

ENVIRONMENTAL ASPECTS

Background and Exhibits

In *Module 1*, you defined the scope of your facility’s EMS, in *Module 3*, you drafted your facility’s policy that included commitments for continual improvement and prevention of pollution, and in *Module 4*, you identified the legal requirements and voluntary commitments that apply to your facility. In *Module 5*, you will use all that information as you identify the environmental aspects associated with your facility and determine the subset of these aspects that have significant impacts. The outcome of *Module 5*’s activities will be your list of significant environmental aspects (SEAs), upon which all of your subsequent objectives and targets, environmental management programs (EMPs), operational controls, monitoring and measurement, training, etc., will be based within your EMS.

Definitions and Relationships

An environmental aspect is defined as an element of a facility’s activities, products, or services that can or does interact with the environment. These interactions and their effects may be continuous in nature, periodic, or associated only with events, such as emergencies.

An environmental impact is defined as any change to the environment, whether adverse or beneficial, resulting from a facility’s activities, products, or services. A significant environmental aspect is one that may produce a “significant environmental impact.”

In short, the aspect is the cause and the impact is the effect. *Exhibit 5-1: Cause and Effect — Environmental Aspects and Environmental Impacts*, provides examples of this relationship.

Exhibit 5-1: Cause and Effect – Environmental Aspects and Environmental Impacts

Environmental Aspect	⇒	<i>Environmental Impact(s)</i>
Emissions of volatile organic compounds (VOCs)	⇒	Air pollution, smog
Discharges to stream	⇒	Degradation of aquatic habitat and drinking water supply
Spills and leaks	⇒	Soil and groundwater contamination
Electricity use	⇒	Air pollution, global warming
Use of recycled paper	⇒	Conservation of natural resources

Techniques and Data Sources for Identifying and Evaluating Environmental Aspects

As shown in *Exhibit 5-2: Selected Techniques and Data Sources for Identifying and Evaluating Environmental Aspects and Impacts*, there are numerous techniques and data sources to assist you in identifying and evaluating environmental aspects and impacts at your facility. You may already have experience using some of these techniques. Note that much of the data you have collected to date will be useful as you identify environmental aspects and determine their significance.

Exhibit 5-2: Selected Techniques and Data Sources for Identifying and Evaluating Environmental Aspects and Impacts

Techniques and Data Sources	When Best Used
Emission Inventories	Used to quantify emissions of pollutants to the air. Some data on emissions or chemicals of concern may already be available to you, based on EPCRA requirements and Clean Air Act (CAA) Title V permitting program data requirements.
Environmental Compliance Audits	Used to assess compliance with federal, state, and local environmental regulations. These methodologies are in common use. Their scope and level of detail vary. These are not typically directed at examining environmental impacts (particularly for products).
Environmental Cost Accounting	Used to assess the full environmental costs associated with activities, products, or services. Emerging protocols require comprehensive assessments to quantify such costs.
Environmental Impact Assessments	Used to satisfy requirements of the National Environmental Policy Act (NEPA) regarding the evaluation of environmental impacts associated with proposed projects. Methodology in common use, but not typically used to assess environmental impacts associated with existing operations.
Environmental Property Assessments	Used to assess potential environmental liabilities associated with facility or business acquisitions or divestitures. The scope and level of detail is variable. These assessments typically do not assess impacts associated with products or services.
Failure Mode and Effects Analyses	Commonly used in the quality field to identify and prioritize potential equipment and process failures as well as to identify potential corrective actions. Often used as a precursor to formal root cause analyses.
Life Cycle Assessments	Used to assess the cradle-to-grave impacts of products or processes, from raw material procurement through disposal. Life-cycle methodologies are somewhat subjective and can be resource intensive. These methodologies are described in ISO 14040-14048.
Pollution Prevention or Waste Minimization Audits	Used to identify opportunities to reduce or eliminate pollution at the source and to identify recycling options. Requires a fairly rigorous assessment of facility operations. These audits typically do not examine off-site impacts.
Process Flow Diagrams	Used to allow an organization to visualize and understand how work gets accomplished and how its work processes can be improved.
Process Hazard Analyses	Used to identify and assess potential impacts associated with unplanned releases of hazardous materials. Methodology in common use due to Occupational Safety and Health Act (OSHA) Process Safety Management regulations. Typically employs team approach to identify and rank hazards.
Project Safety/Hazard Reviews	Used to assess and mitigate potential safety hazards associated with new or modified projects. Methodologies in common use. Typically do not focus on environmental issues.
Risk Assessments	Used to assess potential health and/or environment risks typically associated with chemical exposure. Variety of qualitative and quantitative methodologies in common use.

A recommended approach, which is described in detail below, is based on creating process flow diagrams to give you a thorough understanding of all of your facility's processes.

The Process Flow Diagram Technique

Process flow diagrams allow facilities to visualize and understand how work gets accomplished and how they might be improved. As illustrated in *Examples 5-1* through *5-6* later in this model, a process flow diagram visually depicts:

- Inputs of process or activity, which include energy and other resources consumed and raw materials and chemicals used;
- Step-by-step process flows;
- Decision points, if applicable (e.g., on alternate methods); and
- Process outputs, which include products or services, air emissions, noise, odor, radiation, wastewater discharges, solid waste, and hazardous wastes. When identifying inputs and outputs, all modes of operation should be considered because startup, shutdown, or emergency operations might introduce additional aspects to the process.

As an EMS tool, process flow diagrams help facilities to identify inputs (such as chemicals, raw materials, and other resources used), outputs (including products, wastes, air emissions, etc.) and decision points and interactions with other processes, and thereby help to identify environmental aspects and impacts.

Using this approach, identifying and evaluating your environmental aspects and related impacts will involve the following tasks, each of which is described in greater detail below:

- Subdividing your facility into appropriate units (i.e., activities and processes) for subsequent environmental aspects data collection;
- Developing process flow diagrams, which are essentially material balance sheets of all inputs and outputs of the activities and processes;
- Identifying environmental aspects by transferring the input and output information from the process flow diagrams to environmental aspect identification forms;
- Determining SEAs by evaluating the identified environmental aspects against pre-established significance determination criteria to arrive at the list of SEAs, upon which other elements of an EMS will be based;
- Documenting your approach to environmental aspects identification and significance determination in a written procedure; and
- Reviewing and revising environmental aspects over time.

Subdividing Your Facility into Appropriate Units

The appropriate level of subdivision will be one that balances the need to capture all relevant input-output information with a desire to avoid having too much unwieldy information, much of which might be redundant. Also keep in mind that the scheme for subdividing the facility should mirror how the facility is divided in terms of staffing and supervision. The people who manage and work in these areas will ultimately take ownership of the SEAs, work instructions, and monitoring and measurement that result from this process.

Exhibit 5-3: A List of Common Activities and Processes with Functional Areas at Specialty-Batch Chemical Manufacturing Facilities, identifies thirteen common activities and processes

across four general functional/process areas at a typical specialty-batch chemical manufacturing facility.

Remember to look at services as well as products. While the need to examine on-site operations might be obvious, you also should consider identifying aspects of activities that might be done off-site (such as servicing equipment at a customer’s site). Similarly, the environmental aspects of the products, vendors, and contractors you use may be less obvious, but many will be appropriate to consider. Aspects may also result from past activities, such as spills. You may want to refer to the defined scope of your EMS (see *Module 1*) in determining the set of processes and activities for which aspects will be identified.

Exhibit 5-3: A List of Common Activities and Processes with Functional Areas at Specialty-Batch Chemical Manufacturing Facilities

Activity and Process	Functional/Process Area
Packaging Area	Production
QC Laboratory	
R&D Laboratory	
In-Plant Material Handling (inc. bulk material & drums)	
Pressurized Reactor Operation (based on a generic process)	
Packaging Area	
Raw Material Handling & Storage (EO, flammables, reactives, sulfur, other chemicals)	Material Loading, Unloading, Handling & Storage
Waste Storage & Separation	
Waste Water Treatment Plant Operations (inc. off-site transfers & emissions)	Facilities & Maintenance
Centralized Air Pollution Control Operations (inc. incinerator or thermal oxidizer with pretreatment)	
Cooling Water System	
Boiler Operation	
Contractor Trailer, Storage/Welding Area	
Administration	Other

Developing Process Flow Diagrams

Use a team to diagram the inputs and outputs of the activities and processes into which you have subdivided your facility. At a minimum, the team should include the process “owner.” Probably it should also include members of the Cross Functional Team (CFT) who have become specialists in environmental aspect identification.

Identifying Environmental Aspects

If you have done a thorough job of diagramming the inputs and outputs of all of the appropriate activities and processes at your facility, the next step is easy. Transfer the information from each flow diagram onto a separate environmental aspect identification form (such as the one provided with *Exhibit 5-6: Procedure for Environmental Aspects, Objectives and Targets, and Programs (EP-003)* as Identification and Significance Determination of Environmental Aspects (Aspects Form) (EF-003.01) for each process or activity. This information should be arranged on the environmental aspect identification form by input category (e.g., product input, energy usage, water usage, supplies/disposables, or chemicals) and by non-product output category (e.g.,

point source air emissions, fugitive air emissions, secondary air emissions process wastewater discharge, storm water discharge, discharge to groundwater, hazardous waste, non-hazardous waste, noise/odor/radiation/traffic/aesthetic, land use/land development/habitat, or spillage and others). Having these categories on the form should reduce the likelihood of mistakenly neglecting relevant aspect information.

Determining Significant Environmental Aspects

Determining which aspects have significant impacts, and therefore will be included in your EMS as SEAs, is one of the most crucial steps in EMS planning. It can be one of the most challenging as well as one of the most rewarding. Decisions you make in this step will affect many other system elements, such as setting objectives and targets, establishing operational controls, and defining monitoring needs. Careful planning of this activity will pay dividends later.

