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## ELEMENTS OF AN ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) FOR BIOSOLIDS

### Preamble

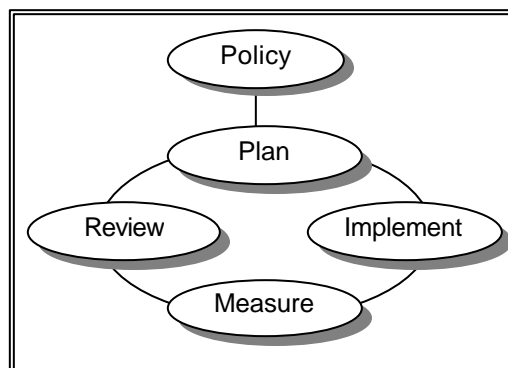
The National Biosolids Partnership has developed the National Biosolids Code of Good Practice, a set of principles and strategic biosolids industry goals that emphasize best practices, communication, and the implementation of environmentally sound management programs. An EMS provides a standardized and comprehensive framework to assure that biosolids activities are managed effectively.

This document, *Elements of an Environmental Management System for Biosolids (EMS Elements)* is an integral part of the overall management framework (i.e., the EMS Blueprint) being developed by the National Biosolids Partnership (NBP). The *EMS Elements* establish management system requirements for effectively managing biosolids activities at all critical control points. These elements cover management commitments, planning processes, organizational development, operating procedures, documentation requirements, monitoring and review processes.

Overall the *EMS Elements* described in this document provide an effective process for optimizing the management of wastewater treatment solids and biosolids. Adopting the *EMS Elements* will help organizations that manage biosolids activities assure compliance with applicable federal, state, and local regulatory requirements and address other environmental issues such as odor that could cause community concerns. Implementing the *EMS Elements* will also facilitate applying best practices and will foster continual improvement in biosolids management practices. A functioning EMS will ensure the safe and effective management of biosolids, regardless of the management method. For those organizations that choose to beneficially use biosolids, an EMS provides a rigorous management framework that will consistently produce a stable, high quality, biosolids product. Ultimately, the NBP hopes that EMS implementation on a broad scale will help develop and promote the use of biosolids as a renewable resource in agricultural and other beneficial use applications at a national level.

The *EMS Elements* use an environmental management system framework similar to the ISO 14001 EMS Standard. The *EMS Elements* have been adapted to meet the needs of organizations managing biosolids. As with the ISO 14001 EMS, the *EMS Elements* are based on the Deming Quality Management Cycle for continual improvement (Plan – Do – Check – Act), a management process used successfully by manufacturing and service organizations to improve the quality of their activities, products, and services and to manage environmental compliance. The *EMS Elements* include five sequential steps for developing and implementing an EMS:

1. Biosolids management policy,
2. Biosolids management planning,
3. Biosolids program implementation,
4. Measurement and corrective action, and
5. Management review.



The *EMS Elements* are applicable to all biosolids management activities that the organization can directly control or influence. The *EMS Elements* are applicable to any organization involved in biosolids management activities that wishes to:

- Implement, maintain, and improve its biosolids management program;
- Use best management practices, as defined in the *National Biosolids Partnership's National Manual of Good Practice*;
- Assure its conformance to the *National Biosolids Partnership's Code of Good Practice*; and
- Demonstrate conformance with the *Code of Good Practice* to customers, regulators, local residents, and other local stakeholders through a third party verification process.

The NBP Code of Good Practice requires that organizations conduct an independent, third party verification audit to document conformance with the *EMS Elements*. The *EMS Elements* presented in this document contain objective requirements that are suitable for third party verification. The third party verification process and procedures have been developed in a separate set of documents, which include auditor qualifications and requirements to establish and maintain a certificate of conformance with the *EMS Elements*.

The *EMS Elements* define the requirements but do not prescribe specific approaches, methods or activities. The *EMS Elements* are flexible and allow an organization to determine how its EMS will meet the requirements set forth in each of the seventeen (17) elements. The auditor will also look for objective evidence that the organization is doing what said it would do to meet the requirements of all seventeen *EMS Elements*.

