



## **NBP EMS 101 Workshop**

### **Summary Report**

**Prepared by**



January 19-20, 2005

Kalamazoo, MI

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## **INTRODUCTION**

In 2005, the National Biosolids Partnership (NBP) welcomed a group of new utilities into the Environmental Management System (EMS) demonstration program. The University of Florida Center for Training, Research and Education (UF/TREEO), in conjunction with the National Biosolids Partnership (NBP), conducted a two-day Environmental Management Systems (EMS) workshop in Kalamazoo, Michigan on January 19 - 20, 2005. This workshop was an opportunity for these new agencies to interact together and start the process of developing and implementing an EMS. This workshop (EMS 101) is the first in a four course series developed by the NBP to assist the current group of utilities in the EMS demonstration project.

This report is intended to highlight some key topics covered during the workshop and serve as a high-level 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.

There were 35 attendees representing 17 utilities. The list of attendees and a link to the class photos are shown in appendix A.

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

The purpose of this workshop was to brief the participating utilities on the NBP expectations and the process of developing and implementing an EMS. The participants were given information on the function of the NBP, its mission, its strategy and the program which they are beginning.

Prior to attending the workshop, students were given the following documents to review:

- NBP 2003-2004 Annual Report
- How to get started with your EMS
- The NBP EMS Guidance Manual-Chapter 1-4

Appendix B contains details on the location of these references

## **WORKSHOP STRUCTURE**

The agenda for the workshop is shown as appendix C. The workshop was designed to have attendee participation. This was accomplished by breakout sessions, guided discussions and question and answer opportunities. The workshop began with the key topics of building blocks, continual improvement and using the plan-do-check-act cycle of total quality management. Also discussed, were the pressures facing many biosolids operations, such as reduced land application sites and poor public perception of biosolids, and how implementing an EMS will help a utility address these issues.

Another key workshop objective was to introduce the new agencies to the NBP and its EMS framework and the 17 EMS elements. The participants were given information about the formation of the NBP, its mission, its strategy, and the demonstration program. They were introduced to the 17 EMS elements as well as the NBP's materials, which will serve as reference and guidance while developing their EMSs.

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.



During the workshop, representatives from Orange County, California and the City of Los Angeles Department of Sanitation (both are NBP certified programs) participated as guest speakers. They provided real life experiences on benefits and barriers to their EMS implementation program.

A copy of the EMS manual from Madison Wisconsin (also a NBP certified program) was provided to all participants. It was used to reference each of the 17 elements as they were covered in class.

## **OBJECTIVES AND EXPECTATIONS**

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

- Define an EMS,
- Identify the benefits of a NBP EMS,
- Identify the fence line of the NBP EMS,
- Identify the four (4) key outcomes of the NBP EMS,
- Identify challenges in developing and implementing a biosolids EMS,
- Identify the difference between a NBP EMS and an ISO 14001 EMS,
- Identify Critical Control Points,
- Identify Operational Controls,
- State expectations for the implementation plan visit and

- Describe the steps in preparing the agency staff for the implementation plan visit.

On day one, the instructional team solicited input from the participants on their EMS experience and their expectations of the workshop. Figure one, below, shows the class distribution for EMS experience with the majority having limited or some experience.

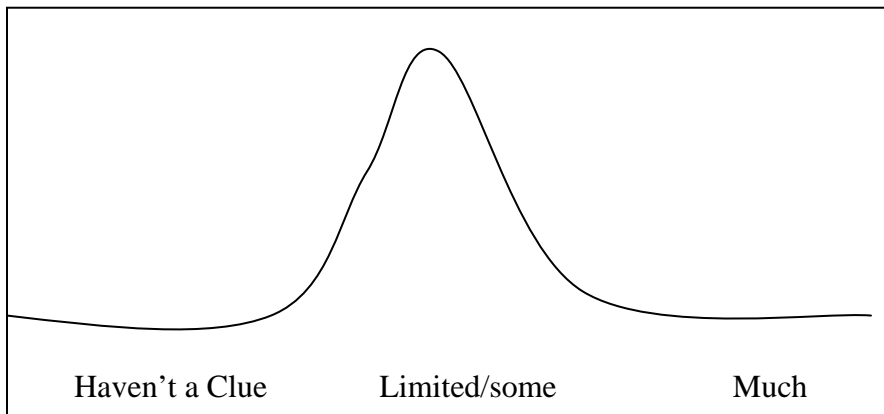


Figure 1: EMS Experience

Listed below are the workshop expectations given by the class.

