CE 491/591. Effects and Fates of Hazardous Chemicals Released to the Environment
Fall 2002

Description: Chemical fate and transport in the environment. Frequency and magnitude of accidents involving hazardous materials. Effects of these releases on the community.

Textbooks:


Instructor: Robert Pitt, P.E., Ph.D., Professor, room 347b. Office hours to be determined, or by email rpitt@eng.ua.edu or phone 348-2684.

Course Goals: Integrate chemical property information to better understand the transport and fate of hazardous chemicals released to the environment. Examine case studies to understand the long-term social and environmental effects of these releases.

Prerequisite by Topic:
1. basic chemistry (Chemistry 131 and 132)
2. fundamental math (Math 126)
3. basic environmental engineering (CE 420)
4. water resources (CE 478)

or permission of instructor

Course Topics:

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Other Course Information:
Accidents involving chemicals or radioactive materials represent a significant threat to the environment, public health and safety, and community well-being. In an increasingly complex and interconnected world, no community is immune from the threat posed by environmental accidents and contamination. Even communities far removed from industrial production or storage facilities can still be at risk from accidents associated with the transport of hazardous materials. While a variety of studies have been conducted on aspects of major transportation accidents, few have attempted to examine both environmental and community aspects of the problem. In contrast, this course takes an integrated approach to hazardous transportation accidents by considering environmental, safety, economic, and psychosocial issues.

The course will cover basic environmental chemistry topics and will conclude with practical applications covering an analysis of transportation-related accidents involving hazardous materials and likely important social, psychological and related community impacts that can occur after transportation-related hazardous materials accidents.

Several case studies will be examined of actual accidents, ranging from small to very large releases of hazardous materials and will illustrate the varied long-term problems that have resulted. In addition, detailed quantitative procedures will be studied covering problems associated with spills of petroleum hydrocarbons (the most common material involved in transportation accidents) and losses of ammonia (a toxic gas).