In addition to the Code of Good Practice and the independent third party verification, there are two additional guidance documents that should be considered in developing and implementing the EMS Elements:

- **EMS Guidance Manual** – A detailed manual with useful step by step guidance on how to implement the EMS Elements; and
- **National Manual of Good Practice** – A detailed set of documents that provides guidance on the identification of critical control points and the selection of appropriate management practices.

## STATEMENT OF PURPOSE/INTENT

The National Biosolids Partnership (NBP) is a not-for-profit alliance formed in 1997 with the Association of Metropolitan Sewerage Agencies (AMSA), Water Environment Federation (WEF), and U.S. Environmental Protection Agency (EPA). Its purpose is to advance environmentally sound and publicly accepted biosolids management practices.

The NBP has sponsored several initiatives designed to promote responsible biosolids management within the industry, with the goal of enhancing public perception of biosolids programs. The cornerstone of these initiatives is the development of a framework for preparing and implementing an Environmental Management System, which includes an independent third party verification step. Development of an EMS and its associated requirements is voluntary. It is the goal of the NBP that all POTW's voluntarily adopt and implement a formal EMS.

It is not the intent of the NBP that the EMS be a substitute for regulatory oversight or that the EMS requirements be included as a regulatory requirement in NPDES permits. However, the EMS can be used by facilities as a mechanism to ensure compliance with permit requirements.

### Organization of the EMS Elements

As illustrated in the table below, the *EMS Elements* include seventeen (17) individual management elements that must be addressed in the development of an EMS for biosolids. Each management element contains a set of requirements that can be objectively measured. The requirements have been designed to allow the organization a significant level of flexibility in how it chooses to implement the requirements.

While the content and structure of the *EMS Elements* is similar to the ISO 14001 EMS Standard, they contain specific biosolids management requirements based on best practices that were observed in successful biosolids programs. For example, proactive public participation, communications, education, and outreach are important factors in achieving public acceptance.

### Elements of an EMS for Biosolids

<i>Category</i>	<i>Element #</i>	<i>Element</i>
<b>Policy</b>	1	Documentation of Environmental Management System for Biosolids
	2	Biosolids Management Policy
<b>Planning</b>	3	Critical Control Points
	4	Legal and Other Requirements
	5	Goals and Objectives for Continual Improvement
	6	Public Participation in Planning
<b>Implementation</b>	7	Roles and Responsibilities
	8	Training
	9	Communication
	10	Operational Control of Critical Control Points
	11	Emergency Preparedness and Response

	12	EMS Documentation, Document Control and Recordkeeping
<b>Measurement and Corrective Action</b>	13	Monitoring and Measurement
	14	Nonconformances: Preventive and Corrective Action
	15	Biosolids Management Program Performance Report
	16	Internal EMS Audit
<b>Management Review</b>	17	Periodic Management Review of Performance

## Key Definitions

**Biosolids** -- solid organic matter recovered from a wastewater treatment process and used especially as fertilizer -- usually used in plural.

**Biosolids Management Activities** – a wide range of activities that impact the quality of wastewater solids and biosolids, including pretreatment activities, wastewater treatment processes, solids stabilization processes, conditioning and dewatering processes, transportation, storage, and beneficial use or disposal.

**Biosolids Management Policy** – statement by an organization committing it to the principles set forth in the NBP Code of Good Practice with respect to biosolids management and any other overall environmental goals voluntarily adopted by the organization.

**Biosolids Management Program** – a comprehensive program covering all aspects of the organization’s biosolids activities throughout the biosolids value chain, including management processes for all critical control points in order to mitigate environmental impacts, meet legal and other requirements and execute action plans to achieve biosolids program goals and objectives.

**Biosolids Program Goal(s)**– environmental performance improvement goals that are consistent with an organization’s biosolids management policy to assure biosolids activities comply with applicable laws and regulations, meet quality and public acceptance requirements and prevent other unregulated adverse environmental and public health impacts by effectively managing all critical control points. Biosolids program goals may include but are not limited to compliance with specific regulatory requirements, expanding beneficial use, improving biosolids quality, improving public acceptance and reducing or eliminating direct/indirect negative environmental impacts.

**Biosolids Program Objective(s)** – a detailed environmental performance improvement requirement, quantified wherever possible, based on a biosolids program goal. One or more objectives must usually be met in order for the underlying goal to be achieved.