- ❖ Utilize EMS knowledge for biosolids
- ❖ Get the EMS done
- ❖ Learn how to implement the EMS
- ❖ Learn how EMS affects lab/pretreatment
- ❖ Finish the EMS Process
- ❖ Want to establish new network/partners
- ❖ Enhance auditing ability
- ❖ Basic training - refresher
- ❖ Hear from Orange County/LA folks
- ❖ Compare EMS to existing practices
- ❖ How to communicate with top management
- ❖ Increase beneficial use
- ❖ Consider options to land application
- ❖ Build on biosolids knowledge
- ❖ Improve public image/communication
- ❖ Determine right EMS model
- ❖ Understand EMS limits
- ❖ Understand essential components
- ❖ Learn where to start

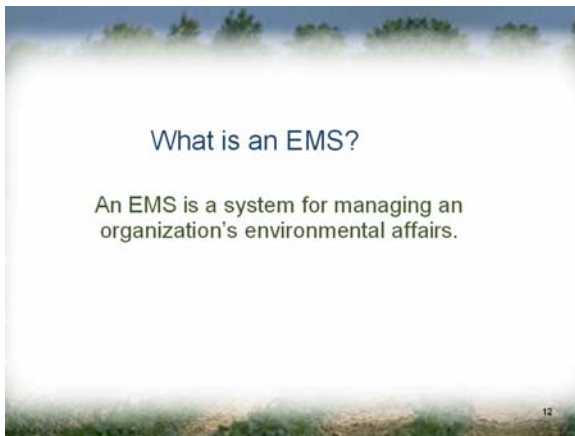
The class expectations and workshop objectives were a good match increasing the chances of a successful exchange of information.

## NBP EMS OUTCOMES

An EMS is a management framework for reducing environmental impacts and improving organizational performance over time. Implementing an EMS is voluntary; therefore, the EMS framework can be adapted to support the implementing organization's needs, priorities, and circumstances. The NBP EMS framework supports continual improvement in four key outcome areas that will help an organization foster public acceptance.

- Regulatory compliance
- Quality management practices
- Improved relations with interested parties
- Environmental performance

The EMS framework is based on the “plan-do-check-act” continual improvement cycle of total quality management (TQM) and involves a set of planning activities, procedures, performance monitoring, and review to allow an organization to improve business processes over time. Some key points are summarized in the slides below.



## BACKGROUND ON THE NBP AND THE NBP FRAMEWORK – THE 17 ELEMENTS

The NBP is a nonprofit alliance formed in 1997 by the Association of Metropolitan Sewerage Agencies (AMSA), Water Environment Federation (WEF) and the U.S. Environmental Protection Agency (USEPA). The NBP is committed to developing and advancing environmentally sound and sustainable biosolids management practices that go beyond regulatory compliance. The NBP promotes public participation in biosolids programs to enhance the credibility and public acceptance of beneficial reuse of biosolids.

The NBP developed a framework that consists of 17 building blocks, or elements, for developing and implementing an EMS. Taken together, these elements provide a structure for helping an organization:

- Establish guiding principles for the biosolids management program
- Set goals for continual improvement
- Implement procedures for ensuring consistent product and service quality
- Engage stakeholders to demonstrate that the program is committed to protecting the environment and carrying out the stated mission
- Correct and prevent problems
- Measure and report performance improvements, and act on lessons learned and opportunities for additional improvements

The 17 elements are grouped into five categories: Overview and Policy, Planning, Implementation, Measurement and Corrective Action and Management Review.

