Operational Control and Monitoring and Measurement Module Training

September 17, 2008

N.C. Division of Pollution Prevention and Environmental Assistance
Aspects, impacts and assessing significance

• Were you able to complete 3 activity areas for homework?

• What challenges did you have in assessing aspects and impacts?

• What challenges did you have in choosing significance criteria and determining significance?
Check In (cont.)

- Do you have a list of operational procedures (work instructions or SOPs) already in place at your facility.
- How does your facility measures environmental performance currently.
- Questions?
Step 4. Operational Control and Emergency Preparedness and Response

(ISO 14001:2004 Clauses 4.4.6., 4.4.7)
### Design Tool Timeline and Module 2

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<tr>
<th>EMS Elements</th>
<th>Month 1</th>
<th>Month 2</th>
<th>Month 3</th>
<th>Month 4</th>
<th>Month 5</th>
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* First internal audit with results reported at next management review board meeting

** First MRB meeting covering all requirements of ISO 14001:2004
# Building on Significant Aspects

<table>
<thead>
<tr>
<th>Activity</th>
<th>Aspect (input or output)</th>
<th>Env. Impact</th>
<th>Significant Aspect (volume, haz. characteristics, frequency, etc.)</th>
<th>Operational Control</th>
<th>Monitor/Measurement</th>
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<td>Module 2</td>
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4.4.6 Operational Control
4.4.6 Operational Control

The organization shall identify and plan those operations that are associated with the identified significant environmental aspects consistent with its environmental policy, objectives and targets, in order to ensure that they are carried out under specified conditions, by

a) establishing, implementing and maintaining a documented procedure(s) to control situations where their absence could lead to deviation from the environmental policy, objectives and targets, and

b) stipulating the operating criteria in the procedure(s), and

c) establishing, implementing and maintaining procedures related to the identified significant environmental aspects of goods and services used by the organization and communicating applicable procedures and requirements to suppliers, including contractors.
Operational Control

• Huge “chunk” of the standard
• On-going day-to-day EMS activities
• Pre-requisite – identify significant environmental aspects
  – Intent is that whatever you deem “significant”, you have control over
Why Are Operational Controls Important?

• To prevent or lessen environmental impacts
• To maintain regulatory compliance
• To safeguard against “informality” and its results (word-of-mouth)
• To avoid non-conformances in the EMS
• To assist staff in achieving the environmental objectives and performance measures
Operational Control

- Env Policy
- Aspects
- Objectives & Targets
- Monitoring & Measurement
- Documentation
- Training
- Document Control
Operational Control

• Various means of “control”
  – Physical – locked valves, equipment set-up
  – Computer – alarms, instrumentation
  – Procedural – standard operating procedures
Operational Controls Can Be…

• SOPs … but what else?
Example Operational Controls

- Checklists
- Equipment
- Sign, e.g. “Cardboard only”
- Training
- Work instruction or SOP
Remove Berry Stains From: Cotton, Linen

Test fabric for colorfastness. If color doesn't change, stretch the stain over a bowl; fasten in place with a rubber band. Pour boiling water through the fabric from the height of 2 or 3 feet. Avoid splatters. This procedure must be done immediately. If stain persists, soak in a solution of 1 quart warm water and 1/2 teaspoon detergent for 15 minutes. Rinse with water. Sponge the area with rubbing alcohol and launder as soon as possible.
Criteria to consider in Operational Controls

May cover:

• Operational procedure
• Sampling and analysis activities
• Reporting results
• Emergency response
• Qualifications or certifications of those performing task
• References to laws or regulations that apply
Criteria to consider in Operational Controls (cont.)

• List step-by-step tasks.
  – What to do
  – How to do it

• Roles and responsibilities
  – Job titles, not names

• Consider including normal and abnormal conditions
  – Consider listing precautions to prevent incidents/accidents
May Include “Why” in SOP/Work Instructions

• Consequences of departure from specified operating conditions (clause a)

• Benefits of following the procedure
Novozymes Integrating Environment Into SOP’s

“In order to support our Environmental Quality System (QS.EQ.1000 NNBNA ENVIRONMENTAL POLICY), this system will be operated according to this procedure to reduce environmental impact and conserve natural resources whenever possible. This operating procedure was written and this system designed to accomplish these goals. All items in this procedure pertaining to EQS will be in bold type."

