

ENVS 404: Urban Environments – Prevention of Childhood Lead Poisoning in West Philadelphia

Tuesdays and Thursdays
10:30 – 11:50 am
Hayden Hall 358

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Overview:

Despite the fact that lead has been removed from many products such as paint and gasoline, nearly 1.7 million young children have elevated blood levels, according to recent Centers for Disease Control estimates. The incidence of lead poisoning has declined over the last 10 years, but thousands of Philadelphia children still have elevated levels. Philadelphia ranks second in the country as the city with the highest number of lead poisoned children. Most at-risk are low income children living in poorly maintained homes built before the 1978 ban of lead based paint for residential use. According to the Philadelphia Health Department, there are about 1,400 homes with dangerous levels of lead paint chips and dust awaiting cleanup in the city. Lead poisoning can cause learning disabilities, impaired hearing, behavioral problems and at very high levels, seizures, coma and even death. Young children are especially at risk because of their developing systems. They often ingest lead chips, dust, and dirt while playing in their home and yards.

In ENVS 404, students learn about the epidemiology of lead poisoning, the pathways of exposure, and methods for community outreach and education. As an Academically Based Community Service (ABCS) course, Penn students will collaborate with middle school teachers in West Philadelphia to engage eighth and ninth grade students in lessons that apply environmental research relating to lead poisoning to their homes and neighborhoods.

Structure:

This seminar consists of lectures, readings, student presentations, group work, discussions, research, and community service. For their community service, students will:

- As part of a group, teach six lessons on childhood lead poisoning in public school classes in West Philadelphia.
- Collect and analyze soil and dust samples from local areas of interest (as defined by the instructor) to contribute to a database on West Philadelphia lead hazard exposure and soil lead content.

Objectives:

1. To facilitate comprehension and evaluation of the environmental science and health issues surrounding childhood lead poisoning in West Philadelphia.
2. To provide opportunities for perfecting and practicing presentation and communication skills in several different situations.
3. To incorporate group fieldwork collecting and analyzing lead samples into a larger study of lead in West Philadelphia.
4. To deliver course lectures and encourage class discussion that can be adapted into lessons and learning activities for urban youth.
5. To lead classes and discussions on lead poisoning prevention with at-risk populations, as well as to encourage conceptual thinking about environmental health among the target audience.
6. To support the research, writing and presentation of a problem-oriented research paper.

Requirements and Grading:

This course is a seminar and focuses primarily on presentations and discussions. Because this course features experts in their field with limited availability, **attendance is mandatory** and active **preparation** and **participation** are expected.

- Classes begin promptly at 10:30 am.
- Absences or lack of participation in class will contribute to a lower grade.
- You are expected to be prepared to discuss *at least* the required readings and lead lesson plans on the dates for which they are assigned.
- More than two unexcused absences from class will adversely affect the student's final grade. Requests for an excused absence must be emailed to the TA, Lucia DiNapoli, in advance.
- **The Community Service time requirement outside of class is approximately 6 hours of teaching plus travel time. No absences from teaching lessons are permitted or excused.**
- The course is affiliated with Communication Within the Curriculum (CWIC) and oral presentations are an integral part of the curriculum. Meetings with the CWIC advisor are a requirement of the course.

Assignments (70%):

1. Group Oral Presentation: Team Teaching (5%)

In teams of four or five students, design and deliver a 20-minute lesson. Each group will be assigned a different topic related to lead. You should reference the lead lessons that we will be using in the schools for inspiration and ideas, but may add your own games, skits, handouts, etc. Although the lesson will be delivered to the class of Penn students, it should be targeted at the school children grade level (to be assigned). Evaluation will be based on presentation skills, age appropriateness, message effectiveness, choreographed discussion and class activities. Communicate your take-home messages clearly.

2. Participation and assigned readings (15%).

The list of required and suggested readings will be distributed and posted on Blackboard (<https://courseweb.upenn.edu>) along with assignments and community service updates. Your familiarity and analysis of the assigned articles during class discussion will form the basis for this portion of the grade. This portion of your grade is also affected by timely production of non-graded assignments, such as the research topic proposal and community service reflection.

