

ISO 14001:2015.....

Best Practices on Implementation of an Environmental Management System

By

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Program Outline

- Overview of the Requirements
- Engaging Top Management
- Context- Driving Risks & Opportunities
- Process Approach- risks & audits
- Continual Improvement- Monitoring & Measurement

ISO 14001:2015

- Effective September 10, 2015
- Employs a common approach sometimes referred to as the common format (e.g. ISO 9001:2015)
- Focused on a Process Approach with encouragement to integrate similar management systems; e.g. ISO 9001:2015 & ISO 45001:2015

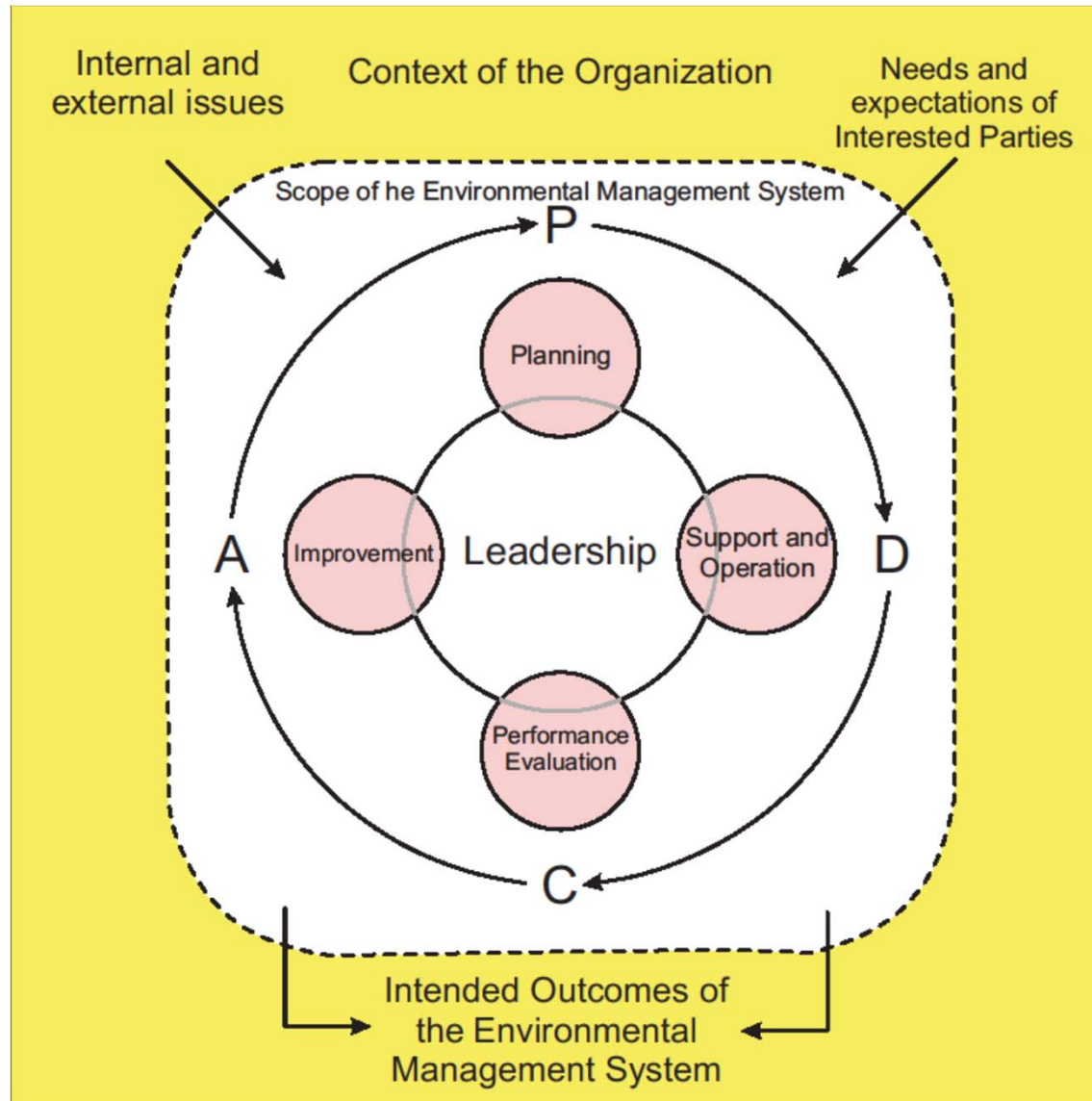
ISO 14001:2015

- Obtain copy of the ISO 14001:2015 Standard
- Consider purchasing companion guide – ISO 14004:2016
- Copies of both available at www.ansi.org - Standards Store
- Train internal auditors to this Standard

