

**PHS 789: Introduction to Environmental Health – A Systems Science Approach
(Formerly PHS 650-063)
Course Syllabus
Spring 2016**

Course Information

Course Dates: Monday and Wednesday - Spring 2016
Times: 10:00-11:30

Classrooms: Lectures/Discussions: Signe Scott Cooper Hall (Nursing Building) 1227

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Course Overview

This course provides an overview of the field of environmental health and its history on a local and global scale, using a systems thinking approach. Systems thinking recognizes that environmental health problem solving is complex and that solutions in one area may have positive or negative impacts on other areas. This approach can be useful when examining complex environmental health issues and assessing the environmental hazards and exposures found in air, land, and water.

A primary goal of this course is to address core environmental health competencies for Masters of Public Health students; thus, this course is designed to help students think critically about complex problems and practice effective communication both in written and oral forms of communication. As such, it provides an overview of fundamental information and tools that public health practitioners will need to know how to use in public health practice and more specifically environmental health. It also lays the foundation for higher-level courses in the field of environmental health for those wishing to pursue aspects of this field in more detail. This course is aimed at students with a diverse knowledge set and background; a general sense of basic biology and chemistry and general public health solving paradigms is helpful, but not necessary.

The course provides practice in using traditional environmental health methods including environmental health risk assessment, management and communication tools. As an introduction to environmental health the course first covers the science of environmental health with introductory lectures in toxicology, environmental epidemiology and risks assessment. Students are introduced to how environmental contaminants are regulated and tools to apply this knowledge to an environmental health problem of their choice. The course also introduces students to emerging environmental issues beyond traditional hazards posed by physical and chemical environments such as neighborhood social and built influences on health, food systems, cumulative risk and environmental justice. Readings, video lectures, projects, and discussion are designed to help students begin to develop the necessary tools to address these complex environmental health issues.

At the end of this course students are introduced to the broad field of environmental health and are exposed to a variety of tools necessary to be effective environmental health practitioners. Students are able to identify and apply the key concepts of environmental health science to identify problems, assess the magnitude of their impact on population health and use this as the basis for sound environmental decision-making. Students also obtain practice in several forms of health risk communication through oral and written assignments.

What program objectives are met by this course?

- 1) Through systems thinking approaches – students will become proficient in environmental health core competencies as defined by CEPH (See CEPH requirements)
- 2) Use interactive/experiential learning to aid students in becoming effective public health leaders
- 3) Students will apply critical thinking/problem solving skills through independent projects
- 4) Students will develop communication skills through written and oral assignments

Course Objectives

1. Summarize the field of environmental health and describe its history as a crucial aspect of the history of public health. (Unit 1)
2. Discuss and predict why a systems thinking approach is appropriate for addressing environmental health problems. (Unit 1)
3. Explain differences in types and classes of environmental hazards (e.g., metals, volatile organic compounds, pesticides, physical/built environment), their sources (e.g. air pollution, land use and storm-water run-off) and how exposure to these contaminants occurs and breadth of health impacts. (Unit 1-8)
4. Evaluate the strengths and weakness of the differing domains of environmental health sciences (toxicology, exposure assessment, epidemiology and risk assessment) and methodologies required for addressing environmental health problems (Unit 2)
5. Explain the evolution of environmental regulation and decision-making in the United States and globally, and identify key tools available from environmental decision-making to manage risks. (Unit 2-8)
6. Apply regulatory principles and weight of evidence to conduct an environmental health risk assessment for environmental management and decision-making through analysis of a case study. (Unit 2-6)
7. Create risk communication strategies appropriate for intended audiences. (Unit 7-8)

8. Discover solutions to environmental health problems that integrate across disciplines (Independent study)
9. Identify different environmental health assessment strategies for engaging vulnerable or underserved populations in community health assessments, and how these approaches can address issues of health disparities and environmental justice. (Unit 7-8)

Readings

There are two required texts for this course:

1) Maxwell, Nancy-Irving (2013). *Understanding environmental health: How we live in the world*.

Books are available at the University bookstore or can be purchased online via Amazon (<http://www.amazon.com/Understanding-Environmental-Health-Live-World/dp/1449665373>) or from Jones and Bartlett (<http://www.jblearning.com/catalog/9781449665371/->). A copy of the text is also on reserve in Ebling Library. Additional online resources and study guides are provided by the publisher, however, the textbook and a password must be purchased to use these resources.

