PM529: Environmental Health: An Epidemiological Approach

This course was designed by: Dr. Rob McConnell and Dr. Talat Islam

Course description

This course will help students develop a broad understanding of environmental health. The format includes lectures, case studies and critique of literature conducted as group exercises, and various media. An introductory overview of the principles of exposure assessment and toxicology will be provided within the context of specific hazards considered in the course. Exposure pathways will be reviewed, focusing on the role of air as a route of exposure. Environmental illness associated with selected exposures, including common air pollutants, heavy metals, persistent organic pollutants, pesticides, environmental endocrine disruptors and obesogens, and radiation and other environmental carcinogens will be reviewed. These topics have been selected to illustrate the application of epidemiologic methods to environmental outbreak evaluation and management, to screening for environmental illness, and to evaluation of current controversies regarding the true health risks of environmental hazards. Students will learn the accepted approaches to management of known environmental hazards, such as lead, that should be part of any comprehensive public health program. There will be a review of anthropogenic climate change associated with greenhouse gases, as illustrative of newly recognized environmental hazards that have largely unknown but potentially catastrophic long term consequences for public health. The course will also introduce students to the tools for managing environmental health risks, including the use of risk assessment, the “precautionary principle”, regulatory and legal instruments.

PM 512, or equivalent, is a prerequisite for the course.

Learning objectives

1. Apply the basic principles of toxicology, epidemiology, and exposure assessment, using examples specific to environmental hazards examined in the course.
2. Describe the potential health effects and alternative methods of control for the major environmental hazards to public health.
3. Think critically about controversial issues in environmental health.

Textbooks and materials

- **Books:**
  - Frumkin, H. (Ed.). (2010). *Environmental health: From global to local.* San Francisco: John Wiley & Sons, Inc.
- **Articles:**

- Please refer to the weekly reading table at the end of this syllabus for a complete list of articles or other readings.
- All course articles can be accessed via the USC E-Reserves system. The PM529 E-Reserves can be located here: https://libproxy.usc.edu/login?url=http://nml-203.usc.edu/eres/coursepage.aspx?cid=714

- **Other Materials:**
  - Webcam and mic
  - A scanner (or access to one) may be useful in submitting case study components

Sessions and days of the week

The course is divided into fifteen weeks. Due dates for assignments and discussions are stated in day numbers. Day 1 is Monday, the first day of the beginning of each weekly session.

Class Day	Corresponding Week Day
Day 1	Monday
Day 2	Tuesday
Day 3	Wednesday
Day 4	Thursday
Day 5	Friday
Day 6	Saturday
Day 7	Sunday

Assignments are due no later than **11:55 p.m. in the Pacific time zone** on the day that is stated in the assignment page.

Grading policy

Course components

Component	Percentage of Final Grade
1. Class Participation	5%
2. Group Assignments	15%
3. Quizzes	10%

4. Midterm Exam	35%
5. Final Exam	35%
Total Percentage	**100%**

Class Participation (5%)

You will receive an end-of-semester class participation grade based upon your involvement in discussion boards (including your comments and questions on other groups' literature critique assignments), your ratings in your group's peer evaluations, and your input during Live Sessions.

This participation score will be rated on a scale of 0-5, with 0 indicating no participation and 5 indicating outstanding involvement in all class activities.

Group Assignments (15%)

Most weeks will include an analysis assignment designed to offer you the opportunity to think critically about controversial issues in environmental health. These analysis assignments will take the form of **case studies** or **literature critiques**. They will be group activities, so you will be assigned to an "Analysis Team" (labeled Group A through Group F) at the beginning of the course. (See "Group Work" below for more information on groupings.)

Literature Critiques:

In Week 02 and Week 03, all groups will complete *practice* literature critiques designed to provide you with experience in writing such critiques. These will be graded on a complete/not complete basis. In later weeks, as pre-assigned below, we will have **one group** complete a literature critique per week and present the outcome of their analysis to the class. Members of all other groups will post comments and replies to the presenting group's critique, and we will discuss these as a class at the following Live Session.

Group Literature Critique Weeks:

- Week 02: Practice Literature Critique—Self Reflection – all groups
- Week 03: Practice Literature Critique—Peer-Review – all groups
- Week 04: Group A
- Week 06: Group B
- Week 07: Group C
- Week 09: Group D
- Week 10: Group E
- Week 11: Group F

Each group literature critique will be graded on a 5-point scale based on the correct identification of strengths and limitations, potential for bias, how the article could be improved, the quality of the written and the group presentation (at a Live Session).