Determining which aspects are significant involves some subjective decisions. For this reason, you will achieve more balanced results by having a CFT that represents different job functions. This will provide a cross-section of operational experience and different perspectives.

Your CFT should carefully define the criteria that will be used to determine which environmental aspects are significant. The criteria presented below are intended to achieve a balance between structure and flexibility. They are a starting point that you can use to customize your own criteria.

- Legal Requirements/Voluntary Commitments/Company Policy. An obvious initial criterion is whether the aspect is subject to environmental regulations—all of these aspects, as defined by broad scientific and legislative consensus, are significant. A closely related condition is whether an aspect is the subject of facility policy, goals, or voluntary commitments. For example, many facilities have established energy-use, water-use, or waste reduction goals and targets because it also makes good business sense. If these facility policies/goals apply to your facility, then the associated aspects should be considered significant.
- Community Concern. A second criterion to consider involves the views of interested parties. One of the commitments of your environmental policy must be communication with external stakeholders. There are a variety of community concerns that might affect your designation of a particular activity as a significant aspect. These may include issues other than pollution. Some examples are the noise level or odor produced by your facility; increased traffic caused by your business; and increased light needed for your operations. Aspects that the community considers important (for example, aspects that the community has lodged complaints about) should be labeled as significant in your EMS.
- Pollution Prevention Potential. A third criterion is whether the aspect has good technical and financial potential for pollution prevention improvements (such as the reduced use of water, energy, or hazardous materials). Pollution prevention is also included in your environmental policy. The determination that makes for a particular aspect under this criterion is highly subject to the specific circumstances and values of your facility and community. For example, a high rate of water use would be of higher concern in a desert region than in a region where water is more plentiful. The determination that your CFT makes is based on your judgment and your facility's specific circumstances.

- **Potential Impact to the Environment.** A final criterion is one that your CFT customizes for your facility. A commonly used approach relies on scoring environmental aspects based on magnitude, frequency, toxicity, and duration.

Where appropriate, individual aspects can be grouped. For example, if energy use is listed as an environmental aspect for several processes, it may also be a facility-wide concern. The CFT could list energy on each process-specific aspect form and then record the aspect and significance determination on a facility-wide form to indicate it as a facility-wide concern.

Refer to ***Exhibit 5-4: Summary Checklist*** for a set of steps that can help you develop and maintain your process for identifying environmental aspects and determining SEAs.

As shown in ***Exhibit 5-5: Significant Environmental Aspects as a Basis for Operational Controls and Objectives and Targets***, SEAs serve as the basis for further planning of your EMS. In a subsequent step, each SEA will be assigned an objective. That is, it either becomes the subject of: controls, which are ongoing; improvements, which have targets that specify how much can be achieved and by when; or an investigation leading to improvements (*Module 6*), which will have targets that indicate when study results will be issued.

Each improvement (and investigation) objective will be associated with an EMP that specifies who is responsible for what outcomes and by when (*Module 7*). In addition, your facility's SEAs will have key characteristics that are monitored and measured (*Module 14*), and also will be the basis for determining where operational controls are required (*Module 12*).

Documenting Your Approach

You need to describe your approach to identifying aspects and determining their significance in the form of a written procedure. You can modify ***Exhibit 5-6: Procedure for Environmental Aspects, Objectives and Targets, and Programs (EP-003)***, to develop that procedure. Variations on this procedure are provided in Appendix D—Environmental Aspect/Impact Ranking. Keep the resulting information up-to-date, so that the potential aspects of new activities, products, and services are factored into your targets and objectives (see *Module 6*) and operational controls (see *Module 12*).

Reviewing and Revising Environmental Aspects Over Time

Regularly revisiting your environmental aspects and objectives, as described in *Module 6*, is an essential step in developing an EMS that achieves the goal of continuous improvement. The regular review of aspects can be used to change the priorities you set last time, or it can be used to examine a part of your facility's activities that you set aside last time. The regular review can be part of a planned "phasing in" process, wherein different parts of your facility's operations are reviewed until all of your facility's activities are included in your EMS. The regular review of aspects is the foundation for your facility's continuing improvement.

Exhibit 5-4: Summary Checklist

ENVIRONMENTAL ASPECTS

- Step 1: Using *Exhibit 5-3: A List of Common Activities and Processes with Functional Areas at Specialty-Batch Chemical Facilities* as a guide, identify facility activities, processes, and associated functional areas. These areas will be examined for environmental input and output information.
- Step 2: Diagram the inputs and outputs of the activities and processes into which you have subdivided your facility (see *Examples 5-1* through *5-6*).
- Step 3: Transfer the information collected in Step 2 onto the aspect identification section of Form EF-003.01, Identification and Significance Determination of Environmental Aspects, sample forms are provided in *Examples 5-1* through *5-6*.
- Step 4: Determine a rational, repeatable method for determining which aspects your facility considers significant (see *Exhibit 5-6: Procedure for Environmental Aspects, Objectives and Targets, and Programs (EP-003)* and Appendix D—Environmental Aspect/Impact Ranking for example methods).
- Step 5: Capture the approach used to identify aspects and determine their significance in a written procedure. *Exhibit 5-6: Procedure for Environmental Aspects, Objectives and Targets, and Programs (EP-003)* serves as a template. Include the customized procedure in your EMS manual (see *Exhibit 10-3: EMS Manual*).

Exhibit 5-5: Significant Environmental Aspects as a Basis for Operational Controls and Objectives and Targets

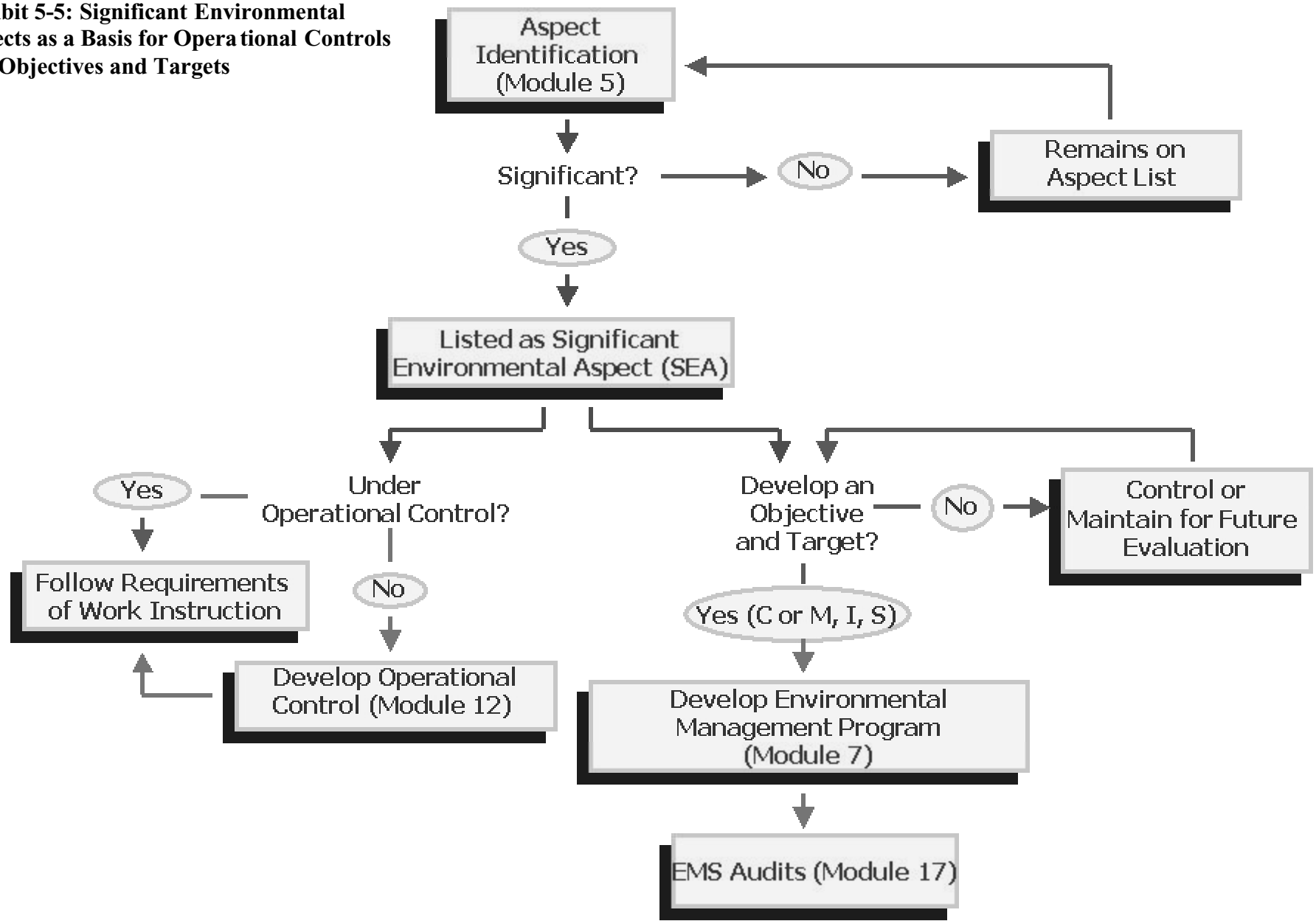


Exhibit 5-6: Procedure for Environmental Aspects, Objectives and Targets, and Programs (EP-003)

1.0 Purpose

This procedure defines [Facility's Name]'s method for the identification of environmental aspects of its operations and the determination of significance for aspects that have actual or potential significant impacts on the environment.