2) Fagin (2014). *Toms River: A Story of Science and Salvation*

Books are available at University bookstore or can be purchased online via Amazon (<http://www.amazon.com/Toms-River-Story-Science-Salvation/dp/055380653X>). A copy of the text is also on reserve in Ebling Library.

Additional readings and reading assignments by topic/week are provided in the course summary and on the course website at Learn@UW, the website and course management tool for the course. There may on occasion be “optional” readings which will be listed as such on the course website, otherwise all readings should be considered required.

Optional readings are listed to enhance learning but are not required.

Grading and Assessment

Discussion	Assigned based on both online and in-class discussions	Designed to encourage critical thinking around components affecting environmental health and management of risks	30%
Journal Article Review	1 per semester	Designed to help students identify environmental health issues of interest and new topics in the news or peer review	5%
Quizzes	2 @ 10% each	Evaluate student comprehension and application of core competencies and learning objectives presented in the readings	20%

Independent Study	Independent paper on topic of choice	Provide an opportunity for students to apply principles in addressing an environmental health topic Abstract and References – 2.5% Outline – 2.5% Policy Brief – 10% Final Paper – 20%	35%
Presentation	Application of Risk Communication Principles	Learn presentation skills, summarize and present knowledge gained, provide peer review	10%
Total			100%

Grading Scale Based on Total Points

95-100	A
90-94	AB
85-90	B
80-84	BC
70-79	C
60-69	D
<60	F

Technical Requirements and Course Navigation

All students must have basic computer skills and access to the Internet in order to be successful in the course. For more information on system and technical requirements see materials available through Learn@UW. Resources on how to navigate through the course will be made available on the course website through Learn@UW.

Overview of Key Assignments:

Readings

Readings are posted each week on Learn@UW and in the course summary. Weekly readings will include sections from the Maxwell textbook, the *Tom's River* novel, peer review journal articles and supplemental reports or books. All materials, with the exception of book chapters, will be posted on the course website at a minimum one week before class and listed in course summary.

Discussion (DP)

Discussion questions will be based on integrating concepts from lecture with concepts introduced in Daniel Fagin's *Toms River- A Story of Science and Salvation*. Each module will have required set of discussion questions based on application of principles being learned in

the textbook and translation of these issues in context of the story of Toms River as it unfolds. Students will be placed in groups of 4-5 students for discussion. You will be required to post your own response to discussion questions as well as respond to posts all other group members posts. Responses should be constructive, show evidence of critical thinking and provide concrete reasons for agreement or disagreement and logical arguments. All communication must be professional in nature. While disagreements and a variety of perspectives and opinions are welcome, no personal or demeaning comments will be allowed on the discussion board at any time.

All discussion posts for *Tom's River* need to be submitted by 11:59 PM the day they are due, peer review responses are due on the Friday of that week (including weeks where there are in class discussion). For weeks with in-class discussion, student groups will be asked to lead the in-class discussion and should come prepared with questions to provide to groups for consideration. A list of questions by each group will be required at least two days prior to the discussion session.

Journal or News Article Assignment

To engage students early on in identifying the role that environmental health plays in our daily lives, each student will pick a journal or news article from the media/website (not sensational) or other PubMed search engine- covering an environmental health topic of interest and present it to the class. A schedule of presentations is created during the first week of class and this presentation is counted towards your discussion grade.

In addition, each student within the first week of class will pick a peer-reviewed journal article and/or newspaper article and write a brief summary. The assignment is to read and describe the environmental health issue addressed by the article using a systematic approach. Using a maximum of 2 pages double-spaced the following questions should be addressed:

- 1) What is the scale of the environmental health problem/issue (local community, state, national, global or other...)
- 2) What is the nature of the environmental health issue - chemical, infectious, social or built environment, other?
- 3) What are the primary hazards/exposures of concern related to this issue?
- 4) What population is most affected? - Who is most vulnerable or at risk? – Are there children, older adults, individuals with chronic conditions?
- 5) What is the main focus of the article – at what point along the environmental health continuum from assessment (problem identification), policy development (program or intervention implementation), or assurance (evaluation of a past policy decision) would you say the crux of your article is addressing?
- 6) Using Table 2.1 from the Maxwell textbook, which federal regulatory agency or agencies would you think most likely to address this issue and who do you think would have the greatest authority please explain why?

