

APPENDIX H: BLANK WORKSHEETS

This appendix contains blank copies of all the worksheets presented in the *Implementation Guide*, for your use. The worksheets are identified by the same numbers used in the *Guide*. For example, Worksheet 6-1 would be the first worksheet found in Module 6.

Worksheet 1-1: Costs and Benefits of Developing and Implementing an IEMS

Costs	Benefits
Contact Person:	Date completed:

Worksheet 1-2: IEMS Responsibilities

IEMS Function	Person	Regular Position
Management Representative		
IEMS Coordinator		
IEMS Committee		
Contact Person:		Date Completed:

Corresponds to RESP-01 of the *Company Manual Template*.

Worksheet 1-3: IEMS Development Schedule and Resources Worksheet

Module	Participants	Budget	Target Completion
Making the Commitment: Creating a Policy Statement and Determining the Scope			
Intermediate steps: (As appropriate)			
Planning the Process: Decision Points, Leadership & Participants, Schedule & Plan			
Intermediate steps: (As appropriate)			
Determining Significant Aspects: Prioritizing Concerns and Setting Objectives			
Intermediate steps: (As appropriate)			
Developing Operational Controls			
Intermediate steps: (As appropriate)			

Making Improvements: Evaluating Alternatives and Setting Targets			
Intermediate steps: (As appropriate)			
Implementation: Building Organizational Support for Your IEMS			
Intermediate steps: (As appropriate)			
Setting Up Environmental Management Projects; Measuring and Achieving Success			
Intermediate steps: (As appropriate)			
Establishing Continuing Improvement			
Intermediate steps: (As appropriate)			
Contact Person:	Date Completed:		

Worksheet 1-4: Persons Responsible for IEMS Development			
Roles	Individual(s) Responsible	% of Time Designated	Budget
"Management representative" having responsibility for implementing the EMS (in small businesses, this could be the owner).			
IEMS Coordinator			
IEMS Team Participants			
Identifying and determining significance of environmental aspects.			
Identifying and determining applicability of legal and other requirements.			
Competency-based training.			
Operational controls.			
Emergency preparedness and response.			
Monitoring and measurement of "key characteristics" of operations and activities that can have significant environmental impacts (i.e., the "significant environmental aspects.>").			
Periodic evaluations of environmental compliance.			
Handling and investigating non-conformance with the EMS.			
Records management.			
Internal EMS audits.			
Contact Person:			Date Completed:

Note: Most of these blocks will be filled in as development of the IEMS progresses. This worksheet will help track progress and serve to remind the team and management of necessary assignments.

Worksheet 1-5:* Identifying Environmental Aspects		
Input/Output	Environmental Aspect (quantify if available)	Environmental Impact
Office Activities		
Manufacturing Process		
Building Maintenance		
Products and Services		
Contact Person:	Date Completed:	

Use the information you have included here to fill in EA-02 in the the *Company Manual Template*.

Worksheet: 1-6* Regulations

Regulatory Agencies	Regulations That Apply to My Business Sector	Business Operations Potentially Affected	Does it Apply to My Business?
Contact Person:	Date Completed:		

*Corresponds to Table LR-01 in the *Company Manual Template*.

Worksheet 3-1:^a Health, Safety and Environmental Potential Effects Information

Operation	Environmental Aspect	Information Sources	Regulatory Data: ^b Carcinogen? OSHA Permissible Exposure Limit (PEL)? Volatile Organic Compound (VOC)? Toxics Release Inventory (TRI)?	Human Health Effects by Pathways Acute and Chronic ^c			Effects on wildlife and Other environmental effects ^d			Worker Safety	Rank	
				Inhalation	Dermal	Oral	Air	Water	Land		Human	Env.
Contact Person:				Date Completed:								