Case Studies:

In Week 01, Week 05, Week 06, and Week 13, your group will complete a case-study based group assignment grounded in a real-world case. You will be responsible for

collaborating as a group to address the questions and issues related to the case and submit a single, final document detailing your group's assessment.

Each group case study will be graded on a 5-point scale, with 5 indicating that all answers are complete, thorough, and accurate.

After each week in which a group assignment is completed, you will be asked to also complete a peer evaluation indicating your assessment of your groupmates' participation in the group work. This may be used to inform each group member's grade.

Quizzes (10%)

Each week (with the exception of the midterm and final exam weeks) will contain a quiz designed to allow you to test your understanding of the week's didactic material and prepare for the midterm and final. You are expected to complete each week's reading carefully prior to the quiz. Each quiz will have 5 questions, and you will have 10 minutes to complete these questions, so careful advance preparation is essential.

Midterm Exam (35%) & Final Exam (35%)

The midterm and final exams are multiple choice exams. These exams will test your understanding of the previous weeks in the course. The midterm will test your knowledge of Weeks 01-07, and the final will test your knowledge of Weeks 09-14. Both exams will be timed and proctored, and you will have one attempt to complete each.

Other grading policies

Course Requirements

Students will be expected to complete the reading and exercises for each class.

Students will be expected to check Moodle regularly for homework and reading assignments, as well as for other postings.

Grade ranges

This course is graded on a curve.

Lateness

Late work is not accepted.

Extra credit

There might be extra credit opportunities throughout the course, which can be used to replace your lowest quiz scores.

Live Sessions

With the exception of a few weeks, this course will include weekly Live Sessions. These Live Sessions will be used in many weeks for group presentations of literature critiques, as they will provide us with a class forum to delve more deeply into the content of the literature being critiqued. Live Sessions will also be used to discuss other weekly content or issues that arise.

Please review the Adobe Connect Quick Start Guide for details on how to attend a Live Session using Adobe Connect.

Group work

You will work with a single group throughout this course, your Analysis Teams (Teams A-F). These groups will be randomly assigned prior to the start of the course. You can find your group assignment by clicking on the 'Roster' link in the right bar of the main course page.

With these Analysis Teams, you will be conducting three group activities: one literature critique assignment and two case study assignments.

Please be aware that you and your group members will be completing a Peer Feedback Survey after each group assignment, which may inform your grade on the assignment.

Academic integrity policy

Academic integrity: Students should maintain strict adherence to standards of academic integrity, as described in SCampus (http://www.usc.edu/dept/publications/SCAMPUS). In particular, the University recommends strict sanctions for plagiarism, defined below:

11.11 Plagiarism

A. The submission of material authored by another person but represented as the student's own work, whether that material is paraphrased or copied in verbatim or near-verbatim form.
B. The submission of material subjected to editorial revision by another person that results in substantive changes in content or major alteration of writing style.
C. Improper acknowledgment of sources in essays or papers.

Note: Culpability is not diminished when plagiarism occurs in drafts that are not the final version. Also, if any material is prepared or submitted by another person on the student's behalf, the student is expected to proofread the results and is responsible for all particulars of the final draft.

Source: SCampus University Governance, Section 11 Behavior Violating University Standards; For the full text please see http://web-app.usc.edu/scampus/1100-behavior-violating-university-standards-and-appropriate-sanctions/

USC policies on accessibility for online courses

The University of Southern California is dedicated to maintaining an environment that ensures that all students with documented disabilities, including deafness, ADHD, dyslexia, visual impairments, and other disabilities, have equal access to its educational programs, activities and facilities. This policy covers all students at USC and in distance learning programs. The accommodations are designed to level the playing field for students with disabilities, while maintaining the integrity and standards of USC's academic programs.

Accommodations are determined on a case-by-case basis. Examples of typical accommodations include assistance in providing note-takers, sign language interpreters, real-time captionists, readers, scribes, advocacy with faculty, accommodated exam proctoring, alternative text formats, adaptive technology, referrals to community resources, support groups and other support services for individual needs unique to a student's disability. DSP encourages you to contact their office early in the semester to discuss individual needs and arrange appropriate support services and strategies. More information on these policies is available here: http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html.

