EMS In-Depth: A’s & I’s and Rating their Significance Workshop

Iowa Department of Natural Resources
Ankeny, Iowa
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Sander Group Environmental, LLC
Welcome

- Facilitator Introduction
- Course Content and Materials
- Logistics
- Introductions of Participants
  - What is your name?
  - Where do you work?
  - What is your title and job responsibilities?
  - What experience do you have with EMS?
  - What do you hope to gain from this course?
EMS Refresher

What IS an EMS?

- Environmental Management System (not Emergency Medical Services, etc.)
- Similar to any other management system
- Method for carefully and deliberately controlling performance (i.e., processes, procedures, and programs)
- Integrated within an organization
- Used to ensure an organization can fulfill tasks and achieve goals
- Continual improvement
EMS Refresher

What IS NOT an EMS?

- Disorganized approach to managing performance
- Informal and undocumented
- Detached environmental responsibilities
- Entirely focused on compliance
- Flawless
EMS Refresher

What are Some Benefits of an EMS?

- Reduced influences on the environment
- Improved environmental compliance
- Enhanced public image
- Cost savings
- Reduced risks
- Improved employee satisfaction
EMS Refresher

What are the Key Elements of an EMS?

- Environmental policy
  - Overall intentions
- Planning
  - **Environmental aspects (and impacts)**
  - Legal and other requirements
  - Objectives, targets and programme(s)
- Implementation and operation
- Checking
- Management review
What are Environmental Aspects and Impacts?

- ISO 14001:2004 definitions
  - An aspect is an “element of an organization’s activities or products or services that can interact with the environment”
  - An impact is “any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization’s environmental aspects”
What are Environmental Aspects and Impacts?

- ISO 14001:2004 definitions
  - An aspect is an “element of an organization’s activities or products or services that interact with the environment”
  - An impact is “an change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization’s environmental aspect”
Environmental Aspects and Impacts

What are Environmental Aspects and Impacts?

- Layman’s terms
  - An aspect is a cause (reason)
  - An impact is an effect (result) on the environment
  - “Because of ____X______, ____Y______ happened”
    (Aspect) (Impact)
  - “Because of the oil spill, the soil has become contaminated”
  - “Because of the air emissions, the atmosphere has become polluted”
Environmental Aspects and Impacts

What aspects (causes) and impacts (effects) do you see here?
Environmental Aspects and Impacts

What aspects (causes) and impacts (effects) do you see here?
Environmental Aspects and Impacts

What are the Requirements for Aspects and Impacts?

1. Identify
2. Prioritize (significant aspects and impacts)
3. Include and maintain

Don’t Forget!

Continual Improvement
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- An organization’s aspects (causes) originate from its activities, products, and services
  - “Grouping” methodology
  - “Surveying” methodology
  - “Mass balancing” methodology
  - “Back-calculating” methodology
  - “Potpourri” methodology
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- “Grouping” methodology
  - Focuses on one category at a time
  - Starts with activities, moves to products, and finishes with services
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- “Grouping” methodology
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- “Surveying” methodology
  - Typically focuses on areas
  - Starts at one end of the facility / site (property) and finishes at the other end
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- “Surveying” methodology
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- “Surveying” methodology