^a Corresponds to Table EA-03 in *Company Manual Template*.
^b Most information for this column can be found on the MSDS.
^c Partial information for these columns might come from the MSDS, but other resources may be needed. In particular, acute effects are usually reported on MSDS sheets. Chronic effects are sometimes on MSDS sheets, but often will have to be found elsewhere. LC refers to lethal concentration. Inhalation LC50 is the concentration of a chemical in air that causes death in 50 percent of the test organisms at the end of the specified exposure period. LD refers to lethal dose. LD50 is the dose of a chemical taken by mouth, absorbed by the skin, or injected that is estimated to cause death in 50 percent of the test animals. Lethal dose data are expressed in terms of amount of chemical divided by the body weight, e.g., mg/kg.
^d MSDSs usually do not include environmental effects.
 Note: For more information on risk-related data, including methods for interpreting quantitative toxicity values, refer to the Risk Guide provided on the DfE Program website.

Worksheet 3-2: Exposure to Chemicals and Materials

Operation	Aspect	Quantity* Used per time period	Exposure Time		Personal Protective Equipment (PPE)	Pathway		Rank Exposed Groups		
			Duration**	Frequency		Human: Inhalation, Dermal, Oral	Environment: air, water, land	Workers	Community	Environment

Contact Person: _____ Date Completed: _____

*If ingredient in chemical product, use quantity of chemical not product, i.e., apply the percentage that the ingredient makes up of the product.
 **How many hours per day is the chemical or material used?
 Note: For more information about evaluating exposure, refer to the exposure section of the Risk Guide on the DfE Program website.

Worksheet 3-3: Community Issues

Operation	Aspect	Community Issues (List)	Rank

Contact Person:

Date:

Worksheet 3-4: Natural Resources Use

Operation	Aspect	Natural Resources Used	Rank

Contact Person:

Date:

Worksheet 3-5:^a Criteria to Determine Significant Aspects^b

Operation	Aspect ^b	Regulatory Concerns	Chemical and Material Risk			Worker Safety	Other Community Issues: ^d	Natural Resources: ^e	Overall Ranking	Significant? Y/N
			Worker Eff/Exp ^c	Community Eff/Exp ^c	Environment Eff/Exp ^c					
Contact Person:					Date Completed:					

- ^a Corresponds to SEA-01 in the *Company Manual Template*.
- ^b Include each input and output of a process step.
- ^c Effects/Exposure
- ^d Noise, traffic, light, odor.
- ^e Include such items as Resource Use, Solid Waste, Energy Use

Worksheet 3-7: Potential Improvements

Aspect	Human Health ¹	Environment	Cost Savings	Community Relations	Morale	Expected Improvements
Contact Person:					Date Completed:	

¹ Workers, Community, Global

Worksheet 3-8: Overall Ranking Summary

Process Step Aspect	Aspect Total	Feasibility Total	Benefits Total	Significant Y/N
Contact Person:				Date Completed:

Worksheet 4-1:* Potential Alternatives

Significant Environmental Aspect:

Baseline:

	Baseline	Potential Alternatives
Products		
Technologies		
Work Practices		
Recycling/ Reuse		
Treatment		
Disposal		
Contact Person:	Date Completed:	

* Document these results in Section AE of the *Company Manual Template*.

Worksheet 4-2:^a Alternatives Evaluation: Health, Safety and Environmental Potential Effects Information

Baseline:

Alternative	Information Sources	Regulatory Data: ^b Carcinogen? OSHA Exposure limit? Volatile Organic Compound (VOC)? Toxics Release Inventory (TRI)?	Human Health Effects by Pathways Acute and Chronic ^c			Comments	Effects on Wildlife and Other Environmental Effects ^d			Worker Safety ^e	Rank	
			Inhalation	Dermal	Oral		Air	Water	Land		Human ^f	Env