2.0 Activities Affected

All areas and departments

3.0 Forms Used

- 3.1 Identification and Significance Determination of Environmental Aspects and Setting Objectives and Targets (EF-003.01)
- 3.2 Linking SEAs, Objectives and Targets, and EMS Operational Control Procedures to Measurement Indicators, Job Functions, Responsible Parties, and Applicable Processes (EF-003.02)
- 3.3 Environmental Management Programs (EF-003.03)

4.0 References

- 4.1 Procedure for Environmental Management System Management Review (EP-006)
- 4.2 Procedure for Emergency Preparedness and Response (EP-007)
- 4.3 Procedure for Identification of Legal and Other Requirements (EP-001)
- 4.4 Procedure for Communication with Stakeholders (EP-004)
- 4.5 Procedure for Environmental Training and Awareness (EP-008)
- 4.6 Procedure for Monitoring and Measurement (EP-009)
- 4.7 ISO 14001:1996, Elements 4.3.1, 4.3.3 and 4.3.4

5.0 Definitions

- 5.1 Environmental Aspect: element of an organization's activities, products or services that can interact with the environment.
- 5.2 Environmental Objective: overall environmental goal, arising from the environmental policy, which an organization sets itself to achieve and which is quantified where practicable.
- 5.3 Environmental Target: detailed performance requirement, quantified where practicable, applicable to the organization or parts thereof, which arises from the environmental objectives and which needs to be set and met to achieve those objectives.
- 5.4 Environmental Management Program: the means, time frames, and personnel responsible for achieving an objective and target.

6.0 Exclusions

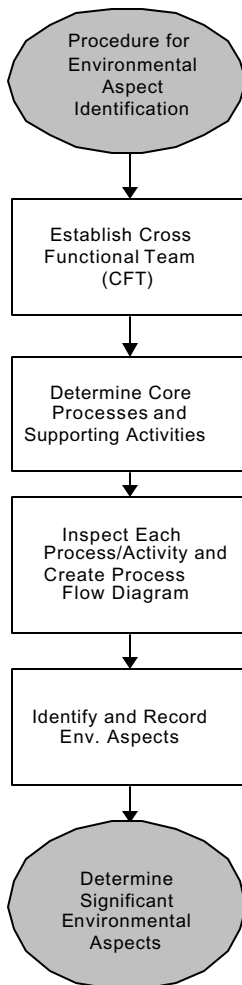
None

7.0 Procedures

7.1 Procedure for Environmental Aspect Identification

7.1.1 The facility Cross Functional Team (CFT), led by the Environmental Management Representative (EMR) or designee, is responsible for completing the Identification and Significance Determination of Environmental Aspects and Setting Objectives and Targets (Aspects Form) (EF-003.01) for each core process and supporting activity. If possible, members of the CFT will conduct a physical inspection when completing the form. The completed form is a process flow diagram of a process or activity and is used to identify environmental aspects.

7.1.2 At a minimum, the CFT will review and revise the completed forms, by means of physical inspection, annually. The CFT will also review and revise the aspects forms at the time of implementation of new or modified processes/activities, if those changes are likely to affect the facilities list of SEAs.



7.1.3 All environmental aspects are evaluated for significance as defined in the section below, Procedure for Determination of Significant Environmental Aspects.

7.1.4 The following procedure is used to fill out the Aspects Form (EF-003.01).

7.1.5 Creating the process flow diagram consists of identifying all raw materials, chemicals, and utilities used as inputs and all outputs produces as products and by-products. Outputs are all products, wastes produced, recycled materials, water discharges, and air emissions known for the process(es).

7.1.6 When identifying inputs and outputs, all modes of operation will be considered because startup, shutdown, or emergency operations might introduce additional aspects to the process. When doing the diagrams, the team will make notes of other potentially useful information such as the quantity or volume used per unit time, where available. These diagrams will be improved over time with specific data to allow material balances in the long term, if this is not possible initially.

To assist with these diagrams, the CFT shall consider the following potential inputs and outputs:

- **Inputs**
 - Product Input.
 - Energy Usage: Enter energy type and purpose (e.g., electricity, gas, oil, diesel).
 - Water Usage: Enter water type and purpose (e.g., city, well, storm, process, chilled).
 - Supplies/Disposables: Enter the major, non-chemical supplies used in the process.
 - Chemicals: Enter any chemical materials used in the process.
 - Other Inputs: Enter inputs that are not covered clearly in other categories.
- **Outputs**
 - Point Source Air Emissions: List all air emissions emitted through a stack.
 - Fugitive Air Emissions: List all air emissions that are discharged as fugitive emissions.
 - Secondary Air Emissions: List air chemicals that are not emitted directly from sources into the atmosphere, but formed through complex chemical reactions of precursor species. Ozone, sulfates and nitrates (the last two being types of PM10) are examples of secondary air pollutants.
 - Process Wastewater Discharge: Enter all process wastewater streams that discharge to sanitary sewer systems or surface waters. Containerized wastewater should be included in the waste section.
 - Storm Water Discharges: List all facility storm water discharges.
 - Discharge to Groundwater: Enter all process wastewater streams that discharge to groundwater.
 - Hazardous Waste: List material intended to be discarded or disposed of that are characterized as hazardous, including liquids, solids, and gases. Include chemical by-products under this category, if applicable.
 - Non-hazardous Waste: List material intended to be discarded or disposed of that are characterized as non-hazardous, including liquids, solids, and gases. Include recycled materials, returnable containers, and chemical by-products under this category.
 - Noise/Odor/Radiation/Traffic/Aesthetic/Land Use/Land Development/Habitat: Include noise and odor as an air emission if potentially noticeable outside the facility and list any potential radiation emitted from the facility. Include facility impacts on traffic, aesthetics, land use, land development, or habitat.
 - Spillage and Other: Enter all potential spills or other outputs not covered by the categories listed above.

7.2 Procedure for Determination of Significant Environmental Aspects (SEAs)

7.2.1 Where appropriate, individual aspects can be grouped. For example, if the consumption of energy is listed as an environmental aspect in several areas, the CFT can group these listings such that consumption of energy appears just once on a facility-wide form.

7.2.2 The following criteria will be used to determine significance and are listed in the Aspects Form (EF-003.01):

1. Legal Requirements/Voluntary Commitments/Company Policy: Subject to specifically relevant legislation, regulation, and/or permit requirements that address significant impacts to the environment. This will likely include aspects associated with processes and activities if (1) environmental regulations specify controls and conditions, (2) information must be provided to the authorities, and/or (3) there are, or may be, periodic inspections or enforcement actions taken by the authorities. Potential aspects that are subject to environmental regulations in the event of incidents will be recognized as significant when such an event occurs. A closely related condition is whether an aspect is subject to or associated with environmentally-related facility goals, directives, policies, or subject to or associated with voluntary covenants to which the facility had committed.
2. Community Concern: Subject to or associated with community concerns, such as those previously expressed in the form of complaints or critical inquiry.
3. Pollution Prevention Potential: Based on technical and business conditions, has a high potential for pollution prevention or resource-use reduction.
4. Potential Impact to the Environment: Associated with potential impact to the environment from high environmental loading due to one or more of the following:
 - a. Toxicity (compositional characterization of materials and wastes)
 - b. Amounts (volumes and masses of emissions, waste, or releases)
 - c. Amounts (consumption of renewable and non-renewable resources)
 - d. Frequency of episodes
 - e. Severity of actual or potential impacts

(Note: Additional examples of how to determine significance are provided in Appendix D— Environmental Aspects/Impacts Ranking.)

Using the Significance Determination portion of the Aspects Form (EF-003.01), the CFT, or a subset thereof, shall evaluate each identified aspect to determine whether it is significant. The environmental aspects will be considered to be “significant” if the aspect has an impact on the environment and meets one or more of the four criteria. For criteria 1 through 4, using your best judgment, backed up by research if possible, put Yes, No, or Not Applicable [NA] (or place an “X” in the column where that criterion applies) in the appropriate column on the Aspects

Form (EF-003.01). If any of the columns are assigned a Yes, indicate “S” for significant in the appropriate column for that aspect. Otherwise, indicate “N” for not significant. Provide the rationale for S or N in the appropriate column on the Aspects Form (EF-003.01).

7.3 Establishing and Maintaining Objectives and Targets

7.3.1 The CFT shall establish and maintain environmental objectives and targets for all significant aspects. Objectives and targets shall be consistent with the **[Facility’s Name]** environmental policy and shall be one of three types: control; improve; or investigate. The environmental objectives and targets for each process shall be recorded in the second column of the form for Linking SEAs, Objectives and Targets, and EMS Operational Control Procedures to Measurement Indicators, Job Functions, Responsible Parties, and Applicable Processes (EF-003.02). For each SEA, the organization will establish an appropriate objective and target. There are three types of objectives represented as follows:

C = Control or Maintain

I = Improve

S = Study or Investigate

Guidance regarding use of these objectives is provided below for use by the CFT:

- Control or Maintain – is an appropriate objective for SEAs that are the subject of environmental regulations because the environmental policy states that we will comply with the law. In these cases, the objective will be to maintain conformance with operational controls, such as procedures and work instructions that apply to those significant aspects. The target will be ongoing.
- Improve – is appropriate for SEAs that our facility goals commit us to improving upon. For example, energy- or water-use reductions that are not required by law but fall within our commitment to pollution prevention. Improvement objectives also can be used for SEAs that have regulatory drivers and environmental improvement goals. For example, we have regulatory requirements and fugitive emission reduction goals for our VOC emissions. Particulate Matter (10 micron) is another example because we wish to maintain limits in our permits to operate, but we in addition we may begin to reduce emissions of 5 micron particulate matter, which is not currently stipulated in our permit—but could be sometime in the future. Thus, the objective for these will be C and I (that is, maintain compliance and reduce emissions).
- Study or Investigate – is appropriate in cases where the CFT thinks improvement will be feasible and beneficial, but study is needed to determine how much improvement can be achieved and timeframes that are feasible. The objective will be to study the alternatives by a target date in preparation for later setting an improvement objective (or dropping the objective if the study reveals that the changes are not financially, technologically, or logistically feasible).