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is sent to the professor as early in the semester as possible. The phone number for DSP is (213) 740-0776 and is open 8:30 a.m. – 5:00 p.m. Pacific Time, Monday through Friday.

Library access

As a MPH student, you have access to all the library resources. The Norris Medical Library Librarian, Amy Chatfield (amychatf@usc.edu), is available to assist you with any inquiries you may have.

Hardware and software requirements

Minimum hardware requirements for PC users

Operating System:	Windows XP or higher required.
RAM:	1 GB of RAM required (higher is recommended).
Free Disk Space:	4 GB available hard-drive space.
Connection:	Internet service provider (ISP); broadband connection recommended
Audio & Video	Sound card and speakers or headphones for listening to audio

	components. Webcam.
Monitor	Monitor resolution of 1024 x 768 or higher.
Browser:	Mozilla Firefox 4.0 or Google Chrome or higher browser(s). The browser should be set to accept cookies, allow Javascript and Java, and to show the newest version of a page. Pop-up blockers should be disabled for Moodle.
Also Recommended:	CD/DVD-ROM drive.

Minimum hardware requirements for Mac users

Operating System:	Mac OS X Version 10.4 or higher.
RAM:	1 GB of RAM required (higher is recommended).
Free Disk Space:	4 GB available hard-drive space.
Connection:	Internet service provider (ISP); broadband connection recommended
Audio & Video	Sound card and speakers or headphones for listening to audio components. Webcam.
Monitor	Monitor resolution of 1024 x 768 or higher.
Browser:	Safari 5.0, Mozilla Firefox 4.0, Google Chrome or higher browser. The browser should be set to accept cookies, allow Javascript and Java, and to show the newest version of a page. Pop-up blockers should be disabled for Moodle.
Also Recommended:	CD/DVD-ROM drive.

Software

Recommended: Microsoft Office 2003 (or Mac 2004) or higher (to include Word, Excel, and PowerPoint), Virus protection software, Adobe Reader.

Plug-ins

General note: Please ensure you have the latest Java plug-ins.

- PC: Windows Media Player, QuickTime, Flash, Shockwave, Adobe Reader, and Java.
- Mac: Flip4Mac(to access Windows Media files), QuickTime, Flash, Shockwave, Adobe Reader, and Java.

Check your System Compatibility

To verify that you have the appropriate hardware and software, please log in to the course to launch the Browser Test Page.

Technical support

Assistance to resolve technical problems is available 24 hours a day, every day of the year. This service is provided by Pearson Embanet, and it is restricted primarily to problems associated with the functionality of the course delivery platform.

Contact Pearson Embanet's Help Desk staff for assistance to resolve problems you believe are not associated with the computer hardware and software you have purchased from a vendor.

Examples of problems that fall within this category are:

- Unable to view multimedia files.
- Unable to view responses to comments you have posted in the Discussion area.

If you are not sure whether the problem is due to your computer system, contact Pearson Embanet's Help Desk for guidance; otherwise, contact the vendor.

To talk to a live technical support agent, please call the following number:

Toll-free	877-646-1885
Support Center	http://supportcenter.embanet.com/usc

Weekly Readings

Weekly Readings	
Week 01	**Optional (E-Reserves):** • Barnosky A. D., Matzke N., Tomiya S., Wogan, G. O. U., Swartz, B., Quental, T. B., et al. (2011). Has the Earth's sixth mass extinction already arrived? *Nature*, 471, 51-57. • Bell M. L., Davis D. L. (2001). Reassessment of the lethal London fog of 1952: Novel indicators of acute and chronic consequences of acute exposure to air pollution. *Environmental Health Perspectives, 109*(S3), 389-394.
Week 02	**Library E-Reserves:** • Nieuwenhuijsen, M. J. (2003). Introduction to exposure assessment. In M. J. Nieuwenhuijsen (Ed.), *Exposure Assessment in Occupational and Environmental Epidemiology* (pp. 3-19). New York: Oxford University Press, USA. • ***(Note: This should be read as part of this week's literature critique assignment.)*** Leuenberger, P., Schwartz, J., Ackermann-Liebrich, U., Blaser, K., Bolognini, G., Bongard, J. P. et al. (1994). Passive smoking exposure in adults and chronic respiratory symptons (SAPALDIA Study). *American Journal of Respiratory and Critical Care Medicine, 150,* 1221-1228. **Websites/Links:** • **(Note: This should be read as part of this week's literature critique assignment.)** Atteslander, P. & Schneider, B. (1996). SAPALDIA Study. Swiss study on Air Pollution and Respiratory Diseases in Adults. *American Journal of Respiratory and Critical Care Medicine, 153*(1): 462-463.
Week 03	**Textbook:** • Bell, M. L. & Samet, J. M. (2010). Air pollution. In H. Frumkin (Ed.), *Environmental Health* (pp. 387-416). San Francisco: John Wiley & Son, Inc. **Library E-Reserves:** • **(Note: This should be read as part of this week's literature critique assignment.)** Yang, C., Chang, C., Chuang, H., Ho, C., Wu, T., & Tsai, S. (2003). Evidence for increased risks of preterm delivery in a population residing near a freeway in Taiwan. *Archives of Environmental Health, 58*(10), 649-654. **Websites/Links:** *The websites listed here may be of interest to you as you begin this week's content. Spend some time reviewing each, then delve into a few more deeply in this week's discussion.*

	EPA Review of Criteria Air Pollutants: • The Plain English Guide to the Clean Air Act: http://www.epa.gov/air/caa/peg/index.html • Air Quality Index: http://www.epa.gov/airnow/aqi_brochure_08-09.pdf *Other Sites of Interest:* • National-Scale Air Toxics Assessment: http://www.epa.gov/ttn/atw/nata/mapconc.html • National Library of Medicine Toxmap: http://toxmap.nlm.nih.gov/toxmap/main/index.jsp **Optional (Library E-Reserves):** • Anonymous. (1996). Health effects of outdoor air pollution. Committee of the Environmental and Occupational Health Assembly of the American Thoracic Society. *American Journal of Respiratory and Critical Care Medicine 153*(1), 3-50. (A bit dated but quite comprehensive) • Anonymous. (1996). Health effects of outdoor air pollution. Part 2. Committee of the Environmental and Occupational Health Assembly of the American Thoracic Society. *American Journal of Respiratory and Critical Care Medicine 153*(2), 477-498. • *Two articles that make a strong case for a causal link between near-roadway pollution and asthma:* ○ Li, N., Hao, M., Phalen, R. F., Hinds, W. C., & Nel, A. E. (2003). Particulate air pollutants and asthma. A paradigm for the role of oxidative stress in PM-induced adverse health effects. *Clinical Immunology, 109*(3), 250-65. ○ Anderson, H. R., Favarato, G., & Atkinson, R. W. (2010). Long-term exposure to air pollution and the incidence of asthma: meta-analysis of cohort studies. *Air Quality, Atmosphere and Health*,1-10. **Optional (Websites/Links):** • American Lung Association 2013 Report on Air Quality: http://www.lung.org/associations/states/california/assets/pdfs/sota-2013/sota-2013-press-release-english.pdf • Some limitations to the Toxic Release Inventory (TRI): • http://www.iwatchnews.org/2012/01/09/7836/epas-toxics-release-inventory-doesnt-offer-full-picture-pollution • http://www.iwatchnews.org/environment/pollution/poisoned-places
Week 04	**Textbook:** • Richardson, J., & Miller, G. W. (2010). Toxicology. In H. Frumkin (Ed.), *Environmental Health* (pp. 49-78). San Francisco: John Wiley & Son, Inc. **Library E-Reserves:**

- Landrigan, P. J., Claudio, L., Markowitz, S. B., Berkowitz, G. S., Brenner, B. L., Romero, H., et al. (1999). Pesticides and inner–city children: exposures, risks, and prevention. *Environmental Health Perspectives, 107*(S3), 431–7.
- **(Note: This should be read as part of this week's literature critique assignment.)** Pelucchi, C., Franceschi, S., Levi, F., Trichopoulos, D., Bosetti, C., Negri, E., et al. (2003). Fried potatoes and human cancer. *International Journal of Cancer, 105*(4), 558-560.

Optional (Library E-Reserves):

This demonstrates huge economic benefits to removing lead:

- Gould, E. (2009). Childhood lead poisoning: conservative estimates of the social and economic benefits of lead hazard control. *Environmental Health Perspectives, 117*(7), 1162-1167.