Contact Person:			Date Completed:									

a See Section AE in *Company Manual Template*.
b Most Information for this column can be found on the MSDS.
c Partial information for these columns might come from the MSDS, but other resources may be needed. In particular, acute effects are usually reported on MSDS sheets. Chronic effects are sometimes on MSDS sheets, but often will have to be found elsewhere.
d MSDSs usually do not include environmental effects.
e There may be information on the MSDS that would be useful for preparing your emergency preparedness plan.
f This rank is based on the potential effects of the chemical and not on the dose required to obtain those effects. For example, a person can drink a certain amount of Scotch. Drinking a large quantity of Scotch, however, can be lethal. Therefore dose does make a difference ultimately in making a judgment. However, one can still make a qualitative ranking about whether Scotch, cola, water, milk or juice have beneficial or negative impacts. For more discussion of the role of “dose” see the Hazard Guide on the DfE web site.
Note: For more information on risk related data, including methods for interpreting quantitative toxicity values, refer to the risk Guide provided on the DfE Program website. The data on this table were constructed for purposes of illustration and do not represent real data.

Worksheet 4-3: Alternatives Evaluation: Exposure to Chemicals and Materials

Significant Environmental Aspect:

Baseline:

Alternative Products	Quantity* Used per time period	Exposure Time		Personal Protective Equipment (PPE)	Pathway		Rank Exposed Groups		
		Duration**	Frequency		Human: Inhalation, Dermal, Oral	Environment: air, water, land	Workers	Community	Environment

Contact Person:

Date:

*If ingredient in chemical product, use quantity of chemical not product, i.e., apply the percentage that the ingredient makes up of the product.

**How many minutes or hours per day is the chemical or material used?

Worksheet: 4-4: Alternatives Evaluation: Community Issues

Significant Environmental Aspect:

Alternative	Community Issues (List)	Rank
Contact Person:		Date:

Worksheet: 4-5: Alternatives Evaluation: Natural Resource Use

Significant Environmental Aspect:

Alternative	Natural Resources Used (List)	Rank
Contact Person:	Date:	

Worksheet 4-6:^a Alternatives Evaluation: Criteria to Determine Environmental Impact

Baseline:

Significant Environmental Aspect:

Alternative	Regulatory Concerns	Chemical and Material Risk			Worker Safety	Other Community Issues: ^c	Natural Resources ^d	Overall Ranking	Preferred Alternative? Y/N
		Worker Eff/Exp ^b	Community Eff/Exp ^b	Environment Eff/Exp ^b					
Contact Person:				Date Completed:					

- ^a Corresponds to SEA-01 in *Company Manual Template*.
- ^b Effects/exposure
- ^c Noise, traffic, light, odor.
- ^d Include such items as resource use, solid waste, energy use.

Worksheet 4-7:* Performance Comparison of Alternatives

Significant Environmental Aspect:

Baseline:

Function:

Alternative	How well it works	Time	Ease of use	Overall Performance Evaluation
Contact person:				Date Completed:

*Document results in Section AE of the *Company Manual Template*.

Worksheet 4-8:* Regulatory Comparison of Alternatives				
Alternative	Applicable Regulations	Required Controls	Regulatory Cost	Overall Regulatory Concerns Evaluation
Contact Person:			Date Completed:	

*See Section AE of the *Company Manual Template*.

Note: Under “Cost of Regulations” include: paperwork triggered, reporting requirements, cost of controls, personal protective equipment, and any other costs that may be attributed to regulations associated with using that product or process.

Worksheet 4-9a: Annual Operating Costs

Significant Environmental Aspect:

Baseline:

Alternative	Materials	Direct Labor	Utilities	Waste Management	Regulatory Compliance	Insurance	Future Liability	Total Operating Costs

Contact person:

Date:

Worksheet 4-9b: Potential Annual Revenue Effects

Significant Environmental Aspect:

Baseline:

Alternative	Product Throughput	Product Quality	Reuse of or Sales of Recovered Materials	Total Revenue Effects
Contact Person:		Date:		

Worksheet 4-9c: Initial Investment Costs*

Significant Environmental Aspect:

Baseline:

Alternative	Purchased Equipment	Utility Systems/ Connection	Planning/ Engineering	Site Preparation	Construction/ Installation	Start-up/ Training	Permitting	Other**	Total Inv. Costs

Contact Person:

Date:

Worksheet 4-9d: Cost Comparison of Alternatives

Significant Environmental Aspect:

Baseline:

Alternative	Total Operating Costs	Total Investment Costs	Annual Revenue Effects	Rank
Contact Person:				Date:

Document results in Section AE of the *Company Manual Template*.