New Terminology

- "Appropriate" and "Applicable" are not the same
 - Appropriate = suitable for your situation with some freedom
 - Applicable = If it can be done, it must be done
- "Consider" = think about but can exclude
- "Take into account" = think about AND incorporate
- "Ensure" = responsibility for action can be delegated, but not accountability
- "Compliance Obligations" = legal and other requirements
- "Documented Information" = documentation, documents and records
- "Environmental Objective" includes BOTH objectives AND targets

Plan-Do-Check-Act Model (new)



Verbal language of the Standard

- “shall”- indicates a requirement
- “should” indicates a recommendation
- “may” indicates a permission
- “can” indicates a possibility or a capability

ISO 14001:2015

- **Clause No. Clause Name**
- 4 Context of the Organization
- 5 Leadership, Environmental Policy & Roles and Responsibilities
- 6.1 Aspects, Compliance obligations, planning actions
- 6.2 Environmental Objectives & Targets
- 7.1 Resources
- 7.2 Competence
- 7.3 Awareness
- 7.4 Communication- Internal & External
- 7.5 Documentation
- 8.0 Operational Control & Emergency Response
- 9.0 Monitoring & Measurement, Internal Audits, Management Review
- 10.0 Nonconformity & Continual Improvement

Standard Aero (SA)

- Enterprise wide ISO 14001:2015 Certification
- Independent aerospace Maintenance, Repair, & Overhaul provider
 - Component repair at the Cincinnati, OH location
 - ~ 600 employees
- One certificate of registration for entire Corporation by third party
- Cincinnati specific EMS requirements are developed and implemented in a site specific format.

Clause 4.0 Context – The Starting Point

- Context framework developed by our Corporate EMS Manual.
 - Site specific enhancement through meetings & discussions
- Five (5) basic questions addresses, evaluated, & answered:
 - What will the SA EMS be used to accomplish?
 - What are the external issues that can affect the purpose of the SA EMS?
 - What are the internal issues that can affect the purpose of the SA EMS?
 - Who are the relevant interested parties for the SA EMS?
 - What are the needs & expectations of the identified relevant parties?
- Context document was essentially an outline addressing the items above and meeting minutes signed by members of the Local Leadership.

EMS Purpose

- SA determined that they wanted the EMS to accomplish the following tasks:
 - Compliance with applicable laws & regulations
 - Improve environmental performance through procedural enhancements
 - Achieve organizational environmental objectives
 - Standardize environmental procedures within BU's where applicable

External Issues

- The following topics were considered to identify the potential external issues:
 - Political system
 - Economic – availability of utilities, transportation, infrastructure, etc.
 - Financial – availability to resources
 - Social – workforce availability, education, languages, values, etc.
 - Competition – similar organizations that may be modelled
 - Supply Chain Management – availability, capacity, capability
 - Cultural -
 - Market & Public Demand – lifecycle of products & wastes
 - Technological
 - Legislative framework

Risks & Opportunities

- **Risks**

- Employee turnover could impact environmental performance
- Market growth rate of our business
- Development and implementation of new technology and capabilities-
Customer Requests/Requirements
- Waste Generation
- Hazardous waste handling

- **Opportunities**

- Energy reductions- CI projects to drive improvements
- Recycling/waste diversion opportunities
- Integrate EMS with quality management system where applicable

Internal Issues

- The following topics were considered to identify the potential internal issues:
 - Organizational governance & structure
 - Legal compliance
 - Other management systems
 - Organizational structure, style, & culture
 - Organizational vision
 - Resources – human, financial, etc.

