

## General Preventive Medicine and Public Health

BIOM 505: Topics in Environmental Health and Risk  
Syllabus Spring 2014

- Course Faculty: Melissa Gonzales PhD., Course Director  
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- Day & Time: Thursdays, 11:00 am -12:00 pm, unless otherwise noted
- Location: SURGE Library, Bldg 226-UNM North Campus, unless otherwise noted
- Credits: 1.0
- Prerequisites: GPM/PH Residents enrolled in MSCR, or permission of instructor
- Course Description: Overview of concepts and programs designed to evaluate, control and communicate health risks arising from exposures to biological, chemical, and physical agents, air and water pollution, radiation, noise and temperature. Also included are injury and vector control. Exposures to both the general and occupational populations are considered.
- Course objectives will be carried out by lecture and expert guest presentations supported by computer simulated case scenarios and small group discussion. The course will use *Public Health and Preventive Medicine* Maxcy-Rosenau-Last (M/R/L 2007) as a core reference, supplemented with additional guided reading.
- Objectives: At completion of this course, students should
- 1) Understand and apply the principles risk assessment and communication applicable to general population and occupational hazards.
  - 2) understand the legal and regulatory issues guiding the environmental programs to protect workers and the general public.
- Student Evaluation: This course is offered as Credit/No Credit only. To earn course Credit, students must successfully meet the following expectations:
- 1) Class Participation reflecting command of main themes from readings, through class discussion and/or acquisition/sharing of materials in class
  - 2) Class attendance and participation reflecting a command of the main themes from pre-assigned required reading from the peer-reviewed literature
  - 3) Summative evaluation with board review-like questions related to topics discussed.

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**Schedule**

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**January 9, 2014****Didactic Title: Cowboy Medicine and the Ethics of Managing Expectations****Dr. Halley Faust, MD**, President-elect American College of Preventive Medicine**Description:** How much should a lone voice impact informed consent in health care?

Communicating risk is a critical part of informed consent. Most health care and public health practitioners use risk-related words without fully appreciating their implications.

**Learning Objectives:**

- Discuss factors that influence patient/family/community understanding of risk.
- Review ethical considerations behind informed consent and how risk communication is involved.

**Background Reading Material:**

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**January 23, 2014****Topic: Cascading Communication**

Presenter: Rosa Matonti - Fellow, America's Essential Hospital's program

**Objective:** *Cascading Communication* project as an example of how application of three essential Public Health Services (#7,8,9 below) are examined in a Hospital setting.

Please complete the brief Cascading Communication survey prior to didactic:

[https://hospitals.health.unm.edu/intranet7/apps/survey\\_builder/index.cfm?fuseaction=take\\_survey\\_home&survey\\_id=89923](https://hospitals.health.unm.edu/intranet7/apps/survey_builder/index.cfm?fuseaction=take_survey_home&survey_id=89923)**Ten Essential Services of Public Health**

1. *Monitor health status to identify and solve community health problems*
  2. *Diagnose and investigate health problems and health hazards in the community*
  3. *Inform, educate, and empower people about health issues*
  4. *Mobilize community partnerships to identify and solve health problems*
  5. *Develop policies and plans that support individual and community health efforts*
  6. *Enforce laws and regulations that protect health and ensure safety*
  7. *Link people to needed personal health services and assure the provision of health care when otherwise unavailable*
  8. *Assure a competent public and personal health care workforce*
  9. *Evaluate effectiveness, accessibility, and quality of personal and population-based health services*
  10. *Research for new insights and innovative solutions to health problems*
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**January 30, 2014****Topic: Overview of Ionizing Radiation**

Presenters: Alireza Esfane, MD

**Objective:** Ionizing radiation and comparison of exposure from medical devices

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**February 6, 2014****Journal Club:****Charles Bennett, MD (PMR Resident)** Luttjeboer J, Westra TA, Wilschut JC, Nijman HW, Daemen T, Postma MJ.