- 7.3.2 The CFT is also responsible for developing and recommending potential new environmental objectives to top management. In identifying potential new objectives, the CFT considers the following:
 - Environmental policy;
 - SEAs (especially those that pose chemical risk);
 - Applicable laws and regulations and potential future laws and regulations;
 - Practical business criteria, such as the potential costs and benefits of pursuing a particular environmental objective and our commitment to pollution prevention; and
 - The views of employees and other interested parties.
- 7.3.3 When developing and recommending objectives, the CFT should consider the number of columns that were marked Yes on Aspects Form (EF-003.01). These columns relate to the significance criteria established by this EMS (legal/facility requirements, community concerns, pollution prevention potential, and/or potential impact on the environment). Those SEAs with two or more Yes rankings will likely be good candidates for control, improvement, or investigation. Tools provided in Appendix D—Environmental Aspect/Impact Ranking can also be used for prioritizing your list of objectives for environmental performance improvement.
- 7.3.4 Performance against objectives and targets shall be reviewed at least every six months by the CFT and reported at the management review meeting (see EP-006, Environmental Management System Management Review). The management review shall endorse the facility environmental objectives and targets.
- 7.4 Establishing and Maintaining Environmental Management Programs
 - 7.4.1 The CFT shall establish and maintain environmental management programs for achieving the objectives and targets developed for the significant environmental aspects identified and updated every six months.
 - 7.4.2 Environmental management programs shall identify the means, time frames and those responsible for achieving associated objectives and targets. Responsibility will be identified at each relevant function and level of the facility. Use the form for Environmental Management Programs (EF-003.03) to record this information (See *Module 7*).

8.0 General Rules

- 8.1 The CFT shall include representation from all appropriate functional areas and departments.
- 8.2 The environmental aspects and significant aspects associated with the operations of semi-permanent on-site contractors are covered by this procedure.
- 8.3 Interested parties include employees and the community.
- 8.4 The environmental management programs that address the following areas should be created if applicable objectives and targets are developed:
 - 8.4.1 Compliance Assurance
 - 8.4.2 Pollution Prevention/Waste Minimization
 - 8.4.3 Energy Management

8.4.4 Materials Management

9.0 Frequency

This procedure will be repeated at least annually. More frequent updates will be conducted for new projects or processes that affect the list of the facility's significant aspects.

10.0 Records

The originals of completed the Aspects Forms (EF-003.01) and form for Linking SEAs, Objectives and Targets, and EMS Operational Control Procedures to Measurement Indicators, Job Functions, Responsible Parties, and Applicable Processes (EF-003.02) are maintained by the EMR or designee.

RECORD OF REVISIONS

Revision Date	Description	Sections Affected

Identification and Significance Determination of Environmental Aspects (Aspects Form) (EF-003.01)

Person Completing Form:

Area/Process:

Date:

ASPECT IDENTIFICATION	SIGNIFICANCE DETERMINATION					
Category/Aspect	Legal Requirements/ Voluntary Commitments, Company Policy	Community Concern	Pollution Prevention Potential	Potential Impact to the Environment	N or S	Rationale for Significance (S) or Non-significance (N)
INPUTS						
Product Input						
Energy Usage (e.g., electricity, gas, oil, diesel):						
Water Usage:						
Supplies/Disposables:						
Chemicals:						
NON-PRODUCT OUTPUTS						
Point Source Air Emissions:						
Acid Mist						
CO						
CO2						
Dust						
H2S						
Known Contamination						
NH3						
NOX						
Odiferous Compounds						
Other Nuisance Emissions						
Particulate Matter (PM10)						
PBT chemicals						
SO2						
SO3						
VOC						
Water Vapor						
Other (Specify)						

Fugitive Air Emissions:						
Acid Mist						
CO						
CO2						
Dust						
H2S						
Known Contamination						
NH3						
NOX						
Odiferous Compounds						
Other Nuisance Emissions						
Particulate Matter (PM10)						
PBT chemicals						
SO2						
SO3						
VOC						
Water Vapor						
Other (Specify)						
Secondary Air Emissions:						
Ozone						
Sulfates						
Nitrates						
Particulate Matter (PM10)						
Other (Specify)						
Process Wastewater Discharge:						
Bio-Toxicity						
BOD						
COD						
Flow						
Known Contamination						
Metals						
Oil & Grease						
Other Nuisance Compounds						
P & N2						
PBT Chemicals						
Pesticides						
pH						
Priority Pollutants						
TOC						
Total Suspended Solids						
NH3						
Other (Specify)						

Storm Water Discharge:						
Bio-Toxicity						
BOD						
COD						
Flow						
Known Contamination						
Metals						
Oil & Grease						
Other Nuisance Compounds						
P & N2						
PBT Chemicals						
Pesticides						
pH						
Priority Pollutants						
TOC						
Total Suspended Solids						
NH3						
Other (Specify)						
Discharge to Groundwater:						
See Process Wastewater Discharge for examples						
Hazardous Wastes:						
Asbestos						
Bleach						
Catalyst						
Caustic Soda						
Characteristic Waste						
Construction Debris						
Filtrate						
Inorganic Compounds (e.g., WWT Solids, Ash)						
Lab Waste						
Metals						
Off-Spec product						
Organic Compounds (Used Solvents)						
Contaminated PPE						
PBT Chemicals						
Plant Trash						
Product Shelf Life						
Sulfur						
Sulfuric Acid						
Tank Sludge						
Tower Packing/Acid Brick						
Used Oil						
Other (Specify)						

Non-hazardous Wastes:						
See Hazardous Waste for examples						
Noise/Odor/Radiation/Traffic/Aesthetic/Land Use/Land Development/Habitats:						
Image Presentation						
Machine Operations						
Siting Restrictions						
Truck/Railcars						
Urban vs Rural						
Use Sensitivity						
Wastewater Treatment/Landfills						
Other (Specify)						
Spillage and Other:						

Linking SEAs, Objectives and Targets, and EMS Operational Control Procedures to Measurement Indicators, Job Functions, Responsible Parties, and Applicable Processes (EF-003.02)*

SEA	Objective & Target C=Control I=Improve S=Study	Measurement Indicators	Associated Job Functions/ Training Needs	Existing Operational Control (Procedure, Work Instruction, BMP, Visual Aid)	New Operational Control (Procedure, Work Instruction, BMP, Visual Aid)	Person Responsible	Production Processes				Material Loading, Unloading, Handling & Storage	Facilities & Maintenance				Other Processes				
							Packaging Area	QC Laboratory	R&D Laboratory	In-Plant Material Handling (inc. bulk material & drums)		Pressurized Reactor Operation (based on a generic process)	Raw Material Handling & Storage (EO, flammables, reactives, sulfur, other chemicals)	Waste Storage & Separation	Waste Water Treatment Plant Operations (inc. off-site transfers & emissions)		Centralized Air Pollution Control Operations (inc. incinerator or thermal oxidizer with pretreatment)	Cooling Water System	Boiler Operation	Contractor Trailer, Storage/Welding Area Administration

Contact Person:

Date Completed:

* **An example of how to use this form is provided in** Example 12-2: Worksheet for Linking EMS Operational Control Procedures to Measurement Indicators, Job Functions, Responsible Parties, and Locations of Documents

Examples

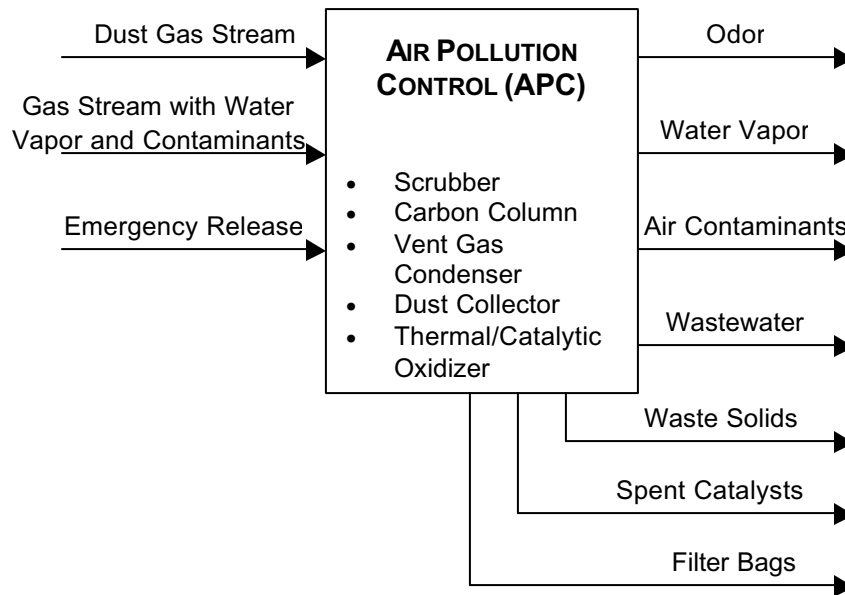
Process flow diagrams and associated Aspects Forms (EF-003.01) that illustrate how the diagram can be used to identify and determine the significance of an aspect for common production processes at specialty-batch chemical manufacturing facilities are provided below as:

- *Example 5-1: Flow Diagram and Aspects Form for Centralized Air Pollution Control Operations*
- *Example 5-2: Flow Diagram and Aspects Form for QC Laboratory*
- *Example 5-3: Flow Diagram and Aspects Form for a Pressurized Reactor Operation*
- *Example 5-4: Flow Diagram and Aspects Form for Packaging Area*
- *Example 5-5: Flow Diagram and Aspects Form for Raw Materials Handling and Storage*
- *Example 5-6: Flow Diagram and Aspects Form for Wastewater Treatment Plant Operations*

The process flow diagrams show environmental aspects, environmental inputs and outputs, of the example processes. You likely will want to review these examples and modify them to meet your facility's specific conditions. The examples should provide a starting point for understanding how the aspect identification process works and for applying it at your facility.

