

ENVIRONMENTAL STUDIES 28: Global Environmental Health

Spring 2024

Instructor: Bill D. Roebuck, Ph.D.
Professor *Emeritus* of Toxicology, Geisel School of Medicine at Dartmouth
and Visiting Professor of Environmental Studies, Dartmouth College
Fairchild 110; 603-646-3701

Student Office Hours: by appointment at Fairchild 110
(e-mail with 2 suggested times/I will confirm a time)

Teaching Assistant: Ms. Emma Ratchford '25

Research Librarian: Tricia Martone (tricia.martone@dartmouth.edu) can help with finding and accessing articles, books, media, etc. for your research. A link to her Environmental Studies Research Guide that summarizes useful resources <https://researchguides.dartmouth.edu/envs>

ENVS Administrative Assistant: Ms. Kim Wind, 112 Steele Hall, 603-646-2838

Course Description: Environments have dramatic impacts on all organisms. Both natural and synthetic chemicals can be poisonous, and many extremely useful products are highly poisonous (e.g., many medicines). If your environment is defined to include home, workplace, out-of-doors, including lifestyle factors (e.g., drugs/medicines, tobacco use, or exposure to consumer products), then there is no end to examples of adverse environmental health issues. The course focuses on scientific and public health principles that govern environmental health outcomes for humans and other animals. Six case studies will be used to illustrate these principles. A focus will be on age at exposure and limited choices due to poverty. As the course progresses, the cases will increase in complexity with regards to causative agents and health outcomes. **Prerequisites:** ENVS 2 or BIO 16 or permission of instructor.

Course Requirements:

		<u>Due</u>
Briefing #1	15 points	9 April
Mid-term "short story"	15	23 April
Quiz	20	3 May
Briefing #2	20	14 May
Final	20	31 May (3:00pm)
Discussion	10	continuous
Total 100 points		

Generally for the 6 cases, **Day 1** will give historical foundations; **Day 2** will delve deeper into the scientific basis and public health principles so that the case can be understood in a wider context; and **Day 3 we will** discuss the topic(s). The basics of toxicology, epidemiology, disease trends, and risk assessment will be introduced as the cases proceed and discussed with the first 4 cases.

REQUIRED TEXT

Links to Readings are in the ENVS 28 Canvas site. There are approximately 4 articles per case plus 9 addressing basic concepts and 5 concluding articles for a total of 37 articles. We will repeatedly refer to the articles and specific text, figures, and tables both in class and on the PowerPoint slides. Building your course ‘textbook’ of **pdf file printouts** could be useful when in class to connect to the PowerPoint images and for the open “textbook” quiz and final. As the course progresses, there will be a few additional assigned readings mostly coming from the most current or pressing literature.

CLASS SCHEDULE

<u>DATE</u>	<u>LECTURE TOPIC</u>	<u>ASSIGNED READINGS</u>
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25 March	Introduction to ENVS 28: Global Environmental Health	
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Case #1 Environmental Lead

Death of immigrant child in Manchester, New Hampshire

27 March	Acute lead poisoning	Walter, 2023 Caron et al., 2001
28 March	(x-hour) Principles: Toxicology	Suk et al., 2016
29 March	Classic lead poisoning: paint/gasoline & lead shot	Hanna-Attisha et al., 2016 Kelly et al., 2011
1 April	Discussion: Case #1 & Toxicology	Braveman et al., 2011

Case #2 Mercury in the Food Supply

Pregnant woman in Cree village in northern Quebec

3 April	History of mercury poisoning: Japan, Iraq, Canadian dams, and gold mining	Esdaille and Chalker, 2018 Clarkson and Stains, 2020
4 April	(x-hour) Prior to class view video by Ms. Paige Scudder (literature searches) & PowerPoint images of assignment Discussion of assignments, esp. Briefing #1 Tricia Martone, Research & Learning Librarian - Earth Sciences, Environmental Studies, Physics & Astronomy	
5 April	Biological mechanisms: food web, accumulation, and selective neurotoxin	
8 April	no class....Total Eclipse	JAMA Patient Page, 2024
9 April	Briefing Paper #1 (by 2pm submit two copies to the ENVS Office, 113 Steele Hall)	

10 April **Principles: Epidemiology** Lucas and McMichael, 2005

11 April **(x-hour) Discussion: Case #2 & Epidemiology**

Case #3 Tobacco Smoke, Vaping, and Marijuana

Young woman who recently moved to Beijing from a rural village

12 April Cancer statistics and epidemiological evidence Bade and Dela Cruz, 2020
Jha and Peto, 2014

15 April Cancer biology Cairns, 1975
Global view and cancer control

17 April Electronic delivery devices (e-cigarettes, vaping) Balfour et al, 2022
Marijuana (smoking/burning and/or vaping) Hall et al., 2019