Interested Parties

- Interested parties were identified along with the needs & expectations of each
- Documented in a table
 - Regulatory agencies
 - SA corporate
 - Customers
 - Employees, neighbors, & community
 - SA registrar
- Needs & expectations of each were reviewed & specific compliance obligations were identified
- Key expectations included:
 - Compliance with applicable laws & regulations
 - Continued management of environmental risks to prevent pollution

Clause 6-Risk Management

- Key upgrade in the new standard is a systematic risk analysis of impacts to the environment
- Defined in Clause 6.1.1 & the theme is the prevention of negative environmental impacts
- Clause 6.1.1 requires consideration of the following:
 - Context issues
 - Environmental aspects
 - Compliance obligations
 - Views of interested parties
- Documented information must be developed for the risks & opportunities

Process Approach

- Numerous references to managing processes in new standard
- Process map created showing the flow of our business.
 - Large core processes broken down into manageable smaller processes
 - Used to identify inputs & outputs (aspects) of each process
 - Allows focus on environmentally significant sub-processes
 - Helps guide internal audits
 - Helps focus in on significant aspects
 - Helps drive Objectives/Target and Improvements

Standard Aero- Cincinnati -

ENVIRONMENTAL PROCESS MAP

Business Support Functions-
Finance/HR/Supply
Chain/Engineering/IT

Maintenance Activity

Warehouse Activity

Repair Development

Receiving

Cycle 1 Activity-
Cleaning/Inspection/Dis-
assembly/Non-Destructive Testing/
Quoting

Cycle 2 Activity-
Machining/Coating/Assembly/
Heat Treat/Autoclave/Shot-
Peening/Surface Prep/Welding

Shipping

Final Inspection-
Quality



Clause 6.1.2-Risk in Aspect Analysis

- Used “rating scale” for consistency & repeatability
- Rating scale designed to incorporate risk via determination of significance
 - Extent of compliance obligations
 - Frequency of impact associated with aspect
 - Severity of impact associated with aspect
 - Emergency/non-routine impact associated with aspect
- Significant aspects were considered most highest risks for SA-Cincinnati
 - Air emissions from parts cleaning
 - Spills from parts cleaning
 - Spills from “Chromate Conversion”

SA Aspects List-Example

Gensuite Risk Registry

standardaero.gensuite.com/aero/ehs/risktracker/index.cfm?Org=9&Loc=Cincinnati%20%28CCS%29&gso=1

Apps Managed bookmarks Sign In Mount Orab, OH (4... FDEP NPDES Storm... StandardAero Portal Gensuite Applicatio... StandardAero Web... Sign in to Concur [...]

Hazard ID	Hazard/Hazardous Operation	Group	Hazard/Hazardous Operation Description	Status	Score	Risk Reduction Controls	Action Plan
437	Contractor EHS Risks		Predictive/Preventative Maintenance - Use of subcontractors to clean, service, maintain or calibrate plant/equipment - Abnormal - Reduced Water Quality (increased probability with responsibility to control)	Assessed and Under Control	Severity 4	N/A	N/A
					Likelihood 10		
					Score 40		
438	Energy / Water Consumption		Administrative/Support - Use of Electricity - Normal - Waste of Energy	Assessed and Under Control	Severity 4	N/A	N/A
					Likelihood 4		
					Score 16		
439	Energy / Water Consumption		Administrative/Support - Use of Natural Gas - Normal - Waste of Energy	Assessed and Under Control	Severity 4	N/A	N/A
					Likelihood 4		
					Score 16		
440	Environmental - Air - Emissions		Assembly/Disassembly - Dust from process - Normal - Reduced Air Quality	Assessed and Under Control	Severity 4	N/A	N/A
					Likelihood 7		
					Score 28		
441	Environmental - Air - Emissions		Liquid Parts Cleaning (Clean Line) - Emissions to air from chemicals - Normal - Reduced Air Quality	Assessed and Under Control	Severity 10	CI Project for upgrades Phase 1 completed Phase 2 on hold	N/A
					Likelihood 10		
					Score 100		
442	Environmental - Air - Emissions		Machining - Dust/fumes from process - Normal - Reduced Air Quality	Assessed and Under Control	Severity 4	N/A	N/A
					Likelihood 7		
					Score 28		
443	Environmental - Air - Emissions		Mechanical Parts Cleaning (bench operations) - Dust from process - Normal - Reduced Air Quality	Assessed and Under Control	Severity 4	downdraft tables and cross draft booths implemented as needed	N/A
					Likelihood 4		