The examples will be further expanded in *Module 6* and *Module 7* to illustrate how to proceed from significant aspect determination to setting objectives and targets and establishing Environmental Management Programs.

Example 5-1: Flow Diagram for Centralized Air Pollution Control Operations



Example 5-1: Aspect Identification and Significance Determination Form for Centralized Air Pollution Control Operations

Person Completing Form: Sally Doe

Area/Process: Centralized Air Pollution Control Operations

Date: January 13, 2004

ASPECT IDENTIFICATION	SIGNIFICANCE DETERMINATION					
	Legal Requirements/ Voluntary Commitments, Company Policy	Community Concern	Pollution Prevention Potential	Potential Impact to the Environment	N or S	Rationale for Significance (S) or Non-significance (N)
Category/Aspect						
INPUTS						
Product Input						
N/A						
Energy Usage (e.g., electricity, gas, oil, diesel):						
Natural Gas					N	Does not meet significance criteria
Water Usage:						
Water for cooling			X		S	Water use reduction program (see facility-wide form)
Supplies/Disposables:						
N/A						
Chemicals:						
N/A						
NON-PRODUCT OUTPUTS						
Point Source Air Emissions:						
Acid Mist	X	X			S	Operating permit condition
CO	X				S	Operating permit condition
CO2					N	Does not meet significance criteria
Dusts					N	Does not meet significance criteria
H2S	X	X			S	Operating permit condition
NH3	X				S	Operating permit condition
NOX	X				S	Operating permit condition
Odiferous Compounds		X			S	Odor Reduction Program
Other Nuisance Emissions					N	Does not meet significance criteria
Particulate (PM10)	X	X			S	Operating permit condition
PBT Chemicals	X	X			S	Operating permit condition
SO2	X				S	Operating permit condition
SO3	X				S	Operating permit condition
VOC	X	X	X	X	S	Operating permit condition

SPECIALTY-BATCH CHEMICAL MANUFACTURING INDUSTRY — EMS IMPLEMENTATION GUIDE

Person Completing Form: Sally Doe

Area/Process: Centralized Air Pollution Control Operations

Date: January 13, 2004

ASPECT IDENTIFICATION	SIGNIFICANCE DETERMINATION					
Category/Aspect	Legal Requirements/ Voluntary Commitments, Company Policy	Community Concern	Pollution Prevention Potential	Potential Impact to the Environment	N or S	Rationale for Significance (S) or Non-significance (N)
Fugitive Air Emissions:						
Acid Mist	X	X			S	Operating permit condition
CO	X				S	Operating permit condition
CO2					N	Does not meet significance criteria
Dusts					N	Does not meet significance criteria
H2S	X	X			S	Operating permit condition
NH3	X				S	Operating permit condition
NOX	X				S	Operating permit condition
Odiferous Compounds		X			S	Odor Reduction Program
Other Nuisance Emissions					N	Does not meet significance criteria
Particulate (PM10)	X	X			S	Operating permit condition
PBT Chemicals	X	X			S	Operating permit condition
SO2	X				S	Operating permit condition
SO3	X				S	Operating permit condition
VOC	X	X	X	X	S	Operating permit condition
Secondary Air Emissions:						
Ozone					S	Operating permit condition
Sulfates					S	Operating permit condition
Nitrates					S	Operating permit condition
Particulate Matter (PM10)					S	Operating permit condition
Process Wastewater Discharge:						
Bio-toxicity	X				S	Operating permit condition
BOD	X				S	Operating permit condition
COD	X				S	Operating permit condition
Flow	X				S	Operating permit condition
Metals	X				S	Operating permit condition
Oil & Grease	X				S	Operating permit condition
Other Nuisance Compounds					N	Does not meet significance criteria
P & N2	X				S	Operating permit condition
PBT Chemicals	X				S	Operating permit condition
pH	X				S	Operating permit condition

SPECIALTY-BATCH CHEMICAL MANUFACTURING INDUSTRY — EMS IMPLEMENTATION GUIDE

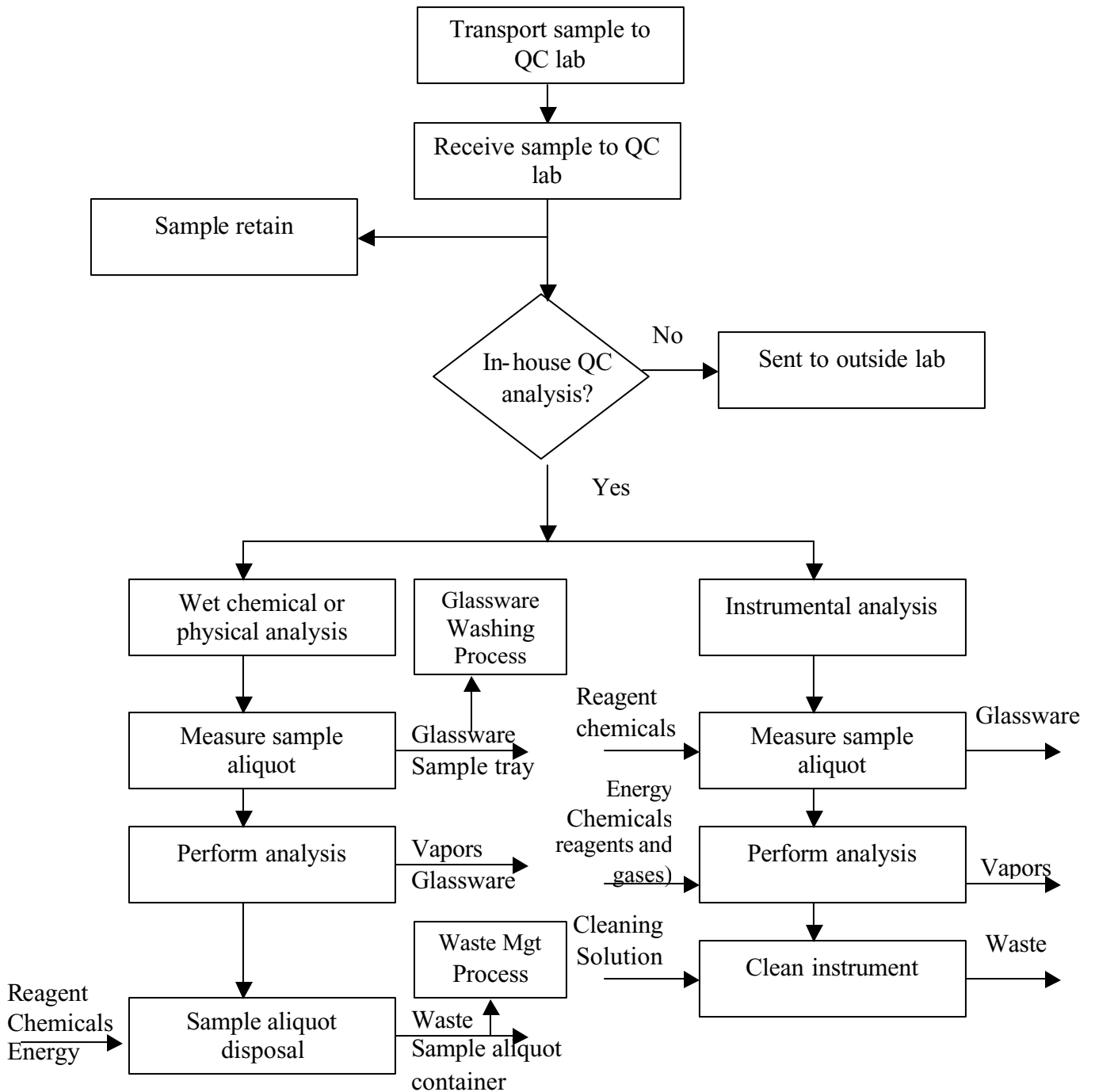
Person Completing Sally Doe
Form:

Area/Process: Centralized Air Pollution Control
Operations

Date: January 13,
2004

ASPECT IDENTIFICATION	SIGNIFICANCE DETERMINATION					
Category/Aspect	Legal Requirements/ Voluntary Commitments, Company Policy	Community Concern	Pollution Prevention Potential	Potential Impact to the Environment	N or S	Rationale for Significance (S) or Non-significance (N)
Priority Pollutants	X				S	Operating permit condition
TOC	X				S	Operating permit condition
Total Suspended Solids					S	Operating permit condition
Storm Water Discharge:						
N/A						
Discharge to Groundwater:						
N/A						
Hazardous Waste Generation:						
Catalyst	X				S	RCRA Title C
Inorganic Compound (WWT Solids, Ash)	X				S	RCRA Title C
Metals	X				S	RCRA Title C
Organic Compounds (Used Solvents)	X				S	RCRA Title C
PBT Chemicals	X				S	RCRA Title C
Tank Sludge	X				S	RCRA Title C
Tower Packing/Acid Brick	X				S	RCRA Title C
Used Oil	X				S	RCRA Title C
Non-hazardous Waste Generation:						
Characteristics Waste			X		S	Waste Reduction Program
High Volume-Low Toxicity Waste			X		S	Waste Reduction Program
Catalyst			X		S	Waste Reduction Program
Noise/Odor/Radiation/Traffic/Aesthetic/Land Use/Land Development/Habitats:						
Machine Operations					N	Does not meet significance criteria
Siting Restriction					N	Does not meet significance criteria
Spillage and Other:						
Hazardous waste spill	X				S	Volume exceeds "No Spill Policy"