**Biosolids Public Acceptance Requirements** – biosolids physical, chemical, biological and aesthetic characteristics and management methods that must be met consistently and reliably in order to achieve public acceptance of the organization’s selected biosolids management method(s).

**Biosolids Quality Requirements** – biosolids physical, chemical, biological and aesthetic characteristics that must be met consistently and reliably in order to apply the organization’s selected biosolids management method(s).

**Biosolids Value Chain** – sequence of activities from wastewater pretreatment, discharge and collection through wastewater treatment, solids treatment and handling, storage, transportation, and final disposition

of biosolids that impact the quality and stability of biosolids and their suitability for the selected management method.

**Continual Improvement** – EMS process for systematically improving the overall management of biosolids to achieve the organization’s biosolids program goals and objectives set forth in the organization’s biosolids management policy and the National Biosolids Partnership Code of Good Practice.

**Corrective Actions** – specific actions and steps taken to correct an organization’s nonconformance(s) to policies, procedures, and other legal, quality and public acceptance requirements, and to mitigate any resulting negative impacts on the environment.

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

**Emergency Preparedness** – a structured emergency planning process to ensure that plausible emergency situations that can affect appropriate biosolids management have been identified, response plans and procedures developed, and trained emergency response personnel and equipment are available and in a state of readiness.

**Emergency Response** – specific emergency plans and activities that are initiated to contain an emergency situation and bring it under control so as to minimize environmental impacts.

**EMS Audit (Internal)** – a systematic internal audit process for objectively evaluating whether an organization’s environmental management system for biosolids conforms with the requirements of *Code of Good Practice*, its Biosolids Policy and the *EMS Elements*.

**EMS Audit (Third Party Verification)** – a systematic, structured audit of the organization’s biosolids EMS performed by a qualified independent third party auditor using a standardized protocol to verify conformance with the requirements of the *Code of Good Practice*, its Biosolids Policy and the *EMS Elements*.

**EMS Documents** – various documents that collectively comprise the biosolids environmental management system documentation, including the biosolids management policy, procedures, practices, operating instructions, and other supporting documents required by the environmental management system and applicable biosolids laws and regulations.

**EMS Guidance Manual** – A detailed manual with useful step by step guidance on how to implement the EMS Elements; and

**EMS Records** – various records/reports of biosolids management activities required by the environmental management system and applicable biosolids laws and regulations, including but not limited to records/reports of monitoring, measurement, laboratory testing, inspections, operating logs, emergency response incident, outside party inquiries, public participation meetings, audits, corrective actions, management reviews and periodic performance reports. Records describe the results of specific biosolids management activities for a prescribed event, activity and/or period of time.

**Environmental Impacts** – any change to the environment (positive or negative) including public health, public nuisance and odor problems, that wholly or partially result directly or indirectly from the organization’s activities, products or services, including those activities associated with biosolids management, and those activities that alter (positively or negatively) the acceptable disposal/use method or create public nuisance and public health risks.

**Environmental Management System for Biosolids (EMS)** – an organized management system that meets the requirements of the *EMS Elements* for achieving the biosolids management policy requirements and for developing, implementing, reviewing, and maintaining effective biosolids management programs, procedures and practices. The EMS needs to manage all critical control points associated with biosolids activities where there is a potential to create significant negative environmental impacts.

**Interested Parties** – individuals, groups or other public/private organizations interested in, involved with or otherwise affected by the organization’s biosolids management activities, including customers, farmers, regulators and other local/state governmental officials, community residents, the media, environmental and public interest groups, university professors and the general public.

**Knowledge** – to recognize, be familiar with, or understand information, activities, and actions based on experience or association; acquaintance with a science, art, or technique.

**Legal Requirements** – the environmental federal, state and local laws and regulations that are applicable to an organization’s biosolids management program activities.

**Measurement** – a systematic method for estimating, testing, or otherwise evaluating key parameters and characteristics of an organization’s biosolids management activities to determine compliance with a specific standard, regulatory or other performance requirement, or to measure progress toward its biosolids program goals and objectives.

**Monitoring** – a systematic process of watching, checking, observing, inspecting, keeping track of, regulating or otherwise controlling key parameters and characteristics of an organization’s biosolids management activities to determine compliance with a specific standard, regulatory or other performance requirement, or to measure progress toward its biosolids program goals and objectives.

