



NBP EMS 201 Workshop

Summary Report

Prepared by



June 27-28, 2006

Seattle, Washington

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Introduction

The University of Florida Center for Training, Research and Education for Environmental Occupations (UF/TREEO), in conjunction with the National Biosolids Partnership (NBP), conducted a two-day Environmental Management Systems (EMS) workshop in Seattle, Washington on June 27-28, 2006. This workshop provided an opportunity for these new agencies to interact and continue the process of developing and implementing an EMS. This workshop (EMS 201) is the second in a four course series developed by the NBP to assist the current group of utilities in the EMS project.

This report is intended to highlight some key topics covered during the workshop and serve as a summary for those either unable to attend or interested in reviewing some of the workshop's key learning objectives. It is not intended to substitute for attending nor does it present all the material that was covered in the workshop.

To improve the implementation and public acceptance of environmentally sound biosolids management practices, the NBP has developed a voluntary EMS certification program for the biosolids industry.



The twelve agencies that are currently certified include:

- Orange County, California
- Madison, Wisconsin
- Los Angeles, California
- Ft. Worth, Texas
- Encina, California
- Kent County, Delaware
- King County, Washington
- District of Columbia
- Butler County, Ohio
- Metro Wastewater Reclamation District, Colorado
- Lawrence, Kansas
- Albany, Oregon

During the workshop, Lisa Vogel from King County, Washington (certified NBP program) gave a presentation that included helpful hints, barriers and benefits to implementing the EMS program.

There were 22 attendees representing 14 utilities. The list of attendees is shown in Appendix A, page 10.

The instructional team consisted of Peter Machno, Project Manager, NBP EMS Project, William T. Engel, Director, UF/TREEO, Douglas Dean, Adjunct Professor, UF/TREEO and President, Matrix Compliance Services and Edward Toby, Senior Training Specialist, UF/TREEO.

The purpose of this workshop was to cover Elements 1-10, briefly review the key points of EMS 101, and reinforce the essentials of the elements by having the attendees participate in several hands-on exercises.

Prior to attending the workshop, students were given an assignment. The assignment sheet is in Appendix B, page 12.

Selected responses were requested of the class. These are shown in Appendix B, page 13. In addition, the class was asked in question eight to list three specific questions they would like answered in EMS 201. These responses are shown as Appendix B, page 13.

Workshop Structure

The agenda for the workshop is shown in Appendix C, pages 14-15. The workshop was designed to maximize attendee participation. This was accomplished by breakout sessions, guided discussions and question and answer opportunities.

The manual was organized with Elements 1-10 being covered in sections 1-9. The appropriate section from the Madison, Wisconsin (certified agency) EMS Manual was included in each section.

Objectives

The instructional team developed the following objectives for the workshop. The intent was for the participants to be able to accomplish these objectives over the two-day training period.

- Describe good biosolids management
- Identify the benefits of good biosolids management
- Identify the four environmental outcomes of good biosolids management
- Identify challenges in developing and implementing an environmentally focused management program
- Identify critical control points
- Identify operational controls
- Describe the relationship of Plan, Do, Check, Act and the 17 elements of an EMS
- State their expectations for the implementation plan visit
- Describe the steps in preparing their agency staff for the implementation plan visit

EMS Workshop

Prior to starting with the Elements, an exercise was conducted on “Identifying challenges in developing and implementing a Biosolids EMS”. There are many pressures facing biosolids operations, such as reduced land application sites and poor public perception of biosolids. The six groups were each given an EMS challenge, the task of developing goals and action plans as shown in Appendix D, Exercise 1, pages 16-25. Selected evaluation responses were solicited.

NBP/EMS Elements 1-10

Following is a listing of NBP expectations also referred to as Minimum Conformance Requirements (MCR) for Elements 1-10.

The class reviewed Element 1 for Madison using the MCR for that element.

Element 1: EMS Manual

NBP MCR:

- Manual needs to describe applicable policies, programs, plans, procedures and management practices in the EMS
- Manual needs to be approved by top management
- Manual must contain the policy and EMS procedures required by the EMS Elements
- Manual needs to contain a cross reference to public participation, communications, emergency preparedness and response programs and plans required by the EMS Elements
- Manual needs all applicable Critical Control Points

Element 2: EMS Policy

NBP MCR:

- Policy that commits the organization to the NBP Code of Good Practice
- Communicate the policy to employees, contractors, and all interested parties
- Incorporate the policy into the organization’s biosolids programs, procedures, and practices

Copies of policies from the following certified agencies were provided to the participants:

Butler County, Ohio

Albany, Oregon

King County, Washington

Fort Worth, Texas

DCWASA

Kent County, Delaware

Exercise 2, Appendix D, page 26 outlines the specifics of the exercise.

