



Operational Control and Monitoring and Measurement Module Training

September 17, 2008

**N.C. Division of Pollution Prevention
and Environmental Assistance**



Check In

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 measure 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





EMS Elements	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Management Review Board Meetings												*
EMS Team Meetings												
Gap Analysis											**	
Step 1: Roles and Responsibilities and Scope												
Step 2: Initial Environmental Review (Legal & Other)												
Step 3: Aspects, Policy, and Impact Analysis												
Step 4: Operational Control & Emergency Response												
Step 5: Monitoring and Measurement												
Step 6: Objectives, Targets and Programs												

* 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

Activity	Aspect (input or output)	Env. Impact	Significant Aspect (volume, haz. characteristics, frequency, etc.)	Operational Control	Monitor/ measurement
				Module 2	Module 2



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

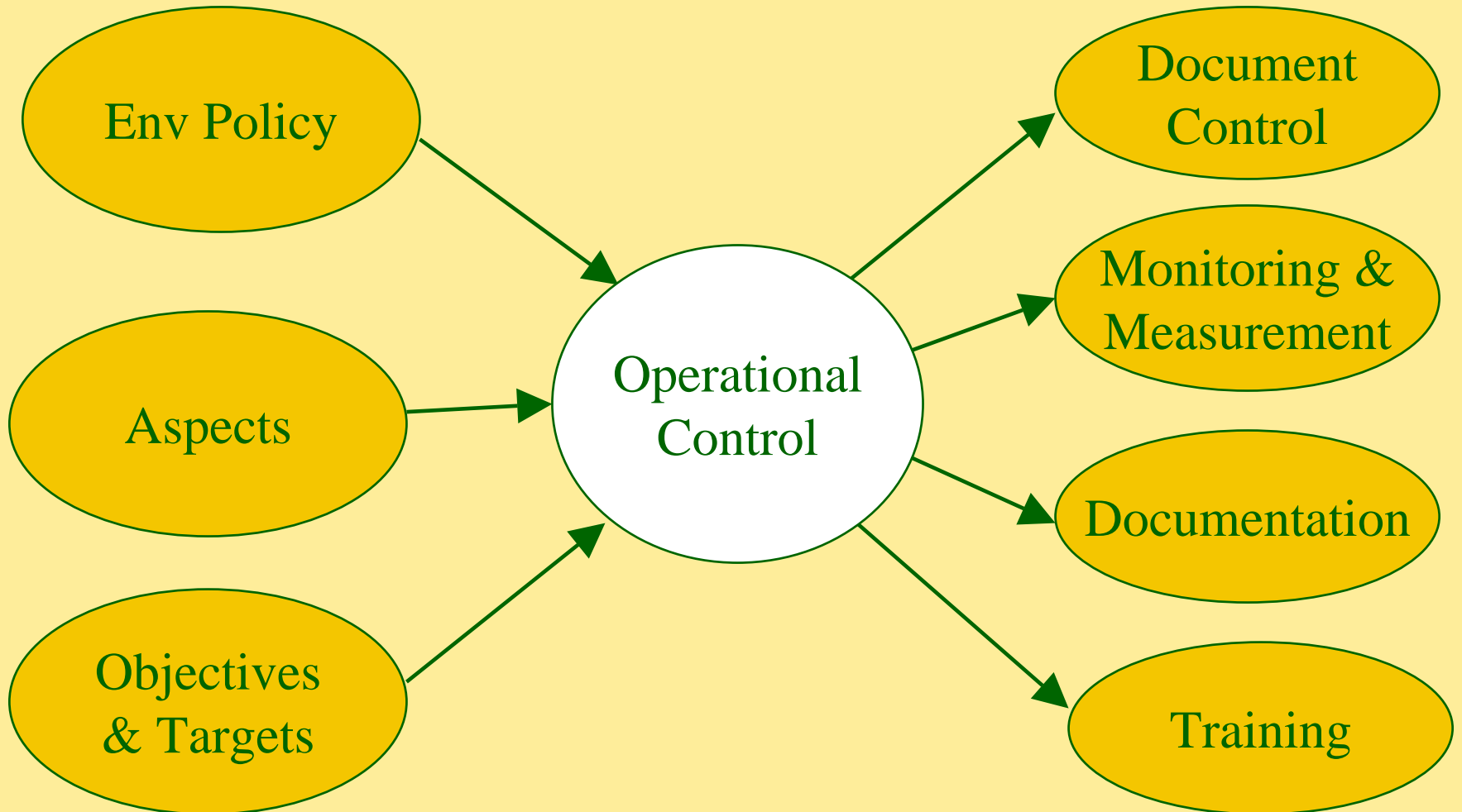


Why Are Operational Controls Important?