**National Manual of Good Practice** – A detailed set of documents that provides guidance on the identification of critical control points and the selection of appropriate management practices.

**Nonconformance** – a deviation in organization’s established Biosolids Management Policy and Environmental Management System from the *Code of Good Practice* principles and/or the requirements of the *EMS Elements*. Nonconformances include circumstances that have the potential to create a noncompliance situation or significant environmental impact

**Noncompliance** – a deviation from federal, state and local laws, regulations and other compliance requirements applicable to the organization’s biosolids management activities.

**Objective Evidence** –policies, ordinances, procedures, manuals, inspection checklists, operating logs, annual reports, various other documents, and various records – monitoring, inspection, enforcement, training, etc., that objectively document conformance with the *EMS Elements* requirements

**Operational Controls** – ordinances, regulations, standard operating procedures, practices, technology, instrumentation and process controls, monitoring and other criteria developed, implemented, and maintained by an organization to ensure effective management of all critical control points associated

with its biosolids management activities; including conformance with biosolids management policy requirements; and achievement of biosolids program goals and objectives.

**Organization** – enterprise, authority, or institution, or part thereof, responsible for individual or a combination of, biosolids management activities.

**Other Requirements** – other binding biosolids management practices and environmental requirements to which an organization voluntarily subscribes as part of its environmental management system. Examples include binding agreements with customers, suppliers, and public organizations and commitments to “beyond compliance” performance.

**Preventive Actions** – specific actions and steps taken to identify, analyze, and eliminate the root causes of noncompliance(s) and nonconformance(s) and to put in place permanent solutions that will prevent a recurrence.

**Public (Interested Parties)** – same as the definition of interested parties

**Public Education** –systematic public communications program for educating interested parties and other stakeholders on its biosolids management activities.

**Public Participation** – specific approach(es) and action(s) taken by an organization to involve interested parties and the general public in its biosolids management program, including establishing improvement goals and objectives.

**Service Agreement(s)** – contractual or other legally binding agreements that define the roles and responsibilities of contractors and other groups in supporting the organization’s EMS for biosolids.

**Skills** – the ability to use knowledge effectively and readily in execution or performance of tasks and activities; a developed aptitude or ability; the ability to do something competently.

**Training** – teaching to make fit, qualified, or proficient; preparation for a test of skill or knowledge; instruction in disciplines and techniques

## **ELEMENTS OF AN ENVIRONMENTAL MANAGEMENT SYSTEM FOR BIOSOLIDS - ELEMENT BY ELEMENT REQUIREMENTS**

### *Policy*

#### **Element 1: Documentation of Environmental Management System for Biosolids**

The *EMS Elements* describe an organization's requirements for establishing and maintaining a comprehensive Environmental Management System (EMS) for Biosolids that covers its biosolids management activities at all critical control points throughout the biosolids value chain.

The Environmental Management System for Biosolids (including the other 16 EMS Elements) shall be documented in an EMS Manual or equivalent set of program documents that describe, at least at a general level, the applicable policies, programs, plans, procedures and management practices in the EMS. The EMS Manual shall:

- A. Be approved by a level of the organization's management with the authority to commit people and resources to biosolids management activities;
- B. Contain the organization's Biosolids Management Policy and EMS Procedures required by the *EMS Elements*;
- C. Contain or cross-reference Public Participation, Communications and Emergency Preparedness and or Response Programs and Plans required by the *EMS Elements*;
- D. Cover all critical control points for its biosolids management activities throughout the biosolids value chain;
- E. Include or cross-reference all operational controls, procedures, processes and other management methods used to achieve and maintain compliance with legal and other requirements; and
- F. Describe those biosolids management activities assigned to and performed by contractors.

#### **Element 2. Biosolids Management Policy**

The organization shall establish a Biosolids Management Policy (Biosolids Policy) that commits the organization to following the principles of conduct set forth in the National Biosolids Code of Good Practice and may include other biosolids commitments the organization voluntarily chooses to adopt.

The organization's Biosolids Management Policy shall be communicated to employees, contractors and all interested parties and incorporated into the organization's biosolids programs, procedures and practices.