This is a scary study of effects of pesticides on brain anatomy revealed by fMRI (functional magnetic resonance imaging):

- Rauh, V. A., Perera, F. P., Horton, M. K., Whyatt, R. M., Bansal, R., Hao, X., et al. (2012). Brain anomalies in children exposed prenatally to a common organophosphate pesticide. *Proceedings of the National Academy of Sciences of the United States of America, 109*(20), 7871-7876.

Editorial about a toxic food additive added to milk and other products in China and then exported:

- Ingelfinger, J. R. (2008). Melamine and the global implications of food contamination. *The New England Journal of Medicine, 359*(26), 2745-2748.

Evidence that the current catastrophic die off of honey bees could be caused by an interaction between pathogens and a widely used pesticide that weakens immune function. Figuring out why "colony collapse disorder" is occurring is urgent, because many food crops depend on bees to pollinate and produce crops, eg. the lucrative California almond industry:

- Pettis, J. S., vanEngelsdorp, D., Johnson, J., & Dively, G. (2012). Pesticide exposure in honey bees results in increased levels of the gut pathogen Nosema. *Naturwissenschaften, 99(*2), 153-158.

Alternatives to pesticides that are as productive; read with this NY Times editorial:

- Davis, A. S., Hill, J. D., Chase, C. A., Johanns, A. M, & Liebman, M. (2012). Increasing cropping system diversity balances productivity, profitability and environmental health. *PLoS One, 7*(10), e47149.

Optional readings for after you've completed the literature critique:

- Mucci, L. A., Adami, H. O., & Wolk, A. (2006). Prospective study of dietary acrylamide and risk of colorectal cancer among women. *International Journal of Cancer, 118*(1), 169-173.

	• Beer, M. U., Schlatter, J., Dudler, V., & Zoller, O. (2004). Fried potatoes and human cancer. *International Journal of Cancer, 108*(4), 634-635; author reply 636-7. • Konings, E. J., Baars, A. J., van Klaveren, J. D., Spanjer, M. C., Rensen, P. M., Hiemstra, M., et al. (2003). Acrylamide exposure from foods of the Dutch population and an assessment of the consequent risks. *Food and Chemical Toxicology, 41*(11), 1569-1579. • Sanderson, K. (2012). Bid to curb fried-food chemical goes cold. *Nature, 491*(7422), 22-23. **Optional (Websites/Links):** *If you're interested in when and what it makes sense to buy organic, there was a very practical article in Consumer Reports:* • Consumer Reports. (2008, June). *When buying organic pays (and doesn't).*

Week 05	**Library E-Reserves:**
	• World Health Organization. (1991, December). *Investigating environmental disease outbreaks: A training manual* (WHO/PEP/91.35). Geneva: World Health Organization.
	  • Read pages 1-44.
	  • Note references and appendix after page 29.
	
	Websites/Links:
	• Centers for Disease Control and Prevention. (1990, July 27). Guidelines for investigating clusters of health events. *Morbidity and Mortality Weekly Report*, *39*,1-16.
	
	Other:
	• Be sure to review outbreak investigation from your introductory epidemiology course.
	
	Optional:
	• McNeill, W. H. (1998). *Plagues and Peoples.* New York: Random House. (Great story of the impact of epidemic disease on the course of history.)
	• Hopkins, D. R (2002). *The Greatest Killer.* Chicago: University of Chicago Press. (Role of smallpox in the course of human history.)
	• Diamond, J. (1999). *Guns, Germs and Steel.* New York: WW Norton and Co. (Pulitzer Prize Winning. A 13,000 year history of the world; disturbing chronicle of human behavior writ large.)
	• Feature Movies:
	  • *A Civil Action* (based on a true story about leukemia in Woburn, Massachusetts)
	  • *Contagion* (little more of a Hollywood outbreak investigation

