USCC COMPOST OPERATIONS TRAINING COURSE

Syllabus, Draft April 2011

Module 1. Introduction, Overview and Framework
   I. Course overview
   II. Overview of the composting manufacturing process
      A. Define compost
      B. Begin with the end in mind
      C. Approach composting as a manufacturing process
   III. Introductions. Have everyone, including other instructors present, introduce themselves

Module 2. Compost Biology and the Key Process Variables
   I. Biology of composting
      A. Why biology
      B. What happens in composting?
      C. How can microbes get energy?
      D. Kinds of microbes?
      E. Roles of microbes
   II. Controlling The Composting Process
      A. Basic Process
      B. Key Process Variables
         1. Feedstocks
         2. Moisture
         3. Aeration
         4. Pile shape, size
         5. Temperature
         6. Time
   III. Recommended parameters

Module 3. Feedstocks and recipe building
   I. Feedstocks
      A. Types of feedstocks
      B. Desired conditions for rapid composting
   II. Combining feedstocks-recipe building
      A. Why recipe?
      B. Strategies for recipe dev’t
      C. Balancing H₂O and C:N
   III. Group Practice with Recipe Calculator and prep for BYOP activity

Module 4. Systems, methods and equipment
   I. Terminology
      A. System
      B. Method
      C. Equipment
II. Methods
   A. Turned windrow
   B. Aerated static pile
   C. In-vessel
   D. Passive Piling
   E. Combined methods

III. Putting the system together
   A. Considerations
   B. Equipment review, selection and maintenance
      1. Materials handling
      2. Size reduction
      3. Mixers
      4. Windrow management/turners
      5. Screens
      6. Watering

Module 5. Site selection and design
   I. Location
      A. The location paradox
      B. Location considerations
      C. Setbacks and sensitive receptors
   II. Design
      A. Components of a site
         1. Typical layouts
         2. Environmental considerations
      B. The composting pad
         1. Design and construction
         2. Sizing

Module 6. Water management
   I. Planning
      A. Why manage
      B. Types of water and pollutants
      C. Volume, duration, intensity, runoff factors
      D. Site design
   II. Management
      A. Infiltration/Bioinfiltration/Bioswales
      B. Solids separation
      C. Retention basins/ponds
      D. Treatment Train
      E. Relative costs

Module 7. Odor management
   I. Odor science and measurement
      A. What are odors
      B. Impacts
      C. Measurement and characterization
   II. Odors at Composting Facilities
      A. Truisms
B. Primary odor compounds  
C. Factors that can lead to increased odors  
D. Emission sources  
E. Offsite movement  

III. Control and treatment  
   A. Adapting to weather conditions  
   B. Materials handling  
   C. Optimize Key Process variables  
   D. Treatments  

IV. The Odor Management Plan  

Module 8. Regulations  

I. Regulatory Organization  
   A. By feedstock types  
   B. By activity  

II. Permitting  
   A. Definitions  
   B. Acceptable materials  
   C. Types of “permits”  
   D. Siting criteria  
   E. Construction requirements & site preparation.  
   F. Operational requirements – Can be prescriptive or performance based  
   G. Record Keeping Requirements  
   H. Facility closure requirements.  

III. Other environmental permitting  
   A. Clean Water Act related  
   B. Clean Air Act related  

IV. Other non-environmental permitting.  
   A. Local Zoning  
   B. Fire Marshall  
   C. Solid Waste Management District or local equivalent  
   D. Product registration: Department of Agriculture or appropriate agency.  

Module 9. Product quality: sampling, testing and analysis  

I. Compost quality  
   A. Defining quality  
   B. Determinants of quality  
   C. Measuring quality  
      1. Is it done?  
      2. Is it safe?  
      3. Other qualities  

II. Assessing quality  
   A. Sampling  
   B. Testing  
   C. Seal of Testing Assurance  

III. Regulatory requirement  
   A. State Dept of Ag and AAPFCO  
   B. Product registration requirements  
   C. Specifiers
Module 10, Compost Uses and Markets

I. Compost’s benefits
   A. Soil basics/role of organic matter
   B. Physical benefits
   C. Chemical Benefits
   D. Biological

II. Landscaping and Home Horticulture
    A. Planting Beds
    B. Home gardens
    C. Mulches
    D. Back Filling

III. Turf and lawn
     A. New
     B. Renovation/topdressing

IV. Commercial Horticulture
    A. Container mixes
    B. Field Beds
    C. Tree farms

V. Agriculture
   A. Organic agriculture
   B. Vegetable farms
   C. Row crops
   D. Incorporating into Nutrient Management Plans

VI. Erosion, Sediment and Stormwater control
    A. Low Impact and Sustainable Development Principles
    B. Construction
    C. Post Construction

VII. Environmental Restoration
     A. Remediation of contaminated sites
     B. Reclamation of minelands
     C. Constructed wetlands
     D. Methane emissions mitigation
     E. Carbon sequestration

Module 11. Marketing and sales

I. Marketing vs. sales
   A. Role of marketing
   B. Role of sales

II. Marketing plan
    A. Identify and characterize markets
    B. Distribution
    C. Develop the plan
    D. Implement the plan

III. Beating the competition
    A. Attributes of the compost supplier
    B. Understanding the customer
Module 12. Facility management

I. Neighbor and Community Relations
   A. Building good relations with neighbors
   B. Community relations
   C. Media relations

II. Fires
   A. Sources
   B. Best Practices

III. Health and safety
   A. Health concerns
   B. Safety
   C. OSHA

IV. Contingency Planning
   A. Often a regulatory requirement
   B. Spill and leak planning and prevention
   C. Emergency procedures
   D. Planning for the unexpected

V. Safety Inspection Checklist
Module 13, Trouble Shooting

An interactive review of potential problems a facility might face and practice planning to minimize their impact through contingency planning.