Cost-effectiveness of the prophylactic HPV vaccine: an application to the Netherlands taking non-cervical cancers and cross-protection into account. *Vaccine*. 2013 Aug 20;31(37):3922-7. PubMed PMID: 23806241.

**Didactic:****Topic: ALARA and Occupational Radiation Safety**

Presenters: Melissa Gonzales, PhD

**Objective:** Components and rationale for occupational radiation safety programs

**February 13, 2014**

**Topic: Occupational Safety and Health Act (OSHA)**

Presenters: Melissa Gonzales, PhD

Objective: Components and rationale for occupational health under the OSH Act

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**February 27, 2014**

**Topics: "Injury Prevention"**

Presenter: Cameron Crandall, MD

Description: A motor vehicle crash model will be used as the template to demonstrate the biomechanics of injury and how prevention / injury control works.

Learning Objectives:

- Identify the leading causes of injury morbidity and mortality in NM and the US
- Understand the injury-disease model of injury control
- Identify at least two different rubrics for developing injury control strategies

Background Reading: NHTSA Traffic Safety Facts, 2011

<http://www.nrd.nhtsa.dot.gov/cats/listpublications.aspx?Id=E&ShowBy=DocType>

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**March 6, 2014**

**Topics: Indoor and outdoor air quality**

Presenter: Melissa Gonzales, PhD

Objective: Indoor and outdoor air pollutants can pose significant public health risk. This presentation will cover the National Ambient Air Quality Standards for Criteria Air Pollutants and regulated Hazardous air pollutants. Main contributors to indoor air quality problems in homes will be covered along with recommended control strategies for reducing health effects in the general population.

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**March 13, 2014**

**Journal Club**

Presenter: Kevin Vlahovich, MD

Brendan Nyhan, Jason Reifler, Sean Richey and Gary L. Freed. Effective Messages in Vaccine Promotion - A Randomized Trial. Pediatrics. 2014. Epub 2014/03/05. PMID: 24590751

**Didactic**

**Topic:** Environmental Risk Assessment: Uranium Mining Case Study

Presenter: Malcolm Siegel PhD, MPH

**The learning objectives are:**

- 1) Obtain an introduction to risk assessment of contaminant migration related to resource development
- 2) Become acquainted with some of the uncertainties in assessing the health effects of low-level environmental exposures to uranium.
- 3) Become acquainted with some of the uncertainties associated with assessing long term migration of uranium from historical mining sites.
- 4) Learn about research into public health impacts of uranium mining on the Navajo Nation.

**Required Reading:**

- 1) "Uranium Mining in the American Southwest: Can Medical Geologists Ask the Right Questions?"
  - 2) Background Information: <http://ehp.niehs.nih.gov/122-A44/>.
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March 27, 2014

**Didactic:** Risk Communication Role Play

Presenter: Melissa Gonzales, PhD

Homework: To be completed before class on Thursday 3/27/14

- A. Carefully read assigned scenario (3 articles below)
- B. Develop a comprehensive list of stakeholders – the interested, affected, or influential
- C. Identify concerns and questions for each stakeholder

**Background Scenario:**

1. [Decades-Old Underground Jet Fuel Leak In New Mexico Still Decades From Being Cleaned Up?](http://thinkprogress.org/climate/2014/01/14/3160291/kirtland-jet-fuel-leak-water-contaminated/)  
xml:namespace prefix = o ns = "urn:schemas-microsoft-com:office:office" />

<http://thinkprogress.org/climate/2014/01/14/3160291/kirtland-jet-fuel-leak-water-contaminated/>

2. The Environmental Disaster You've Never Heard Of: Albuquerque's Kirtland Air Force Base jet fuel spill

<http://alibi.com/feature/45896/The-Environmental-Disaster-Youve-Never-Heard-Of.html>