	than a CDC one)
Week 06	**Library E-Reserves:** • Thacker, S. B., Stroup, D. F., Parrish, R. G., & Anderson, H. A. (1996). Surveillance in environmental public health: issues, systems, and sources. *American Journal of Public Health, 86*(5), 633-638. • Litaker, D., Kippes, C. M., Gallagher, T. E., & O'Connor, M. E. (2000). Targeting lead screening: The Ohio lead risk score. *Pediatrics, 106*(5), E69. • **(Note: This should be read as part of this week's literature critique assignment.)** Haley, R. W. (2003). Excess incidence of ALS in young Gulf War veterans. *Neurology, 61*(6), 750-756. **Other:** • Also review the principles of screening and the calculation and meaning of sensitivity, specificity and positive and negative predictive value from your introductory epidemiology course. In PM512, refer to Week 11 Instructional Materials.
Week 07	**Textbook:** • Ford, T. (2010). Water and health. In H. Frumkin (Ed.), *Environmental Health* (pp. 487-558). San Francisco: John Wiley & Son, Inc. **Library E-Reserves:** • **(Note: This should be read as part of this week's literature critique assignment.)** Schwartz, J., Levin, R., & Goldstein, R. (2000). Drinking water turbidity and gastrointestinal illness in the elderly of Philadelphia. *Journal of Epidemiology & Community Health, 54*(1), 45-51. • Westerhoff, P., Prapaigong, P., Shock, E., & Hillaireau, A. (2008). Antimony leaching from polyethylene terephthalate (PET) plastic used for bottled drinking water. *Water Research*, *42*(3), 551-556. **Optional (E-Reserves & Websites/Links):** • Ballester, F., & Sunyer, J. (2000). Drinking water and gastrointestinal disease: need of better understanding and an improvement in public health surveillance. *Journal of Epidemiology & Community Health, 54*(1), 3-5. • Sinclair, M., & Fairley, C. (2000). Drinking water and endemic gastrointestinal illness. *Journal of Epidemiology & Community Health, 54*(10), 728-730. *The following include information to help reduce your own exposures:* • Clear choices for clean drinking water. (2003, January). *Consumer Reports*, 33-38. ○ Note: this has the best background material. • Water Filters: Simple, effective options. (2007, May). *Consumer*

	Reports, 38-40. ○ Note: read this for updated recommendations. • Pediatric Environmental Health Specialty Units. (2008, June). *Health Care Provider Guide for Safer Plastics.* *Additional information for your interest, not for exams or quizzes:* • United States Government Accountability Office (GAO). (2009). *Bottled water: FDA safety and consumer protections are often less stringent than comparable EPA protections for tap water*. (GAO-09-610)
Week 08	None
Week 09	**Textbook:** • Upton, A. C. (2010). Radiation. In H. Frumkin (Ed.), *Environmental Health* (pp. 769-797). San Francisco: John Wiley & Son, Inc. **Library E-Reserves:** • **(Note: This should be read as part of this week's literature critique assignment.)** Pershagen, G., Akerblom, G., Axelson, O., Clavensjo, B., Damber, L., Desai, G., et al. (1994). Residential Radon exposure and lung cancer in Sweden. *The New England Journal of Medicine, 330,* 159-164. **Optional (Library E-Reserves):** • Cohen, B. L. (1998). Test of the linear-no threshold theory of radiation carcinogenesis for inhaled radon decay products. *Health Physics, 68*(2), 157-174. • Lagarde, F., & Pershagen, G. (1999). Parallel analyses of individual and ecological data on residential radon, cofactors, and lung cancer in Sweden. *American Journal of Epidemiology, 149*(3), 268-274. • Mettler, F. A. Jr., Thomadsen, B. R., Bhargavan, M., Gilley, D. B., Gray, J. E., Lipoti, J. A., et al. (2008). Medical radiation exposure in the U.S. in 2006: preliminary results. *Health Physics, 95*(5), 502-507. **Optional (Websites/Links):** • Centers for Disease Control and Prevention. (n.d.). *Public health planning for radiological and nuclear terrorism.* Retrieved from http://www.bt.cdc.gov/radiation/masscasualties/publichealthplanning.asp
Week 10	**Textbook:** • Wilson, S. H. (2010). Genetics and Environmental Health. In H. Frumkin (Ed.), *Environmental Health* (pp. 128-142). San Francisco: John Wiley & Son, Inc.