Worksheet 4-10:* Evaluation of Alternatives

Significant Environmental Aspect:

Baseline:

Alternative	Performance Rank ¹	Regulatory Rank ²	Cost Rank ³	Environmental Effects ⁴	Overall Evaluation ⁵
Products					
Technologies					
Work Practices					
Recycle/Reuse					
Treatment					
Disposal					
Contact Person:			Date Completed:		

*See Section AE of the *Company Manual Template*.

¹ Take from Worksheet 4-7, Performance Comparison.

² Take from Worksheet 4-8, Regulatory Cost Comparison.

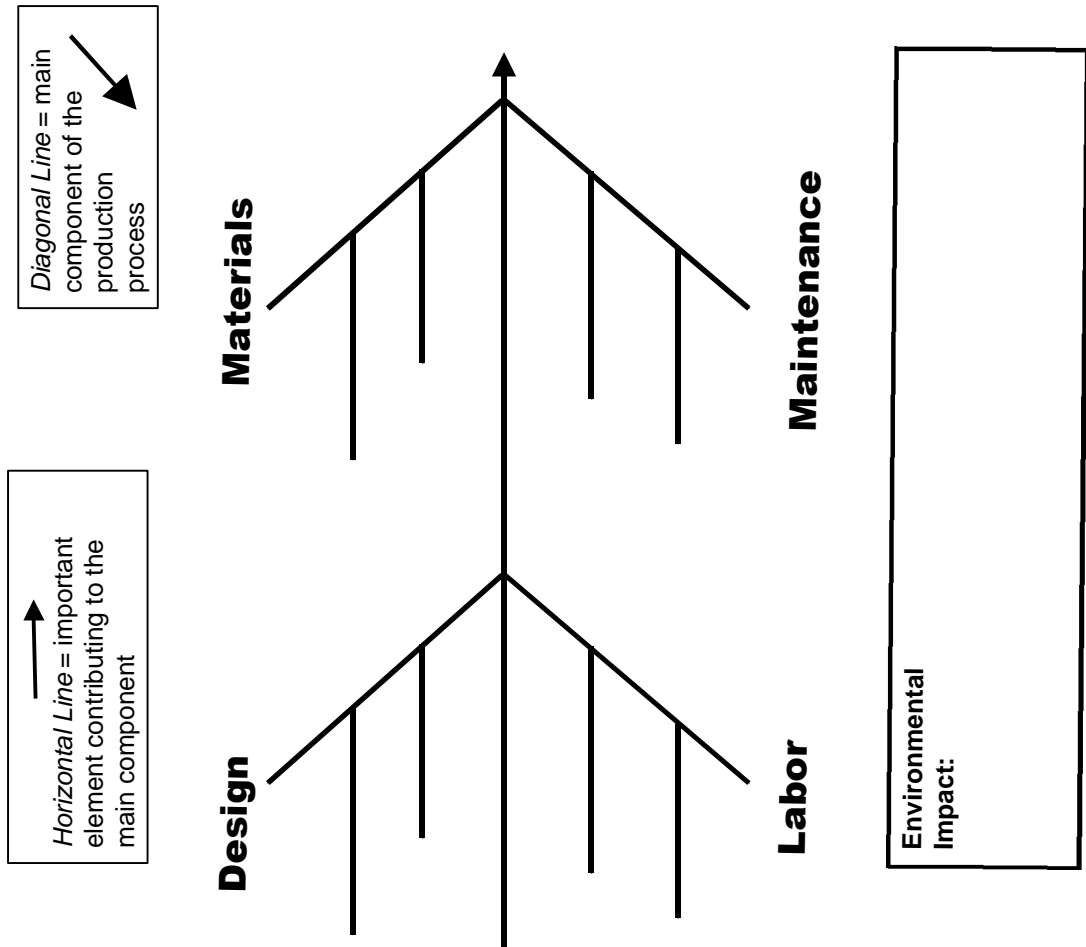
³ Take from Worksheet 4-9d, Cost Comparison.

