

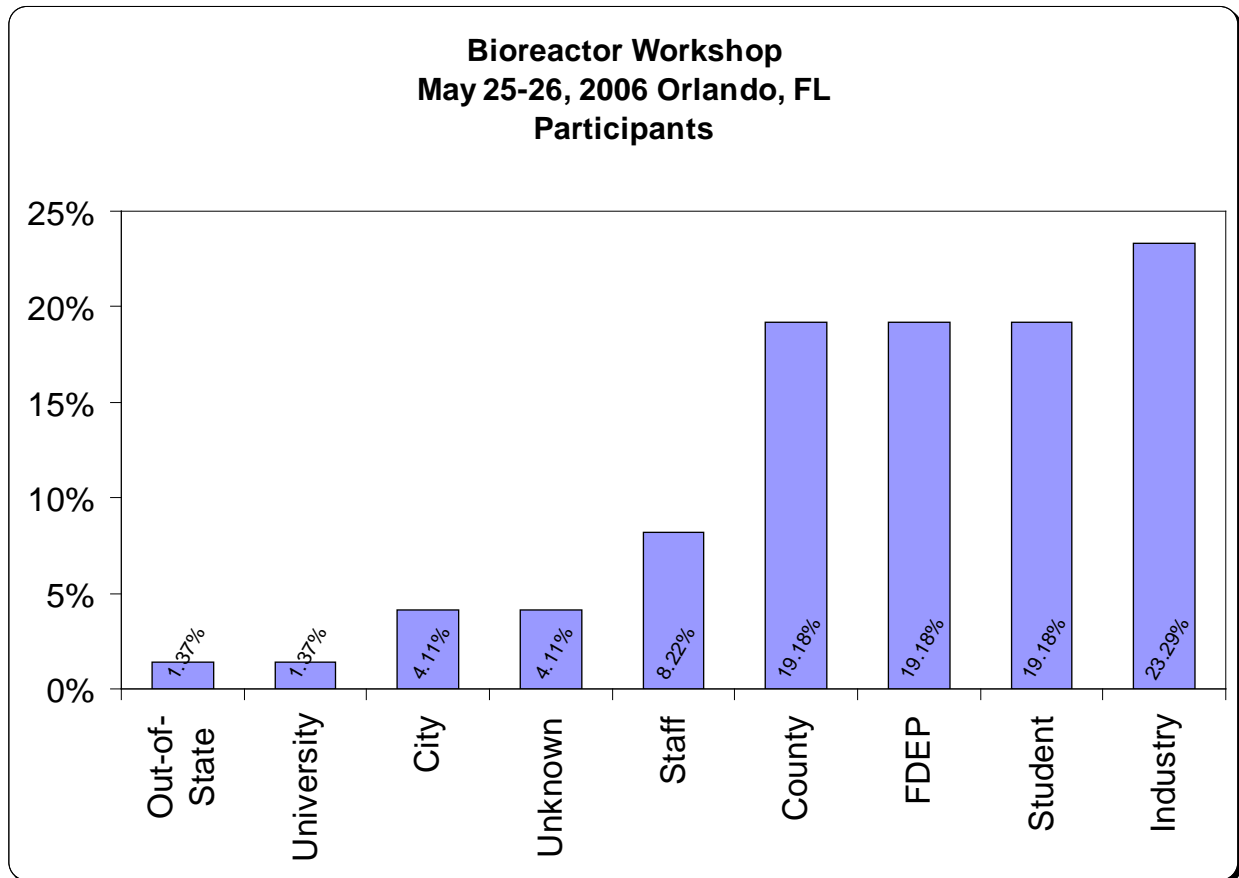
Bioreactor Landfill Workshop

The Florida Center for Solid and Hazardous Waste Management (the Center) held a bioreactor landfill workshop May 25-26 in Orlando.

1. Workshop Overview:

This two-day workshop, taught by Debra Reinhart, Ph.D., PE (University of Central Florida) and Timothy Townsend, Ph.D., PE (University of Florida) included an overview of the design, management, operation and regulations associated with a bioreactor landfill. Workshop attendees learned about bioreactor landfills from inception to post-closure through hands-on applications and a tour of the North Central Landfill in Polk County.

There were a total of 73 participants from throughout Florida, representing local and state government, industry, academicians and students.



Workshop participants received a notebook filled with information and powerpoint presentations. Participants also received the powerpoint presentations on CD in addition to an excel spreadsheet that was used for teaching the economic impacts. A complete agenda follows:

2. Workshop Agenda:

Wednesday, May 24

5:00 Meet for cocktails and hors d'oeuvres - Embassy Suites Lounge

Thursday, May 25

8:00 Registration

8:30 Welcome/Goals of Workshop

*John Schert, Florida Center for Solid and Hazardous Waste Management
Fletcher Herrald, Florida Department of Environmental Protection*

8:45 Introduction of Participants

9:00 A History of Bioreactor Research in Florida

Timothy Townsend, Ph.D., P.E., University of Florida

10:15 Break

10:30 Regulatory Considerations for Bioreactors

Richard Tedder, Florida Department of Environmental Protection

11:15 Assessing the Feasibility of Bioreactor Operations: Part 1
Technical Regulations and Site Opportunities and Constraints

