



American Chemical Society

Central Wisconsin Section



"Industrial Ecology and the Environmental Chemistry of Hazardous Wastes"

by

Dr. Stanley E. Manahan
University of Missouri

Wednesday, September 11, 2002

7:30 PM Science Building, *Trytten Lecture Hall*. Room A121
UW – Stevens Point

5:30 Mixer & Dinner, Michele's Restaurant

Abstract:

Hazardous waste constitutes one of the major environmental problems of our time. Particularly through possible groundwater contamination, such wastes pose significant potential health hazards in many areas. Efforts to alleviate such problems have been only partially successful, with a disproportionate amount of money spent in litigation and relatively fewer resources devoted to actually solving hazardous waste problems. A much better approach to dealing with hazardous waste is to use the principles of industrial ecology so that industrial systems are viewed as being analogous to ecosystems in nature, in which waste products with no use to any life form in the ecosystem are very rare. An industrial ecosystem is designed so that a group of industries and waste processors exists symbiotically, such that waste products from one are used as raw materials for another. This lecture discusses hazardous wastes on the basis of systems of industrial ecology, with emphasis on aspects such as design for environment, materials recycle, and "green chemistry". It considers the environmental chemistry of hazardous wastes according to the following factors: (1) origin, (2) transport, (3) reactions, (4) effects, and (5) ultimate fate. The destruction of hazardous wastes by gasification and the advantages of gasification over incineration are discussed with an example of a cocurrent flow hazardous waste gasification system.

The Speaker:

Stanley E. Manahan is a professor of chemistry at the University of Missouri-Columbia, where he has been on the faculty since 1965. He received his A.B. in chemistry from Emporia State University in Kansas in 1960 and his Ph.D. in analytical chemistry from the University of Kansas in 1965. Since 1968, his primary research and professional activities have been in environmental chemistry, with recent emphasis on hazardous waste treatment. Current research deals with gasification as an alternative to incineration as a means of thermally treating hazardous waste materials without producing toxic pollutant byproducts. Professor Manahan teaches courses on environmental chemistry, hazardous wastes, toxicological chemistry, and analytical chemistry and has lectured on these topics throughout the U.S. as an American Chemical Society Local Sections tour speaker. Professor Manahan has written books on environmental chemistry (Environmental Chemistry, 6th ed., 1994, Lewis Publishers/CRC press), general/environmental chemistry (Fundamentals of Environmental Chemistry, 1993, Lewis Publishers/CRC press), hazardous wastes (Hazardous Waste Chemistry, Toxicology and Treatment, 2nd ed., 1990, Lewis Publisher/CRC press), toxicological chemistry (Toxicological Chemistry, 2nd ed., 1992, Lewis Publishers/CRC press), applied chemistry, and quantitative chemical analysis. He is the author or co-author of approximately 85 research articles.

Prior to the meeting, a 5:30 PM mixer and dinner will be held at Michele's Restaurant, 513 Division St. (Business 51 North, adjacent to UWSP campus). *After dinner, drive three blocks east on Fourth Avenue to reach Parking Lot X on campus. The Science Building is adjacent to the lot and the Trytten Lecture Hall is just inside the main entrance.* **Reservations may be made by calling Tom Zamis at 715-346-3258 (or email tzamis@uwsp.edu) by 5 PM on Monday September 9.**