3. Written Assignment and Discussion: International Heavy Metal Recalls (10%)

Research the current status & recent history of heavy metal-related and other product recalls originating in an assigned country. Specific questions will be distributed; present your findings and analysis in a 5-page paper. Come prepared to discuss in class on Oct 2; expect to make a *very short* (2-3 minute) presentation about your analysis followed by extensive discussion.

4. Individual Oral Presentation – Research Project (15%)

Deliver a formal 15-minute presentation outlining your thesis, background research, analysis, conclusions and recommendations. **Meeting with the CWiC advisor is required prior to giving this oral presentation.** Appropriate use of PowerPoint slides and evidence of substantive research will be factors considered in the grading. Students presenting before Thanksgiving break may spend more time during the presentation explaining the background research, and are expected to have only preliminary analysis and conclusions.

5. Written Assignment – Research Paper (25%)

Select any topic or problem related to lead. Topics must be approved in advance by the instructor by submitting a 2 paragraph research topic proposal (due 10/23). Conduct research and write a 10-12 page problem-oriented research paper. The paper will be due during final exams; specific date TBD. Use APA documentation style for citations and works cited (a useful APA guide: <http://www.wisc.edu/writing/Handbook/DocAPA.html>).

Community Service (30%):

1. Classroom Teaching (20%)

In a group, teach one 1-hour class per week for 6 weeks about lead poisoning prevention to a fourth, seventh, or ninth grade class at Drew, Shaw, or Sayre Schools. The classes will occur during the school day and will meet at the same time and day every week. A variety of available lesson times will be offered; students are expected to teach one per week, during days when both Penn and PPS are in session (ie, no vacations). **The Community Service time requirement outside of class is approximately 6 hours plus travel time. No absences will be permitted or excused.** Evaluation will be based on attendance as well as feedback from the teachers, the public school students, and the TA.

2. Fieldwork – Lead Study (10%)

In teams of four or five students, sample the soil of assigned areas in West Philadelphia. Analyze the samples using the x-ray fluorescence instrument. **Completion of on-line XRF certification and in-class training is mandatory prior to use of the instrument.** Grades will be based on a 12-minute presentation of the findings that should describe the sampling protocol, the XRF results, the analysis, consideration of other factors and conclusions. Pictures, graphs, and maps contribute to a successful presentation.

3. Written Assignment – Reflection

A 3-4 page reflection paper on the community service experience. This is an informal writing assignment. Some questions to consider: What were your expectations? How did the experience compare to your expectations? What were the challenging and rewarding aspects of this experience? This is not graded, but must be produced in order to receive a grade.

Date	Topic	Speaker	Assignments & Readings:
TH 9/4	Course Overview	Pepino	<ol style="list-style-type: none"> Jennings, 2007 Story, August 2, 2007 US CPSC, August 2, 2007 Mattel, 2007 Recommended: Lavoie, 2004
TU 9/9	History of Lead Poisoning	Pepino	<ol style="list-style-type: none"> ATSDR, 2005 Markowitz, 2002 Lipton, July 13, 2007 Lipton, August 6, 2007 Franklin, 1786 Gilfillan, 1965 Eisinger, 1996 Recommended: Kaufmann, 2003
TH 9/11	Lead in the Environment CWIC Presentation	Pepino CWIC Advisor	<ol style="list-style-type: none"> EPA 1998 Mielke, 2005 Filippelli et al, 2005 Rosen, 2002 Coon, 2006 Fung, 2003 Recommended: Sterling, et al, 2004; Sjoberg 1965, Olton 1974
TU 9/16	Cross-cultural Competencies and Education in West Philadelphia	ABCS Coordinator (?) and Cory Bowman, Associate Dir. Netter Center for Community Partnerships	Team Teaching Sign Up (if dates avail) <ol style="list-style-type: none"> Reflections, 2006 CCP, 2006 Giegengack, 2004 PPRS and Rogers Recommended: Harkavy, 1996, Renault, 2007
TH 9/18	Lead Poisoning and Public Health	Kevin Osterhoudt	<ol style="list-style-type: none"> Kohlhuber et al, 2006 EPA, 2003. EPA, 1996. Clinton, 1997. Breyse, 2004 Mennis, 2005 Recommended: Polivka, 2006; Niskar, 2005; Sterling, 2004
TU 9/23	Oral Presentations – Lead Lessons Team Teaching		
TH 9/25	E-Waste: Part I - Framing the Issue	Pepino	Read All Lead Lessons Prepare Lead Lesson #1 <ol style="list-style-type: none"> WEEE Directive, 2003 Huo, X., 2007 Huiru Li, 2007
TU 9/30	E-Waste	Dan Gallo, EPA	
TH 10/2	Lead in the Workplace/Occupational Hazard	Ted Emmett, MD (CEET, Penn Medicine)	<ol style="list-style-type: none"> Muntner, 2005 Schwartz, 2007 Rabito et al, 2006 Recommended: Spivey, 2007