- 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





Operational Control

- Various means of “control”
 - Physical – locked valves, equipment set-up
 - Computer – alarms, instrumentation
 - Procedural – standard operating procedures





Operational Controls Can Be...

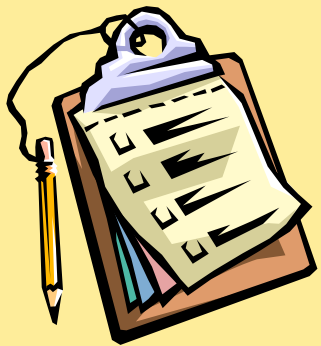
- SOPs ... but what else?





Example Operational Controls

- Checklists
- Equipment
- Sign, e.g. “Cardboard only”
- Training
- Work instruction or SOP

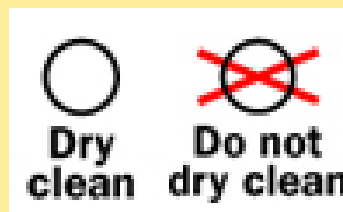
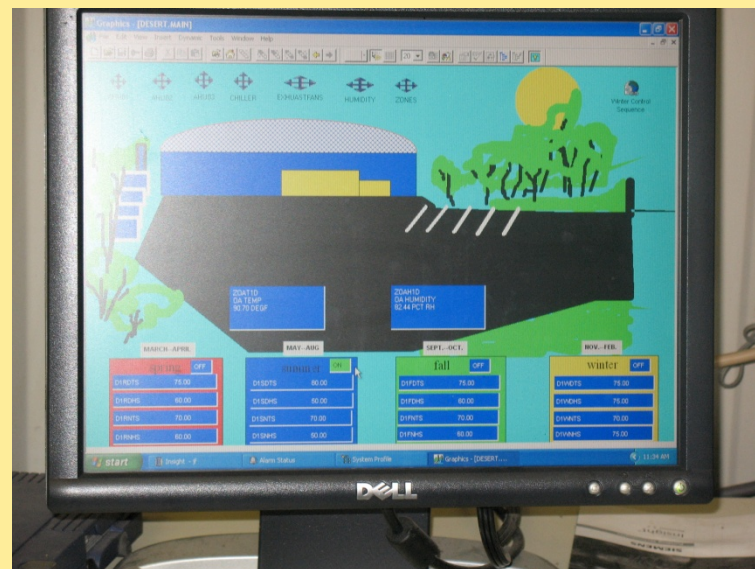




Example Operational Controls (cont.)

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 ENVIROMENTAL 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.”

Work Instruction

Comment

When precoat touches the knife, open the knife water valve at the drum to approximately 2m³/hr

**Use only enough water to transport precoat from trough.
Reduces depletion of a renewable resource**



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?

	Mon	Tues	Wed	Thur	Fri
Area X (10-25 gpm)					
Area Y (2-12 gpm)					
Area Z (3-15 gpm)					
If out of range, notify _____					



Example 3

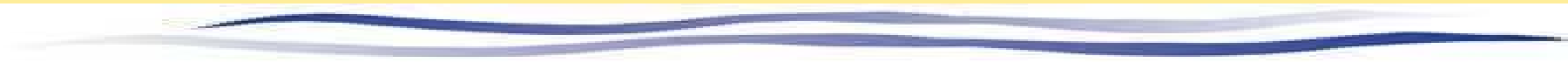
Significant Aspect = Hazardous Waste

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



Class Examples





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.



Operational Control Audit

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

Rev. Date: 6/4/07	Inventory Audit	Doc Owner: John Doe
Initials: <u>JHA</u>		Date: <u>7/3/07</u>
Hydrogen – Really Big Gas Co, Inc.		
South Trailer #1	North Trailer #2	
Pressure: <u>350</u> psi	Pressure: <u>800</u> psi (500 – 2400 psi)	
(800) 234-2323 Joe Smith – Ext. 34, or Barry Bonds – Ext. 3230		
Initial: <u>✓</u>		
LP Gas - National Gas Corp.		
Empty tanks: <u>3</u>	To be called in every Monday and Thursday	
Full tanks: <u>2</u>		
Note: If less than 4 FULL tanks of LP Gas, contact Carol, Herb, Bobby		
Phone: 234-2323 - <u>ask for Counter Sales</u>		
Initial: <u>TWH</u>	Vendor must be contacted BEFORE 10:00 A.M.	
Salt – Morton		
Number of bags in inventory: <u>3</u>		
(910) 345-2341 (Call to re-order ONLY when inventory is down to one pallet of bags)		
Initials: <u>OK</u>		
Comments:		

- 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 notwithstanding 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.



Pitfalls (cont.)