Windows Taskbar: 2:33 PM 2/10/2020

Addressing Risks & Opportunities

- Aspects

- Established O&T to better control air emissions from parts cleaning with a system/technology upgrade – Significant Aspect
- Established O&T to reduce spill risk associated with “Chromate Conversion” which includes a process relocation and upgrade. – Significant Aspect
- Established O&T centered around energy reduction to align with a Corporate Environmental objective – Opportunity identified as Internal Issue
- Established EWI for all significant aspects, provided training, & made available to the organization

- Employee Turnover/Growth


- Developed new environmental training matrix and incorporated it into the newly implemented Learning Management System at facility
- Revised employee ISO 14001 new hire orientation; every employee must complete training prior to first day of work
- Incorporated more Environmental/EMS trainings in “Toolbox Talks”/Stand Up Meetings

Addressing Risks & Opportunities

- Environmental Communications
 - Monthly EHS Review with Site Leadership Team used to convey important information and monitor system performance
 - Standardized EWI when possible (i.e. Universal Waste)
 - Monthly All Hands Meetings with all site personnel used as main avenue of ISO communications
 - Bulletin boards and posting of relevant EMS information
 - Monthly data entry to Corporate
- Waste Handling
 - Established documented EWI for waste handling
 - Established waste characterization & waste tracking spreadsheets to provide better understanding & tracking of wastes
 - Profiles updated
 - Included waste handling review on weekly environmental audit

EWI Waste Management

- Put in place to document the waste management process at facility and to ensure key points not overlooked in procedure(s)
- All procedures maintained electronically on Site's network. All employees have access to the network.

Site: Cincinnati	Work Instruction	
BU/Function:	Waste Management	
Document number: W 6.4-3		
Old document number: N/A	Revision level 4	Issue date April 16, 2015
	Initiated by Dave Showalter	
Owner approval: Matt Scroggins		
Quality approval: Marc Hinterlach		

1. Purpose

- 1.1. This Waste Management work instruction summarizes the procedures for the determination and disposal of all waste, both hazardous and non-hazardous.

2. Scope

- 2.1. The sections of this work instruction comply with the provisions of 40CFR 260 – 268 as implemented at Cincinnati Component Services (CCS).

3. Process and Responsibilities

- 3.1. **Waste Determination.** Waste determination is the responsibility of the EHS Department. All items that are not on the predetermined Waste Disposal List shall be placed in the Chemical Storage Room, in the "MATERIAL FOR WASTE DETERMINATION" container. EHS shall review the material to determine proper disposal, and make arrangements for its disposal.
 - 3.1.1 The Waste Disposal List shall be maintained by the EHS Department.
- 3.2. **Container Selection.** Containers used for collection and disposal are required to meet specific DOT requirements. The EHS Department is responsible for the proper selection, use and control of waste containers to ensure proper waste management at CCS.
- 3.3. **Satellite Accumulation Areas.** Specific hazardous wastes associated with operations at CCS are accumulated at the point of generation in satellite waste accumulation areas.
 - 3.3.1 The maximum quantity of any specific hazardous waste allowed to be stored in a satellite waste accumulation area is 55 gallons.
 - 3.3.2 Satellite areas will be inspected weekly through the RCRA SAP inspection form (F 6.4.3-1).
 - 3.3.3 RCRA trained and authorized employees are responsible for the placement and removal of all satellite accumulation drums. Drums shall be moved to the RCRA 90 Storage area within 72 hours of final closure.
 - 3.3.4 Operations Managers are responsible for notifying the Maintenance team when a satellite accumulation container becomes full. Full is defined as 95% of the container volume or 4 inches below the top lip of a drum for liquids. Do not

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Reports & Obligations List

- Online EHS Software used to manage and summarize required Environmental activity.
- Serves as compliance calendar for EHS department

The screenshot displays the 'Permit Manager' web application. The main content area is titled 'Permits List' and shows 'Showing records 1-18'. A filter for 'Media: Air (5 permits)' is applied. Below this, a list of applicable regulations is shown, including 'Applicable OH EPA Air Regulations - OAC 3745 15-17, 21, 31, 78'. A table provides a summary of permit details:

Field	Value	Count
Type	Not Specified	Sections/Sub-Sections: 0
Jurisdiction	Not Specified	Requirements: 0
		What-ifs: 0
		Checklists: 0
Important Dates:		
Date issued	28-Oct-19	
Renewal Required By	Not Specified	
Expiration date	Not Specified	

To the right of the permit details is a 'Calendar Tasks' summary table:

Task Status	Count
Completed (YTD)	0
Missed (YTD)	0
Open	0
Past Due	0
Upcoming in next 30 days	0

The interface also includes a 'Manage Permits' and 'Reports' menu, and a 'Show Data Filters' dropdown.