<table>
<thead>
<tr>
<th>Area</th>
<th>Aspects (Cause)</th>
<th>Impacts (Effect on the Environment)</th>
</tr>
</thead>
<tbody>
<tr>
<td>21  Shipping &amp; Receiving</td>
<td>Waste Generation and Disposal</td>
<td>Degradation of Land Quality</td>
</tr>
<tr>
<td>22  Shipping &amp; Receiving</td>
<td>Energy Usage</td>
<td>Depletion of Natural Resources</td>
</tr>
<tr>
<td>23  Paint Room</td>
<td>Air Emissions</td>
<td>Degradation of Air Quality</td>
</tr>
<tr>
<td>24  Canopy Pre-cut Area</td>
<td>Air Emissions</td>
<td>Degradation of Air Quality</td>
</tr>
<tr>
<td>25  HVAC Storage</td>
<td>Energy Usage</td>
<td>Depletion of Natural Resources</td>
</tr>
<tr>
<td>26  Electrical Finish</td>
<td>Chemical Usage</td>
<td>Depletion of Natural Resources</td>
</tr>
<tr>
<td>27  Plumbing/HVAC</td>
<td>Energy Usage</td>
<td>Depletion of Natural Resources</td>
</tr>
<tr>
<td>28  Fastener Cage</td>
<td>Waste Generation and Disposal</td>
<td>Degradation of Land Quality</td>
</tr>
<tr>
<td>29  Receiving Docks Canopy</td>
<td>Waste Generation and Disposal</td>
<td>Degradation of Land Quality</td>
</tr>
<tr>
<td>30  Storage Warehouse Area (#1)</td>
<td>Energy Usage</td>
<td>Depletion of Natural Resources</td>
</tr>
<tr>
<td>31  Storage Warehouse Area (#2)</td>
<td>Spills</td>
<td>Degradation of Land Quality</td>
</tr>
<tr>
<td>32  Tool Room</td>
<td>Energy Usage</td>
<td>Depletion of Natural Resources</td>
</tr>
<tr>
<td>33  Restrooms</td>
<td>Waste Generation and Disposal</td>
<td>Degradation of Land Quality</td>
</tr>
<tr>
<td>34  Restrooms</td>
<td>Water Usage</td>
<td>Depletion of Natural Resources</td>
</tr>
<tr>
<td>35  Electrical R.I.</td>
<td>Energy Usage</td>
<td>Depletion of Natural Resources</td>
</tr>
<tr>
<td>36  Chassis Fabrication</td>
<td>Chemical Usage</td>
<td>Depletion of Natural Resources</td>
</tr>
</tbody>
</table>
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- “Mass balancing” methodology
  - Typically macroscopic
  - Starts with inputs and finishes with outputs
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- “Mass balancing” methodology
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- “Mass balancing” methodology
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- “Back-calculate” methodology
  - Focuses on impacts
  - Evaluates each
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- “Back-calculate” methodology
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- "Potpourri" methodology
  - Typically combines two methods
  - "Grouping" and "Surveying" combo is popular
    - Starts at one end of the facility / site (property)
    - Focuses on one area at a time
    - Lists out all activities, products, and services
    - Moves to the next area and repeats
    - Finishes at the other end of the facility / site (property)
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- “Potpourri” methodology

<table>
<thead>
<tr>
<th>Facility/Program/Location:</th>
<th>Description</th>
<th>Aspects (Cause)</th>
<th>Impacts (Effect on the Environment)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Widgets R Us</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing Area</td>
<td>Activity</td>
<td>Sanding Operation</td>
<td>Air Emissions</td>
</tr>
<tr>
<td></td>
<td>Activity</td>
<td>Washing Operation</td>
<td>Wastewater Discharges</td>
</tr>
<tr>
<td>Manufacturing Area</td>
<td>Product</td>
<td>Widget 100</td>
<td>Waste Generation and Disposal</td>
</tr>
<tr>
<td>Manufacturing Area</td>
<td>Product</td>
<td>Widget 200</td>
<td>Waste Generation and Disposal</td>
</tr>
<tr>
<td>Front Office</td>
<td>Activity</td>
<td>Office Support</td>
<td>Waste Generation and Disposal</td>
</tr>
<tr>
<td>Front Office</td>
<td>Activity</td>
<td>Office Support</td>
<td>Energy Usage</td>
</tr>
<tr>
<td>Front Office</td>
<td>Activity</td>
<td>Office Support</td>
<td>Air Emissions</td>
</tr>
<tr>
<td>Plumbing/HVAC</td>
<td>Activity</td>
<td>Building and Grounds Maintenance</td>
<td>Oil Usage</td>
</tr>
<tr>
<td>Plumbing/HVAC</td>
<td>Activity</td>
<td>Building and Grounds Maintenance</td>
<td>Water Usage</td>
</tr>
<tr>
<td>Plumbing/HVAC</td>
<td>Activity</td>
<td>Building and Grounds Maintenance</td>
<td>Chemical Usage</td>
</tr>
<tr>
<td>Entrance Gate</td>
<td>Service</td>
<td>Collection Drop-Off</td>
<td>Waste Generation and Disposal</td>
</tr>
</tbody>
</table>
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- The plain truth
  - No “magic bullet”
  - Best method depends on organization
  - Pros and Cons for each method
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- Helpful hints
  - Use consistent terminology and lists / selections
    - Environment
    - Impacts
    - Aspects
  - Use Excel (or some other software)
    - Copy and Paste
    - “Pick From Drop-down List”
    - Data Validation
    - Filters
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- Helpful hints
  - Use what is already available / common within your organization
    - Maps / diagrams
    - Flowcharts
    - Quality / safety / ergonomic analyses
    - Budgets
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- Helpful hints
  - Brainstorm with a group
    - Variety of people / experiences
    - Don’t get too many “cooks in the kitchen”
    - Avoid ISO definitions
    - Don’t overthink / over-analyze
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- Helpful hints
  - Reference other organizations similar in size / scope
  - Don’t discriminate
    - Environmental policy
    - Abnormal and emergency situations
    - Maintenance, contractors, suppliers, visitors
    - Planned / new APS
    - Adverse / beneficial impacts
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- Helpful hints
  - Maintain on an annual basis
  - Keep it simple!!!
    - Focus on what your organization can control / influence
  - Generalize
  - Do a draft then finalize
- Continual improvement
Environmental Aspects and Impacts