**There are 17 EMS Elements**

**Overview and Policy**  
Element 1 — EMS Manual  
Element 2 — Biosolids Management Policy

**Planning**  
Element 3 — Critical Control Points  
Element 4 — Legal and Other Requirements  
Element 5 — Goals and Objectives  
Element 6 — Public Participation in Planning

**Implementation**  
Element 7 — Roles and Responsibilities  
Element 8 — Training  
Element 9 — Communication  
Element 10 — Operational Control of Critical Control Points  
Element 11 — Emergency Preparedness and Response  
Element 12 — Documentation and Document Control

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*(A circular diagram with four nodes: Plan, Do, Check, Act, connected by arrows in a clockwise cycle.)*

**There are 17 EMS Elements**

**Measurement and Corrective Action**  
Element 13 — Monitoring and Measurement  
Element 14 — Nonconformances: Preventive and Corrective Action  
Element 15 — Biosolids Management Program Report  
Element 16 — Internal EMS Audit

**Management Review**  
Element 17 — Management Review

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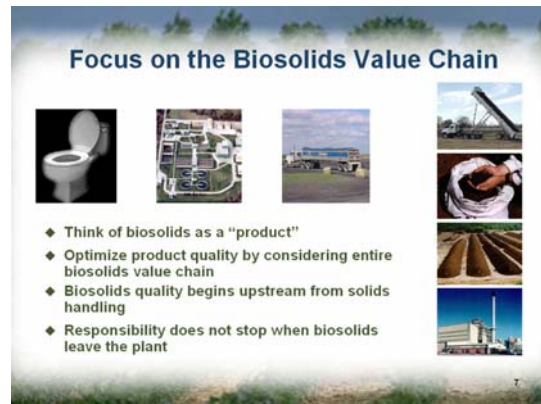
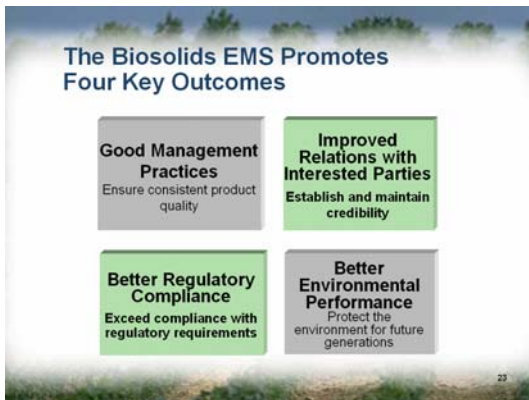
*(A circular diagram with four nodes: Plan, Do, Check, Act, connected by arrows in a clockwise cycle.)*

## THE FOUR OUTCOMES

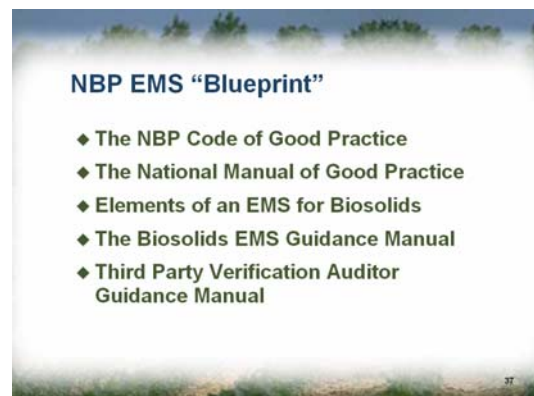
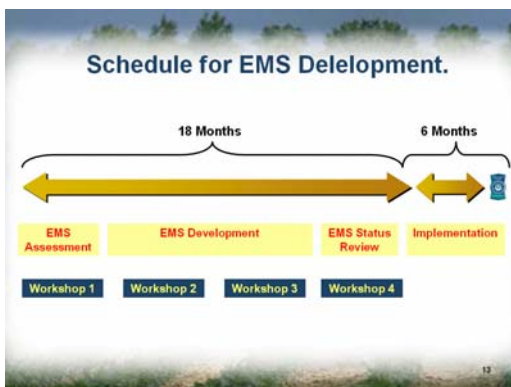
The NBP EMS framework is specifically tailored to support the needs and priorities of wastewater utilities and biosolids programs and is well-suited to other public utilities as well. The NBP EMS is designed to support improvements in four key areas:

- Quality management practices
- Regulatory compliance
- Improved relations with interested parties
- Environmental performance

Participants in the NBP EMS program are evaluated on whether their EMS actually supports real performance improvements in these areas. The workshop covered the four outcomes that the EMS promotes. It also emphasized the importance of focusing on the biosolids value chain when developing an EMS.