The screenshot displays the 'Compliance Calendar' web application for February 2020. The calendar shows various regulatory tasks scheduled throughout the month:

- February 1: Post OSHA 300 Forms (Bob Pendergrass)
- February 4: Weekly RCRA 90 Day Storage Inspect... (Bob Pendergrass)
- February 5: Update/Verify HSMS Elements in... (Matthew Scroggins)
- February 6: Monthly VOC and OC Emissions Reconc... (Bob Pendergrass)
- February 10: Weekly RCRA 90 Day Storage Inspect... (Bob Pendergrass)
- February 14: Scheduled Inspections- Permit Evalua... (Matthew Scroggins)
- February 14: Tier II report preparation (Bob Pendergrass)
- February 14: Replace Aerosolve filter (Bob Pendergrass)
- February 17: Weekly RCRA 90 Day Storage Inspect... (Bob Pendergrass)
- February 24: Weekly RCRA 90 Day Storage Inspect... (Bob Pendergrass)
- February 27: ISO 14001 EMS Mgmt Review (Matthew Scroggins)

The calendar interface includes navigation arrows for the month and a task list on the right side of the calendar grid.

Manual

- Enterprise ISO 14001:2015 procedures revised & incorporated into one manual
 - Site specific documentation managed locally.
- Documented information corresponding to standard clauses identified
- One stop shop for the SA EMS



StandardAero Environmental Management System Manual

Approval and Certification

The approvals on this page certify that this Environmental Management System Manual accurately describes the environmental management system in use at StandardAero and is designed to meet the requirements of the ISO 14001 Environmental Management System Standard.

Approved by:
Lloyd Barker
SVP, Quality & Engineering

Date: 3/25/19

Approved by:
John Teilmeyer
VP, EHS and Security

Date: 3/25/19



Conclusion

- Keys for a successful management system and certification:
 - Engage top management
 - Find ways to involve management regularly (at least quarterly)
 - Utilize a cross-functional team to “de-centralize” the EMS
 - Consider non-traditional forms of documentation; e.g. picture work instructions

**Thank you
Questions?**

Biographical Information

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Mr. Scroggins is currently Manager-Environmental, Health, and Safety at StandardAero-Component Services, LLC, a world class Maintenance, Repair, and Overhaul facility for aircraft engine components, located in Sharonville, Ohio. He has over 8 years of experience in the implementation and management of EHS functions and programs in a manufacturing setting; specifically focusing on hazardous waste management, air pollution, and occupational safety and health. Also, he has led the effort to implement and become 3rd party registered for both ISO 14001-Environmental Management and OHSAS 18001-Occupational Health and Safety Management Systems at his sites of responsibility.

Mr. Scroggins obtained a Master's Degree in Safety, Security, and Emergency Management from Eastern Kentucky University and is a Certified Safety Professional (CSP).

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Mr. Hemker is one of the founders of EHS Technology Group, LLC located in Moraine, Ohio. He has over 45 years of experience in environmental engineering and management. Mr. Hemker obtained a Master's Degree in Environmental Engineering from the University of Cincinnati and is a Certified Hazardous Materials Manager (CHMM). His principle fields of expertise are air pollution, hazardous waste, and hazardous chemical management. He has conducted numerous environmental management training seminars throughout the U.S. and China.

In recent years Mr. Hemker has focused on consulting with manufacturing industries to solve problems associated with air pollution, water pollution, hazardous waste, oil and chemical spill prevention, chemical safety, and industrial hygiene.

He has also led the development and implementation of Energy management Systems at manufacturing facilities in Ohio and Kentucky.

Mr. Hemker is a RAB/Exemplar Global trained lead auditor and has been developing and implementing ISO 14001, 9001, 50001 and OHSAS 18001 management systems since the adoption of the Standards.