Identifying Aspects and Impacts

Exercise and Networking
As with any organization, everything is not managed equally. Some things are more important than others.
Significant Aspects and Impacts

Those things that are more important are addressed as a priority by the EMS
## Significant Aspects and Impacts

### Identify

<table>
<thead>
<tr>
<th>Activities / Products / Services</th>
<th>Environmental Aspects (Causes)</th>
<th>Environmental Impacts (Effects)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil Management</td>
<td>Oil Spills</td>
<td>Degradation of Water Quality</td>
</tr>
<tr>
<td>General Office Support</td>
<td>Electricity Usage</td>
<td>Depletion of Natural Resources</td>
</tr>
<tr>
<td>Equipment Operation</td>
<td>Air Emissions</td>
<td>Degradation of Air Quality</td>
</tr>
<tr>
<td>Equipment Operation</td>
<td>Gasoline Usage</td>
<td>Depletion of Natural Resources</td>
</tr>
</tbody>
</table>

### 2. Prioritize
Significant Aspects and Impacts

The process of buying a home is a good example of prioritizing.

Out of all the houses available in your area, how do you decide which ones to go see?
Significant Aspects and Impacts

Different Ways of Determining Significance

- Align with environmental policy. Include criteria and provide consistent results
  - “All-in” methodology
  - “Comparative” methodology
  - “Scoring” methodology
Significant Aspects and Impacts

Different Ways of Determining Significance

- “All-in” methodology
  - All aspects and impacts are significant
  - Criteria -> everything
  - Definitely provides consistent results
Significant Aspects and Impacts

Different Ways of Determining Significance

- “Comparative” methodology
  - Compares each aspect and impact relative to something
  - Criteria -> another organization, industry, geographic location, etc.
Significant Aspects and Impacts

Different Ways of Determining Significance

- “Comparative” methodology
Significant Aspects and Impacts

Different Ways of Determining Significance

- “Scoring” methodology
  - Focuses on a few characteristics
  - Values each characteristic
  - Calculates total value based on a formula
  - Very common method
Significant Aspects and Impacts

Different Ways of Determining Significance

- “Scoring” methodology
Significant Aspects and Impacts

Different Ways of Determining Significance

- The plain truth
  - No “magic bullet”
  - Best method depends on organization
  - Pros and Cons for each method
Significant Aspects and Impacts

Different Ways of Determining Significance

- Helpful hints
  - Be consistent
  - Use Excel (or some other software)
  - Use what is already available / common within your organization
    - Don’t worry about collecting data
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- Helpful hints
  - Brainstorm with a group
    - Variety of people / experiences
    - Don’t get too many “cooks in the kitchen”
    - Avoid ISO / technical definitions
    - Don’t overthink / over-analyze
  - Document “rules” for consistency
  - Reference other organizations similar in size / scope
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- Helpful hints
  - Avoid criteria with overlap
  - Include a “trump card”, if necessary
  - Maintain on an annual basis
Environmental Aspects and Impacts

Methods for Identifying Aspects and Impacts

- Helpful hints
  - Keep it simple!!!
    - Use easy “rules”
    - Do a draft then finalize
  - Conduct a reality check
- Continual improvement
Significant Aspects and Impacts

Determining Significance

Exercise and Networking
Open Discussion

- Questions??
- Attendance sheet
- Evaluations
- Thank you for attending
- Contact SGE anytime
  - Cory Sander @ 614-917-3074
  - Cory@SanderGroupEnv.com
- Stay around for additional questions or comments and networking
- Hope to see you or talk to you again soon