Resources for Journal Article Assignment

The website Environmental Health News (<http://www.environmentalhealthnews.org/about.html>) provides a daily annotated listing of links to news stories related to environmental health, newly published scientific articles of interest, and new reports—mostly by nonprofit organizations, but sometimes by government agencies. Anyone can subscribe for free to receive a daily email listing top current news stories, with links to the full stories. This service is called *Above the Fold: Links to articles in today's press about environmental health*. Please note, this is not an endorsement for this non-profit site, rather the site provides a relatively easy opportunity for students to have access to what is in the news and being published about environmental health issues on a daily basis while taking the class. As an instructor, I do not endorse or refute any information being published on this site. This may be a resource that you choose to use for your journal/news article assignments. Students may use a news article from this website as well, or other news site – including *New York Times*, *NPR*, *Science*, *Fox*, *ABC* etc. or any other news site depending on your comfort level. The goal is to make you aware of how environmental health issues affect your daily lives and to get a sense of how they are presented in the news and media everyday.

Quizzes

Quizzes will be multiple choice and short answer/essay. The majority of the content for the quizzes will come from the required textbook reading. A small percent (20%) may be related to application of principles to addressing specific issues that were presented in additional and supplemental readings. No content from optional readings will be included on the quizzes.

Independent Study Project (IP): Independent Project + Presentation (35% + 10% = 45%)

General description (More Details Provided in Appendix 1 and see directions posted on Learn@UW)

The independent study project culminates in a paper and a PowerPoint presentation performed by students individually. The purpose of the independent project is to apply what you are learning in this course to a specific environmental health topic or problem of interest to you. Each paper will take the form of a report to an organization with decision-making power (e.g., a UN agency, a national legislative body, a town council, an army general, a governor or president, a corporate vice president, or a community group) regarding an environmental health issue. The topic can be chosen from the list provided in Appendix 1 (or on the course website). Alternately, a student's topic of choice is also encouraged, but (1) the new topic will need to be described in detail for review by course instructor and (2) the course faculty reserves the right to disapprove a proposed topic.

Submit all assignments on Learn@UW in a Word document. The independent project's final paper and presentation will constitute in total 45% of the course grade.

Objectives of the independent study project are to:

- A) Demonstrate critical thinking, problem solving and decision-making skills through a process of problem identification, review of scientific evidence, policy analyses and decision-making (through policy or other recommendations for action)

- B) To apply environmental health risk assessment principles in addressing an environmental health topic
- C) To improve written communication skills
 - 1) Abstract and References – 2.5%
 - 2) Outline – 2.5%
 - 3) Policy Brief – 10%
 - 4) Final Paper – 20%
- D) Students will also present a PowerPoint of their independent project. The presentation will constitute 10% of the course grade. See Appendix #1 for specific details on each element of the independent project.

Handing In Assignments and Due Dates

All due dates for assignments are provided on the course schedule and overview documents as well as updated regularly within each topic/content area on Learn@UW (course website).

Course Schedule Spring 2016

Module	Week	Date	Topic	Assessments
Introduction and Getting Started	1	18-Jan	<i>No Class (MLK day)</i>	
		20-Jan	Getting Started and Syllabus	Intro DP: Jan 22 nd
Module 1-Science of Environmental Health	2	25-Jan	History of and Systems Approach to EH/Environmental Regulation	TR Chp 1-3 DP: Jan 27 th Readings
		27-Jan	Fate and Transport	Readings; DP Jan 30th
	3	1-Feb	Toxicology and Dose Response (Bradfield/Malecki)	Journal Article: Feb 1st (In class and L@UW) TR Chp 4-6 DP: Feb 2 nd Readings
Module 2- Assessing and Responding to Environmental Health Hazards, and Decision-Making Frameworks	3	3-Feb	In class discussion: Toms River Chp: 1-6	Prepare for In Class Discussion: DP Feb 5th
		4	8-Feb	Applied Epidemiology/Biomonitoring and Surveillance (Christensen)
	5	10-Feb	Exposure Assessment/Epidemiology	Readings: DP Feb 12th
		15-Feb	Risk Assessment	TR Chp 10-12 DP :Feb 17 th Readings
6	17-Feb	In class discussion: Toms River Chp: 7-12	Prepare for In Class Discussion: DP Feb 20th	
	22-Feb	Risk Communication (Remington)	TR Chp 13-15 DP: Feb 24 th Readings	