Element 3 and 10: Critical Control Points and Operational Controls

Critical Control Points (CCP) were identified as those locations, unit processes, events and activities throughout the biosolids value chain under the organization's direct control or influence that require effective policies, programs, procedures, practices, monitoring and measurements to assure the biosolids activities meet legal, quality and public acceptance requirements and do not have undesirable environmental impacts.

It was noted that identifying CCPs (and the related operational controls) along an organization's biosolids value chain is fundamental to effectively operating an EMS for Biosolids.

The NBP MCR will:

- Identify all CCPs that you need to manage to support the four NBP outcomes
- Identify environmental / quality impacts for each one
- Identify CCPs that are consistent with the NBP National Manual of Good Practice (Appendix F) – Please see Appendix D pg 28 for Appendix F – *Critical Control Points throughout the Biosolids Value Chain*
- Demonstrate that you manage them effectively
- Monitor key parameters as needed at each CCP

Exercise 3, Appendix D, page 27 was designed so that each group could define CCPs, identify environmental impacts and develop operational controls of the CCPs.

Element 4: Legal and Other Requirements

The NBP MCR will:

- Establish a procedure for identifying and tracking legal (federal, state, and local) and other requirements applicable to the organization's biosolids management activities.
- Establish and maintain records of applicable legal and other requirements.
- Include a management process for incorporating changes and new requirements into the Elements of the EMS.

Element 4 for Madison were reviewed and compared with the MCR of that element. The review was conducted using a guided discussion.

Element 5: Continual Improvement – Goals and Objectives

The training stressed that performance improvement goals and objectives link high-level principles to day-to-day processes and procedures.

The NBP MCR are:

- Goals and objectives that support improvement in the four NBP outcome areas
- Consider input received through public participation activities
- Use SMART criteria (Specific, Measurable, Achievable, Relevant and Time-bound)
- Establish action plan that spells out the details
- Communicate goals to employees, contractors, and make available to interested parties
- Measure progress – performance indicators
- Review and update

Please see Appendix D page 34 for Exercise 4; Jeopardy.

Elements 6 and 9: Public Participation and Communication

Effective communication is essential in setting up a biosolids EMS. During the planning and implementation stages internal and external communication amongst the EMS team, the utility and interested parties are critical. As stated in the Code of Good Practice it is crucial to the success of a biosolids EMS to have public participation.

The NBP MCR for Public Participation is:

List of identified interested parties

- Credible mechanisms for:
 - Receiving input
 - Considering input as part of establishing goals and objectives
 - Responding to input
- Documented approach / procedure
- Records of input / consideration / response

The NBP MCR for Communication is:

- Make the following information available:
 - Biosolids management policy
 - Applicable legal and other requirements
 - Biosolids program goals and objectives
 - Periodic biosolids program performance report
 - Results of independent, third-party EMS verification audit

Exercise 5 Appendix D, pages 35-37 was conducted where the attendees identified interested parties, input mechanisms and output mechanisms. The interested parties were then matched with appropriate inputs and outputs.

Element 7: Roles and Responsibilities

The NBP MCR is:

- Document individual roles and responsibilities relative to biosolids EMS
- Appoint individual with overall responsibility for development, implementation and review of EMS
- Compare job descriptions to biosolids value chain, critical control points, and EMS Elements to insure all aspects of program are addressed
- Ensure individuals responsible for EMS have experience and expertise necessary
- Define contractors' roles and responsibilities for EMS in a service agreement or memorandum of understanding
- Consider roles and responsibilities part of EMS review process
- Document modifications to job descriptions, service agreements, and memoranda of understandings and include them in document control system

There was a group discussion on Element 7 utilizing the Element from Madison, Wisconsin.

Element 8: Training

The NBP MCR is to:

- Incorporate biosolids management and the environmental management system into training program
- Training programs should include general EMS training and specific unit process training
- Include normal operations and emergency situations
- Compare training program to biosolids value chain, critical control points, and EMS Elements
- Compare roles and responsibilities of Element 7 with training aspects identified in Element 8
- Document all training activities within the organization
- Consider an overall training documentation system in the organization
- Verify that partners/contractors establish and document their own training programs

A discussion included a review of Element 8 from Madison, Wisconsin to determine whether the Element met the NBP MCRs. It was also demonstrated how Element 7 –Roles and Responsibilities linked to Element 8 as well as Element 2-Policy.

Conducting a Training Program

A discussion was conducted which included the essentials of an EMS trainer. The class embarked on designing, developing and delivering an EMS training program.

The first group was assigned the subject of **What is a Biosolids EMS?**

The second group was assigned the subject of **Why Implement a Biosolids EMS?**

The third group was assigned the subject of **What is your Role in the EMS?**

The specific instructions for Exercise 6 are found in Appendix D, on page 38.

Assignments

The participants were provided an EMS 201 assignment sheet. Please see Appendix E page 39.