- 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

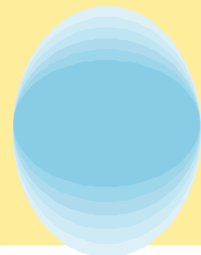


Example EMS Procedures and Forms



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)

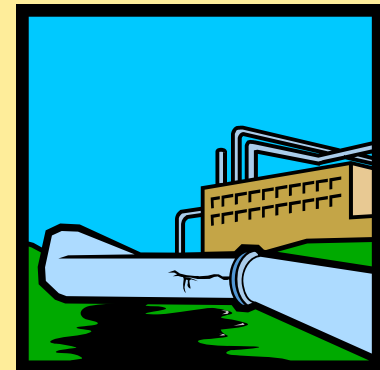
- Current phone number (s)
- Map
- _____



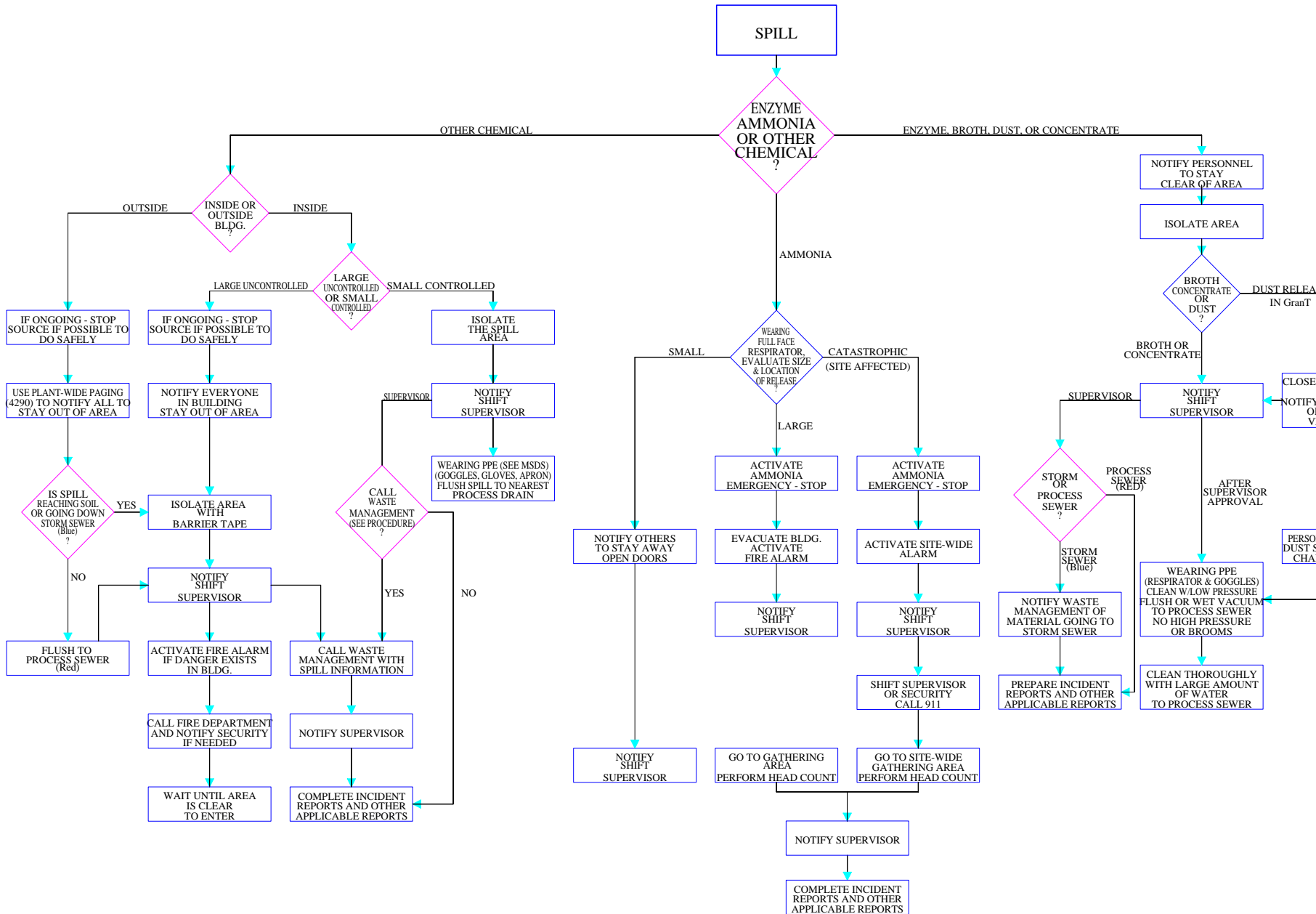
Test and Revise Procedures



- Periodically test procedures where practicable
- Review and revise procedures as needed.
 - Periodically
 - After drills
 - After an accident



SPILL RESPONSE AND NOTIFICATION





Example EMS Procedures and Forms



Exercise 1.

PB&J

- Read and complete exercise.