## *Planning*

### **Element 3. Critical Control Points**

The organization shall identify and document the critical control points its biosolids management activities throughout the biosolids value chain. The organization shall also identify potential or actual environmental impacts at each critical control point. The organization's critical control points shall be consistent with those identified in the *NBP's Manual of Good Practice* and other authoritative sources on biosolids management. The information on the organization's critical control points shall be kept up to date and the records shall link each critical control point and its potential environmental impacts with the corresponding operational control(s).

Organizations that have successfully completed a third party verification audit shall provide notification to the NBP (and assigned third-party verification auditor) following any operational change that requires a change to the identified critical control points or environmental impacts associated with the critical control points.

### **Element 4. Legal and Other Requirements**

The organization shall establish a procedure for identifying and tracking legal (federal, state, and local) and other requirements applicable to its biosolids management activities. The procedure shall include a management process for incorporating changes and new requirements into the elements of its EMS. The organization shall establish and maintain records of applicable legal and other requirements.

### **Element 5. Goals and Objectives for Continual Improvement**

In order to continually improve the environmental performance of its biosolids management program, the organization shall establish and periodically review measurable biosolids program goals and objectives for its biosolids management activities. The organization's goals and objectives shall reflect identified priorities for improving the environmental performance of its biosolids management activities based on its critical control points, identified or potential environmental impacts, legal and other requirements and applicable best management practices as defined in the NBP's *National Manual of Good Practice* and various authoritative information sources on biosolids management (e.g., Water Environment Federation Manuals of Practice). The biosolids program goals and objectives shall also consider input from interested parties developed through proactive public participation.

The biosolids program goals and objectives shall be integrated with other elements of its EMS and its biosolids management activities, developed and documented using SMART criteria (i.e., be Specific, Measurable, Achievable, Relevant, and Time-bounded), and updated on a regular basis.

The organization shall establish an action plan that describes those improvement activities it is pursuing to achieve its biosolids program goals and objectives. The action plan shall designate schedules, milestones, resources, and responsibilities for achieving its biosolids program goals and objectives.

### **Element 6. Public Participation in Planning**

The organization shall select and implement a proactive public participation approach to involve interested parties in its Biosolids Management Program and EMS planning process. The approach selected for public participation shall reflect the organization's commitments to ten (10) principles in the NBP's Code of Practice, including its plan for independent third-party verification of conformance with

the *EMS Elements*. The public participation approach shall be consistent with degree of current public interest, the history of public involvement, the method of biosolids management and related local circumstances.

The approach selected for public participation shall also provide interested parties with meaningful opportunities to express their views and perspectives relative to the organization's biosolids management activities, including concerns about environmental impacts, biosolids program performance, and potential areas for improvement. The organization shall consider input from interested parties in initially developing its biosolids program goals and objectives during its EMS implementation and in updating them as part of its periodic review of biosolids management program performance.

## *Implementation*

### **Element 7. Roles and Responsibility**

The organization shall establish and maintain records of the assigned roles and responsibilities for its biosolids management program and activities. To assure these assigned roles and responsibilities are effectively performed, the organization shall:

- A. Appoint an individual with overall responsibility for ensuring that its biosolids management program and EMS are implemented and maintained;
- B. Define and document roles and responsibilities of its employees for performing its biosolids management activities and EMS functions;
- C. Provide the human, technical, and financial resources necessary to effectively execute these responsibilities; and
- D. Define and document the roles and responsibilities of contractor(s) retained to perform various biosolids management activities and EMS functions through Service Agreements.

### **Element 8. Training**

The organization shall establish and maintain a training program to ensure that its employees responsible for specific biosolids management activities and for the implementation of various EMS functions are competent in performing their assigned tasks and duties.

The training program shall provide general awareness of the EMS and how each employees' assigned roles and responsibilities relate to the entire biosolids value chain. The training program shall address new or reassigned employees. The organization shall maintain records of individual employee training delivered and completed.

The organization shall require that their contractors establish their own training programs consistent with their roles and responsibilities in biosolids management activities as defined through Service Agreements.

