

## INTRODUCTION TO ENVIRONMENTAL HEALTH

Spring 2009, Course: HEHT590  
Thursdays, 5:30 p.m. to 8:20 p.m.,  
East Campus, SPH Auditorium

- Instructors:
1. David O. Carpenter, M.D., 525-2660, East Campus, A wing, Rm. A217  
[carpent@uamail.albany.edu](mailto:carpent@uamail.albany.edu)
  2. Irina Birman, Ph.D., 402-7650, CEH, Flannigan Square, Troy [ixb02@health.state.ny.us](mailto:ixb02@health.state.ny.us)
  3. Michael Bloom, PhD, MS 473-1821, SPH, Rm. 153  
[mbloom@albany.edu](mailto:mbloom@albany.edu)

Contact information Office hours by appointment.

Prerequisites: College level biology course or permission of instructor.

Course objectives: Course objectives, topics and the week each topic is covered are given on the following pages. These dates are subject to change for guest lecturers, seminars, or audiovisual presentations.

Text Book: A text book is not required for this course, since all of the material on which exams are based will be presented in the lectures and student presentations. However having a text is good as a reference. The best textbook for the course is "Basic Environmental Health", Annalee Yassi, Tord Kjellstrom, Theo de Kok and Tee L. Guidotti, UNEP, ISBN 0-19-513558-X, Oxford University Press, 2001, but the other texts listed below are also appropriate sources.

### Other Recommended Reading:

- Moeller, Dade W. 1997 Environmental Health, Harvard University Press, Cambridge, MA, 480 pp.  
Friis, Robert H. 2007 Essentials of Environmental Health. Jones and Bartlett, Sudbury, MA. 390 pp.  
Frumkin, Howard 2005 Environmental Health: From Global to Local, Jossey-Bass, San Francisco, CA, 1108 pp.  
Gasana J., 2003, Essentials of Environmental Health Management. Aglob Publishing, Hallandale Beach, FL.749 pp.

### Course Objectives:

#### *Basic Environmental Health Knowledge:*

- ◆ Learn the environmental causes of human disease.
- ◆ Recognize the terminology and explain the principles of the basic scientific disciplines (biological, chemical, or physical) of environmental health.
- ◆ Explain the methods by which risk factors for health related events are identified.
- ◆ Recognize major research and analytical methods used in basic environmental health science.
- ◆ Gain some understanding of emerging and controversial environmental health issues.

#### *Policy Development/Program Planning Skills:*

- ◆ For selected environmental health problems, determine alternative policy options and summarize the fiscal, legal, social, political, administrative and overall public health implications of each option.
- ◆ To identify environmental health laws, regulations, and policies related to specific programs.

#### *Communication Skills:*

- ◆ To develop effective communication skills both in writing and in oral presentations.

### Exams:

Two exams will be given during the semester. There will be a one-hour midterm on March 19th, covering all material through the lecture to that date, **including information from the student presentations**. The final exam, expected to be on May 7, will cover only lecture materials and student presentations presented after the midterm. The format of the examinations will be short essay questions. There will be ten such questions in the midterm, and 20 in the final.

### Grading System:

The midterm exam will constitute 20% of the grade, the final exam 40%, and the remaining 40% will be based on the written paper and oral presentation on an environmental health topic. Grading scheme is A-E.

## Course Outline

<u>Class Date</u>	<u>Instructor</u>	<u>Topic</u>	<u>Chapters in Yassi</u>
January 22	Carpenter & Birman	Introduction to Environmental Health; Food Safety	1,2,7,12
January 29	Carpenter & Bloom	Risk Assessment; Metals	2,3,4,8,10
February 5	Carpenter	Air Pollution and Asthma; Injury Control	2, 5,11
February 12	Carpenter	Ionizing and Non-ionizing Radiation	9
February 19	No Class		
February 26	Bloom	Solid and Hazardous Wastes	10,11
March 5	Bloom	Persistent Organic Pollutants	2,10
March 12	<b>Midterm Exam</b>		
March 19	Birman	Private and Public Water Supplies	6
March 26	Birman	Waste Water Treatment	6
April 2	Bloom	Occupational Health	10
April 9	No Class		
April 16	Carpenter	Environmental Laws; Disaster Response & Bioterrorism	11,12
April 23	Bloom	Vector-Bourne Disease	7,11
April 30	Bloom	Endocrine Disruption	2,10
May 7	<b>Final Examination</b>		

