

Short Course:

# Sustainable Land Application of Residuals



Soil and Water Science Department

May 7-10, 2012

## Who Should Attend?

Agricultural consultants, agency and operator personnel tasked with successful land application programs, environmental engineers and consultants, agricultural engineers, farmers, soil, water, plant scientists, and others dedicated to sustainable land application.



## Introduction:

Residuals of society's activities have been land applied for eons, usually with beneficial effects, but sometimes with unintentional negative effects on human, environmental, and soil health. This short-course provides the basis for sustainable land application by considering the assimilative capacity of soils to accept residuals, regulatory issues, and residual characteristics. Residuals include biosolids, animal manures, reclaimed waters, composts, and various non-hazardous industrial by-products. Successful course attendees will learn how to match the characteristics of various residuals with soil assimilative capacities (residual loading rates and management) to optimize beneficial effects, minimize negative effects, and to meet regulatory requirements.

The course format includes lectures by the instructors that describe fundamental residual-soil processes and reactions, guest lectures by regulators and individuals involved in land application operations, and various experiential activities (e.g., data interpretations, practical calculations, self-directed activities). A Certificate of Completion will be presented upon completion of the course.



## Instructors

**Dr. G. A. O'Connor and Dr. H. A. Elliott**



Dr. O'Connor is Professor of Environmental Soil Chemistry in the Soil and Water Science Department at the University of Florida. He has researched and taught about the fate, transport, and risks of numerous wastes and waste constituents following land application for over 25 years.



Dr. Elliott is Professor of Agricultural and Biological Engineering at Penn State University. For 30 years, he has been involved in teaching, research, and consulting in the areas of fate and transport of pollutants in aquatic and soil systems, and the evaluation and design of land-based waste disposal systems.

## Benefits

Upon completion of the course, you will be able to:

- Identify residual characteristics critical to sustainable land application,
- Identify soil characteristics and management practices critical to sustainable land application,
- Calculate residual application rates consistent with sustainable land application based on residual and soil characteristics and regulatory guidance,
- Recognize and understand the bases for successful land application programs,
- Understand the bases for “non-traditional” benefits of land application of residuals (e.g., carbon credits, contaminate mitigation, remediation, urban gardening, etc.),
- Understand the bases for “contaminants of concern” that could impact land application programs.

## Registration

Advanced registration is required. Register early to secure a seat.

Registration fees will not be refunded after the cancellation deadline.

### Course Fee

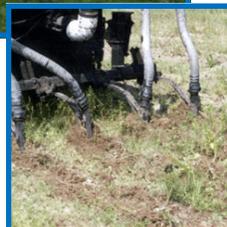
<b>Early Registration (before 04/15)</b>	<b>\$500.00</b>
<b>Registration</b>	<b>\$600.00</b>

The course fee includes a notebook containing lecture notes, Power Point slides (pdf), sample exercises, selected journal articles (pdf), references, pertinent websites/links, and agency/other contacts.

Refreshments will be provided. Housing and all meals are the responsibility of the attendees

### **For more information, contact:**

Dr. George A. O'Connor  
Soil and Water Science Dept.  
University of Florida  
Gainesville, FL 32611-0510  
[gao@ufl.edu](mailto:gao@ufl.edu)  
352-392-7181 ext 329



## Course Agenda

Monday May 7

01:00 pm - 5:00 pm

Tuesday – Wednesday May 8-9

08:00 am – 5:00 pm

Thursday May 10

08:00 – 12:00 pm

## Timeline

Last day for receipt of Application:

xx XXX 2012

Last day for cancellation:

xx XXX 2012

## Training Location:

Classroom location

## Course Instructors:

Dr. George A. O'Connor  
Soil and Water Science Dept.  
University of Florida  
Gainesville, FL 32611-0510  
[gao@ufl.edu](mailto:gao@ufl.edu)  
352-392-7181 ext 329

Dr. Herschel A. Elliott  
Agricultural and Biological  
Engineering Dept.  
Penn State University  
University Park, PA 16802-1909  
[hae1@engr.psu.edu](mailto:hae1@engr.psu.edu)  
814-863-2062



## Daily Agenda

### Monday

- 1:00 pm Welcome and Course Overview
- 2:00 Introduction Land Application, Residual Types and Properties
- 3:30 Break
- 3:45 Videos, films, links to symposia (or guest) lectures;  
“the good, the bad, and the ugly” of land application.  
Readings and homework assignments

### Tuesday

- 8:00 am Lecture – Soil as a Treatment Medium
- 9:45 Break
- 10:00 Lecture— Continued
- Noon Lunch on your own
- 1:00 pm Lecture—Soil Processes Controlling Pollutants
- 3:00 Break
- 3:15 Lecture—Soil Processes Controlling Pollutants—Continued
- 5:00 Assign homework (fictitious data) and reading for Wed (soil fundamentals)

### Wednesday

- 8:00 am Lecture – Soil Processes Continued
- 9:45 Break
- 10:00 Lecture – Soil Processes Continued (CMIS demonstration/practice)
- Noon Lunch on your own
- 1:00 pm Lecture—Application Rate Determinations
- 2:45 Break
- 3:00 Lecture—Rate determination Example Calculations
- 5:00 Assign homework and reading

### Thursday

- 8:00 am Examples of successful programs, various speakers  
(e.g., ConservII, Living Filter, GRU Whistling Pines farm)
- 9:45 Break
- 10:00 Discussion, questions, wrap-up.
- Noon Adjourn