	24-Feb	Risk Assessment Exercise/Review Quiz 1	Quiz 1 - Due 11:59 PM Feb 28th: DP Feb 26th
Module 3 - Industrial Chemicals and Occupational Health	7	29-Feb Producing Manufactured Goods	TR Chp 16-18 DP: Mar 1 st Readings
		2-Mar In class discussion: Toms River: 13-18	IP: Abstracts & Ref: Mar 2nd DP Mar 4th
Module 4 - Energy and Communities: Environmental Health from Local to Global	8	7-Mar Industrial Chemicals/Managing Risks and Workplace Hazards - Asbestos (Kanarek)	TR Chp 19-21 DP: Mar 8 th Readings
	8	9-Mar Air Pollution and Health (Schauer)	Readings: DP Mar 12 th
	9	14-Mar Producing Energy: Climate Change and Health (Limay/Patz/Malecki)	TR Chp 22-24 DP: Mar 17 th Readings Watch Limay Video
	9	16-Mar Final in class discussion: Toms River 19-24	Prepare for In Class Discussion: DP Mar 18 th IP: Outline: Mar 16th (In class and L@UW)
Spring Break March 21-25th No Class			
Module 5 - Systems: Living with Nature and the Communities We Live In	10	28-Mar Fracking - A practitioners Perspective (Anderson)	Readings Discussion: DP Mar 29th
		30-Mar Living with Nature: Introduction to Regulations, Sewage, and Sanitation - Revisiting Risk Communication	Readings Discussion: DP Apr 1
	11	4-Apr Water Quality, Drinking Water and Health (Harrington)	Readings DP: Apr 5th
		6-Apr Built Environment and Health (Malecki/Grabow)-	Readings Discussion: DP Apr 8th
Module 6- Environmental Susceptibility, Sustainability and Food Systems	12	11-Apr Food Systems, Food Insecurity and Health (Jahn)	Readings DP: Apr 12 th
		13-Apr Food systems and Sustainability: Mighti Project (Bergmans)	Readings IP: Policy Brief Apr 13th DP Apr 15th

Module 7: New Frontiers -Health Impact Assessment and Cumulative Risk	13	18-Apr	Cumulative Risk/HIA (Givens) and Policy Briefs	DP: Apr 21 th Readings (In class and L@UW)
		20-Apr	Cumulative Risk/Environmental Justice/Children's Environmental Health	DP Apr 24th Quiz II- Due 11:59 PM April 24th
Module 8- Student Projects	14	25-Apr	Begin Student Presentations	TR Reflections DP: Apr 28 th Readings
		27-Apr	Student Presentations	IP: Final Presentation: Posted May 3rd L@UW DP May 1st
EXAM WEEK	15	2-May	Student Presentations	
		4-May	Student Presentations	
	16	11-May	Student Presentations TIME: 10-11	IP: Final Papers In Class and posted May 9th L@UW

TR Chp= *Tom's River* Chapter

DP= Discussion Posts (should be posted by 11:59 on Learn@UW, on due date, typically a Wednesday and Friday of each week, the first DP is your own, the second DP per week is response to at least two group members.

IP= Independent Project assignment

L@UW= Learn@UW either discussion post or dropbox post

University Policies

All students are required to abide by University policies for code of conduct.

The University of Wisconsin–Madison is dedicated to a safe, supportive and non-discriminatory learning environment. It is the responsibility of all undergraduate and graduate students to familiarize themselves with university policies regarding Network Use, Disability Accommodations, Misconduct, Religious Beliefs Accommodation, FERPA, and Copyright.

Network Use Policies

Please read UW-Madison's Responsible Use of Information Technology Policy available at: <http://www.cio.wisc.edu/policies-responsibleuse.aspx>.

Disability Accommodations

The University of Wisconsin–Madison is dedicated to a safe, supportive and non-discriminatory learning environment. Students requesting special accommodations should contact the McBurney Disability Resource Center as soon as possible regarding a Verified Individualized Services and Accommodations plan (VISA). Once your accommodation plan has been determined and approved, you will need to contact your professor. Additional information is available at the McBurney Disability Resource Center:
<http://www.mcburney.wisc.edu/students/howto.php>.