	Library E-Reserves: • **(Note: This should be read as part of this week's literature critique assignment.)** Bonner, M. R., Bennett, W. P., Xiong W. Y., Lan, Q., Harris, C. C., Field, R. W., et al. (2006). Radon, secondhand smoke, glutathione-S-transferase M1 and lung cancer among women. *International Journal of Cancer, 119*(6),1462-1467. • Kelada, S. N., Eaton, D. L., Wang, S. S., Rothman, N. R., & Khoury, M.J. (2003). The role of genetic polymorphisms in environmental health. *Environmental Health Perspectives, 111*(8),1055-1064. • Sharp, R. R., Yudell, M. A., & Wilson, S. H. Shaping science policy in the age of genomics. *Nature Reviews Genetics, 5*(4), 311-316.
Week 11	**Textbook:** • Heaton, S. K., Balbus, J. M., Keck, J. W., & Dannenberg, A. L. (2010). Healthy Communities. In H. Frumkin (Ed.), *Environmental Health* (pp. 487-558). San Francisco: John Wiley & Son, Inc. **Library E-Reserves:** • **(Note: This should be read as part of this week's literature critique assignment.)** Jerrett, M., McConnell, R., Chang, C. C., Wolch, J., Reynolds, K., Lurmann, F., et al. (2010). Automobile traffic around the home and attained body mass index: a longitudinal cohort study of children aged 10-18 years. *Preventive Medicine, 50 Suppl 1*, S50-58. • La Merrill, M., & Birnbaum, L. S. (2011). Childhood obesity and environmental chemicals. *Mount Sinai Journal of Medicine, 78*(1), 22-48.
Week 12	**Textbook:** • Lee C. (2010). Environmental Justice. In H. Frumkin (Ed.), *Environmental Health* (pp. 227-250). San Francisco: John Wiley & Son, Inc. **Library E-Reserves:** • Blumm, M. C. (1992). A primer on environmental law and some directions for the future. *Virginia Environmental Law Journal, 11*(3), 381-99. ○ (Summary slides of key aspects of this article are also provided here.) **Websites/Links:** • Matsuoka, M., Hricko, A., Gottlieb, R., & De Lara, J. (2011). Global trade impacts: addressing the health, social and environmental consequences of moving international freight through our communities. Occidental College & University of Southern California. ○ Read pages 3-6 and 13-22.
Week 13	**Textbook:** • Bartell, S. (2010). Risk assessment. In H. Frumkin (Ed.), *Environmental Health* (pp. 1037-1060). San Francisco: John Wiley & Son, Inc. • Goldman, L. R. (2010). Prevention in environmental health. In H. Frumkin

	(Ed.), *Environmental Health* (pp. 970, 972-973). San Francisco: John Wiley & Son, Inc. **Library E-Reserves:** • Künzli N., Kaiser, R., Medina, S., Studnicka, M., Chanel, O., Filliger, P., et al. (2000). Public-health impact of outdoor and traffic-related air pollution: a European assessment. *Lancet, 356*(9232), 795-801. • McConnell, R., Berhane, K., Yao, L., Jerrett, M., Lurmann, F., Gilliland, F., et al. (2006). Traffic, susceptibility, and childhood asthma. *Environmental Health Perspectives, 114*(5), 766-772. **Websites/Links:** • Philip Morris Europe S.A. (1999). Second-hand tobacco smoke in perspective. Life is full of risks. But they're not all equal. **Optional (Library E-Reserves):** • Künzli, N. (2000). Ministers of health, environment, traffic, economy: You need to have lunch together! *Sozial und Praventivmedizin, 45*(6), 237-238.

Week 14	**Textbook:**
	• Patz, J. A. (2010). Climate Change. In H. Frumkin (Ed.), *Environmental Health* (pp. 279-318). San Francisco: John Wiley & Son, Inc.
	
	Library E-Reserves:
	• Campbell-Lendrun, D. & Corvalán, C. (2007). Climate change and developing-country cities: implications for environmental health and equity. *Journal of Urban Health, 84*(S1), 109-117.
	
	Optional (Websites/Links):
	• The President's Climate Action Plan
	• Obama's Climate Plan: The Key Points
	• Related websites:
	  ○ http://epa.gov/climatechange/facts.html
	  ○ http://www.opr.ca.gov/s_climatechangefacts.php
	  ○ http://climaterealityproject.org
	  ○ http://www.climatecentral.org/
	  ○ http://ncse.com/climate?
	
	Optional (Other):
	• Documentary: An Inconvenient Truth (Al Gore)

Week 15	None