



Semtech Corporation

Environmental Management Manual

The environmental management manual set forth in this document shall define the scope of the environmental management system (EMS) implemented at Semtech Corporation headquartered in Camarillo, CA (hereafter referred to as “the organization” or Semtech) and compliance to the standards of ISO 14001:2015 (hereafter referred to as “ISO 14001”).

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CORPORATE ENVIRONMENTAL MANAGEMENT SYSTEM MANUAL

1. GENERAL REQUIREMENTS

Semtech has created this Environmental Management System Manual to detail how the Environmental Management System has (EMS) been established, and how it will be documented, implemented and maintained on all relevant levels of the organization.

2. HIERARCHY OF DOCUMENTS

Unless otherwise specifically agreed to or approved by the Corporate Quality Manager, in the event of any conflict between the provisions of this procedure, forms, guidelines or requirements, the order of precedence is as follows: (i) this Environmental Manual and any Addendum or any Appendices thereto; (ii) and then Semtech Corporate Quality Manual (iii) any regulatory requirement or statute (iv) any applicable approved customer requirement contract or agreement (v) as applicable the ISO,AS, TS, or OHSAS standard.

3. ADJUNCT PROCEDURE, SPECIFICATION OR LOCAL SITE MANUAL

Typically, no adjunct procedure, specification or site manual is needed or required in place of this procedure. If a local site has an established process or procedure exceeding, not circumventing, the guidelines and requirements of this procedure then such an adjunct procedure or site manual may be authorized keeping the guidelines below in mind.

Exception to this procedure or specification at the local site level requires a local adjunct procedure outlining the exception, approved and controlled within PLM document management system and approved by both the site Quality Manager, site Environmental Manager and the Corporate Quality Manager. Furthermore, an exception clause must be inserted in their applicable local Supplemental Environmental Manual if so created.

When an exception is documented and approved, the Supplemental Environmental Manual shall be identified within the Relationship tab of the relevant Agile PLM workflow.

4. DEFINITIONS (ACRONYMS AND ABBREVIATIONS)

The terms and acronyms identified below are typical in their use within Semtech's management systems, processes and not solely for the use within this document.

- 4.1 PLM: Product Lifecycle Management
- 4.2 CEO: Chief Executive Officer
- 4.3 QAM: Quality Assurance Manager
- 4.4 Q&R: Quality and Reliability
- 4.5 APQP: Advanced Product Quality Planning
- 4.6 PPAP: Production Part Approval Process
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- 4.13 QC: Quality Control
- 4.14 HR: Human Resources
- 4.15 LMS: Learning Management System
- 4.16 OFI: Opportunity for Improvement
- 4.17 ORT: On-going Reliability Testing
- 4.18 CMRT: Conflict Mineral Reporting Template
- 4.19 SAR: Supplier Action Request
- 4.20 CR: Customer Request
- 4.21 ECO: Engineering Change Order
- 4.22 MCO: Manufacturing Change Order
- 4.23 AVL: Approved Vendor List
- 4.24 QMS: Quality Management System
- 4.25 CCare: Customer Care Action Request
- 4.26 SFDC: Sales Force Dot Com
- 4.27 ERP: Enterprise Resource Planning
- 4.28 SAP: Systems Applications and Products (in Data Processing)
- 4.29 MRB: Material Review Board
- 4.30 NCMR: Non-Conforming Material Review
- 4.31 CF: Counterfeit / Fraudulent
- 4.32 OCM: Original Contract Manufacturer
- 4.33 OEM: Original Equipment Manufacturer