Written and Oral Reports: Each student is required to research a topic, write a paper and give an oral presentation on an environmental health issue of contemporary importance. The sequence for completion of these tasks is as follows:

1. Select an environmental health topic. Possible subjects are listed below. Other topics of your choice may be considered (and are encouraged) upon approval of the instructor, but they must be controversial, subjects not covered in detail in the regular class period, and not a subject that you already know well. You are encouraged to consider a presentation and paper on a local hazardous waste site, visit the site, review DEC and DOH data on the site and report on status relative to human health effects. Presentations will be graded and judged on the basis of scientific content, clarity of presentation including use and attractiveness of visual and ability to relate to the audience.
2. Once a topic area is chosen by a student, it will no longer be available for anyone else. *Each student's presentation date is assigned* and they are scheduled on the following dates: February 12, 26, March 5, 19, 26, April 2, 16, 23 and 30. The schedule of presentations will be handed out at the first class, and will be posted on ERes. Up to four student presentations can be made on each of these days. Please inform Dr. Carpenter (carpent@uamail.albany.edu) of your choice of topic as soon as possible, you will receive confirmation that the topic is available. It will be on a first come, first serve basis!
3. Requirements for written report. ***The written report is due two weeks after your oral presentation.*** Be careful to follow instructions carefully. The written report should be formatted similar to a scientific review paper and must include complete references to source materials. It should be double spaced with 1" margins and no less than 15 pages in length (not including the title page or the references section; however, this may include tables and/or figures). Format in text citations and references according to the "Instructions To Authors" for the peer-reviewed journal *Environmental Health Perspectives* (<http://www.ehponline.org/docs/admin/style.html#refe>). It is desirable to reproduce figures and tables from published scientific articles when they add to the information, as long as there is clear acknowledgment of the source and a description/explanation within the text. Pages of the report should be numbered consecutively beginning with a title page, (the title page does not count towards the 15 page length requirement), followed by an "Abstract" which is not to exceed 250 words, the main text, and should have a section titled "Conclusions and Recommendations" at the end, followed by the "References" section (the References do not count towards the 15 page requirement). The main text can be organized as appropriate to the subject, but should provide information on the background of the problem including history, a discussion of the health effects, a discussion of the degree of certainty or uncertainty, and for most subjects a discussion of regulations and

governmental policies. The references section should be single spaced with an space between successive citations and should primarily comprise peer-reviewed journal articles (preferably at least 10 publications), not web pages, magazines, newspaper articles, etc. If you get a journal paper from the web, you do not need to give the web address as a part of the reference, but do not reference anything that you have not read in its entirety. *Be careful not to plagiarize!* You can quote, but make sure you use quotation marks and provide a reference and it is advisable to use this approach sparingly. Be certain to reference all original materials in the reference list.

4. Instructions for oral presentation. The time allocated for your oral presentation will be 15 minutes, followed by 5 minutes of discussion. You are expected to use PowerPoint. Materials presented in these reports may be included in all exams. **Please send an electronic copy of your powerpoint presentation to Dr. Carpenter or Bloom no later than the day of your presentation!** All student presentations (as well as all materials used in the lectures) will be placed on University at Albany EReserves site (see how to log on at p.4).