Example 5-2: Flow Diagram for QC Laboratory



Example 5-2: Aspect Identification and Significance Determination Form for QC Laboratory

Person Completing Form: Sally Doe

Area/Process: QC Laboratory

Date: January 13, 2004

ASPECT IDENTIFICATION	SIGNIFICANCE DETERMINATION					
	Legal Requirements/ Voluntary Commitments, Company Policy	Community Concern	Pollution Prevention Potential	Potential Impact to the Environment	N or S	Rationale for Significance (S) or Non-significance (N)
Category/Aspect						
INPUTS						
Product Input						
QC Samples					N	Does not meet significance criteria
Energy Usage (e.g., electricity, gas, oil, diesel):						
Electricity					N	Does not meet significance criteria
Natural gas					N	Does not meet significance criteria
Water Usage:						
Water			X		S	Water use reduction program (see facility-wide form)
Supplies/Disposables:						
Glassware (flasks, beakers, etc.)					N	Does not meet significance criteria
Chemicals:						
Reagents	X				S	Managed by company as "material of concern"
Solvents	X				S	Managed by company as "material of concern"
Cleaning solutions	X				S	Managed by company as "material of concern"
NON-PRODUCT OUTPUTS						
Point Source Air Emissions:						
Odiferous Compounds		X			S	Odor Reduction Program
Other Nuisance Emissions					N	Does not meet significance criteria
Fugitive Air Emissions:						
Odiferous Compounds		X				Odor Reduction Program
Other Nuisance Emissions					N	Does not meet significance criteria
Secondary Air Emissions:						
N/A						
Process Wastewater Discharge:						
Flow	X				S	Operating Permit Condition
Other Nuisance Compounds					N	Does not meet significance criteria
pH	X				S	Operating Permit Condition
Total Suspended Solids	X				S	Operating Permit Condition

SPECIALTY-BATCH CHEMICAL MANUFACTURING INDUSTRY — EMS IMPLEMENTATION GUIDE

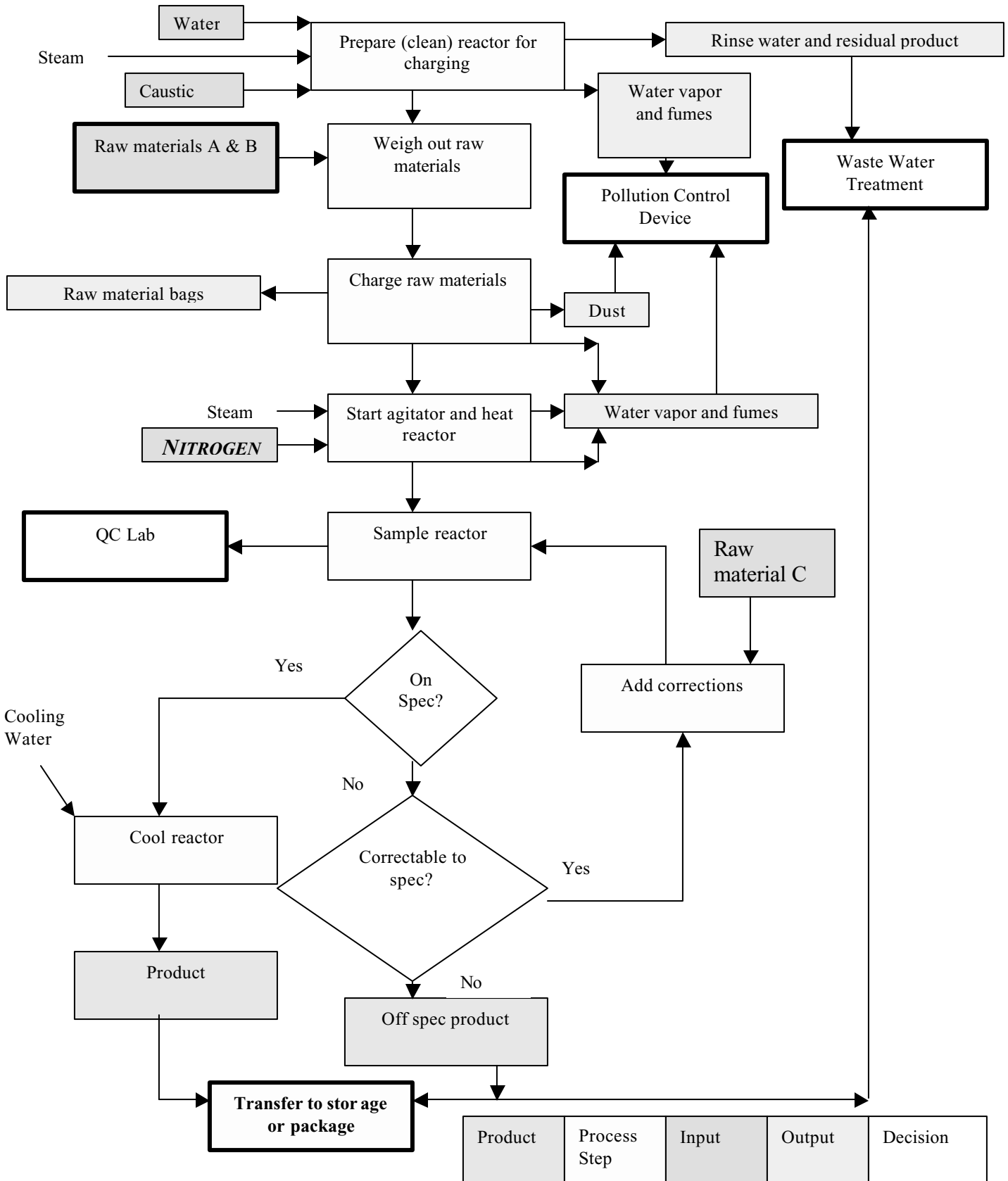
Person Completing Form: Sally Doe

Area/Process: QC Laboratory

Date: January 13, 2004

ASPECT IDENTIFICATION	SIGNIFICANCE DETERMINATION					
Category/Aspect	Legal Requirements/ Voluntary Commitments, Company Policy	Community Concern	Pollution Prevention Potential	Potential Impact to the Environment	N or S	Rationale for Significance (S) or Non-significance (N)
Storm Water Discharge:						
N/A						
Discharge to Groundwater:						
N/A						
Hazardous Wastes:						
Characteristic Waste	X				S	RCRA Title C
Lab Waste	X				S	RCRA Title C
Organic Compounds (Used Solvents)	X				S	RCRA Title C
Contaminated PPE	X				S	RCRA Title C
Non-hazardous Wastes:						
Lab Waste			X		S	Waste Reduction Program
Organic Compounds (Used Solvents)			X		S	Waste Reduction Program
Plant Trash			X		S	Waste Reduction Program
Noise/Odor/Radiation/Traffic/Aesthetic/Land Use/Land Development/Habitats:						
Odor (Image presentation)		X			S	Odor Reduction Program
Spillage and Other:						
N/A						

Example 5-3: Flow Diagram for a Pressurized Reactor Operation



Example 5-3: Aspect Identification and Significance Determination Form for a Pressurized Reactor Operation