- 4.34 RMA: Return Material Authorization
- 4.35 COD: Certificate of Destruction
- 4.36 EMS: Environment Management System
- 4.37 DMR: Design Modification Record
- 4.38 PCN: Process or Product Change Notification
- 4.39 EOL: End of Life
- 4.40 RoHS: Restriction on Hazardous Substances
- 4.41 REACH: Registration, Evaluation, Authorization and restriction of Chemicals
- 4.42 WEEE: Waste Electrical and Electronic Equipment
- 4.43 3TGs: Tungsten, Tantalum, Tin and Gold. Metals pertaining to conflict mineral program
- 4.44 IATF: International Automotive Task force
- 4.45 SMD: Surface Mount Device
- 4.46 MSL: Moisture Sensitivity Level
- 4.47 IMDS: International Material Data System
- 4.48 RBA: Responsible Business Alliance (formally, EICC)
- 4.49 RMI: Responsible Minerals Initiative
- 4.50 RRMI: Responsible Raw Material Initiative
- 4.51 RLI: Responsible Labor Initiative (formally, EICC Code of Conduct)
- 4.52 RRA: Risk Readiness Assessment
- 4.53 RMAP: Responsible Mineral Assessment Process
- 4.54 CTQ: Critical to Quality
- 4.55 CTF: Critical to Function
- 4.56 CTS: Critical to Safety
- 4.57 ADAS: Advanced Driver Assistance System
- 4.58 LiDAR: Light Detection and Ranging

5. RELATED DOCUMENTS

Related documents noted below and throughout this document are applicable to the extent noted herein.

The related documents listed below and referenced throughout this document provide further background information and guidance. Within such referenced document there may contain listed applicable documents which must also be considered.

5.1 Updated Documents

User is responsible to verify current or applicable revision level within PLM Document Management System prior to use.

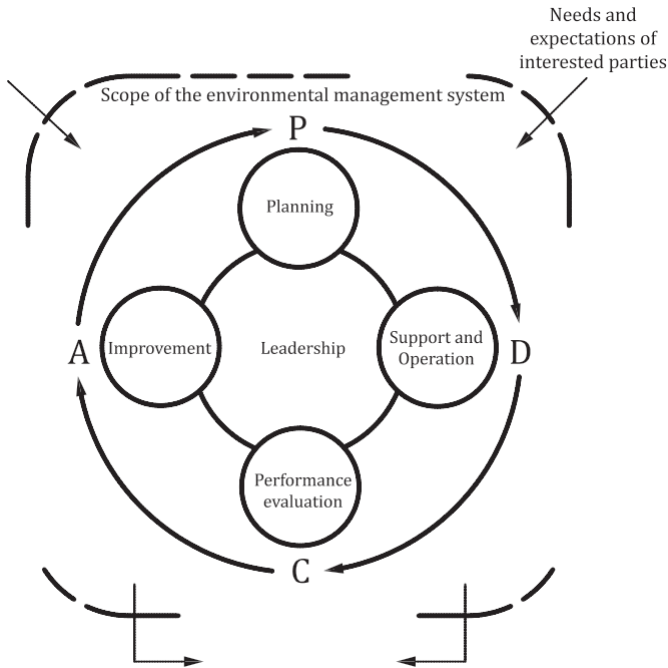
5.2 External Reference Documents

- 5.2.1 ISO 9001
- 5.2.2 AS 9100
- 5.2.3 ISO 14001
- 5.2.4 IATF16949
- 5.2.5 ISO 45001

5.3 Internal Reference Documents

- 5.3.1 SFBN-4MRP6X: Corporate Quality Manual
- 5.3.2 PSAZ-5AFU9J: Change Control Procedure
- 5.3.3 KFID-4KWSAP: Control of Quality Records
- 5.3.4 SEMDOC004964: Risk Management
- 5.3.5 SEMDOC004328: Conflict Mineral Program
- 5.3.6 SEMDOC004924: Confined Space Program

6. CONTEXT OF THE ORGANIZATION (Clause 4)



Each business unit of comprising Semtech Corporation acknowledges and adheres to The Plan – Do – Check – Act methodology and the elements of planning, support, operations, performance evaluation and improvement in order to maintain product superiority in today’s business environment.