18 April **(x-hour) Principles: Disease Trends** Koh and Perekh, 2018
Woolf et al., 2023
Woolf, 2022
Wade, 2021

19 April **Discussion of Mid-term “short story”**
Emma Ratchford & Guest: Carly Elsinger ‘25

22 April **Discussion: Case #3 and Disease Trends**

23 April **Mid-term “short story” (by 2pm submit two copies at ENVS Office, 113 Steele Hall)**

Case #4 Air Pollution – Indoors & Out-of-Doors and Wildfires

The case: A woman with children in impoverished rural Limpopo, South Africa

24 April Heavy industry and economic prosperity Roueche, 1954
and life expectancy Lelieveld et al, 2020

26 April Poverty and cooking fires Balmes, 2019
wildfires Xu et al., 2020
Kizer, 2020

29 April **Principles: Risk/Risk Communication** Wilson and Crouch, 1987
Slovic, 1987
Rosenbaum, 2015

1 May **Discussion: Case #4 and Risk**

3 May Discussion Quiz

Case #5 Complications of Pesticide Use

Young boy from farm community in Central Valley, California, twice poisoned

6 May	Hard pesticides (DDT) and “environmental friendly” pesticides	Rogan and Chan, 2005 Conis, 2010
8 May	More problems with insecticides: unintended uses	Eddleston and Gunnell, 2020 Cha et al, 2016 *Mew et al, 2017
10 May	Discussion: Case #5 and Children	Pascale and Laborde, 2020

Case #6 Malaria and Its Control

Mother and child die in rural Thai village

13 May	Mother and child in rural village	Desowitz, 1991
14 May	Briefing Paper #2 (due by 2pm, post to Canvas Site)	
15 May	Malaria: the disease and its control	Ashley et al., 2018
17 May	Discussion: Case #6 and Disease & Poverty	*Kuehn, 2022

Concluding Thoughts

20 May	Global health challenges: Is the real challenge poverty?	Schroeder, 2007
22 May	poverty and age challenges	Deaton, 2016 Woolf and Parnell, 2016 Klass, 2016
24 May	Ways forward	McMichael, 2013
27 May	no class - Memorial Day	
29 May	review for final	
31 May	Final (3:00pm)	

BRIEFING #1 (Paper)

Background. Case studies allow in-depth exploration of one topic. Each case serves as a “mirror” to compare and contrast other agents, exposure circumstances, or populations. A limitation of cases is that you will have less knowledge of the very large field of environmental health. This assignment is designed to expand our breadth of knowledge.

Topic: Imagine that you serve on the technical staff of a corporation, government agency, public policy/advocacy group, or media organization. You need to keep your superiors or maybe a reporter abreast of current environmental health issues, old ones which periodically re-surface, or historical issues that serve as important milestones and signals. Concisely, summarize one environmental health issue. The topic may be a very specific chemical/substance, a very specific issue regarding a chemical having numerous environmental health outcomes, or part of an instructive historical environmental health incident. At every class, I will suggest potential topics.

Approval of Topic: Once you have a tentative topic area and some literature, you are advised to discuss your topic with Prof. Roebuck or Emma Ratchford. Additionally, a discussion with a reference librarian would be productive. The major concern is that your topic be sharply focused.

Due Date: 2:00 pm, 11 April. **(Submit two copies to the ENVS Office, 112 Steele Hall)**

Paper format:

- PAGE ONE - These 5 topics (“a” to “e”).
 - a. Informative title
 - b. Abstract (80 word maximum), single spaced
 - c. Key words (3 to 5)
 - d. **Critically important references (2 to 3) from peer-reviewed, scholarly journals.** You must identify **key literature** and not just any piece of literature on the topic.
 - e. **Statements of search strategy and outcomes for each prompt (up to 3 lines of text for each item, be sure to number your responses, e.1 to e.6), single spaced.**
 1. How did you identify key reviews and key data papers?
 2. Did a Google search help you?
 3. How about *Google Scholar*?
 4. What did you find on *Web of Science*? Search terms and numbers are desired
 5. How did you narrow/focus the topic?
 6. Strength and weaknesses of your articles

CAUTION: Websites do not substitute for the required peer-reviewed, scholarly literature.

- PAGES TWO and THREE - Your Environmental Health Briefing Paper should be no more than 2 pages of text, double-spaced, 12-point font, and 0.5 -inch margins all around.
- Your name must NOT appear on the title page. Put your name on the back of the last page of your article (that is, on the back of page 3 so I do not come across it when reading your paper).