**How to get started on your EMS.** The Workshop gave the students the information and tools needed to get started developing their EMSs. Items covered included the importance of management buy-in and assembling an EMS team.



## **CONTINUAL IMPROVEMENT**

Agencies implementing a NBP EMS establish performance improvement goals and objectives that address each of the four key outcome areas. In addition, the EMS framework leads agencies through a “plan-do-check-act” process where each year they review goals and objectives, implement an action plan that supports those objectives, and measure and report results.

The participants were introduced to the plan-do-check-act model which is the continual improvement basis behind the EMS elements. It was explained how the plan-do-check-act model relates to the following elements;

- Element 5 – Goals and Objectives,
- Element 13 – Monitoring and Measurement,
- Element 16 – Internal Audit, and
- Element 17 – Management Review.

As part of the training program the participants broke into smaller groups and were tasked with developing examples of issues, goals, objectives, and action plans. See appendix D, exercise I.

## **QUALITY MANAGEMENT PRACTICES**

The success of a biosolids program depends primarily on the production of a quality biosolids product. The NBP uses the term “biosolids value chain” to describe the sequence of events from pretreatment through biosolids use/disposal – all of which affect the quality of the final product.

The biosolids value chain is different for each wastewater treatment plant. Focusing on the biosolids value chain helps an agency define exactly how it produces its biosolids product and what key processes it needs to manage to ensure quality requirements are met. The focused evaluation of the biosolids quality and the supporting processes in the biosolids value chain are the foundation for building a practical and effective EMS.

By “beginning with the end in mind” and identifying the biosolids quality and use/disposal requirements, a facility can more easily define their critical control points and develop an EMS that focuses on the management and control of those processes and activities.

The students were introduced to the concept of critical control points and operational controls (element 3 and 10). They were reminded again of the importance of focusing on the biosolids value chain for identifying critical control points and operational controls. See appendix D, exercise II.

### Official Definition of Critical Control Points

Those **locations, unit processes, events, and activities** throughout the biosolids value chain under the organization's direct control or influence that require effective

- Policies → Practices
- Programs → Monitoring and
- Procedures → Measurements

... to ensure the biosolids activities

- Meet legal, quality, and public acceptance requirements and
- Do not have undesirable environmental impacts.

Critical control points include all biosolids management activities that are covered under applicable legal and other requirements.

**What to manage to meet biosolids quality, compliance, and public acceptance objectives**



### The Art of Mapping Critical Control Points and Operational Controls

Ask the right questions...

**What?**  
What are our product quality requirements?

→

**Where?**  
What activities, events, and processes do we need to manage?

→

**How?**  
What procedures or management tools do we need in place to manage them?

## REGULATORY COMPLIANCE

The workshop covered compliance management as an essential outcome as well as Element 4, legal and other requirements. Compliance management must cover the entire biosolids value chain.

### Compliance Management – EMS Context

- ◆ Create or demonstrate an effective compliance management system
- ◆ EMS should support improvements in the organization's performance in meeting legal requirements
- ◆ Establish compliance-based goals and objectives
- ◆ Respond proactively and effectively to instances of noncompliance
- ◆ Ensure that contractors have effective compliance management systems

### Your approach should cover the entire biosolids value chain






- ◆ From pretreatment to end use
- ◆ Don't forget contractors.....
  - they can have their own system, as long as it works



## EMS BUY-IN, PUBLIC PARTICIPATION AND COMMUNICATION

The workshop stressed the importance of both internal and external buy-in. Internal buy-in refers to top management, as well as other facility personnel, agreeing to support the implementation of the NBP EMS. They must also be willing to participate in the entire process. External buy-in involves soliciting information from the public (Element 6) and providing information to the public (Element 9).