Understanding Semtech Corporation and its contents (Clause 4.1)

Understanding Semtech Corporation and its content impacted by internal and external risks and environmental conditions are carried through this environmental manual from the understanding of Semtech and is various business units, the identification of internal and external risks, the risk assessment process determining its impact and guidelines on monitoring and achieving its goals and targets.

6.1 Semtech Corporation

Semtech Corporation, incorporated on December 19, 1960, is a supplier of high performance analog and mixed-signal semiconductor products, and advanced algorithms for high-end consumers. Semtech Corporation designs, develops and markets a range of products for commercial applications, which are sold into the enterprise computing, communications, consumer and industrial end-markets. Semtech Corporation's product lines include Signal Integrity, Protection, Wireless and Sensing, and Power and High-Reliability. Applications for the industrial market include video broadcast studio equipment, automated

meter reading, smart grid, wireless charging, military and aerospace, medical, security systems, automotive, Internet of Things (IoT), industrial and home automation, video security and surveillance, and other industrial equipment. Enterprise computing end-markets include desktops, notebooks, servers, graphic boards, printers, monitors, datacenter related equipment, passive optical networks, storage networks and computer peripherals. Communications end-market applications include third generation (3G) or fourth generation (4G) or Long Term Evolution (LTE) wireless base stations, long-haul optical networks, carrier networks, switches and routers, cable modems, signal conditioners, wireless local area network (LAN) and other communication infrastructure equipment.

Semtech Corporation is dedicated to reducing the impact it, and its products, have on the environment. Internal green programs seek to reduce waste through material and manufacturing control, use of green technology and designing for resource reduction.

6.2 Signal Integrity Products

Semtech Corporation designs, develops and markets a portfolio of optical communications, broadcast video, surveillance video, active cable transceiver and backplane products used in a range of enterprise computing, industrial, communications and consumer applications. Its portfolio of integrated circuits (ICs) for optical transceivers, backplane applications and high-speed interfaces ranges from 100 megabits per second (Mbps) to 100 gigabits per second (Gbps). Its security and surveillance products for high-definition closed circuit television (HDcctv) enable upgrade of analog closed circuit television installations to digital HD, using the installed base of coaxial cable (COAX) cabling, and its integrated transmit and receive products enable the HDcctv standards-compliant designs.

Semtech Corporation sells advanced wired communication and ultra-high speed Serializer/Deserializer (SerDes) products for long haul optical transport communication.

6.3 Protection Products

Semtech Corporation designs, develops and markets protection devices, which are referred to as transient voltage suppressors (TVS). Its portfolio of protection solutions include filter and termination devices that are integrated with the TVS device. Its protection products are found in a range of applications, including smart phones, liquid crystal display (LCD) televisions (TVs), set-top boxes, tablets, computers, notebooks, base stations, routers, automobile and industrial instruments.

6.4 Wireless & Sensing Products

Semtech Corporation designs, develops and markets a portfolio of radio frequency products used in a range of industrial, medical and communications applications, and sensing products used in industrial and consumer applications. Its sensing interface platforms can interface to any sensor and output digital data in any form. The proximity sensing capability of its devices enables user interface solutions for mobile and consumer products. Its wireless and sensing products can be found in a range of applications in the industrial, medical and consumer markets.

Semtech's **LoRa** devices and **wireless** radio frequency technology (**LoRa** Technology) is a long range, low power **wireless** platform that has become the de facto technology for Internet of Things (IoT) networks worldwide.

6.5 Power & High-Reliability Products

Semtech Corporation designs, develops and markets power product devices that control, alter, regulate and condition the power within electronic systems. The product types within the power product line include switching voltage regulators, combination switching and linear regulators, smart regulators, charge pumps and wireless charging. Its Power products feature integrated functionality for the communications, industrial and computing markets, and small form factor products for mobile phones, notebook computers, computer peripherals and other consumer devices. The primary application for these products is power regulation for enterprise computing, communications, consumer and industrial systems. Its discrete semiconductor products consist of rectifiers, assemblies (packaged discrete rectifiers) and other products that are used to convert alternating currents into direct currents, and to protect circuits against high voltage spikes or high current surges. Its products are found in a range of applications, including industrial, military, medical, automotive, aerospace and defense systems, including satellite communications.