Summary and Recommendations

Participants are invited to share their thoughts and comments both during and after the workshop. This feedback is part of the continual improvement process of presenting training courses. The instructional team makes every effort to incorporate suggestions in future training courses.

Input was received in an open forum after day one, Appendix F page 40. At the conclusion of the class, written evaluations were collected and summarized; see Appendix G, page 41-43.

As a result of reviewing the evaluations, having discussions with NBP personnel and the instructional team the following recommendations are being made.

- Continue with exercises and breakout sessions
- Logistics need to be addressed. Specifically the registration (check-in) process. Timely submittal of registration numbers and names to the contractor.
- Continue having certified agencies give presentations on specific workshop topics.
- Consider reviewing the structure and content of 101-401. It appears after Round 5 enough data will have been gathered to review and improve.

Appendix A: List of Attendees

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Appendix B: NBP EMS Workshop 101 Assignment

Instructions

At the last workshop, each participant was asked to complete the following in preparation for their EMS Assessment and Implementation Visit and the upcoming Workshop 201. Please answer each item as specifically as you can. If you have any questions, please contact your Account Executive, Pete Machno (peterm7@prodigy.net), or Lori Stone (lori.stone@adelphia.net).

Assignment

EMS Status/Progress

1. When was your EMS Implementation Planning Visit? _____
2. What was the most helpful aspect of the Planning Visit to you and your team (please try to be specific)? _____

3. **What** and **when** is your next major milestone? _____

Biosolids Policy

4. Does your agency have a Biosolids Policy? _____

Biosolids Quality/Critical Control Points

5. What are the top 4 biosolids quality characteristics that you need to manage consistently in order to have a successful biosolids end-use/disposal program (e.g., minimal odors, pathogen reduction, percent solids concentration, etc.)?

6. Which processes/critical control points do you need to manage to ensure that you achieve these biosolids quality characteristics? _____

Relations with Interested Parties

7. From your list of Interested Parties, name 3 that are your top priority as you develop your biosolids EMS. _____

Workshop 201 Preparation

8. Before the workshop, please read about Elements 1-10 in the **NBP EMS Guidance Manual**. List 3 specific questions that you would like answered at Workshop 201.
-
-
-

2. What was the most helpful aspect of the Planning Visit to you and your team (please try to be specific)?

- Visit – Introduction to EMS
- Having Paul lead the visit
- Practicing as a team – communication

3. **What** and **when** is your next major milestone?

- New policy

5. What are the top 4 biosolids quality characteristics that you need to manage consistently in order to have a successful biosolids end-use/disposal program (e.g., minimal odors, pathogen reduction, percent solids concentration, etc.)?

- Minimize odors
- Pathogen reduction
- Reduce pathogen and vectors

7. From your list of Interested Parties, name 3 that are your top priority as you develop your biosolids EMS.

- Dept of Ecology

8. Before the workshop, please read about Elements 1-10 in the **NBP EMS Guidance Manual**. List 3 specific questions that you would like answered at Workshop 201.

- When is enough – enough SOPs
- How to make time to do this
- Is everyone struggling with time constraints
- How do you stay focused

Appendix C: Agenda

National Biosolids Partnership Environmental Management System (EMS)

Workshop - EMS 201

June 27-28, 2006, Seattle, Washington

Day 1 - Tuesday June 27, 2006

7:00 – 8:00 am	Breakfast – Networking opportunity	
8:00 – 8:15 am	Welcome and Introduction (Machno, Engel)	
8:15 – 8:45 am	EMS 201 Workshop and Objectives (Engel)	Section 1
8:45 – 10:00 am	Exercise 1 (Dean) Identify challenges in developing and implementing a Biosolids EMS	Section 2
10:00 – 10:15 am	Break	
10:15 – 11:00 am	Plan-Do-Check-Act Review Elements 1 – 10 (Dean)	Section 3
11:00 – 12:00 noon	Elements 1 & 2 EMS Manual Policy Exercise 2 (Engel)	Section 4
12:00 – 1:00 pm	Lunch	
1:00 – 2:15 pm	Elements 3 & 10 Critical Control Points Operational Controls Exercise 3 (Toby)	Section 5
2:15 – 3:00 pm	Elements 4 & 5 Legal and other requirements Goals and Objectives Exercise 4 (Dean)	Section 6
3:00 – 3:15 pm	Break	
3:15 – 4:15	Case Study – King County, Washington (Vogel)	
4:15 – 4:30 pm	Review of Day 1 (Engel and Machno) Assignment for Workshop 301	