Timothy Townsend, Ph.D., P.E., University of Florida

12:00 Lunch (provided by Florida Center)

1:00 Assessing the Feasibility of Bioreactor Operations: Part 2
Economic Opportunities and Constraints

Debra Reinhart, Ph.D., P.E., University of Central Florida

3:00 Break

3:30- Instrumentation and Monitoring for Bioreactor Landfills

5:00 *Debra Reinhart, Ph.D., P.E., University of Central Florida*

Timothy Townsend, Ph.D., P.E., University of Florida

7:00- Dinner and Poster presentations (provided by Florida Center)

9:00

Friday, May 26

- 8:30** Sign in for CEUs, Tour overview
- 9:00** Board bus for trip to Polk County Landfill (about 30 minutes from the hotel)
- 11:30** Return to hotel
- 12:00** Lunch (provided by Florida Center)
- 1:30** Bioreactor Design and Operations Strategies: Part 1
Timothy Townsend, Ph.D., P.E., University of Florida
- 2:30** Break
- 3:00** Status of Aerobic Bioreactor Landfills in the U.S.
Debra Reinhart, Ph.D., P.E., University of Central Florida
- 3:30** Bioreactor Design and Operations Strategies: Part 2
Timothy Townsend, Ph.D., P.E., University of Florida
- 4:30** Closing and Wrap-up
Fletcher Herrald, Florida Department of Environmental Protection

3. Workshop Evaluation:

An evaluation of the workshop was conducted on the last day. The feedback from the 14 participant's completing the survey was very complimentary and favorable.

What did you like best about the workshop?

- "The seminar was presented by knowledgeable folks. I really enjoyed talking w/students at the poster session. The workshop did not belabor the obvious, but presented useable information (and information new to me). Also, the papers on the CD and in the book are greatly appreciated."
- "Get update on bioreactor landfill. Met old friends."
- "The speakers and poster presentations."
- "Going on the tour of Polk County landfill."
- "Graphs, figures, and info covered in presentations. The info in the binders and CD's is also very helpful."
- "The insight of the instructors and speakers."
- "Great lectures and relevant, practical information."
- "Hands on experience."
- "The fact that speakers usually take a practical approach and include business decisions rather than just technical."
- "Practical discussions."
- "Design and operation strategies."
- "All the information was useful and new."
- "Information and the ability to discuss issues with other solid waste professionals involved in landfill and bioreactor operations."

What did you like least about the workshop?

- “The room was cold.” 3 responses
- “Don’t schedule before a holiday weekend.”
- “The history of bioreactor.”
- No answer – 5 responses
- Nothing – 4 responses

Was the information given practical?

Yes – 14 responses

How will you use the information?

- “I will be working to permit a proposed bioreactor soon. The information will also be usable for doing permit modifications for leachate recirculation.”
- “At work.”
- “Potential graduate research.”
- “To help with my research.”
- “Gas design project for Polk.”
- “Increase knowledge.”
- “I hope to push for more design of these systems within the company. I feel technology can be of great benefit for many sites.”
- “For similar design experience.”
- “Digest it to see if our site can maybe one day be a bioreactor.”
- ”Looking at recirculating leachate at our facility.”
- “Plan on taking it back and consider utilizing some of the ideas.”
- “Understand operational restraints.”
- “Not sure.”
- “Information gathered will allow several new methods to try in relation to operational issues.

Did the workshop meet your expectations?

○ Yes – 14 responses

If not, what was missing?

- “The GUE (Grand Unifying Equation) based on the GUT (Grand Unifying Theory).”
- “It would have been good to have some sites as examples of bio-reactors that are actually WSPS sites who could share their air monitoring experiences.”
- “I think some detailed discussion – better yet – case study of the permitting process. That is, what practical steps were taken, what modeling information was submitted, etc.?”
- No answer – 11

Was the field trip to Polk County North Central Landfill beneficial?

- Yes – 13 responses
- N/A – 1 response

Was the Embassy Suites an adequate place to hold the bioreactor workshop? If not, why?

- Yes – 14 responses

Did you enjoy the food?

- “Yes and there was lots of it (all pretty good).”
- “Yes, it was great. A vegetarian selection for the 2nd day lunch would have been nice.”
- “Yes. Something other than cake for a dessert selection would have been nice.”
- “1st day – yes. 2nd. day – so-so.”
- “Great food.”
- “Very much.”
- “Yes – Thursday, No – Friday.”
- Yes – 7 responses

Would you change the length of the survey? If so, how?

- “Overall, the length was good, but the first day was a bit long. Finishing at 8PM was nice. (scheduled 8 AM – 9PM)”
- “No – 2 days were enough. Most consultants can’t afford to use more.”
- “Amount of time was appropriate.”
- “3 day – 9-3.”
- No – 8 responses
- No answer – 2

4. Workshop Expense and Income:

Income:

Affiliation	Contribution
FDEP	
GeoKon	\$875.00
GeoSyntec	Calculators
Registrations	\$2,520.00
TOTAL	

Expense:

Item	Amount
Equipment	\$1,260.00
Guest rooms	\$1,130.99
Food	\$7,678.80
Bus	\$436.00
Printing and other	

miscellaneous expenses	
TOTAL	