Exercise III was conducted as a guided discussion. See appendix D, exercise IV for details.



## **ASSIGNMENTS**

The participants were asked to do the following upon return to their facilities.

- Download elements and EMS Guidance Document
- Review EMS Assessment Questionnaire (NBP will supply)
- Check for Biosolids Policy
- Make a list of potential Interested Parties

## **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. Participant's comments and suggestions were incorporated into day two's session. These comments are shown in appendix E.

At the conclusion of the class, written evaluations were collected and summarized, see appendix F.

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

- Review and update the NBP EMS 101 manual to reflect changes made between day one and day two.
- Decide how best to incorporate case study manual into the training program. This

was added after day 1, cross referencing is essential.

- Review and update exercises. Are there better methods that could be used to stress the objectives and the outcomes?
- Have one or more NBP verified utilities present during the workshop.

## Appendix A - Attendees list and class photos

[http://www.flipviewer.com/popup/?opf=http://members.myflipbooks.com/shadeed/Kalamazoo\\_EMS101\\_Workshop.opf&ver=FlipAlbum](http://www.flipviewer.com/popup/?opf=http://members.myflipbooks.com/shadeed/Kalamazoo_EMS101_Workshop.opf&ver=FlipAlbum)

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## Appendix B-Pre-Class Reading List

Information is found on the NBP Web Site at [www.biosolids.org](http://www.biosolids.org)

- The NBP 2003-2004 Annual Report

<http://biosolids.org/docs/27343.pdf>

- How to get started with your EMS

[http://biosolids.org/ems\\_main.asp?sectionid=48&pageid=175&pagename=How%20To%20Get%20Started](http://biosolids.org/ems_main.asp?sectionid=48&pageid=175&pagename=How%20To%20Get%20Started)

- The NBP EMS Guidance Manual-Chapters 1-4

[http://biosolids.org/ems\\_main.asp?sectionid=48&pageid=188&pagename=EMS%20Guidance%20Manual](http://biosolids.org/ems_main.asp?sectionid=48&pageid=188&pagename=EMS%20Guidance%20Manual)

**Appendix C: Agenda  
National Biosolids Partnership EMS Workshop  
EMS 101  
January 19 and 20, 2005  
Kalamazoo, Michigan**

**Day 1**

**Wednesday, January 19, 2005**

7:00 – 8:00 am	BREAKFAST-Networking Opportunity	
8:00 – 9:30 am	Welcome and Introduction William T. Engel, Jr., Ph.D. and Peter Machno, Ph.D.	Session 1
9:30 – 10:00 am	NBP Program Overview William T. Engel, Jr., Ph.D.	Session 2
10:00 – 10:15 am	BREAK	
10:15 – 11:00 am	NBP EMS Building Blocks Douglas Dean, P.E.	Session 3
11:00 – 12:00 pm	Continual Improvement Douglas Dean, P.E.	Session 4
12:00 – 1:00 pm	LUNCH-Networking Opportunity	
1:00 – 1:30 pm	Continual Improvement Douglas Dean, P.E.	Session 4 (Cont'd)
1:30 – 2:15 pm	The EMS Development Process Douglas Dean, P.E.,	Session 5
2:15 – 2:45pm	Overview of Plan-Do-Check-Act Elements 1 and 2 William T. Engel, Jr., Ph.D. EMS Manual Biosolids Management Policy	Session 6
2:45 – 3:00 pm	BREAK	
	Planning Douglas Dean, P.E. Elements 3, 4, 5 & 6	Session 7
3:00 – 3:30 pm	Critical Control Points Element 3	