Day 2 - Wednesday June 28, 2006

7:00 – 8:00 am	Breakfast – Networking opportunity	
8:00 – 8:30 am	NBP Small Agency Manual (Burnet)	
8:30 – 9:15 am	Elements 6 & 9 Public participation in planning and communication Exercise 5 (Toby)	Section 7
9:15 – 10:00 am	Element 7 Roles and Responsibilities (Dean)	Section 8
10:00 – 10:15 am	Break	
10:15 – 11:00 am	Element 8 Training	
11:00 – 12:00	Design, develop, deliver and evaluate a Training Program (Engel, Toby)	Section 9
12:00 – 1:00 pm	Lunch	
1:00 – 2:00 pm	Training preparation (All) Exercise 6	
2:00 – 3:00 pm	Training presentations Exercise 6	
3:00 – 3:15 pm	Break	
3:15 – 3:30 pm	Training presentations Exercise 6	
3:30 – 4:00 pm	Wrap up Review Evaluations Next Workshop/Assignment for Workshop 301	

Appendix D: Exercises

EXERCISE 1: DEALING WITH CHALLENGES – Group 1

<i>The Challenge</i>	Describe the Solution/Goal	Develop Step-Wise Action Plan for Goal
<p>After an initial EMS Awareness class, the Director of Public Works pulls you aside and asks questions about the public participation/communication elements of the EMS. The Director is of the opinion that “no news is good news”, that it’s best to lie low and not give out information. The ability to implement these elements is in doubt without the Director’s support.</p>		

EXERCISE 1: DEALING WITH CHALLENGES – Group 2

<i>The Challenge</i>	Describe the Solution/Goal	Develop Step-Wise Action Plan for Goal
<p>The Director of Public Works has been assigned the task of developing and signing the Policy. Everyone else is moving along on their tasks, but the Director seems to be putting his task off. His commitment to the EMS is suspect.</p>		

EXERCISE 1: DEALING WITH CHALLENGES – Group 3

<i>The Challenge</i>	Describe the Solution/Goal	Develop Step-Wise Action Plan for Goal
<p>The Director of Water/Wastewater in charge of budgets was initially in favor of the EMS effort, and even authorized sending three managers to a workshop. However, as details emerge on what the EMS requires, the Director begins to have serious concerns over the cost of developing and maintaining the EMS.</p>		

EXERCISE 1: DEALING WITH CHALLENGES – Group 4

<i>The Challenge</i>	Describe the Solution/Goal	Develop Step-Wise Action Plan for Goal
<p>As the EMS Coordinator you provide an initial “EMS Awareness” class to the participants. However, as you go around seeking support to build the EMS, it becomes obvious that less than 10% of the training was remembered, and folks don’t have a clue. How do you reinforce training in EMS benefits and concepts?</p>		

EXERCISE 1: DEALING WITH CHALLENGES – Group 5

<i>The Challenge</i>	Describe the Solution/Goal	Develop Step-Wise Action Plan for Goal
<p>Chief Operator who is set to retire in six months hears about the EMS and isn't very excited about it. You fear this attitude may spill over into rest of the workforce, and need to shore up the buy-in to the EMS.</p>		

EXERCISE 1: DEALING WITH CHALLENGES – Group 6

<i>The Challenge</i>	Describe the Solution/Goal	Develop Step-Wise Action Plan for Goal
<p>As the EMS Coordinator, you realize that there are unwritten SOPs that manage various elements of the biosolids value chain. The training for these has been through word of mouth. You will need operators' help in writing procedures, setting up training, and formalizing much of the process-yet, the operators are already stretched thin and hate to write SOPs.</p>		

EXERCISE 1: DEALING WITH CHALLENGES – Group 7

<i>The Challenge</i>	Describe the Solution/Goal	Develop Step-Wise Action Plan for Goal
<p>There have been efforts in the past to hold meetings to educate the public on biosolids, and nobody showed up. You question whether these efforts do any good, yet the EMS requires public outreach and you need to show progress in this area.</p>		

EXERCISE 1: DEALING WITH CHALLENGES – Group 8

<i>The Challenge</i>	Describe the Solution/Goal	Develop Step-Wise Action Plan for Goal
<p>The EMS requires that contractors be involved in the EMS. As you consider the contractors, you believe some might go along, but you expect resistance from others. But you need to involve all the contractors.</p>		

EXERCISE 1: DEALING WITH CHALLENGES – Group 9

<i>The Challenge</i>	Describe the Solution/Goal	Develop Step-Wise Action Plan for Goal
<p>The EMS public participation seems to be going well, but one stakeholder begins asking for information beyond reason. This person, who has a bad history with the utility, might be using the public outreach as a way to hassle the biosolids effort. You need to deal with this person in a way that doesn't reflect poorly on the public outreach efforts.</p>		

EXERCISE 1: DEALING WITH CHALLENGES – Group 10

<i>The Challenge</i>	Describe the Solution/Goal	Develop Step-Wise Action Plan for Goal
<p>As the EMS Coordinator, you hold a meeting and assign tasks to various personnel to build the EMS framework. As you monitor progress, you find that hardly anyone seems to be following through, citing competing responsibilities. You're starting to worry about your deadlines for getting the EMS together.</p>		

Exercise 2

Policy

This exercise will be conducted at your round table. There are copies of the policies from each of the 6 certified agencies. Each table has one of these policies.