<table>
<thead>
<tr>
<th>Work Instruction</th>
<th>Comment</th>
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<tbody>
<tr>
<td>When precoat touches the knife, open the knife water valve at the drum to approximately 2m³/hr</td>
<td>Use only enough water to transport precoat from trough. Reduces depletion of a renewable resource</td>
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Example 1

Significant Aspect = Air Emissions

- Most likely have an air permit
- Operational control details how to run/maintain pollution control equipment to stay in compliance
- Have SOPs – standard operating procedures
  - Operation of baghouse
  - Operation of scrubber
  - Operation of boiler
  - Operation of _________
Example 1 Procedures

SOPs need to include/address

• How to start-up
• How to shut-down
• Normal operation
  • What is method of control
  • How are parameters changed
• Abnormal operation
  • What to do if a parameter goes high/low
Example 1 Procedures (cont.)

Are log sheets used?

- Document control clause applies also
- Are sheets filled out consistently
- In INK
- Ranges specified
- Consequences specified
- Do log sheets specify actions to take if a parameter is out of range, high/low, etc?
Example 2

Significant Aspect = Water Usage

Operational control details how you control usage

- Do you let water flow just happen?
- Recycle triggered above a certain point?
- How is it monitored?
- If water flow is high/abnormal, how do you react, where is this specified?

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<th>Thur</th>
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<td>Area Y (2-12 gpm)</td>
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<td>Area Z (3-15 gpm)</td>
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If out of range, notify ________________
Example 3

Significant Aspect = Hazardous Waste

Operational control details how you handle waste

- SOPs should address
  - How to load/unload/dispose
  - Personal protective equipment
  - Who handles
    - Specific training required?
  - What happens if?
    - Spill/release
    - Mixing
    - Unknown substance
Control Considerations

• Being practical and straight-forward. (K.I.S.S)
• Linking WI/SOP to significant aspect
• The workforce – are allowances needed for non-English speakers or illiteracy or other?
Also consider...

- Are operational controls available at point-of-use?
  - Ex. Laminated procedure at work station
  - If on a computer or intranet, is there a back-up?

- How do you control external references such as equipment manufacturer’s calibration documents and other references?
Who needs to know procedures?

- Employees!
- Anyone else?
Training on Procedures

1. Identify who needs to be trained.
2. Conduct training.
3. Verify procedures are being followed. It is important to follow your own procedures and update as appropriate.
4. Evaluate competence.
5. Track training.
What an EMS auditor should look for:

- evidence that operations/activities linked to significant aspects have been identified
- appropriate documented procedures and work instructions
- applicable communication with suppliers and contractors pertaining to significant aspects
Pitfalls

• Nonconformance

“A review of the Inventory Audit form for April and July 2007 indicated that the forms were initialed inconsistently. Examples include: Operators initialing when supplies were low and contacts were made for replacement. Operators initialing when inventory check was done not withstanding the result. Operators using check marks or OK in place of initials.”
Pitfalls (cont.)

• How are contractors made aware of operational control issues?
  – Identify appropriate records to be kept

• Ensure documented procedures match actual practice
  – Example: SOP says “Water samples are taken daily”. However, since area is not staffed on weekends, samples are not taken on Sat/Sun. SOP does not match practice.
  – Conversely, permit says to monitor a parameter monthly. You choose to monitor more frequently – say weekly. Documented procedure should specify the more frequent practice.
• If operational control includes alarms/interlocks, is it documented how to respond to those events?
  – Are alarms/interlocks tested? Connects to monitoring & measurement clause
  – Are alarm set-points above or below permit parameters?
Operational Control – Key Points

- Operations relate to significant aspects
- Documented procedure(s)
- Specify operating criteria
- Communicate to contractors
- Pay attention to the details
Example EMS Procedures and Forms
EMS Linkages to Operational Control 4.4.6

- Have documented procedures (where absence could lead to deviation from policy or O&T) for identified significant aspects - 4.3.1
- Identify and provide training on “benefits of improved personal performance” related to significant aspects and related actual or potential impacts and “potential consequences of departure from specified procedures” – 4.4.2
- 4.4.7 Emergency Response and Preparedness
- 4.5.1 Monitoring and Measurement
4.4.7 Emergency Preparedness and Response
Emergency Preparedness and Response 4.4.7

- Identify potential emergency situations and potential accidents and how organization will respond

- Seek to prevent or mitigate adverse environmental impacts
Tell those on-site

Ensure contractors/suppliers can access emergency information (and procedures if needed)

- Current phone number (s)
- Map
- __________
Test and Revise Procedures

- Periodically test procedures where practicable
- Review and revise procedures as needed.
  - Periodically
  - After drills
  - After an accident
Example EMS Procedures and Forms
Exercise 1.
PB&J

- Read and complete exercise.