### **Element 9. Communications**

The organization shall establish and maintain a proactive Communications Program that provides on-going information about its Biosolids Management Program and its EMS to interested parties and the public, consistent with local circumstances, the method of biosolids management, its public

communications history and degree of current interest in its biosolids management activities. The organization's Communication Program shall make available a summary of its independent, third party EMS verification audit results to the public. The organization shall define the roles and responsibilities of outside contractors in its Communications Program.

The Communications Program shall include a procedure for receiving inquires and requests for information from interested parties about its biosolids management activities and EMS. The procedure shall define a process for assuring a timely and complete response to inquiries by interested parties. At a minimum, the organization's Communications Program shall make the following information about the organization's biosolids management program and activities available to interested parties:

- A. The Biosolids Management Policy;
- B. The applicable legal and other requirements;
- C. The biosolids program goals and objectives for continual improvement;
- D. The periodic Biosolids Management Program Performance Report; and
- E. A detailed report of its independent, third party EMS verification audit results

The organization's Communications Program shall also communicate relevant information about its biosolids management activities and its Biosolids Management Policy and all seventeen (17) elements of its EMS to its employees and outside contractors, consistent with their assigned biosolids management roles and responsibilities.

#### **Element 10. Operational Control of Critical Control Points**

The organization shall develop and implement standard operating procedures, work management practices or other appropriate methods at all critical control points throughout the biosolids value chain to effectively manage potential environmental impacts. Operational controls at critical control points shall incorporate all legal and other adopted requirements and shall consider applicable best management practices as defined in various authoritative information sources on biosolids management (e.g. NBP *National Manual of Good Practice*, Water Environment Federation Manuals of Practice, etc.).

Operational controls shall include appropriate preventive maintenance procedures and work management systems for maintaining equipment, instrumentation, vehicles, and other treatment technology and process control systems associated with its biosolids management activities.

The organization shall require that their contractors establish their own operational controls consistent with their roles and responsibilities in biosolids management activities.

#### **Element 11. Emergency Preparedness and Response**

The organization shall establish and maintain Emergency Preparedness and Response Plans and Procedures to assure effective response to accidents and emergency situations associated with its biosolids management activities.

The organization shall review and evaluate the effectiveness of its emergency preparedness and response procedures, including communications systems, and revise them as necessary. All emergency response equipment shall be on site or readily available within a minimum response time.

The organization shall require its contractors to establish and maintain Emergency Preparedness and Response Plans and Procedures to assure effective response to accidents and emergency situations associated with its biosolids management activities.

### **Element 12. Documentation, Document Control and Recordkeeping**

The organization shall establish and maintain documentation, documents and records for its Biosolids Management program including the 17 elements of its EMS.

The organization shall establish and maintain document control procedures and practices to ensure that its Biosolids Management program documentation and documents are:

- A. Available and can be easily located;
- B. Created following established document creation protocols;
- C. Kept up to date through periodic reviews and revisions (if applicable);
- D. Properly marked with version number, effective date(s), and references to replaced or superseded versions; and
- E. Approved by authorized personnel.

The organization shall establish and maintain records of its biosolids management activities and ensure that they are:

- A. Available and can be easily located; and
- B. Retained for the specified period of time.

The organization shall establish EMS documentation, document control and records requirements for biosolids management activities conducted by its contractors in Service Agreements, and incorporate these requirements into its EMS for biosolids.

## ***Measurement and Corrective Action***

### **Element 13. Monitoring and Measurement**

The organization shall establish and maintain regular monitoring and measurement procedures and practices for all of its biosolids management activities to:

- A. Assure its compliance with applicable legal and other requirements,
- B. Measure biosolids program performance at critical control points, and
- C. Track progress toward achieving its biosolids program goals and objectives as required under Element 4.

Monitoring and measurement results shall be recorded and the records maintained as established in the recordkeeping procedures under Element 12.

The organization shall require its contractors to establish and maintain regular monitoring and measurement procedures and practices for all their assigned biosolids management activities, as defined in their Service Agreements.

#### **Element 14. Nonconformances: Preventive and Corrective Action**

##### ***Procedures for Investigation and Taking Correction Action for Nonconformances***

The organization shall develop and implement a procedure to:

- A. Investigate any noncompliance with applicable regulatory requirements and/or nonconformance with internal EMS procedures identified during routine monitoring and measurement or periodic internal EMS audits;
- B. Identify the cause and take actions to correct the non-conformance; and
- C. Document the necessary corrective actions taken to prevent a recurrence.