1. Compare the NBP minimum conformance requirements of an EMS policy with the policy at your table.
2. Compare your plant's policy, if available to the NBP minimum conformance requirements of an EMS policy.
3. Appoint a spokesperson to report out to the class on one of the policies (i.e. does it meet the NBP minimum conformance requirements).

Exercise 3

Critical Control Points and Operational Controls

For this exercise we are going to split into two groups of five tables each. We will call one group “A” and one group “B”. When the exercise starts, Group “A” will be responsible for identifying possible critical control points at their facilities. Review the biosolids value chain as outlined in the Manual of Good Practice Appendix F in order to come up with the lists. Use the provided table to organize the critical control points. Group “A” will then announce the identified critical control points, one table at a time. Group “B” will then be responsible for identifying operational controls at the individual critical controls. Once this is completed both groups will try to identify environmental impacts.

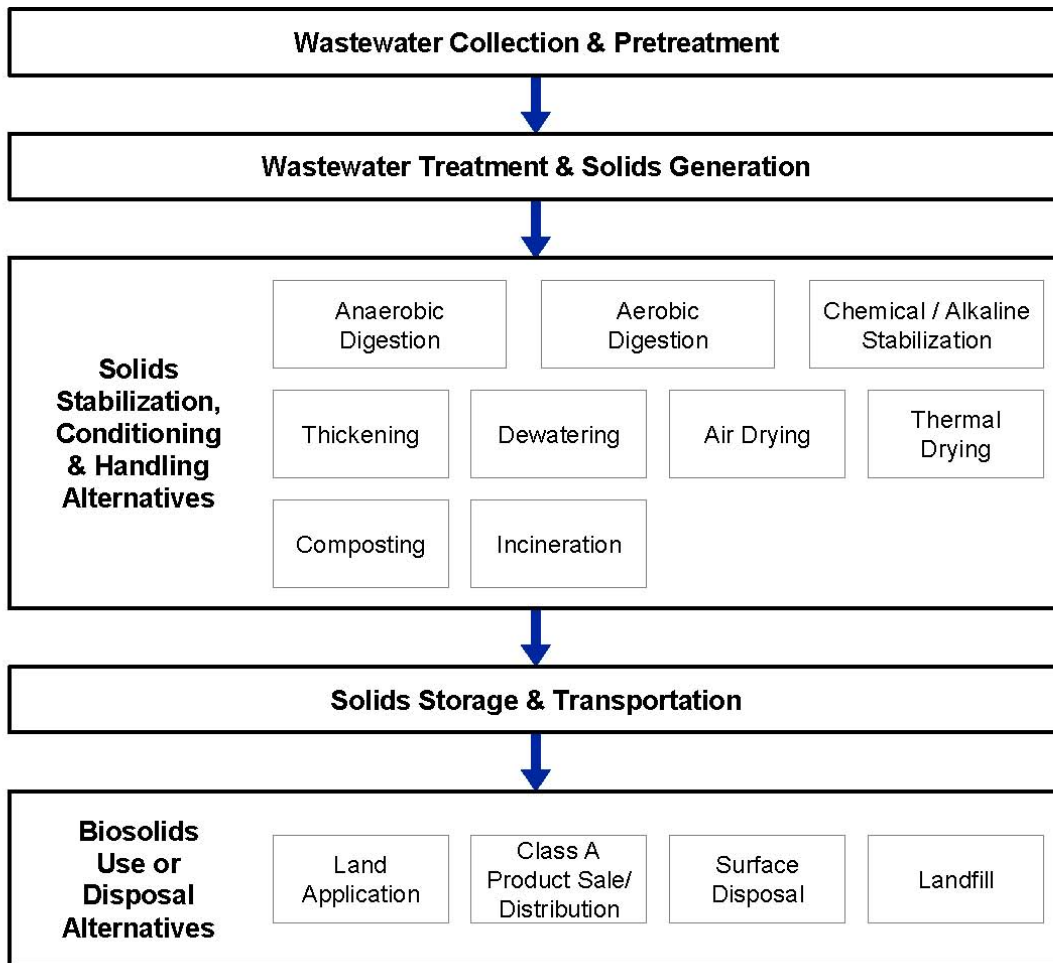
This exercise is meant to reinforce the attendee’s understanding of critical control points and how they relate to operational controls and environmental impacts.

Critical Control Points throughout the Biosolids Value Chain (NBP – Manual of Good Practice, Appendix F)

The purpose of this appendix is to clarify identification of critical control points throughout the biosolids value chain. Critical control points are locations, unit processes, events, and activities throughout the biosolids value chain, from pretreatment through final use or disposal of biosolids. Effective management of critical control points assures that biosolids management activities meet legal, quality, and public acceptance requirements and do not have undesirable environmental impacts. This effective management of critical control points is accomplished with operational controls. Each critical control point has one or more associated operational controls. Operational controls include standard operating procedures, work practices, process controls, and monitoring and other management methods such as ordinances, permits, periodic reports and inspections.