3:30 – 4:00 pm	Exercise	
4:00 – 4:30 pm	Review of Day 1	

Day 2

Thursday, January 20, 2005

7:00 – 8:00 am	BREAKFAST-Networking Opportunity	
8:00 – 8:30 am	Overview of Day 2	
8:30 – 10:00 am	Planning Elements 3, 4, 5 and 6 Critical Control Points Legal and Other Requirements Goals and Objectives Public Participation and Planning	Session 7 (Cont'd)
10:00- 10:15 am	BREAK	
10:15 – 12:00 pm	Implementation William T. Engel, Jr., Ph.D. Elements 7, 8, 9, 10, 11, and 12 Roles and Responsibilities Training Communications Operational Controls of Critical Control Points Emergency Preparedness and Response EMS Documentation and Document Control	Session 8
12:00 – 1:00 pm	LUNCH-Networking Opportunity	
1:00 – 1:30 pm	Implementation	Session 8 (Cont'd)
1:30 – 2:30 pm	Measurement and Corrective Action Douglas Dean, P.E. Elements 13, 14, 15, and 16 Monitoring and Measurement Nonconformances: Preventative and Corrective Action Biosolids Management Program Performance Report Internal EMS Audit	Session 9

2:30 – 2:45 pm

BREAK

2:45-3:15 pm

Management Review  
Douglas Dean, P.E.  
Element 17  
Periodic Management  
Review of Performance

Session 10

3:15 – 3:45 pm

Wrap Up  
Review  
Evaluations  
Future Workshops

\*Exercises are planned for selected sessions-The groups will divide into three breakout rooms.

## **Appendix D- Exercises**

I Outcomes, Goals, Objectives and Action Plans

II Critical Control Points and Operational Controls

III Public Participation and Communication

## Exercise I

The class was broken down into three groups. Each group was assigned one of the four key outcomes.

- Regulatory compliance
- Quality management practices ( 2 groups)
- Improved relations with interested parties
- Environmental performance

They were to reach a consensus on a goal, objective and develop an action plan. The results from this exercise are shown below.

### Outcome 1

**OUTCOME:** Regulatory Compliance

**GOAL:** Bring Molybdenum (MB) into Compliance

**OBJECTIVE:**

- Goal - Bring MB to 30 ppm by Oct 1, 2005
- Pinpoint MB Sources by June 2005
- Remove MB offsite within budget constraints
- Education of MB sources and monitor

**ACTION PLAN:**

Pinpoint Sources

- Hire summer students to test
- Check permits of MB sources
- Tests mains –Sources
- Remove MB offsite
- Rainy Day \$\$ to clean current facility, export or landfill

### Outcome 2

**OUTCOME:** Quality management practices

**GOAL:** Evaluate emerging risk-biosolids

**OBJECTIVES:** Evaluate Endocrine disruptors

**ACTION PLAN:**

- Literature Search
- Contact build relationships with researchers
- Work w/WEF staff-spend \$\$\$
- Funding for research
- Evaluate research
- Revisit goal based on research

**Outcome 2**

**OUTCOME:** Quality management practice

**GOAL:** 100% Reuse

**OBJECTIVE.** Lime stabilize by Oct 1, (>25%)

**ACTION PLAN:**

- Set up lime slaker or do onsite
- Thicken
- Test & verify
- Test for re-growth
- Contact farmers/users

**Outcome 3**

**OUTCOME:** Improved relations with interested parties

**GOAL:** Reduce complaints by 75% by 6/01/06

**OBJECTIVE:** Reach out to stakeholders by 6/01/06

**ACTION PLAN:**

- Plat map- 1 day
- Addresses – 1 month
- Handout info- 2weeks
- Discussion- door-to door, public meeting
- Sensitivity training

**Outcome 4**

**OUTCOME:** Environmental performance

**GOAL:** Reduce molybdenum 200 ppm to 100 ppm by 10/1/05  
Achieve 100% Land application

**OBJECTIVE**

- Identify Sources
- Sample cooling towers
- Analyze samples

**ACTION:** IPP coordinator

- Prepare List of sources
- Sample sources
- Compare results
- Notify stakeholders of new discharge permits

## Exercise II

### Critical Control Points and Operational Controls

The class was organized by facility and the exercise involved the individual groups comparing their critical control points and operational controls with those in appendix F of the Biosolids EMS Guidance Manual. The outcome indicated that the developed critical control points and operational control points compared well with those in appendix F and that the appendix should be used as a guide in EMS planning and implementation.