Person Completing Form: Sally Doe

Area/Process: Pressurized Reactor Operation

Date: January 13, 2004

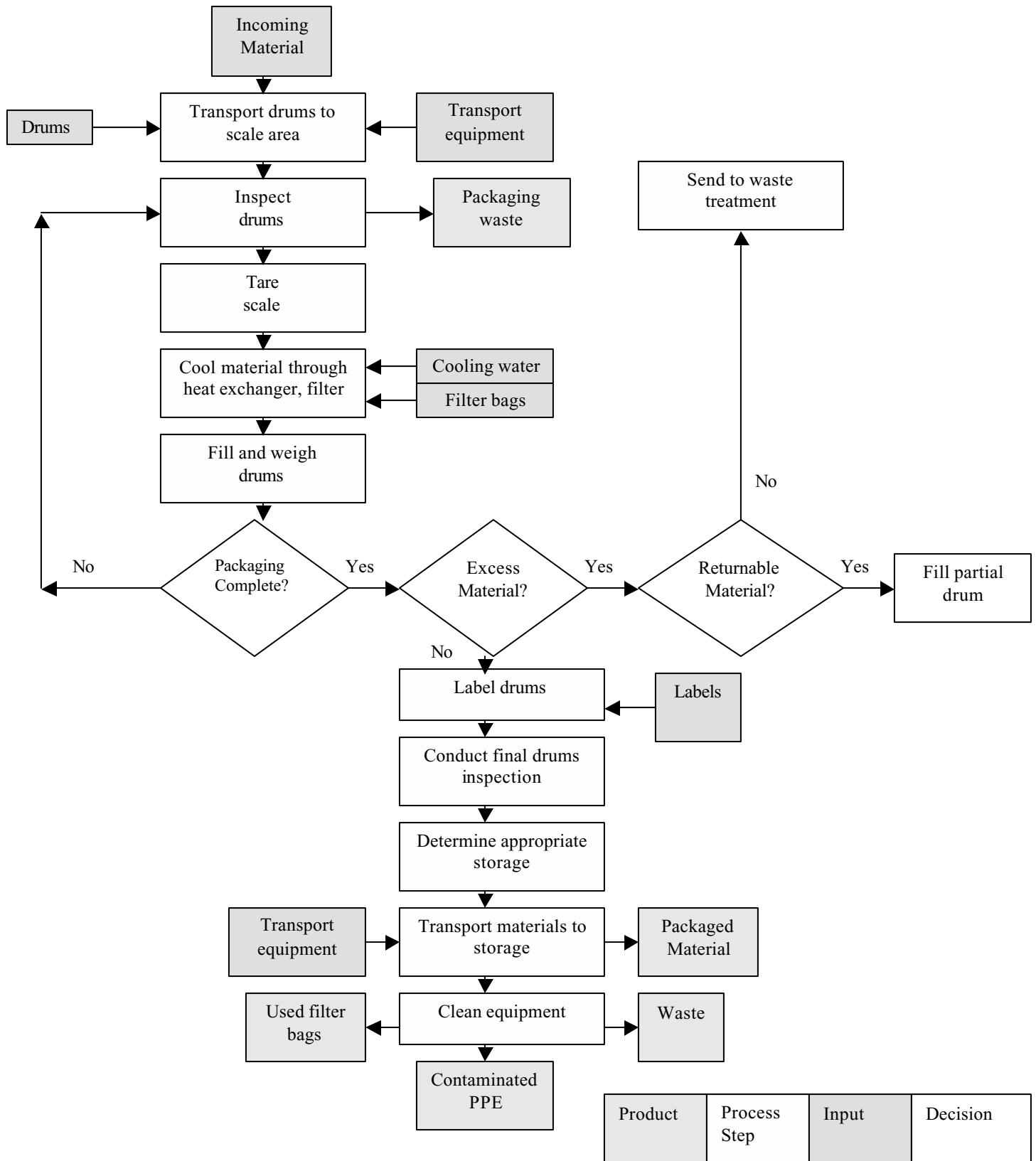
ASPECT IDENTIFICATION	SIGNIFICANCE DETERMINATION					
	Legal Requirements/ Voluntary Commitments, Company Policy	Community Concern	Pollution Prevention Potential	Potential Impact to the Environment	N or S	Rationale for Significance (S) or Non-significance (N)
Category/Aspect						
INPUTS						
Product Input						
N/A						
Energy Usage (e.g. electricity, gas, oil, diesel):						
Operation of pumps and reactor agitator					N	Does not meet significance criteria
Steam for cleaning and heating					N	Does not meet significance criteria
Cooling water for cooling					N	Does not meet significance criteria
Water Usage:						
Cooling water make-up			X		S	Water use reduction program (see facility-wide form)
Tank cleaning			X		S	Water use reduction program (see facility-wide form)
Supplies/Disposables:						
Raw material packaging					N	Does not meet significance criteria
Sample jars					N	Does not meet significance criteria
Chemicals:						
Nitrogen for reactor purge					N	Does not meet significance criteria
NON-PRODUCT OUTPUTS						
Point Source Air Emissions:						
Dusts					N	Does not meet significance criteria
NH3	X	X			S	Operating permit condition & 5 community complaints/year
VOC	X	X	X	X	S	Operating permit condition
Water Vapor					N	Does not meet significance criteria
Fugitive Air Emissions:						
VOC	X	X	X	X	S	Operating permit condition
Water vapor					N	Does not meet significance criteria
NH3					N	Does not meet significance criteria
Dusts					N	Does not meet significance criteria

Secondary Air Emissions:						
N/A						
Process Wastewater Discharge:						
BOD	X				S	Operating permit condition
COD	X				S	Operating permit condition
TSS	X				S	Operating permit condition
NH3	X				S	Operating permit condition
Storm Water Discharge:						
N/A						
Discharge to Groundwater:						
N/A						
Hazardous Wastes:						
N/A						
Non-hazardous Wastes:						
Raw material bags			X		S	Waste Reduction Program
Caustic soda			X		S	Waste Reduction Program
Off-spec product			X		S	Waste Reduction Program
Contaminated PPE: gloves, Tyvek suits			X		S	Waste Reduction Program
Sample jars			X		S	Waste Reduction Program
Noise/Odor/Radiation/traffic/Aesthetic/Land Use/Land Development/Habitats:						
N/A						
Spillage and Other:						
Damaged containers					N	Does not meet significance criteria

Scenario for Identification and Significance Determination of Environmental Aspects for a Pressurized Reactor Operation

The scope of this example is a reactor being prepared for a new batch of non-hazardous material that contains ammonia after the completion of a previous run. This product is made in this reactor 10 batches a year. The employees use a hot caustic wash that is dumped to the plant’s waste treatment facility. The theoretical batch consists of liquid raw materials pumped from storage tanks and bags of a dusty solid. The reactor has both dust and vapor recovery capability. The reactor is purged with nitrogen after it is heated and agitated until the reaction is complete. If the product meets specification, the reactor is cooled and transferred for storage or packaging. If it is not in specification, corrections can be added. If it cannot be brought into specs it can be transferred for storage or packaging or discarded to the plant’s waste treatment facility. The reactor area is concreted and diked so there is no discharge to storm water or groundwater.

Example 5-4: Flow Diagram for Packaging Area



Product	Process Step	Input	Decision
---------	--------------	-------	----------

Example 5-4: Aspect Identification and Significance Determination Form for Packaging Area

Person Completing Form: Sally Doe

Area/Process: Packaging Area

Date: January 13, 2004

ASPECT IDENTIFICATION	SIGNIFICANCE DETERMINATION					
Category/Aspect	Legal Requirements/ Voluntary Commitments, Company Policy	Community Concern	Pollution Prevention Potential	Potential Impact to the Environment	N or S	Rationale for Significance (S) or Non-significance (N)
INPUTS						
Product Input						
Product X					N	Does not meet significance criteria
Energy Usage (e.g. electricity, gas, oil, diesel):						
Electricity					N	Does not meet significance criteria
Water Usage:						
Cooling water			X		S	Cooling water is recycled (Water use reduction program -- see facility-wide form)
Supplies/Disposables:						
Packaging materials (drums, labels)					N	Does not meet significance criteria, low volume usage
Chemicals:						
N/A						
NON-PRODUCT OUTPUTS						
Point Source Air Emissions:						
N/A						
Fugitive Air Emissions:						
N/A						
Secondary Air Emissions:						
N/A						
Process Wastewater Discharge:						
N/A						
Storm Water Discharge:						
N/A						
Discharge to Groundwater:						
N/A						
Hazardous Wastes:						
N/A						

SPECIALTY-BATCH CHEMICAL MANUFACTURING INDUSTRY — EMS IMPLEMENTATION GUIDE

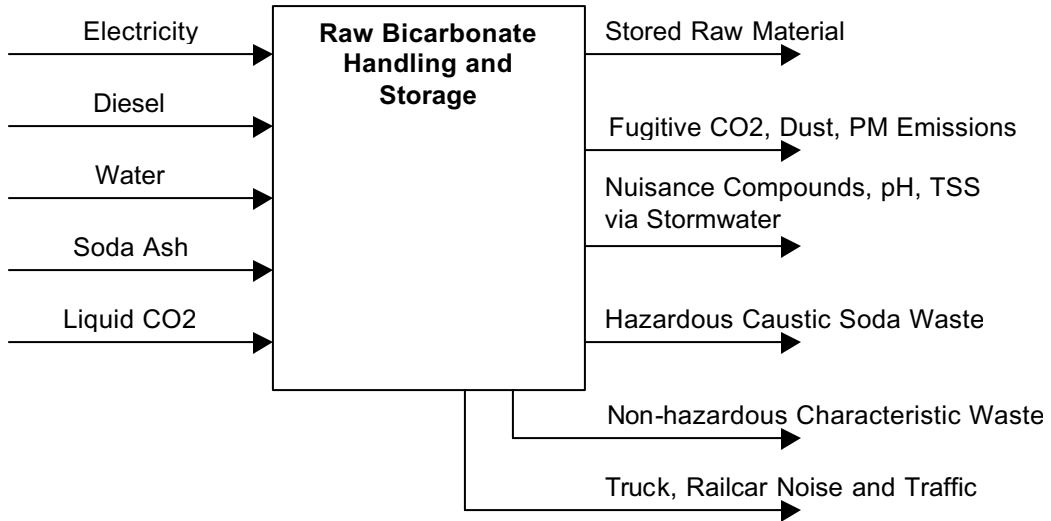
Person Completing Form: Sally Doe

Area/Process: Packaging Area

Date: January 13, 2004

ASPECT IDENTIFICATION	SIGNIFICANCE DETERMINATION					
Category/Aspect	Legal Requirements/ Voluntary Commitments, Company Policy	Community Concern	Pollution Prevention Potential	Potential Impact to the Environment	N or S	Rationale for Significance (S) or Non-significance (N)
Non-hazardous Wastes:						
Contaminated PPE, filter bags, filtrate, packaging waste			X		S	Waste Reduction Program
Noise/Odor/Radiation/traffic/Aesthetic/Land Use/Land Development/Habitats:						
N/A						
Spillage and Other:						
N/A						

Example 5-5: Flow Diagram for Raw Materials Handling and Storage



Example 5-5: Aspect Identification and Significance Determination Form for Raw Materials Handling and Storage

Person Completing Form: Sally Doe Area/Process: Raw Materials Handling and Storage Date: December 3, 2003