At each major step in the value chain (e.g., solids stabilization, conditioning and handling), wastewater treatment facilities have a variety of alternative processes to choose from. For example, solids stabilization methods might include aerobic digestion, anaerobic digestion, chemical stabilization, composting, thermal drying and/or air drying. In identifying critical control points, organizations participating in the NBP EMS Program must include all methods that apply to local operations. Some alternatives may not apply to some operations.

Biosolids Value Chain



Organizations participating in the NBP EMS Program are required to identify critical control points that are consistent (e.g., similar in scope and scale) to those in the *National Manual of Good Practice*. The table below can help organizations confirm that their critical control points meet NBP requirements. For example, if an organization were to identify “Wastewater Treatment” as a critical control point, this would be too broad in scale and scope to allow for effective mapping and management of environmental impacts and operational controls. Wastewater Treatment refers to an entire link in the biosolids value chain or a broad category of critical control points. To be consistent with NBP expectations, an organization would need to dig deeper within Wastewater Treatment to identify specific locations or activities – such as anaerobic digestion, air drying systems, or solids dewatering.

The NBP encourages organizations to go even one level deeper when identifying critical control points, as indicated in the table below. For example, under anaerobic digestion, organizations could identify digester temperature and detention time as critical control points needing effective management to assure that biosolids activities meet legal, quality, and public acceptance requirements and do not have undesirable environmental

impacts.

As discussed, earlier, the guidance contained in this manual is not intended to be interpreted as requirements that third party auditors will use. Auditors should ask if the manual was consulted during the identification of critical control points and operational controls. However, auditors should recognize that each facility and biosolids management program is unique. Consequently operating procedures will be unique as will the selection of critical control points and operational controls. Auditors should recognize and allow for the possibility that a critical control point for one organization may be listed as an operational control (or monitoring/measurement) by another organization.

Biosolids Value Chain	Examples of Critical Control Points
Wastewater Collection and Pretreatment	Industrial – Significant Industrial User discharges
	Commercial user discharges
Wastewater Treatment and Solids Generation	Solids screening / grit collection
	Scum blanket
	Primary treatment
	Secondary treatment
Solids Stabilization, Conditioning, and Handling	Anaerobic digestion - Temperature - Digester mixing - Detention time - “End product” meets regulatory requirements - Any regulatory/permit requirements that identify specific locations/activities that need to be managed
	Aerobic digestion - Temperature - Digester mixing - Aeration requirements - “End product” meets regulatory requirements - Any regulatory/permit requirements that identify specific locations/activities that need to be managed
	Chemical stabilization – Class B product - Quality of add mix of chemicals / lime - Mixture consistency -Mixture pH and temperature - Mixture detention time - Any regulatory/permit requirements that identify specific locations/activities that need to be managed

	<p>Chemical stabilization</p> <ul style="list-style-type: none"> - Class A product -Quality of add mix of chemicals / lime -Mixture consistency -Mixture pH and temperature -Mixture detention time -“End product” meets regulatory requirements -Location of facility – air emissions management -Any regulatory/permit requirements that identify specific locations/activities that need to be managed
	<p>Composting</p> <ul style="list-style-type: none"> -Quality of add mix of bulking agent -Mixture consistency -Mixture temperature -Mixture turning -Mixture detention time -“End product” meets regulatory requirements -Any regulatory/permit requirements that identify specific locations/activities that need to be managed

Biosolids Value Chain	Examples of Critical Control Points
Solids Stabilization, Conditioning and Handling (continued)	Air drying system <ul style="list-style-type: none"> - Location of facility - Mixture turning - Mixture temperature - Mixture detention time -“End product” meets regulatory requirements - Any regulatory/permit requirements that identify specific locations/activities that need to be managed
	Thermal drying systems <ul style="list-style-type: none"> - Location of facility – air emission management - Temperature -Detention time - Stack emissions - “End product” meets regulatory requirements -Storage bin / silo - Any regulatory/permit requirements that identify specific locations/activities that need to be managed
	Bioenergy / Incineration <ul style="list-style-type: none"> - Thickening - Dewatering - Scum conditioning - Thickened solids holding tank - Burn zone -Scrubber - Stack emissions - Any regulatory/permit requirements that identify specific locations/activities that need to be managed
	Dewatering <ul style="list-style-type: none"> - Location of facility - “End product” meets specifications / percent solids
	Thickening <ul style="list-style-type: none"> - Location of facility - “End product” meets specifications / percent solids
Solids Storage and Transportation	Solids storage <ul style="list-style-type: none"> - Site location - Distance to neighbors - Road access - Set back from surface water - Depth to groundwater - Any regulatory/ permit requirements that identify specific locations/activities that need to be managed
	Solids transportation <ul style="list-style-type: none"> - Truck (e.g., maintenance, appearance) - Truck cover - Transportation route - Truck cleaning facilities - Any regulatory/permit requirements that identify specific locations/activities that need to be managed

