct to more traditional methods of exposure and health risk assessment.
5. Describe and critique at least three examples of the application of biomonitoring data as an exposure assessment tool.
6. Discuss ethical concerns related to the collection of biological samples from humans, and the interpretation of biomarker data.
7. Describe the role and influence of genetic variability on biological monitoring.
8. Synthesize the principles of biological monitoring for exposure in a written review of one environmental agent.
9. Understand government regulations and standards pertaining to exposure biomarker data.
10. Communicate to regulators, employers, workers and the public about the meaning of biomarker data in the context of health risks of environmental and occupational exposure to

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chemical agents.

**Course format:** Class sessions will consist of seminar presentations and discussion of the current scientific literature forming the basis for biological monitoring. Weekly assigned readings will be used to prompt an investigation of each aspect of the topic.

**Course requirements:** Class participation, term paper of 8 – 10 pages, and oral presentation of the findings of the term paper.

**Course Schedule:**

<i>No.</i>	<i>Lead Discussant</i>	<i>Lecture Topic</i>
<i>1</i>	Simpson	Introduction, Justification and Role of Biological Monitoring
<i>2</i>	Galaviz, Ebert	Toxicokinetic Basis for Biological Monitoring
<i>3</i>	Eisen, Crollard	Use of Guidelines and Reference Values: Development and application in Interpreting Results: BEI approach, HSE approach, ATSDR
<i>4</i>	Havens, Ruita	Data from NHANES: normative values & biological variation
<i>5</i>	Penn, Lundin	Issues in collection of biological samples
<i>6</i>	Taylor, Onstad	Analytical Chemistry Issues in Evaluating Biological Samples
<i>7</i>	Schmidt, Romano	Influence of genetic variation on biomarkers; metabolic phenotyping
<i>8</i>	Morgan	Ethical Issues related to biological monitoring; Communication of Results; Program Management; Role of the IRB
<i>9</i>		Student Presentations
<i>10</i>		Student Presentations

**Class Text:**

There is no assigned textbook for this course. Students are required to read the articles listed in the “reference material” section below.

**Grading:**

This course will be graded credit/no credit. Student performance will be evaluated based upon (1) Class participation – 20% (2) term paper – 50% and (3) oral presentation of term paper - 30%.

**Students with Disabilities:**

To request academic accommodations due to a disability, please contact Disabled Student Services, 448 Schmitz, 206-543-8924 (voice/TTY). If you have a letter from Disabled Student Services indicating that you have a disability that requires academic accommodations, please present the letter to me so we can discuss the accommodations you might need in this class.