The following are possible (but not the only) topics:

Aflatoxin and liver cancer	Health effects of dry cleaning fluids
Air fresheners – are they toxic?	Health effects of global warming
Aluminum toxicity	Health effects of high-sulfur coal use
Antibiotic resistance	Health effects of use of marijuana
Antibiotics in food animals	Health effects of mercury-based dental amalgams
Arsenic in drinking water	Health effects of methylene chloride
Beach water quality – past, present, future	Health effects of methyl mercury
Biodiesel – good or bad?	Health effects of molds
Bisphenol A – good or bad?	Health effects of polybrominated flame retardants
Breast feeding, risks vs. benefits	Health effects of perchlorate
Brownfields - problems and policy	Health effects of pesticide use in food production
Cadmium and human health	Health effects of trichloroethylene
Causes of autism	Health effects of UV radiation
Cholera	Health effects of vinyl chloride
Coal and pollution related to it	Health hazards from consumption of raw shellfish
Community design and its impact on exercise.	Herbal & dietary supplements - should they be regulated?
Deforestation of Sub-Sahara Africa	High-level radioactive waste - policy and problems
Desalinization	Incineration of municipal waste
Desertification and public health	Are fish safe to eat?
Dioxin in food	Lafarge Cement Plant in Ravenna
Early onset of puberty – causes and effects	Lathyrism
Ebola in Sub-Sahara Africa	Local and global health effects of Chernobyl
E. Coli O157 :H7	Low-level radioactive waste - policy and problems
Effects of ephedrine on athletes	Mad Cow Disease
Environmental causes of cardiovascular disease	Mold – Health effects and how to control
Environmental causes of diabetes	MTBE - good or bad?
Environmental causes of obesity	Nanotoxicology
Environmental causes of violence	Noise pollution
Environmental exposures and the immune system	Organic Food - Is it Healthy?
Environmental justice and hazardous wastes	Organochlorines and breast cancer.
Epigenetics and environmental exposures	Pesticides in schools
Ethanol-based fuels	Phthalates – good or bad?
Farm injuries - how to prevent them	Prevention of tropical water-transmitted parasitic diseases
Fetal alcohol syndrome	Prion Diseases - Transmission and mechanisms
Fetal nicotine syndrome	Rabies
Fish consumption – risks vs. benefits.	Radon exposure
Fluoride in drinking water - good or bad?	Relationship of environmental exposure & breast cancer
Food irradiation – risks vs. benefits	Renewable fuels – risks vs. benefits
Genetically modified foods - are they dangerous?	SARS – a vector-borne disease
Growth hormone in milk	Second-hand Smoke
Health effects of 50-60 Hz Electromagnetic fields.	Sick building syndrome
Health effects of cell phone use	Teflon and Scotchgard - Are they dangerous?
Health effects of chlorination by-products	Transfats
Health effects of depletion of the ozone layer	Use of DDT vs. Malaria - should use continue?
	West Nile virus and pesticide spraying
	Which is worse, cockroaches or pesticides?

The following are local or New York sites with environmental problems suitable for presentation:

ARCO site at Hastings-on-Hudson  
Dewey Loeffel Landfill  
Fort Edward, NY  
Housatonic River, Pittsfield, MA  
Hudson River  
Greenpoint/Williamsburg in Brooklyn

Cell phone tower in Duaneburg  
NL Industries site in Colonie  
Indian Point Nuclear Power Plant  
World Trade Center - Residual health effects  
Johnstown/Gloversville water treatment plant

Love Canal  
Onondaga Lake  
Patroon Creek  
Schenectady Army Depot

## IMPORTANT!

Instructions: how to log on Eres

- 1) Go to <http://albany.edu> site
- 2) Click on LIBRARIES
- 3) Click on Eres
- 4) Click on Electronic Reserves & Reserves Pages
- 5) Type EHT590 and click on search
- 6) Choose HEHT590 Fall 2008 row and click on HEHT590
- 7) Type HEALTH (this is the password) and click on accept
- 8) Choose and click on necessary folder and then file
- 9) You can copy and print the chosen file for your convenience