Biosolids Value Chain	Examples of Critical Control Points
Biosolids End Use or Disposal	Land application <ul style="list-style-type: none"> - Application site location - Location of off loading from trucks - Interim storage/staging area - Perimeter of biosolids application site-setback distances from surface water/neighbors/wells - Depth to groundwater - Agronomic rate -Truck cleaning on site - Any regulatory/permit requirements that identify specific locations/activities that need to be managed
	Class A/EQ product sale and distribution <ul style="list-style-type: none"> - Product and packaging specifications - Product application rates -Product transportation - Any regulatory/permit requirements that identify specific locations/activities that need to be managed
	Landfill <ul style="list-style-type: none"> - Landfill - Any regulatory/permit requirements that identify specific locations/activities that need to be managed
	Surface disposal <ul style="list-style-type: none"> - Site location - Perimeter of application site – setback from surface water/neighbors/wells - Depth to groundwater - Truck cleaning site -Access road - Any regulatory/permit requirements that identify specific locations/activities that need to be managed

Exercise 4

Jeopardy

An “exercise” will be conducted that simply involves asking questions, in a game-show style, with TREEO prizes going to those who are first to give the correct answers. Up to fifteen questions will be given to the audience with rewards tossed or otherwise freely given out after each correct answer.

The objectives of this exercise are three-fold:

- The exercise occurs in the mid-afternoon, when interest can subside. One objective is to take a break from lectures and raise the energy level.
- The questions will be intended to reinforce some of the more important concepts introduced in prior sessions.
- An objective is to keep this exercise lively, perhaps even humorous, to see what response is given and what comments are received. As we consider the possibility of making significant improvements to the series of courses, this will provide some feedback on what role this type of interaction might play in keeping the courses as stimulating as they can be, given the fact that some of the material can be challenging to present in a stimulating manner.

Exercise 5

Public Participation and Communication

1. Identify input mechanisms. Briefly describe, assign responsibility and indicate how records of this input are maintained.
2. Identify output mechanisms. Briefly describe, assign responsibility and indicate how records of this output are maintained.
3. Review list of interested parties. Add additional parties if applicable.
4. Transfer input and output mechanisms to worksheet.
5. Identify which input and output mechanisms are appropriate for each of the interested parties.

Exercise 5

Interested parties	Input mechanisms							Outreach mechanisms						
Facility neighbors														
Land application site neighbors														
Environmental Groups														
Watershed, wildlife, sportsman groups														
Farmers														
Land application site owners														
State regulatory officials														
Co. and State Health Dept.														
EPA														
Local Elected Officials														
Media														
Rate Payers														

	Input mechanisms							Outreach mechanisms							
Developers															
Academia															
Conservation Districts															
Landscape Professionals (gardeners club)															
NBP-WEF-AMSA															
Community Leaders/Community Groups															
Communities affected by transport routes															

Exercise 6

Conducting EMS Awareness Training

The class will be divided into three groups (I, II, III). The groups will be assigned the following topics.

Group I – What is a Biosolids EMS?

Group II – Why Implement a Biosolids EMS?

Group III – What is your Role in the EMS Process?

Each group will be given a set of PowerPoint (PP) slides that we put together for you. These are on a CD. Printed copies are available in your manual on pages 9-21 to 9-39. Please note that these are only examples of PP slides. You may modify them as you see fit (time permitting). There should be at least one lap-top with the latest version of PP installed on each group/s computer.

Specific tasks for each group:

1. Write at least one but no more than two objectives for your training presentation.
2. Assume your audience to be wastewater operators from all parts of your treatment facility.
3. Prepare a ten minute presentation utilizing the slides provided and/or those you modified.
4. Decide on the method for delivery of the training. (i.e. lecture, guided discussion, etc.)
5. Appoint one or more presenters.
6. Present your material to the entire group.



Appendix E: Homework Assignment NBP EMS Workshop 201 Assignment

Instructions

At the last workshop, each participant was asked to complete the following in preparation for the upcoming Workshop 301. Please answer each item as specifically as you can. If you have any questions, please contact your Account Executive, Pete Machno (peterm7@prodigy.net), or Lori Stone (lori.stone@adelphia.net).

Assignment

EMS Status/Progress

1. Which elements have you completed so far? _____
2. What seems to be your most difficult challenge to EMS development progress?

3. **When** was the last time you worked/interacted with your Account Executive? Was it helpful? Do you have any recommendations for improvement?