3. Kirtland Air Force Base Jet Fuel Spill Threatens Albuquerque Water Supply

[http://www.huffingtonpost.com/2012/07/20/kirtland-air-force-base-fuel-spill\\_n\\_1688603.html](http://www.huffingtonpost.com/2012/07/20/kirtland-air-force-base-fuel-spill_n_1688603.html)

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April 1/2, 2014

New Mexico Public Health Association & New Mexico CARES Health Disparities Annual Conference

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April 3, 2014

**Topic: Motivational Interviewing Consultation and Coaching for Substance Abuse Management**

Presenter: Envision New Mexico TeleECHO Clinic

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April 10, 2014

**Topic:** Arsenic in Drinking Water: Occurrence, Health Effects, Treatment, and Policy

**Presenter:** Malcolm Siegel, PhD, MPH

**Description:** The Maximum Contaminant Level for arsenic in drinking water in public water systems in the United States was lowered from 50 micrograms/liter to 10 micrograms/liter during the first decade of the 21st century. The accompanying debate over uncertainties in the benefits expected from this regulatory action illustrates much about the philosophy and practices that underlie how the US EPA, the academic research community and the drinking water industry approach safe drinking water standards. This lecture will provide an overview of the occurrence of arsenic in drinking water systems in the US, health effects that are associated with low-level chronic doses of inorganic arsenics from drinking water consumption and how drinking water standards are set for carcinogens. The difference between risk *assessment* and risk *management* is also illustrated by this topic as we discuss the approach used to set limits on the acceptable cost to protect populations from such exposures. The drinking water standard was designed to decrease the risks of bladder and lung cancers in the general population. We'll briefly discuss the effectiveness of drinking water regulations as a preventive medical strategy when compared to other methods that could be used to protect populations from bladder cancer risk.

Required readings:

- 1) J. R. Meliker and J. O. Nriagu . Arsenic in drinking water and bladder cancer: review of epidemiological evidence. Chapter 21 in Arsenic in Soil and Groundwater Environment. P. Bhattacharya, A. B. Mukherjee, J. Bundschuh, R. Zevenhoven, R. H. Loeppert (Editors). Trace Metals and other Contaminants in the Environment, Volume 9, 551-584
- 2) Viscusi WV. How to Value a Life. J Econ Finan (2008) 32:311-323.

**April 17, 2014**

**Topic: Occupational Health Clinic**

Presenter: Denece Kesler, MD

Description: Dr. Kesler will give an overview of the Occupational Health Clinic Services

Required readings:

- 1) to be assigned by Dr. Kesler
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**May 15, 2014**

**Didactic:**

Motivational Interviewing

[https://enm.adobeconnect.com/\\_a1080663835/p7v9g10aa9t/?launcher=false&fcsContent=true&pbMode=normal](https://enm.adobeconnect.com/_a1080663835/p7v9g10aa9t/?launcher=false&fcsContent=true&pbMode=normal)

(Start at time 4:21)

Required reading: Maxcy, Rosenau and Last's Public Health & Preventive Medicine, Chapter 53 "Health Behavior Research and Intervention"

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**May 22, 2014**

**Journal Club** Presenter: Alireza Esfahane, MD

**Didactic:** "Solid Waste Management" - Terry Cooper, Sandia National Laboratories

Required reading:

Maxcy, Rosenau and Last's Public Health & Preventive Medicine, Chapter 49 "Hazardous waste: Assessing, Detecting and Remediation"

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**May 29, 2014**

**Didactic:** "Hazardous Waste Management" - Lisa Hooper, Sandia National Laboratories

Required reading:

Maxcy, Rosenau and Last's Public Health & Preventive Medicine, Chapter 49 "Hazardous waste: Assessing, Detecting and Remediation"