CAUTION: Your writing must be sharply focused: avoid verbose, wordy, and flowery language. Directly address the topic with facts and details. **Make every word count** for you have so little space! Your writing must be clear, direct, and specific to the topic. Use table or diagram within the page limit only if it saves space.

SHORT FICTIONAL STORY (mid-term paper)

Background. “The Fog” and “In Another Village a Mother Dies” are powerful public health stories & full of public health concepts. These two stories are available to much wider audiences beyond scientists and public health experts.

You will read these stories on 24 April (in conjunction with Case #4 Air Pollution) and on 12 May (in conjunction with Case 6 Malaria), respectively. Glance at them now.

Topic. Your story must be related to health or lack of health for plants or animals including humans. The story could be related to any of our 6 Cases, but it must not be a reiteration of the content of the cases. A topic in Canvas Discussion may be a good topic for you.

Approval of Topic: Once you have tentatively selected a topic area and have some literature, you are encouraged to discuss your topic with Prof. Roebuck or Emma Ratchford. Additionally, a discussion with a reference librarian could be productive. The major concern is that your topic be sharply focused and fact based..

Due Date: 2:00 pm, 23 April. **(Submit two copies to the ENVS Office, 112 Steele Hall)**

Paper format: Write a short (2 pages, double-spaced, 12-point font, 0.5 inch margins all around) story with important environmental and public health lessons.

- **STORY:** 2 pages, double-spaced, 12-point font, 0.5-inch margins (you may also use margins at top and bottom of 0.5 inches). Provide an informative title to your story.
- **ANNOTATED SCIENTIFIC POINTS:** On page 3, **use phrases** to indicate the scientific points of import (aim for 8 to 10 points). You may want to connect all or some specific science explanations to a specific line or word in your story. I suggest a numbered superscript in the story with the same number on page 3.
- On page 4, state why you chose your topic and how you searched for scholarly references (see items e.1 to e.6 on page 5 of Syllabus. Provide no more than two scholarly references. A review article and a data, peer-reviewed article would be a good combination. If you used a popular article from a website, news outlet, TV, radio, or book provide the references so Prof. Roebuck could locate it.

Important: Your name must NOT appear on the title page. Put your name on the back of the last page of your article (that is, on the back of page 5 so I do not come across it when reading your paper).

Caution: **Make every word count** for you have so little space for your story!

BRIEFING #2 (PowerPoint presentation with supporting documentation)

Background and Topic. COVID-19 ravaged populations in the United States and highlighted the **health penalty** paid by **rural communities, the elderly, and urban poor populations**. How could environmental health be improved in similar communities of the world? Imagine you have an opportunity to deliver a short talk to an international professional organization highlighting the impact of environmental agents/conditions on the health of *disadvantaged segments* of societies. Groups can be defined by geographic or social boundaries and the topic may include the plant and animal communities that support life. One example is the circumpolar north region. Most chemicals and disease agents are produced, occur, and/or are used in mid-latitude regions of Earth and for several reasons they globally distribute into the Arctic. Humans living in the Arctic are exposed to increasing concentrations of chemicals either directly or via their traditional foods. Remote islands and mountainous areas are other geographic regions. Other populations may live very close to vibrant centers of commerce; however, because of lack of money, transportation, or social norms, they cannot access resources and opportunities in these cities. As with the first Briefing Paper, focus carefully on one environmental health issue. The topic may be a very specific chemical/substance, a very specific issue regarding a chemical having numerous environmental health outcomes, an instructive historical environmental health incident, or it may be focused on a specific component of rural or urban people's ecosystem.

Approval of Topic: It is advisable to consult with Prof. Roebuck and/or Emma Ratchford regarding your topic. The major concern is that your topic is not too broad.

Due Date: **2:00 pm, 14 May. Upload PowerPoint presentation and supporting notes to Canvas**

POWER POINT SLIDES – NO MORE THAN 12 (!)

1. Introductory (first) slide
 - Informative title of your presentation
 - Your name
2. References (last) slide
 - Using **standard scientific referencing as seen in the articles in your reader, cite no more than 4 sources**. Only if important, one source may be a website, news item, or editorial. Otherwise, citations must be from peer-reviewed, scholarly literature.
3. Heart of your presentation – no more than 10 slides
 - Slides must be readable; that is, not cluttered with too much writing or too many multiple images. Make any background motif very simple!

SUPPORTING DOCUMENTATION/EXPLANATION

1. **As in Briefing #1, provide statements (numbered) of search strategy and outcomes. This section should be single spaced (see page 5 – Briefing #1)..**
2. Some slides such as your introduction and reference list will likely need no comments; however, other slides may need a description for the viewer to fully understand. Submit no more than two pages (double-spaced, 12-point font, 1-inch margins all around) of supporting text as a Word document.
3. ***With your slides and these supporting directions, an associate could present your talk!!!!***

IN SUMMARY. Upload to Canvas: one PowerPoint file with no more than 12 slides and a two-page Word document supporting your presentation. Selected papers may be presented and discussed in class.