4. **When** is your projected date for EMS completion? Once you complete your draft manual, your Account Executive will schedule your EMS Status Review, after which you can begin your operational phase. _____

Biosolids Quality/Critical Control Points

5. Have you had any difficulties with producing consistent quality biosolids, and managing your process/critical control points? If yes, please explain.

Relations with Interested Parties

6. **Who** is your state regulator responsible for your biosolids management operations? **When** was the last time you spoke with him/her? _____

Workshop 301 Preparation

7. Before the workshop, please read about Elements 11-17 in the **NBP EMS Guidance Manual**. List 3 specific questions that you would like answered at Workshop 301.

Appendix F: End of Day 1 Comments

1. Some repeat check is good
2. Good interaction/samples
3. Concern over \$ for audits
4. Concern over staff time needed
5. Good networking
6. Remove table – need more space
7. Good coverage of elements
8. Albany will share SOPs
9. Scheduling Aug/Sept start
10. Discuss of streamlining for OPS
11. Use of example (Madison) good
12. Having member agencies here good

Appendix G: Evaluations and Written Comments

Environmental Management Systems
June 27-28, 2006, Program EMS201

PROGRAM	<u>Poor</u>					
	<u>Excellent</u>	1	2	3	4	
Course content met expectations						4.20
Level of content was appropriate						4.33
Course was relevant to job needs						4.33
Time allocated for coverage of topics						4.33
Effectiveness of audio visuals						4.13
Usefulness of course materials/handouts						4.33
Accomplishment of learning objectives						4.21
PRESENTATIONS						
Interesting						4.27
Responses to questions						4.53
Emphasis on important topics						4.07
Clarity of presentation						4.33
Enthusiasm and energy						4.60
Knowledge of the subject						4.73
Group discussions						4.67
Breakout Session						4.67
OVERALL RATING OF COURSE						
Course						4.53
Instructor(s)						4.53
Organization of program						4.67
Facility used/meeting room						4.20
Break functions/lunch functions						4.60
Hotel accommodations						4.36

WRITTEN COMMENTS

1. General Comments

- A. I think audit should be changed to review
- B. Great class-learned a lot during breakout-sessions. Operator's comments useful
- C. I felt that this workshop was helpful and it was practical tool to facilitate development our EMS.
- D. Training personnel were very knowledgeable. Room was to cold. Food & Accommodations were very nice. I hope for workshops closer to southeast due to distance. Registration not well organized-some people not on list and no name tags.
- E. Good interactions. Great food. Overall understanding. Useable templates
- F. The class helpful with understanding EMS and how to use is a tool.
- G. Move workshop to another location.
- H. Very good second exposure to EMS (The initial review was useful). Good responses to the kind of questions our coworkers and policy makers will ask about EMS.
- I. Everything was good
- J. Great networking! Try another location for next meeting-just to keep things Interesting.
- K. Have the next workshop in a different location then the Seattle area.
- L. Would like to have the workshop in another location, so that the folks that have traveled in the past, don't have to in the future.
- M. Would like to see a local plant tour to see what others do with the Biosolids.

2. Describe the most valuable portion of the course.

- A. Break out & group discussions.
- B. Interaction with other EMS Coordinators . Input from certified programs
- C. Breakout sessions & exercises. Food was outstanding.
- D. The workshop gives step by step instructions on how to write the 1st 10 sections of the EMS. It tells you how to do it, then gives specific examples of certified agencies. Then the additional comments from the experienced trainers from TREEO were extremely helpful.
- E. Networking with other agencies. Practice exercises with others and seeing other points of view.
- F. Training exercises understanding of all aspects of tp with other agencies perspectives.
- G. The participations sessions
- H. Was interaction with each other, breakout sessions, examples
- I. Good exercises
- J. Interaction with others, Specific information
- K. The breakout exercises were great. Good examples were given that will be very helpful as we move through the EMS process.
- L. Interaction with other attendees. The training workshop was great. You do a great job with training.
- M. Interaction with others
- N. The small agency EMS talk, but I think I got a lot out of the workshop.

3. Describe the least valuable portion of the course.

- A. There was none.
- B. Going over old material. Need to have a class for just operators without their present. Would generate some great input.
- C. Lunch could be shorter. Ed is pretty dry & could use some examples to get his points across and not just read slides.
- D. All in all, the course was exactly what I was hoping for, so its hard to make any negative comments. The only thing I might suggest is that perhaps workshops 101 & 201 could be collapsed into one 3 day session since there some overlap. Actually workshop 101 might have been a little basic, 201 was just right, it seemed to me.
- E. It was all valuable and needed.
- F. Start of the workshop was to long
- G. Esoteric info.
- H. Some repeat of materials
- I. Some of the topics are repeated too much, the workshops are good. Seemed like the slides were similes to the first workshop.
- J. I can't say that I found any of this workshop least valuable to my preparation of my EMS.