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**June 19m 2014**

10 AM – 12 PM

**Evaluation session** Group evaluation for Environmental Health and Risk

**PUBLIC HEALTH AND GENERAL PREVENTIVE MEDICINE – ABPM 2013 topic Guide**

**BOOKS**

Friis, R.H.: Essentials of Environmental Health, 2<sup>nd</sup> ed, Jones and Bartlett, 2012.  
 Haynes, R.B., et al: Clinical Epidemiology: How to Do Clinical Practice Research, 3<sup>rd</sup> Ed., Lippincott Williams & Wilkins, 2005.  
 Novick L.F., et al: Public Health Administration: Principles for Population-Based Management, 2<sup>nd</sup> Ed, Jones & Bartlett, 2007.  
 Rothman, K.J., et al: Modern Epidemiology, 3<sup>rd</sup> ed, Lippincott Williams & Wilkins, 2008.  
 Scutchfield F.D., Keck C.W.: Principles of Public Health Practice, 3<sup>rd</sup> ed, Delmar, 2009.

**WEBSITES**

Guide to Community Preventive Services

<http://thecommunityguide.org>

Healthy People 2020

<http://www.healthypeople.gov>

*\*In addition to the reference material listed above, all reference materials (books, periodicals, and study questions) listed for the Core on page 4 are applicable.*

<b>PREVENTIVE MEDICINE Core</b>	<b>PUBLIC HEALTH AND GENERAL PREVENTIVE MEDICINE</b>
<p><b>PERCENTAGE DISTRIBUTION OF TEST ITEMS</b></p> <p>I, Health Services Management (Systems-Based Practice) 15%</p> <p>II. Epidemiology and Biostatistics 35%</p> <p>III. Clinical Preventive Medicine 20%</p> <p>IV. Behavior and Mental Health 12%</p> <p>V. Environmental 18%</p>	<p><b>PERCENTAGE DISTRIBUTION OF TEST ITEMS</b></p> <p>I. HEALTH SERVICES ADMINISTRATION (30%)</p> <p>II. ENVIRONMENTAL HEALTH (15%)</p> <p>III. BIostatISTICS (10%)</p> <p>IV. EPIDEMIOLOGY (15%)</p> <p>V. CLINICAL PREVENTIVE MEDICINE (30%)</p>
<p><b>V. ENVIRONMENTAL</b></p> <p>A. Agents</p> <ol style="list-style-type: none"> <li>1. Chemical</li> <li>2. Physical</li> <li>3. Biological</li> </ol> <p>B. Community health</p> <ol style="list-style-type: none"> <li>1. Air quality</li> <li>2. Water quality</li> <li>3. Climate</li> <li>4. Food safety</li> <li>5. Sanitation</li> <li>6. Hazardous materials management</li> <li>7. Radiation</li> <li>8. Heat/cold</li> <li>9. Noise</li> <li>10. Injury</li> </ol> <p>C. Occupational medicine</p> <p>D. Aerospace medicine</p> <p>E. Travel</p> <p>F. Risk Assessment</p> <p>G. Risk Management</p> <p>H. Risk Communication</p> <p>I. Disaster planning and management</p> <ol style="list-style-type: none"> <li>1. Natural</li> <li>2. Manmade/Bioterrorism</li> </ol>	<p><b>II. ENVIRONMENTAL HEALTH</b></p> <p>A. Global issues</p> <ol style="list-style-type: none"> <li>1. Climate change</li> <li>2. Threat of nuclear warfare</li> <li>3. Biological warfare and bioterrorism</li> <li>4. Chemical warfare and terrorism</li> </ol> <p>B. Public health protection</p> <ol style="list-style-type: none"> <li>1. Air quality</li> <li>2. Water quality</li> <li>3. Food quality</li> <li>4. Physical stressors</li> <li>5. Solid waste management</li> <li>6. Hazardous materials management</li> <li>7. Land use and planning</li> <li>8. Environmental site assessment</li> </ol> <p>C. Risk assessment</p> <ol style="list-style-type: none"> <li>1. Hazard identification</li> <li>2. Exposure assessment</li> <li>3. Dose response assessment</li> <li>4. Risk characterization</li> </ol>