⁴ Take from Worksheet 4-4, Criteria to Determine Environmental Impact.

⁵ Rank on a scale of low to high to reflect the desirability of each product. This is a judgment call.

Note: For more information on the methodology for comparing alternatives, refer to both the DfE website and the *Cleaner Technologies Substitutes Assessment, A Methodology Resource Guide*, DfE, U.S. EPA 744-R 95-002, Dec. 1996.

Figure 5-a. Root Cause Diagram



Worksheet 5-2: Calibration Log

Indicator	Measurement Method	Equipment Used	Equipment calibrated: date/method
Contact Person:	Date Completed:		

Worksheet 5-3:* Corrective Action Notice	
Issue Date:	Solution Due Date:
Requested by: Issued to:	
Problem Statement:	
Most Likely Causes:	
Suggested Solutions:	
Action Taken:	
Measured Results:	
Corrective Action Closed by:	Date:
Contact for Notice:	Date completed:

*Report results on TCA-01 in the *Company Manual Template*.

Worksheet 6-1:* Operational Control Procedures

Significant Environmental Aspect	Indicator(s)	Associated Job Functions	Existing Operational Control Procedures	Operational Control Procedure Development/ Modification Needed	Responsible for developing	Responsible for checking	Location Posted
Contact Person:					Date Completed:		

*Corresponds to OC-01 in the *Company Manual Template*.

Worksheet 6-2: Operational Control Responsibilities

Significant Aspect	Procedures (list)	Responsible for maintaining controls
Contact Person:		Date Completed:

Worksheet 6-3: Training Plan for Operational Controls

Aspect	Procedures	Person Responsible for Carrying Out	Training Needs	How to Train	When/Length	Budget	Completion Date	Person Responsible for training
Contact Person:						Date Completed:		

Worksheet 7-1: Environmental Review of New Processes, Products and Activities

Area of Company	New Process, Product, or Activity	Environmental Review by	Environmental Effects	Pollution Prevention Opportunities
	Manager/Date	Manager/Date		
Contact for form:			Date Completed:	

Worksheet 7-2:* Compliance Tracking Log

Person Responsible	Regulation	Compliance Check Date	Results and Root Cause	Corrective Action/ Date	Compliance Verified/ Date
Contact Person:			Date Completed:		

*Document results on CA-01 in the *Company Manual Template*.

Worksheet 7-3: Pollution Prevention Tracking Log

Area of Company	Pollution Prevention Activity	Date Started	Results	Measurement Method	Person Responsible
Contact:					Date Completed:

Worksheet 7-4: Environmental Emergency Preparedness and Response

Potential Emergency Scenario	Potential Environmental Impact	Action Required	Procedures Needed	Training Needed

Worksheet 8-1: Training Plan

Jobs Affecting Environment	Training Needs	How to Train	When/Length	Budget	Completion Date	Who is Responsible
Contact Person:				Date Completed:		

Worksheet 8-2: Documentation

List Existing Documents	Determine Format: Who/ Date Completed	Develop Prototype (Content): Who/ Date Completed	Assign Writing: Who/ Date	Review Writing/ Compare to Prototype Who/ Date	Added to Document List/ Date	Who Has Access	Where Located
	/	/	/	/	/		
	/	/	/	/	/		
	/	/	/	/	/		
	/	/	/	/	/		
List Documents to be Created							
	/	/	/	/	/		
	/	/	/	/	/		
	/	/	/	/	/		
	/	/	/	/	/		
	/	/	/	/	/		

Contact Person: _____ Date Completed: _____

Corresponds to CS-2 of the *Company Manual Template*.

