Perelman School of Medicine University of Pennsylvania | CEET | Penn SRP Center CENTER OF EXCELLENCE IN ENVIRONMENTAL TOXICOLOGY

PHRM 657/ENVS 657 (Co-Listing BGS and SAS)
INTRODUCTION TO SUPERFUND SITES AND HEALTH EFFECTS OF HAZARDOUS WASTE

Course Directors: Trevor Penning, PhD – Professor of Pharmacology, Biochemistry & Biophysics and OB/GYN
Richard Pepino, MS, MSS – Lecturer, Earth and Environmental Sciences and Pharmacology
Jane Willenbring, PhD – Assistant Professor Earth and Environmental Sciences

Lectures Days/Times: **4:00 – 5:00 pm Monday (Lecture Only)**
4:00 – 5:30 pm Wednesday (Lecture and student Assignment)

NEW Location: SCTR 8-146AB

INTRODUCTION FOR PHRM 657/ENVS 657: This course will become a key-component of a new Interdisciplinary Superfund Research Training Program involving graduate students in SAS (earth and environmental sciences and biology), graduate students in BGS (Certificate Program in Environmental Health Sciences) that is funded by the Penn Superfund Research & Training Program Center Grant P42-ES023720.

DATE	Lecture №	Student Assignment	PHRM 657 / ENVS 657 - FALL 2015 Topic	Lecturer
MON, AUG 31			Introduction: Overview, Expectations, & Logistics	**Course Directors**
WED, SEP 02	1		Superfund (CERCLA) enabling legislation - Palmerton case study	**Rich Pepino***
MON, SEP 07	**LABOR**	**DAY**	**NO CLASS**	**NO CLASS**
WED, SEP 09	2	Lecture 1	The Superfund Process: Ranking, Removal & Remediation of National Priority Listed Sites	**Rich Pepino***
MON, SEP 14	3		Risk Assessment: Hazard Identification	**Rich Pepino***
WED, SEP 16	4	Lecture 2-3	Risk Assessment: Hazard Characterization	**Rich Pepino***
MON, SEP 21	5		Student Assignments	**Trevor Penning**
WED, SEP 23	6	Lecture 4-5	Risk Assessment: Risk Management	**Rich Pepino***
MON, SEP 28	7	Lecture 6	Risk Assessment: Risk Communication	**Marilyn Howarth**
WED, SEP 30	Field Trip	2:30-7:30pm	The BoRit (Asbestos) Superfund Site-Field Visit & Community Meeting	***Rich Pepino***
MON, OCT 05	8		Contamination of Ground & Surface Water	**Doug Jerolmack**
WED, OCT 07	9	Lecture 7-8	Effects of Hazardous Waste on the Ecosystem & Effects of the Ecosystem on Hazardous Waste	**Brenda Casper**
MON, OCT 12	10		Remediation Strategies	**Jane Willenbring**
WED, OCT 14	11	Lecture 9-10	Environmental Justice EO-12898: Application to Vulnerable Populations	**Samantha Beers****
MON, OCT 19	Field Trip	10:00–2:00pm	The Palmerton, PA (HEAVY METAL) SRP Site-Field Visit and Community Reaction to Clean-up Process	***Rich Pepino****
WED, OCT 21	12	Lecture 11-12	Dealing with Mixtures	**Trevor Penning**
MON, OCT 26	13		Monitoring for Air Toxic Environmental (External) Exposures (Environmental Engineer, Phila Air Monitoring Laboratories)	**Hallie Weiss and Meyliana Wu**
WED, OCT 28	14	Lecture 13	Bio-monitoring-Internal Dose	**Ian Blair**
MON, NOV 02	15		Exposome Concepts	**Ian Blair**
WED, NOV 04	16	Lecture 14	Ultrafine particles and health effects	**Reto Gieré**
MON, NOV 09	17	Lecture 15-16	Health Effects of Major SF-Contaminants-Heavy Metals-I	**Jianghong Liu**
WED, NOV 11	18		The National Toxicology Program	**Trevor Penning**
MON, NOV 16	19	Lecture 17	Health Effects of Major SF-Contaminants-Heavy Metals-II	**Kevin Osterhoudt**
WED, NOV 18	**NO**	**CLASS**	**NO CLASS (SRP ANNUAL MEETING)**	**NO CLASS**
MON, NOV 23	20		Health Effects of Major SF-Contaminants-Asbestos	**Edmund Moon**
Wed, Nov 25			**No Class**	**Thanksgiving**
MON, NOV 30	21	Lecture 18-19	Health Effects of Major SF-Contaminants-PAH	**Trevor Penning**
WED, DEC 02	22		Health Effects of Major SF-Contaminants-Persistent Organic Chemicals (PCBs and Halogenated-PAH)	**Trevor Penning**
MON, DEC 07	23		Computational Data Bases TOXNET	**Trevor Penning**
WED, DEC 09	24	Lecture 20-21	TOX 21st Century	**TBA**
MON, DEC 14	26		"Superfund—selecting a remedy and paying for it"	**Charles Casper**
WED, DEC 16	27		Student Presentations: Analysis of Selected Superfund Site	**Course Directors**

COURSE OBJECTIVES: Superfund hazardous waste sites are prevalent in our nation and the exposures to toxicants from these sites raises, immediate public health concerns. The aims of this course are to educate students about these sites and provide a scientific basis for hazard identification, hazard characterization, risk communication and risk management. The course will describe the effect of these hazardous chemicals on the ecosystem and vice-versa and remediation and mitigation approaches. These environmental science issues will lead into the environmental health aspects of exposures including: bio-monitoring (external and internal dose, biomarkers and the exposome), toxicological properties of contaminants and mode-of-action. The course will be complemented with visits to two Superfund sites in the region: Ambler (Asbestos) and Palmerton (Heavy Metals).

*****Mr. Richard Pepino has over 25 years of experience in regulatory science & was a former member of EPA Reg. III.

******Ms. Samantha Beers, Director US EPA Region III Office of Enforcement, Compliance and Environmental Justice.

Course Grading:
30% Lecture Assignments
30% Written Hazard Report on Superfund Site
30% Oral Presentation on Selected Superfund Sites
10% Class participation

ELIGIBLE STUDENTS: Any PhD student in SAS, BGS, MES or MPH student with permission of the course director. Pre-requisites would include 400 level course in Biology/Chemistry and Biochemistry.

CONTACT INFORMATION

LECTURER	EMAIL	LECTURER	EMAIL
Samantha Beers**	Beers.samantha@epa.gov	Edmund Moon	Edmund.Moon@uphs.upenn.edu
Ian A. Blair	ianblair@exchange.upenn.edu	Kevin Osterhoudt	Osterhoudtk@email.chop.edu
Brenda Casper	bcasper@sas.upenn.edu	Trevor M. Penning	penning@exchange.upenn.edu
Charles Casper	ccasper@mmwr.com	Richard Pepino*	rpepino@sas.upenn.edu
Reto Gieré	giere@sas.upenn.edu	Hallie Weiss	hallie.weiss@phila.gov
Marylyn Howarth	howarthm@uphs.upenn.edu	Jane Willenbring	erosion@sas.upenn.edu
Douglas Jerolmack	sediment@sas.upenn.edu	Meyliana Wu	Meyliana.wu@phila.gov
Jianghong Liu	jhliu@nursing.upenn.edu		