Academic Misconduct

The university believes that academic honesty and integrity are fundamental to the mission of higher education and of the University of Wisconsin System. The university has a responsibility to promote academic honesty and integrity and to develop procedures to deal effectively with instances of academic dishonesty. Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others' academic endeavors. Students who violate these standards are subject to disciplinary action. UWS Chapter 14 identifies procedures to be followed when a student is accused of academic misconduct. For additional information, please refer to the section in the Student Handbook entitled Student Academic Disciplinary Procedures.

Please review the Student Academic Misconduct Policy and Procedures and the Student Nonacademic Misconduct Policy.

Religious Beliefs Accommodation

The UW System Board of Regents' policy states that students' sincerely held religious beliefs shall be reasonably accommodated with respect to scheduling all examinations and other academic requirements. Students must notify the instructor within the first three weeks of the beginning of classes (or within the first week of summer session and short courses) of the specific days or dates on which they will request accommodation from an examination or academic requirement. For additional information, please refer to Chapter UWS 22: Accommodation of Religious Beliefs.

FERPA

FERPA—the Family Educational Rights and Privacy Act of 1974, as amended—is a federal law that governs the privacy of student educational records, access to those records, and disclosure of information from them. For more information, please refer to Student Privacy Rights (FERPA).

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APPENDIX #1 – Guidelines for the Independent Project (35%) and Final Power-Point Presentation (10%)

Abstract and References – 2.5%

As you begin your investigation you should a) review the paper requirements below and b) develop an abstract of the project that describes a) your topic (see suggested list or come up with your own), b) background on the issues - what are the hazards, exposures or environmental health issues being addressed and what is the magnitude of the related health risks under review or consideration c) who your target or intended audience will be and d) what do you hope to learn/gain – e.g. to make policy recommendations, compare and contrast relevant regulations and laws or costs and benefits of projects.

Please use this exercise as a way to finalize your topic and start thinking about your target audience. See this as a first step in an iterative process; the details of what you outline and describe in your abstract may change as you complete the final project/paper and that will be OK. This is a first step in articulating where you hope to go, but not a final summary of where you are or what you have learned.

Abstracts should be approximately 350-400 words max.

Outline – 2.5%

The goal of the outline is to assist you in identifying key pieces of information and writing your paper. This is a tool to help you to identify areas where there are still gaps in your work, and to organize your information to present an environmental health problem or report. If it is not 100% complete that is OK, but be sure to state where additional information will be added. The outline is to help you get feedback from instructors to determine if you are on target with your project: use the outline as a tool to ask additional questions about your topic that you may need/want answered before finishing the final paper. The outline should help you to “begin to tell the story” of what environmental health issue you want to address, why this topic is important to public health, what the magnitude of the environmental risk or associated health issues are, who you think is a target audience for decision/policy-making and what your recommendations likely will be.

Your outline should include the following considerations about issues that SHOULD be considered in each final paper, if appropriate (they may not be but you should first check with the instructors, developing the outline will be an important tool in determining if your paper should focus on each of these aspects or not):

- Relevant toxicology of environmental risk.
- Particular population at risk
- Route(s) of exposure, including source, fate and relevant exposure scenario.
- Relevant epidemiology of environmental risk and health outcome(s) of interest.
- Overall health impact assessment.
- Risk control strategies: types, practicality, scientific basis, and efficacy.
- Comparison of projected costs and benefits.

- Relevant regulations and laws.
- Recommended action.

Paper instructions below also state a quantitative component could be included, you should develop your outline with this in mind, but at this point it is not required to be complete, rather what you might include why and how it should be considered.

Policy Brief – 10%

As you finalize your independent study you will be asked to write a policy brief on your topic. A policy brief is a concise summary of a particular issue that usually targets a non-academic audience (e.g. policy makers, public, media). Since this is not a scientific paper you should avoid using jargon, excessive citations, and statistics. Your policy brief should engage readers by using words and phrases that draw attention and call people to action. Communicate the key message of your topic by focusing on 1 to 2 main points. Consider using graphics appropriately to explain more complicated data. Policy briefs are meant for a general audience, reading level should be at grade 6-8 maximum.