Date	Topic	Speaker	Assignments & Readings:
TU 10/7	Lead and Behavior + X-Ray Fluorescence Training	Pepino, Jim Silhart (Penn EHRS)	Prepare Lead Lesson #2 Begin collecting first 10 samples per group (control) Make XRF appts w/Lucia <ol style="list-style-type: none"> 1. Needleman, 1990 2. Needleman, 1996 3. Pocock, 1994 4. Needleman, 2002 5. Koller, 2004 6. Nevin, 2007 Recommended: Weitzman, 1992
TH 10/9	Philadelphia Lead Poisoning Prevention Program	Robert Himmelsbach (Phil Dept. Public Health)	<ol style="list-style-type: none"> 1. Lanphear, 1998 2. Vallejos, 2006 3. Clark, 2003 4. Rothman, 2002 Recommended: GAO, 1999.
TU 10/14	<i>FALL BREAK</i>	<i>NO CLASS</i>	
W 10/15	Mini-Lead program delivered to Math 122 instructors (volunteers needed) Time TBD		
TH 10/16	Lead in Drinking Water	Lisa Donahue (U.S. EPA)	Prepare Lead Lesson #3 <ol style="list-style-type: none"> 1. Bryant, 2004 2. Philadelphia Water Department, 2005
Fri 10/17	Control Soil Sampling – Raw data due electronically by 12noon		
TU 10/21	Group Discussion – Product Safety		Prepare Lead Lesson #4
TH 10/23	Environmental Law	Robert Fox (Manko, Gold, Katcher & Fox, LLP)	Prepare Lead Lessons #5 & #6 Research Paper Proposals Due
TU 10/28	Testing for lead in Phila Public School Water	Charles Prood	Expect Control figures back to be used for Group Fieldwork Presentations
TH 10/30	Media & Environment	Jeffrey Barg (Philadelphia Weekly)	<ol style="list-style-type: none"> 1. Shibley, 1998 2. Barg, 2007.
TU 11/4	NO CLASS		
TH 11/6	Product Recall Cont'd/ Group Fieldwork Presentations (provide ppt electronically to TA)		
TU 11/11	Group Fieldwork Presentations (provide ppt electronically to TA)		
TH 11/13	Pending Legislation Affecting Lead Poisoning Issue	Christine Hatlelid, Toxicologist, CPSC	Readings TBD
TU 11/18	Student Presentations – Research Project		
TH 11/20	Student Presentations – Research Project		
TU 11/25	Student Presentations – Research Project		
TH 11/27	<i>THANKSGIVING BREAK</i>	<i>NO CLASS</i>	
TU 12/2	Student Presentations – Research Project		
TH 12/4	Student Presentations – Research Project		Community Service Reflection Paper Due

Date TBD: Final Paper due during finals week (Dec 10-17)

Group XRF (times TBD); Write up by 2 volunteers

Date TBD: Final Presentation of both data sets by Math 122 class (assembly?)