ASPECT IDENTIFICATION	SIGNIFICANCE DETERMINATION					
Category/Aspect	Legal Requirements/ Voluntary Commitments, Company Policy	Community Concern	Pollution Prevention Potential	Potential Impact to the Environment	N or S	Rationale for Significance (S) or Non-significance (N)
INPUTS						
Energy Usage:						
Energy					N	
Diesel	X				S	Legal requirements (Sulfur limits in permit, See facility-wide form)
Water Usage:						
Groundwater consumption			X		S	Water use reduction program (see facility-wide form)
Supplies/Disposables:						
N/A						
Chemicals:						
N/A						
NON-PRODUCT OUTPUTS						
Point Source Air Emissions:						
CO2					N	Does not meet significance criteria
Dusts					N	Does not meet significance criteria
Particulate (PM10)	X				S	Operating permit condition
Fugitive Air Emissions:						
CO2					N	Does not meet significance criteria
Dusts					N	Does not meet significance criteria
Particulate (PM10)	X	X			S	Operating permit condition
Secondary Air Emissions :						
N/A						
Process Wastewater Discharge:						
N/A						
Storm Water Discharge:						
Other Nuisance Compounds					N	Does not meet significance criteria
PH	X	X	X		S	Operating permit condition
Total Suspended Solids	X	X	X		S	Operating permit condition

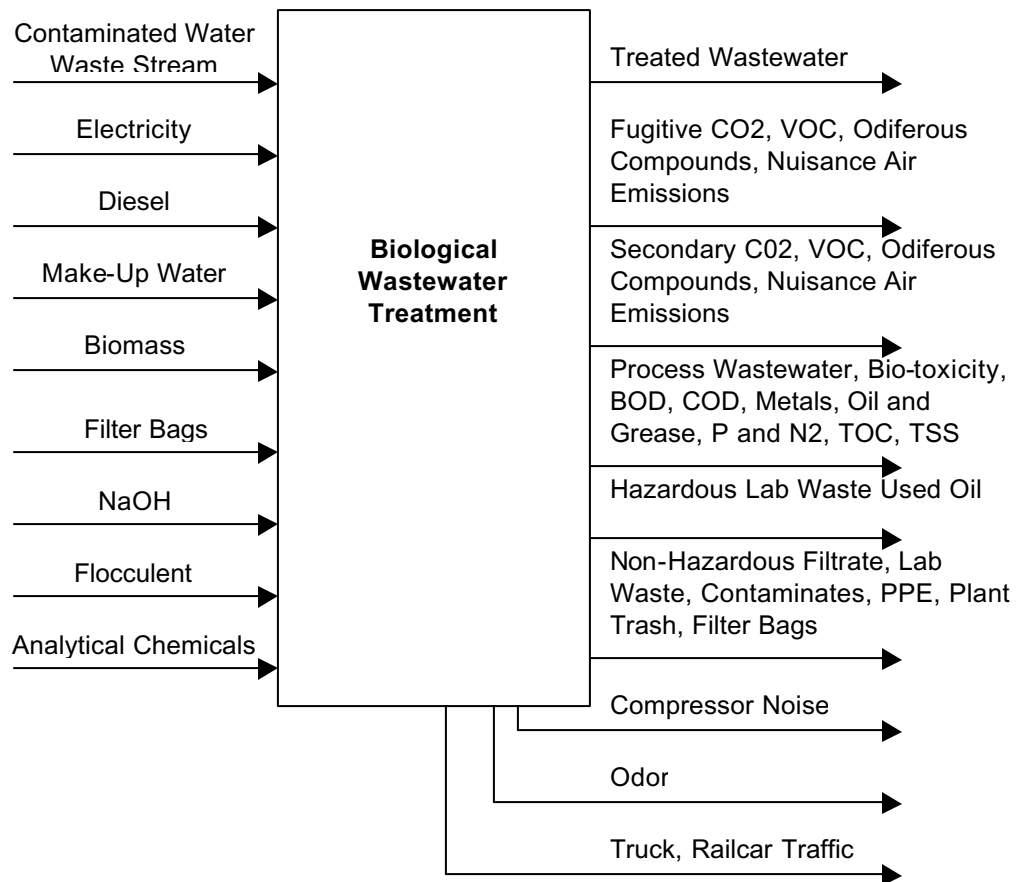
Person Completing Form: Sally Doe Area/Process: Raw Materials Handling and Storage Date: December 3, 2003

ASPECT IDENTIFICATION	SIGNIFICANCE DETERMINATION					
Category/Aspect	Legal Requirements/ Voluntary Commitments, Company Policy	Community Concern	Pollution Prevention Potential	Potential Impact to the Environment	N or S	Rationale for Significance (S) or Non-significance (N)
Discharge to Groundwater:						
N/A						
Hazardous Wastes:						
Caustic Soda	X				S	RCRA Title C
Characteristics Waste	X				S	RCRA Title C
Hazardous Waste Spill	X	X	X		S	RCRA Title C
Known Contamination	X				S	RCRA Title C
Non-hazardous Wastes:						
Contaminated PPE, filter bags, filtrate, packaging waste			X		S	Waste Reduction Program
Noise/Odor/Radiation/traffic/Aesthetic/Land Use/Land Development/Habitats:						
Noise, Machine Operations	X	X			S	Legal requirements
Noise, Trucks/Railcars	X	X			S	Legal requirements
Noise, Transfer from Raw Materials	X	X			S	Legal requirements
Trucks/Railcar Land Use	X	X			S	Legal requirements
Land Development Siting Restrictions	X	X			S	Legal requirements
Trucks/Railcar Traffic	X	X			S	Legal requirements
Spillage and Other:						
Hazardous waste spill	X				S	Volume exceeds "No Spill Policy"

Scenario for Identification and Significance Determination of Environmental Aspects for the Process Raw Material

The facility is a sodium bicarbonate manufacturer with raw materials of soda ash and liquid CO₂. The facility is set in an industrial park and zoned for heavy industry (minimizes problems from neighbors or local governments who allow the construction of housing near industrial sites, not schools). The facility gets its water from a local supplier and the POTW; there are no water issues. The facility discharges to the local POTW. Aspects were identified for minimal amounts of spillage, occurring only at the transfer points, between rail car to silo for the soda ash and from the liquid CO₂ to the CO₂ store tank. No accidental release scenario was projected for this case study because it was assumed that would be done separately under emergency preparedness and response planning.

Example 5-6: Flow Diagram for Wastewater Treatment Plant Operations



Example 5-6: Aspect Identification and Significance Determination Form for Wastewater Treatment Plant Operations

Person Completing Form: Sally Doe Area/Process: Wastewater Treatment Plant Operations Date: January 13, 2004

ASPECT IDENTIFICATION	SIGNIFICANCE DETERMINATION					
Category/Aspect	Legal Requirements/ Voluntary Commitments, Company Policy	Community Concern	Pollution Prevention Potential	Potential Impact to the Environment	N or S	Rationale for Significance (S) or Non-significance (N)
INPUTS						
Product Input						
Contaminated Water Waste Stream					S	Does not meet significance criteria
Energy Usage (e.g. electricity, gas, oil, diesel):						
Electricity					N	Does not meet significance criteria
Diesel	X				S	Legal requirements (Sulfur limits in permit, See facility-wide form)
Water Usage:						
Make-up water			X		S	Water use reduction program (see facility-wide form)
Supplies/Disposables:						
Filter bags					N	Does not meet significance criteria
Biomass					N	Does not meet significance criteria
Chemicals:						
Flocculents	X				S	Managed by company as "material of concern"
Analytical chemicals	X				S	Managed by company as "material of concern"
NON-PRODUCT OUTPUTS						
Point Source Air Emissions:						
N/A						
Fugitive Air Emissions:						
CO2					N	Does not meet significance criteria
Odiferous Compounds		X			S	Odor Reduction Program
Other Nuisance Emissions					N	Does not meet significance criteria
VOC	X	X			S	Operating Permit Conditions
Secondary Air Emission:						
N/A						
Process Wastewater Discharge:						
Bio-toxicity	X	X			S	Operating Permit Conditions
BOD	X	X			S	Operating Permit Conditions
COD	X	X			S	Operating Permit Conditions
Metals	X	X			S	Operating Permit Conditions

SPECIALTY-BATCH CHEMICAL MANUFACTURING INDUSTRY — EMS IMPLEMENTATION GUIDE

Person Completing Form: Sally Doe Area/Process: Wastewater Treatment Plant Operations Date: January 13, 2004

ASPECT IDENTIFICATION	SIGNIFICANCE DETERMINATION					
Category/Aspect	Legal Requirements/ Voluntary Commitments, Company Policy	Community Concern	Pollution Prevention Potential	Potential Impact to the Environment	N or S	Rationale for Significance (S) or Non-significance (N)
Oil & Grease	X	X			S	Operating Permit Conditions
P & N2	X	X			S	Operating Permit Conditions
TOC	X	X			S	Operating Permit Conditions
Total Suspended Solids	X	X			S	Operating Permit Conditions
Storm Water Discharge:						
N/A						
Discharge to Groundwater:						
N/A						
Hazardous Waste Generation:						
Lab Waste	X				S	RCRA Title C
Used Oil	X				S	RCRA Title C
Non-hazardous Waste Generation:						
Filtrate			X		S	Waste Reduction Program
Lab Waste			X		S	Waste Reduction Program
Other Waste (Contained PPE)			X		S	Waste Reduction Program
Plant Trash			X		S	Waste Reduction Program
Filter Bags			X		S	Waste Reduction Program
Noise/Odor/Radiation/traffic/Aesthetic/Land Use/Land Development/Habitats:						
Compressor noise					N	Does not meet significance criteria
Odor (Image presentation)		X			S	Odor Reduction Program
Trucks/Railcar traffic					N	Does not meet significance criteria
Spillage and Other:						
Hazardous waste spill	X				S	Volume exceeds "No Spill Policy"