Remember:

- Your policy brief should contain 7 parts:
 1. Title of the paper
 2. Executive summary
 3. Context and importance of the problem
 4. Critique of policy option(s)
 5. Policy recommendations
 6. Appendices
 7. Sources consulted or recommended
- Limit your brief to 2 pages
- Double-spaced
- 11 point Ariel font
- 1 inch margins

**For assistance please review these additional resources:

http://www.idrc.ca/EN/Resources/Tools_and_Training/Documents/how-to-write-a-policy-brief.pdf

<http://www.policy.hu/ipf/fel-pubs/samples/PolicyBrief-described.pdf>

Final Paper – 20%*

Format: The paper should be approximately 12 double-spaced pages, not including title page or any tables, figures, or references that are cited, with 1” margins all around. Avoid appendices unless they contain material that is essential to issues raised in the paper. Font size should be no smaller than Courier 12 characters per inch, CG Times 11, or equivalent. THE GOAL HERE IS TO BE SUCCINCT AND WELL-ORGANIZED, RATHER THAN COMPREHENSIVE.

➤ BEGIN the paper with a 1-2 page EXECUTIVE SUMMARY of the paper’s main points,

especially including your recommendations.

- ORGANIZE the remaining text into subsections, each of which should have a sub-heading.
- Issues that SHOULD be considered in each paper, if appropriate (they may not be but you should first check with the instructors):
 - Relevant toxicology of environmental risk.
 - Particular population at risk
 - Route(s) of exposure, including source, fate and relevant exposure scenario.
 - Relevant epidemiology of environmental risk and health outcome(s) of interest.
 - Overall health impact assessment.
 - Risk control strategies: types, practicality, scientific basis, and efficacy.
 - Comparison of projected costs and benefits.
 - Relevant regulations and laws.
 - Recommended action.

Additional considerations:

- Have an identified context or place. In other words, consider a particular institution, city, industry, or country when discussing your topic. When you have a particular locus in mind, it will focus your paper.
- You should also achieve focus by specifying a particular recipient for your report. Is this a report to the director of the World Health Organization? The governor of a state? The Minister of Health in your country? The board of selectmen of a town? The head of Region 5 in the EPA? A corporate medical director?
- Don't neglect the scientific basis of your topic. Do not assume that everyone knows what's dangerous about asbestos or arsenic or cryptosporidium. A key part of each report will be an understanding of the human impact of a particular environmental risk or toxin. What does the animal evidence say? Have these findings been replicated in human studies?
- Especially important, do not neglect the quantitative aspects of your problem. It is not enough to point out the risks associated with pathogens, asbestos, arsenic, or Agent X. It is crucial to clearly describe the exposure levels that you believe to be safe, and those which are associated with increased morbidity or mortality. If critical information is not available, clearly describe the data gaps where research is needed. It is essential to relate these levels to levels encountered in the situation you are describing. In other words, your final recommendation should be based on data and relate to current and desired levels (conditions).
- Make compelling and specific recommendations. What can/should be done?
- References - While OK to use the occasional web resource (make sure it is from a reputable agency), most of your references should be drawn from updated, peer-reviewed and published scientific papers. Please use and cite these properly.

Grading System for Final Papers

A scoring rubric will be shared. In general, papers will be graded along 5 dimensions, each given equal weight:

- Strength of the executive summary: For example, is it well written? Does it appropriately summarize the paper's main points? Does it "hang together" and make sense?
 - Strength of the background section: For example, is the issue appropriately described? Are the key papers or other background documents cited correctly? Are they interpreted appropriately?
 - Strength of the overall analysis made on the subject matter: For example, are the concepts in this class (toxicology, exposure assessment, risk management, identification of vulnerable sub-populations etc.) used appropriately to analyze the problem? Are the gaps in information and uncertainties appropriately described?
 - Strength of the recommendations made: Do they make sense? Do they provide realistic solutions? Are they in sync with the analysis?
- Organization/Style: Is the paper well organized and written in a clear manner with smooth transitions from section to section? Are there figures, tables, or other tools used that make it easier to understand the material? Scientific facts and studies properly credited?

*(Adopted from Principles of Environmental Health taught 2012 - at UW Michigan, Ann Arbor)

The PowerPoint Presentation- 10%

During the last few weeks of class you will also present a PowerPoint (PPT) presentation of your project. These PDF slides will be posted in Learn@UW as a handout one day before the actual presentations. The aims of preparing these presentations are:

1. To gain experience in the concise communication of your project's main points in a simulation of a professional meeting setting.
2. To allow the faculty and fellow classmates to see the results of your efforts
3. To allow for adding creativity to the presentation of your work (e.g., audiovisual aids, etc.).
4. To have some fun!!!!!!