CLASS PARTICIPATION

DISCUSSION feature of Canvas will help connect classroom topics to your wider world outside of ENV 28. I expect each student to contribute 2 to 3 posts during the course. Some posts will be discussed in class. Note specific directions in Canvas regarding content and length of the posts.

CLASS DISCUSSION. Our discussions from each of the 6 cases and 4 principles are important to

- drive critical thinking,
- provide feedback of the level of understanding of the readings,
- help the class focus on important and interesting ideas, and
- increase the timely reading of the assigned readings.

I expect you to attend the discussion sessions having done the reading and that you will contribute.

Electronic devices in class: Studies (see citations on Canvas) show that **multi-tasking** on electronic devices during class invariably leads to poorer academic performance distract students around you.

Late assignments: Due dates and times are indicated in the class schedule above. If your assignment is **more than 3 days late, I will consider a penalty of deducting points.** In fairness to those who cannot or do not ask, I rarely grant extensions beyond the **3-day grace period.** Generally, expect loss of half a letter grade per each day after the 3-day grace period.

Honor Principle: We need to discuss the Academic Honor Principle (<https://policies.dartmouth.edu/policy/academic-honor-principle-1>) as it pertains to ENV 28. This will be done within the first week of classes. Additionally, we will discuss how it is appropriate to collaborate on assignments. This resource on proper citation of sources ([Sources and Citations | Writing \(dartmouth.edu\)](#)), is useful. We will discuss in class the conventions of when and how to cite.

If you have a **religious observance** that conflicts with your participation in the course, please meet with me before the end of the second week of the term to discuss appropriate accommodations.

Students requesting disability-related accommodations and services for ENV 28 are encouraged to schedule a meeting with me as early in the term as possible. This conversation will help to establish what supports are built into your course. In order for accommodations to be authorized, students are required to consult with Student Accessibility Services (SAS; <https://students.dartmouth.edu/student-accessibility/faculty-staff/setting-accommodations-0>); and to e-mail me their SAS accommodation form. We will then work together with SAS if accommodations need to be modified based on the online learning environment. If students have questions about whether they are eligible for accommodations, please contact the SAS office. All inquiries and discussions will remain confidential.

Classes are not the only demand of your life. Several resources are available to support your wellness.

Please use these resources and speak with me to help you care of yourself throughout the term.

Example Resources:

Your undergraduate dean (<http://www.dartmouth.edu/~upperde/>)

Counseling and Human Development (<http://www.dartmouth.edu/~chd/>)

Student Accessibility Services (<https://students.dartmouth.edu/student-accessibility/about/about-sas>)

Student Wellness Center (<http://www.dartmouth.edu/~healthed/>)

Academic Skills Center (<https://students.dartmouth.edu/academic-skills/>)

These are times of **great stress for all of us**: we are in this together and **we are learning together**. If I can help you, please, please ask. **I too may need** your assistance.

Guidance for studying in ENVS 28: These points may help us.

1. **The readings on Canvas have always been at the heart of ENVS 28** (maybe 60% to 70% of my focus)
 1. Readings are found under the button READINGS on the face page of Canvas.
 2. I want you to have a good understanding of scholarly writing in this area: its strengths and weaknesses, as well as how to focus searches for critically important literature.
 3. Scientific literature is full of specialized terms. To make the reading easier for you, VOCABULARY for the articles is posted on Canvas. Suggestions for reading articles may also be provided.
 4. Your writing assignments will require you to do literature searches. **Web of Science** (you get access through the Dartmouth Biomedical Library system) provides superb and easy searching. You also have access to Research Librarians to help you.
2. My **PowerPoint** slides will broaden each topic and complement the readings. I will post these within 24 hours of lectures.
3. I have some self-study questions in each lecture (**light blue formatted PowerPoint images**). Write or illustrate your answers. The very act of writing and committing your ideas **to paper** will drive understanding!
4. There are 3 written assignments. The first 2 you need to submit 2 hard copies for each assignment and for the third assignment upload to Canvas one PowerPoint presentation with your word document notes.
5. You are expected to attend class unless alternative arrangements have been made due to illness, medical reasons, or the need to isolate or quarantine. Please **do not attend class when you are sick** or when you have been instructed by Student Health Services to stay home

DO NOT STRESS, but rather **glean all you can from this opportunity**. **Do not hesitate to talk with me for I will give my time to you.**