##### ***Corrective Action Plans for Nonconformances***

Corrective action plans shall be developed to address non-conformances identified during routine monitoring and measurement. Such plans may be as brief as is appropriate to the situation, but at a minimum, shall identify the nonconformance, the root cause(s) and the corrective action being taken. The corrective action plan shall identify changes to policies, programs, plans, operational controls and monitoring/measurement procedures to prevent future nonconformances.

##### ***Corrective Action Plans for EMS Audits***

Formal corrective action plans shall be established to address the findings of internal EMS Audits under Element 16, and EMS verification audits conducted by third parties. The corrective action plan shall be documented, and describe what actions will be taken to address the audit findings, the individual(s) responsible, the estimated completion date and required resources to develop and implement corrective and preventive action. Progress in completing the corrective actions shall be tracked and periodically updated to reflect completion. The corrective action plan shall include recommended changes to policies, programs, plans, operational controls and monitoring/measurement procedures to prevent future nonconformances. These changes shall be documented in the corrective action plan, and in the EMS Manual and other relevant EMS documentation.

#### **Element 15. Biosolids Management Program Performance Report**

The organization shall complete a periodic, written Biosolids Management Program Performance Report (at least annually) summarizing the performance of its biosolids management program. The report shall contain appropriate summaries of monitoring, measurements and other results that demonstrate the performance of the biosolids program relative its goals, objectives and legal requirements, including those biosolids management activities conducted by contractors. The report shall also provide summaries of performance relative to other voluntarily adopted requirements, the organization's progress toward achieving its biosolids program goals and objectives, and a summary of its independent third party EMS verification audit results.

The periodic Biosolids Management Program Report shall be available to the public. The organization shall have the flexibility of using other methods, including electronic methods such as a biosolids program web page in addition to or in lieu of a written periodic performance report.

#### **Element 16. Internal EMS Audit**

The organization shall establish and maintain an internal audit program to periodically analyze the EMS for biosolids and determine whether it is effectively meeting its biosolids management policy, program requirements and biosolids program goals and objectives.

The internal EMS audit program shall define the scope, frequency, and methodology of the audits, assign responsibility for conducting the audits and communicating their findings, and designate individuals to whom these findings are to be conveyed. The internal audit shall also evaluate the organization's performance relative to established biosolids program goals, objectives and performance measures. The internal EMS audit program shall cover all the organization's biosolids management program activities including those performed by contractor.

Internal EMS audit results shall be reported to the organization's management in a way that they can take action to make necessary modifications to the EMS and biosolids management program. The person responsible for the biosolids management program shall develop, or delegate the development of, a comprehensive corrective action plan addressing each nonconformance identified by the internal audit.

At a minimum, the organization shall maintain the following documents and records, as applicable, relating to its audit program:

- A. Description of audit methodology, protocol, scope, and schedule;
- B. Identification of lead auditor(s), qualifications, and description of roles and responsibilities of auditor(s), management representatives, and others that may participate in, review, or be expected to act upon the audit; and
- C. Corrective and/or preventive action plans prepared resulting from an audit, and any related changes made to policies, plans, procedures, and work practices that occur as a result of an audit's findings, evaluation, or follow-up actions.

### *Management Review*

#### **Element 17. Periodic Management Review of Performance**

The organization's management shall, at intervals that it determines appropriate, review the biosolids environmental management system and its performance relative to policy commitments, goals, objectives and established performance measures to ensure its continuing suitability, adequacy, and effectiveness. A lead person or persons shall be responsible for organizing and conducting the review. The management review shall address the possible need for changes to policy, the goals and objectives, the biosolids management program and other EMS elements based on internal EMS audit results, external verification EMS audits by third parties, changing circumstances, and the commitment to continual improvement. The management review shall be documented. Any changes to policies, plans, procedures and work practices that are made as a result of the review shall also be documented.

At a minimum, the organization shall maintain the following related to its management reviews:

- A. Schedule and scope for review(s);
- B. Documentation of findings, evaluation, and follow-up actions; and
- C. Documentation of changes made to policies, plans, procedures, practices and other EMS elements that occur as a result of the management review findings, evaluation, or follow-up actions.