Each PowerPoint file should be **limited to 10 slides (including the title slide!), and presentation limited to 5 minutes**. The presentations will be judged primarily on the basis of content, but style will also be appreciated. Interaction between students is encouraged: Each student will be required to view all of their classmates' presentations and both rate the presentations and post peer reviews on the Learn@UW site for each of their group members. Peer review forms will be provided and should be posted on Learn@UW.

Some Suggested Topics for Independent Study Project (suggesting your own topic is possible but it must be approved by the course instructor). (Adopted from University of Michigan)

- 1) Some predatory fish and shellfish are known to contain high levels of Mercury and PCBs. In a community where fish are an important source of nutrients and where commercial fishing is critical to the economy, what would your recommendation be to community leaders?
- 2) Private well-owners living in agricultural areas may be vulnerable to adverse health effects. What evidence is there to suggest that pesticides in drinking water and/or nitrates from agricultural run-off are posing threats to private well-owners and what recommendations do you have?
- 3) Coal burning power plants lead production of green house gas emissions, as well as release toxic chemicals such as mercury. What are the pros and cons of using coal production? What are the health risks associated with exposure to Hg? Who is at greatest risk? What are the benefits/challenges to local and/or global coal production? What alternatives should we consider?
- 4) Should developing countries use chlorine to disinfect drinking water? What are pros and cons? What are other, feasible alternatives?
- 5) Asbestos continues to be used in the developing world, since it is an efficient insulating material. Some evidence exists to suggest that the chrysotile form of asbestos is less dangerous than other forms of asbestos. What is the evidence, and should all forms of asbestos be banned?
- 6) Devise an action plan for identifying and addressing the most important OUTDOOR air pollution issues in your country.
- 7) Devise an action plan for identifying and addressing the most important INDOOR air pollution issues in your country.
- 8) The current threshold limit value for welding fumes in the workplace is 5 mg/m³. Some evidence exists to suggest welding fumes can cause asthma and possibly an increased risk of lung cancer. Is the standard adequate? Should it be lowered?
- 9) Many of us live in old houses that have tap water that is supplied through lead pipes. Assume we own such a home and live in it. What is the risk posed to health by lead that leaches from the pipe, and what is the cost of replacing the lead pipe with a copper pipe? Is it worth it?
- 10) Why are we concerned about endocrine disrupting chemicals? What are they and what is the evidence to suggest that EDCs are human health risks? Pick a class or source of EDCs and describe their sources and evidence to support their link to human health, what recommendations do you have for reducing exposures?
- 11) Breast cancer has been found to be experienced at high rates in certain communities. What are the potential environmental explanations (as well as non-environmental explanations) for this phenomenon? Is monitoring breast milk for environmental contaminants a good idea?
- 12) What pesticides are banned in the US but still being exported to other countries by US companies? What might be the consequent health risks or benefits to peoples in the other countries as well as our own? Should the practice continue?
- 13) There is some evidence that psychosocial stress may increase one's susceptibility to environmental pollution? What is the evidence? Should this influence environmental

regulations?

- 14) Emerging evidence suggests exposure to low levels of BPAs in our diets is related to the growing obesity epidemic: what is the evidence, what gaps are there, and what recommendations do you have for the future?
- 15) Diabetes is on the rise in many developing countries; what role does the environment and, more specifically, may environmental pollution play?
- 16) Air Pollution- The air quality standard has been reduced to 12 ug/m^3 ; what are the tradeoffs between costs to industry and improved health from the new air quality standards?
- 17) Health impacts of wind power sources – you are a farm owner and have been offered an opportunity to provide land for electrical power generation. Identify the potential environmental health concerns, risks and hazards and explore how these may or may not outweigh benefits of generating electrical power.
- 18) Diet is an important source of nutrients. There may be certain pollutants, old or emerging, that are contributing to the rising obesity epidemics. Identify a chemical pollutant or class of pollutants (organic pesticides, dioxins), describe their presence in food, what we know about the contribution of this contaminant in food to our growing body burden, and suggest recommendations for addressing this issue.