



COMPOST OPERATIONS TRAINING COURSE

Typical Session Summaries

Monday: The Composting Process

1. Introductions, Expectations and Compost Framework

We kick off the week with an overview of the course, and get right into it with a look at composting as a manufacturing process, with inputs, outputs, process controls and feedback loops. We'll cover some basic definitions and clarify what we will be and won't be studying (such as vermicomposting, anaerobic digestion, or the collection of compostables).

2. Process Fundamentals

In the first half of this lecture we will look at composting at its core: a biological process. Who are the microbes that are doing the decomposition? How and why do they work? The second half we introduces the Key Process Variables: Feedstocks, Moisture, Oxygen, Pile dimensions, Temperature and Time. We will look at how we use these variables to control the process, and start to answer the question: "When is it done?"

3. Feedstocks and Recipe Development

At the heart of the composting process is the mixing of the different ingredients, or "feedstocks" to produce a "balanced diet" for the microbes. After a "parade of feedstocks" we look at how you combine them into a "recipe", balancing the key factors of moisture, nutrients and airflow. Working in teams, students will get introduced to a Compost Calculator and try their hand at building their own recipes.

4. Build You Own Pile Field Session

After a lot of talk, it's time to get our hands dirty! We work as teams to take what was taught and put it in to practice. Your goal: as a team, build a 2-cubic-yard compost pile following and adapting the recipe you developed in class.

5. Systems and Methods

With a basic understanding of the core biological processes, how do we put a facility around them to manage the flow of materials from the time they enter your site to the time they go out as products? We'll examine typical components and the pros and cons of the turned windrow, aerated static pile and in-vessel methods.

Tuesday: Site Design and Environmental Control

6. Equipment

We'll look at the equipment needed to do all the work, from materials handling and size reduction (aka grinding) to windrow management and product screening. Pro, cons and costs are examined to help you decide which equipment fits your operation.

7. Site Selection and Design

This session will start out examining where a compost site can and can't go. What are the key considerations in siting a facility? Then we'll move in to designing the site. What are the components of a good design? How do they get laid out for efficiency and safety? We'll end up looking at the composting pad itself, and you'll get some practice figuring out how big the pad actually needs to be.

8. Water management

On to every facility a little rain must fall. Or sometimes, a lot of rain falls! Protecting our water resources is a key responsibility of every compost facility. How do we handle the water that runs off our sites? We will review the Best Management Practices for water management around compost sites.

9. Pile monitoring and Assessment Field Session

Come to class with your boots on! We will go outside and learn how to monitor and document the process. You'll do field testing for moisture, bulk density and free air space, plus monitoring oxygen, carbon dioxide and temperature

10. Odor Management

Odors are the main reason that compost facilities get shut down. Every facility should have an Odor Management Plan. This lesson teaches the basic elements of that plan, focusing on practical measures to mitigate and prevent odor problems.

Wednesday: Regulations and Site Visits

11. Regulations

You can operate, but you can't hide. Compost facilities must comply with a variety of state and local regulations to protect public health, safety, and the environment. This session will help you identify the key permits you may need or offices to be in contact with, and will provide some advice for working with your regulators.

12. Field Trip.

We will go by bus to visit several local composters, and see how all the theory gets put into practice. The tour may also provide attendees with an opportunity to interact with state and local regulators and obtain a better understanding of regulators' issues and concerns at compost facilities.

Thursday: Product Quality and Marketing

13. Compost quality and analysis.

What do we want to know about our compost? Is it done? Is it safe? What's in it? How does that effect it's use? We'll look at how and why we measure the key parameters in assessing compost quality. PARTICIPANTS ARE ENCOURAGED TO SUBMIT THEIR OWN COMPOST SAMPLE FOR ANALYSIS ([See instruction here](#), done for free if submitted four weeks before the start of class) or BRING THEIR OWN (Seal of Testing Assurance) COMPOST to be part of this day.

14. Compost uses and markets.

Since composting is a manufacturing process, the more we understand our products the more successful we can be. What are the uses of compost? How does it work in the soil? Why should we use one compost one place and another someplace else? We will start with some basic soil science and then go over the major uses for compost, including landscaping, home and commercial horticulture, turf management, agriculture, stormwater management and environmental restoration.

15. Compost marketing and sales.

What are the components of a compost marketing plan? Which uses will you target? How will your product get distributed? What kind of promotions, communications, and staffing do you need? This day concludes with an exercise where as teams you'll start to put together a marketing plan, with goals, objectives and activities.

Friday: Facility Management and Wrap-Up.

16. Facility Management—Panel of Operators

It may not be “rocket science” but a modern compost facility is a complex operation with a lot of moving parts. In this session a panel of local operators will discuss

- Neighbor and Community Relations
- Fire prevention and control
- Employee health and safety

along with their general compost operations

17. Pile Tear-down Field Session

After monitoring your piles for the week, it's time to evaluate them. Did they reach PFRP temps? How are the odors? We will tear them down, look inside and see how they did.

18. Trouble-shooting.

For our wrap-up session, you'll be presented with a variety of challenges typically faced at compost facilities. As groups you'll try your hand at posing solutions and building on others, ending with a general discussion of all the issues that compost facility operators confront.

USCC COMPOST OPERATIONS TRAINING PROGRAM

Typical Class Schedule

TIME	SESSION
DAY 1 THEME: THE PROCESS	
8:00 AM	1. Introductions, Expectations and Compost framework
9:00	2. Process Fundamentals
10:30	break
10:45	3. Feedstocks and Recipe development <i>Compost calc practice</i>
12:15 PM	Lunch
1:15	4. <i>Build Your Own Pile</i>
3:15	break
3:30	5. Systems and methods
5:00	adjourn for day
DAY 2 THEME: THE SITE	
8:00 AM	6. Equipment
9:00	7. Site Selection and Design <i>Pad sizing activity</i>
10:30	break
11:00	8. Water Management
12:15 PM	Lunch
1:15	9. <i>Moisture Assessment, measuring bulk density and porosity, Pile monitoring: Oxygen and Temperature</i>
3:00	break
3:15	10. Odor Management
5:00	adjourn for day

DAY 3 THEME: REGULATIONS and FACILITIES

7:45 AM *monitoring team piles*

8:15 11. Regulations

9:45 12. Load bus for tour

Tierra Verde, Irvine

Burrtec, Fontana

Inland Empire Utilities, Rancho Cucamonga

5:00 Return

DAY 4 THEME: THE PRODUCT

7:45 AM *Monitor piles*

8:15 13. Product Quality: Sampling, Testing and Analysis

Solvita maturity test

10:00 break

10:30 14. Compost Benefits, Uses and Markets

12:00 Lunch

1:00 14. Compost Benefits. Uses and Markets (continued)

2:30 break

3:00 15. Developing a Sales and Marketing Plan

Marketing plan exercise

DAY 5. THEME: HEALTH AND SAFETY, CONTINGENCY PLANNING

8:00 16. Operator Panel: Facility Management

9:30 17. *Review team piles*

10:30 18. Contingency Planning

12:00 PM Lunch

1:00 Course evaluation, Conclusion and Good Bye!