Biosolids Value Chain	Critical Control Point	Operational Control	SOPs	Monitoring and Measurement	Potential Environmental Impacts
Solids Processing*	Screening and grit removal*	Operator screen maintenance*	SOP- <i>Headworks</i> *	Level sensor on screen system. Grit removal in lbs/day.*	Controls plastics and other unwanted materials in biosolids*

\* Example



### Exercise III

#### Public Participation and Communication

The participants provided information on the types of interested parties and possible issues facing the interested parties. Next they provided possible mechanisms for accomplishing inputs into planning and outputs into communication. The suggestions are:

##### Input/Outputs

- Focus group meeting
- Feed
- One-on-One
- Schools
- Website
- Plant Tours
- Extension Bulletin
- Interface w/Env. Groups/ Go to them
- BBQ's w/neighbors
- Neighborhood Associations
- Earth Day, other events
- Newspaper, local channels, mailings
- Bill stuffers

##### Interested Parties

Neighbor-  
Farmers-  
Environmental. Groups-  
Local Govt.-  
Regulators-  
Contractors-  
Media-  
Ag. Industry Agencies-  
Plant Staff-  
Drain Commissioner-  
Retail Markets- (nurseries)  
Politicians-  
Industrial dischargers-  
Customer-  
Other EMS  
Truck Route Neighbors-  
Member Agencies (linked)-  
Irrigation Districts-

##### Concerns

Odor, flies, truck traffic, health  
Nutrient value, metals, packing  
Potential Pathogens  
Cost, complaints, perception  
Compliance, cooperation, permits  
Profit, product consistency, sustainability  
Controversy, ad money  
Soil sustainability  
Process Control, updates  
Stormwater, under drains  
Quality  
Image "0" NOVs.  
Limits Liability, non-compliance  
Rates  
Agencies- Assistance  
Spills, noise, odors, speed, aesthetics  
Increased use  
return flow quality.

## **Appendix E: Day One Ending Comments**

- Learned to introduce at various levels
- Able to compare NBP/ISO
- Good Pace –Flexibility
- Appreciate P-D-C-A info
- Good breakout sessions
- Good interaction-Enthusiasm
- Need to get the specifics- what to do
- Intro a little long
- Need better convincing on audits(\$\$\$\$)
- Location (BRRRR)
- More practical examples
- Discussion of how to establish baselines
- Could use real world experience info
- Need class list
- Share results of exit survey
- Strategies for buy-in
- Concerned about 18 month timeline

**Appendix F: Evaluation**  
**COURSE EVALUATION**

**National Biosolids Partnership Biosolids EMS Workshop**  
**January 2005**

**UF/TREEO Center**

<b>Program</b>	<b><u>Poor</u></b>			<b><u>Excellent</u></b>		
	1	2	3	4	5	
Course content met expectations						3.85
Level of content was appropriate						3.85
Course was relevant to job needs						4.04
Time allocated for coverage of topics						3.67
Effectiveness of audio visuals						3.85
Usefulness of course materials/handouts						4.26
Accomplishment of learning objectives						3.81

**PRESENTATIONS**

Interesting						3.78
Responses to questions						4.22
Emphasis on important topics						4.00
Clarity of presentation						3.81
Enthusiasm and energy						3.85
Knowledge of the subject						4.44

## OVERALL RATING OF COURSE

	1	2	3	4	5
Course					4.00
Instructor(s)					3.81
Organization of program					4.00
Registration					4.00
Facility used/meeting room					4.00
Brochure information					4.71
Break functions					4.67
Quality of service from TREEO staff					4.74