Worksheet 8-3: Document Control

Document	Who Will Use It	Permanent Location	Periodic Review Schedule/ Who	When Can Be Destroyed
			/	
			/	
			/	
			/	
			/	
			/	
			/	
			/	
			/	

Contact Person: _____ Date Completed: _____

Worksheet 8-4:* Working with Stakeholders

Your Stakeholders	Potential Environmental Interest	What You Want to Tell Them	What You Want Them to Tell You	How to Communicate With/ tell Them	When	Person Responsible
Contact Person:			Date Completed:			

*Report results on CS-01 in the *Company Manual Template*.

Worksheet 8-5: Stakeholder Communication Record	
Date Communication Received:	
Type of Communication:	
Received From:	
Address/Telephone Number/E-Mail:	
Content of Communication (attach copy if possible):	
Will ABC Company Respond?	Y N
Date of Response:	
Person Responding:	
Nature of Response (attach copy if possible):	
Are Internal Actions Necessary?	Y N
(If Yes, fill out a Corrective Action Form.)	
Contact Person:	Date Completed:

Corresponds to CS-02 of the *Company Manual Template*.

Worksheet 9-1: IEMS Program Measurement Criteria

Company Name _____

Measurement Elements				
IEMS Components	Objectives of Component	Activity Measures	Results Indicators	Review Period
Communication Plan				
Stakeholders Input				
Environmental or IEMS Training				
Review of Aspects				
Operational Controls				
Environmental Review of New Processes and Activities				
Setting Objectives & Targets				
Environmental Management Project 1				
Environmental Management Project 2				
Documentation				
Regulatory Compliance				
Pollution Prevention				
Other				

Contact person for form:

Date Completed:

Worksheet 9-2: Internal Assessment Checklist

Internal Assessment Team:

Date of Internal Assessment: _____ Signed: _____

IEMS Procedures:

Check each item assessed, including auditing of records, where applicable (codes in parentheses refer to the Worksheet number ("WS") in this Guide, followed by the document number in the *Company Manual Template*.):

- Environmental policy (Module 2)
- Environmental objectives (progress; implementation of action plans)
- IEMS responsibilities (WS 7-2, RESP-01)
- Identification of Environmental Aspects (WS 1-5, P-EA)
- Identification of Legal Requirements (WS 1-6, P-LR)
- Identification of Significant Environmental Aspects (WS 3-3, WS 3-6, P-SEA)
- Development of Objectives, Targets, and Action Plans (WS 5-1, P-OTP)
- Conducting an Alternatives Evaluation (WS 4-1 to 4-6, P-AE)
- Development of Operational Controls (WS 6-1 to 6-3, P-OC)
- Environmental Training (Awareness and Task-Specific) (WS 8-1, P-ET)
- Emergency Preparedness (WS 7-5, P-EP)
- Review of New Products and Processes (WS 7-3, P-NPP)
- Documentation (WS 8-2, WS 8-3, P-D)
- Conducting a Compliance Assessment (WS 5-4, P-CA)
- Conducting an Internal Assessment (WS 9-2, WS 9-3, P-IA)
- Taking Corrective Action (WS 5-3, P-TCA)
- Management Review (WS 9-4, P-MR)

IEMS Performance

- Achieved objective #1
- Achieved objective #2
- Achieved objective #3

Contact Person:

Date Completed:

Corresponds to LA-01 of the *Company Manual Template*.

Worksheet 9-3: Internal Assessment Record

Internal Assessment Team:

Date of Internal Assessment: _____ Signed: _____

Major Non-Conformities Observed

1.

2.

Minor Non-Conformities Observed

1.

2.

3.

Is ABC Company making progress in meeting its IEMS objectives?

Is ABC Company adhering to the commitments in its environmental policy?

Suggestions for Improving IEMS:

Contact Person:

Date Completed:

Corresponds to IA-02 of the *Company Manual Template*.

Worksheet 9-4: Management Review Record

Date of review meeting:

Persons present at meeting:

Conclusions:

Actions to be taken/Person(s) responsible:

Signed: _____
Management Representative

Plant Manager

Worksheet 9-4 corresponds to MR-01 in the *Company Manual Template*.