

Syllabus

W ENVIRONMENTAL & OCCUPATIONAL HEALTH SCIENCES
UNIVERSITY of WASHINGTON | SCHOOL OF PUBLIC HEALTH
(<https://deohs.washington.edu/>)

ENVH 502A: Assessing and Managing Risks from Human Exposure to Environmental Contaminants

Quarter: Winter 2021

Credits & Grading: 4 credits, graded

Time: Mondays & Wednesday, 1:30 to 3:20 PM

Offered Remotely via Zoom: <https://washington.zoom.us/j/97167304949> 
(<https://washington.zoom.us/j/97167304949>)

Instructor & Teaching Assistant:



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Course Description

Exposure science provides quantitative data needed to inform risk assessments and apply regulatory standards to a wide range of chemical, biological and physical hazards. Exposure assessment tools have wide application in epidemiological studies and in evaluating health interventions. This course introduces techniques such as hazard identification, dose response estimation, fate and transport

modeling, statistical exposure and dose estimation, exposure biomarkers and toxicological risk characterization as applied in both occupational and community environments.

Learning Objectives

At the end of this course, students will be able to:

1. Describe the major exposure pathways for occupational and environmental disease agents
2. Apply basic box and plume models to assess the fate and transport of environmental contaminants
3. Contrast the relationship between exposure and dose for the dermal, oral, and respiratory routes of exposure
4. Identify the public health agencies responsible for foundational environmental health regulations in the US, and describe how they apply exposure data to regulations
5. Distinguish exposure strategies used for epidemiology, risk assessment, and public health regulations
6. Critique the strengths and limitations of exposure data collected through self reports, micro environmental measurement methods, exposure mapping over time and space and personal monitoring methods
7. Apply the EPA Exposure Factors Handbook to construct plausible exposure scenarios
8. Summarize individual and group exposures with appropriate statistical descriptors and methods
9. Explain the difference between deterministic and probabilistic exposure estimates as applied to risk assessment
10. Describe the factors in absorption, distribution, metabolism and excretion process for toxicological assessment of human risk
11. Illustrate risks from toxic metals and other agents that affect the respiratory system or other vital organs.

Course Textbook

- *Exposure Assessment in Environmental Epidemiology*. 2015. 2nd Edition. Mark J. Nieuwenhuijsen (Editor). Oxford University Press, USA. ISBN-13: 978-0199378784, ISBN-10: 0199378789
- [Link to 2nd Edition eBook \(UW Library\)](#) [↗]
(<http://dx.doi.org/10.1093/med/9780199378784.001.0001>)
- [Note, the 1st edition of the text by this author also will suffice for most of this class. [Link to 1st Edition ebook](#). [↗]
(<http://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780198528616.001.0001/acprof-9780198528616>)

Exams, Assignments and Grading

There will be two homework assignments, a midterm exam with a short written report (~3 pages), and one longer written report (~5 pages) that serves as the final exam. The final grade for the course will

be determined as follows:

Homework Assignments = 30%

Reflection Assignments = 10%

Midterm Exam = 30%

Final Exam = 30%

Class Schedule

A session-by-session schedule for the course can be found on [the Modules page \(https://canvas.uw.edu/courses/1434426/modules\)](https://canvas.uw.edu/courses/1434426/modules).

Classroom Climate

The UW School of Public Health seeks to ensure all students are fully included in each course. We strive to create an environment that reflects community and mutual caring. We encourage students with concerns about classroom climate to talk to your instructor, your advisor, a member of the departmental or SPH Diversity Committee and/or the departmental Manager of Student and Academic Services (tsterry@uw.edu, 206-616-4177). The SPH Student Concern policy provides alternate ways of reporting concerns to the School of Public Health.

<https://sph.washington.edu/students/student-concern-policy>

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Access and Accommodations

Your experience in this class is important to me. It is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law. If you have already established accommodations with Disability Resources for Students (DRS), please activate your accommodations via myDRS so we can discuss how they will be implemented 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), contact DRS directly to set up an Access Plan. DRS facilitates the interactive process that establishes reasonable accommodations. Contact DRS at [disability.uw.edu](http://depts.washington.edu/uwdrs) (<http://depts.washington.edu/uwdrs>).

Religious Accommodations

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at

[Religious Accommodations Policy](https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/) ([https://registrar.washington.edu/staffandfaculty/religious-](https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/)

[accommodations-policy/](https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/)) ([/staffandfaculty/religious-accommodations-policy/](https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/))

[\(https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/\)](https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/)). Accommodations

must be requested within the first two weeks of this course using the [Religious Accommodations Request](https://registrar.washington.edu/students/religious-accommodations-request/) [form](https://registrar.washington.edu/students/religious-accommodations-request/) (<https://registrar.washington.edu/students/religious-accommodations-request/> <https://registrar.washington.edu/students/religious-accommodations-request/>).

Academic Integrity

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](https://sph.washington.edu/students/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.

Diverse backgrounds, embodiments and experiences are essential to the critical thinking endeavor at the heart of University education. In SPH, students are expected:

- To respect individual differences, which may include, but are not limited to, age, cultural background, disability, ethnicity, family status, gender, immigration status, national origin, race, religion, sex, sexual orientation, socioeconomic status and veteran status.
- To engage respectfully in the discussion of diverse worldviews and ideologies embedded in course readings, presentations and artifacts, including those course materials that are at odds with personal beliefs and values.
- To encourage students with concerns about classroom climate to talk to their instructor, adviser, a member of the departmental or SPH EDI Committee, or the Assistant Dean for EDI.

Land Acknowledgment

The University of Washington acknowledges the Coast Salish people of this land, the land which touches the shared waters of all tribes and bands within the Duwamish, Suquamish, Tulalip and Muckleshoot nations."