### General Comments

- A. Started late in morning & after lunches. Breaks went longer than they were suppose to. Would be nice just to socialize and net-work at night instead of more presentation. A long day Wednesday.
- B. I thought the first day could have been compressed into a morning, leaving 1 ½ days for elements & details.
- C. Info presented nicely.
- D. Great job.
- E. Communication & definitions could have been better.
- F. Put notebook together with examples in the notebook. Hard time following material. Also need pages numbers in notebook. Use more real life examples with audio visuals. Tell some stories. Tell some jokes. This material is boring when presented straight forward. Use some ice breakers to make people feel comfortable. Presented material very well but keep crowd with “ya”.
- G. For me first day was slow.
- H. Excellent workshop. Liked the pace & the time the instructors gave us for questions and comments.
- I. Consider training from a specific plan from which we could go to general ideas & then back to our own specific system.
- J. Over all good session. Long over due-needed for all of us.
- K. This is a great program. It will certainly help our facility overall. I am
- L. Anxious to continue the process.

- M. Excellent course, will help as we move forward with out EMS.
- N. Consider adding assessments (test). Statistics indicate people learn better if they know they'll be tested. START ON TIME! Don't make prompt people wait for slackers. Including meals is great idea.
- O. Course was very good. I should be able to use tools learned in other areas of plant.
- P. Good variety of people attending workshop. Fun to chat with people with different problems. NBP staff complimented TREEO instructors well. Am going home knowing that there will be help if we need it.
- Q. Contrary too few people's opinions after 1 day. I thought the re-emphasis of the outcomes was good. Do not cut it out.
- R. Overall good workshop. Considering dry topic.
- S. You need to use actual examples when you are explaining an element process etc. If a facility is having very little problems this is an enormous amount of work for benefits received.
- T. Excellent. Learned much. Wonderful hotel & staff.
- U. Excellent training.

**Describe the most valuable portion of the course.**

- A. Going through the elements. Madison EMS example.
- B. The entire NBP/EMS process & content.
- C. Slide show presentation.
- D. The hand out of the program from Madison, Wisconsin.
- E. The new networking contacts & the fact that we are in this together.
- F. Break out.
- G. Examples.
- H. Madison example but should have been in manual with pages numbers. Excellent food.
- I. Actual examples of EMS, the 17 elements, hands on experience.
- J. Having those who have gone through the process in attendance. Real life examples are the best learning tool.
- K. All portions of the course & the example program.
- L. The Madison EMS handouts.
- M. Meeting you. Meeting others in the business & discussing this issue & other issues relevant to WW. Also the handouts especially the Madison model.
- N. Details on how process works.
- O. Great opportunity to network & hear what others are doing.
- P. Plan-do-check-act. We are good at planning & doing but to really check & make necessary changes don't always happen.
- Q. MMSD handout did a good job of keeping my focus on how the elements fit into the EMS. 1<sup>st</sup> day overview maybe a little long.
- R. Positive energy to get things done back at the plant.
- S. The small group work.
- T. Presentations & handouts.
- U. The forms supplied by certified entities.

- V. Almost all of it was valuable, hopefully they beat it into our brains.
- W. The Wisconsin handout.

**Describe the least valuable portion of the course.**

- A. First day overview.
- B. All was valuable.
- C. Some parts were redundant.
- D. Need more time for break out. So people can connect. You learn more at a lunch or break out about the process at an informed setting.
- E. First day long morning.
- F. Long introductions of all attendees.
- G. This being very new to me. The break-out sessions are participation portions I least got involved in because of my limited knowledge. I almost feel that people that attend this be provided with preliminary documents to review prior to attending. I felt lost much of the time.
- H. No comment.
- I. I thought the overall presentation was not that good considering that a professional organization did the training. Doug interacted well with students & drew out input. Consider describing all 4 sessions to put this in perspective. Eliminate redundancy. Consider creating a video or flash presentation for people to watch before they attend to get good intro to EMS. That may enable more nuts & bolts training at the line event.
- J. 1-Please tell instructors to avoid literal, vibration reading of slides off the screen. This is what the workbook is for. Some instructors were better at avoiding this than others. 2-Ed's leadership during our break out was good. Why didn't he participate more in the rest of the workshop?
- K. Location would like to see different locations, Boston, MA., Florida, California.
- L. The vagueness in the different portions of the presentation.
- M. Overall program was too general. Needed to be more informative. Too much spent on some issues & not enough of others.