6.6 Semtech's Competition

The Company competes with;

- STMicroelectronics,
- NXP Semiconductors N.V.,
- ON Semiconductor Corporation,
- Infineon Technologies AG,
- Texas Instruments Incorporated,

- M/A-COM Technology Solutions Holdings, Inc.,
- Inphi Corporation,
- Broadcom Limited,
- Applied MicroCircuits Corporation,
- Linear Technology Corporation,
- Maxim Integrated Products Inc.,
- Microsemi Corporation,
- Monolithic Power Systems,
- Silicon Laboratories, ,
- Atmel Corporation,
- Analog Devices Inc. and
- Cypress Semiconductor Corp.

Not only does Semtech compete with these companies on multiple business levels, but also on environmental impact studies and compliance issues to better serve our customers and reduce our impact to the environment.

6.7 Interested Parties (Clause 4.2)

Semtech Corporation strives to consistently provide product and services that meet our customer and any applicable regulatory requirements. In the context herein Semtech has identified its interested parties and noted their needs and expectations.

- Employees & Administration expect all the necessary tools and systems necessary for timely evaluation of product and customer requirements to ensure the best possible information is available to capture new business or sustain existing business.
- Sales & Marketing expect timely release of product documents and customer request processing validating environmental compliance
- Business Unit Management and Engineering expect processing of Non-Conforming Material Requests, and new products timely release to market meeting regulatory environmental requirements
- Quality & Reliability expect timely processing and closure of corrective action request stemming from compliance or safety issues
- Operations group expect complete reliability testing on new products and notification when failures occur in the area of environmental compliance
- External Customers expect robust and low cost product. Timely response to quality issues, closures on corrective actions, CMRT declarations, environmental analytical reports

and request for product information through our RoHS Compliance table or through request

- Suppliers expect Semtech engineering and quality support to address potential product issues, periodic performance review, and support for customer visits, audits and CMRT validation process

7. SEMTECH KNOWLEDGE (Clause 4)

Semtech Corporation's supervisors and managers shall determine what knowledge and to what level is necessary for the various operation and processes to achieve conformity of products and services. This training shall be maintained and be made available to the extent necessary pursuant to 7.1.6 of ISO 9001:2015, ISO 14001:2015 and IATF 16949. Such training and knowledge may come as a result from several sources such as;

- Source material from customers
- Source material from standards, procedures or specifications
- Education, experience, training
- Regulatory requirements
- Improvement actions pursuant to customer complaints
- Process or Product trends or analysis or
- Process modifications or updates

8. ENVIRONMENTAL MANAGEMENT SYSTEM

8.1 Leadership Team Commitment and Responsibilities (Clause 5)

Semtech's Leadership Team is responsible to identify resource requirements, provide adequate resources and assign trained personnel for management, performance of work and verification activities including monitoring, tracking, measuring performance and continual improvement.

The leadership team can provide evidence of its commitment to the development and implementation of the EMS and continually improve its effectiveness by communicating to the company of meeting customer as well as statutory and regulatory requirements, establishing the environmental and safety policy, ensuring that environmental and safety objectives are established, conducting management reviews and ensuring adequate resources.

The President and CEO of Semtech Corporation, along with his leadership team, have taken the responsibility and authority as defined within this manual and other relevant corporate documentation, to empower and designate key personnel. This

has been communicated and continues to be communicated through our employee indoctrination training.

Additionally, Semtech's Leadership team can ensure that customer requirements are determined and are met with the aim of enhancing customer satisfaction, minimizing environmental impact, and ensuring personnel safety.

8.2 Organizational Roles, Responsibilities and Authorities

Roles, responsibilities and authorities are defined, documented and communicated in the organizational chart referenced in the Corporate Quality Manual. Furthermore the Corporate Quality Manager has been appointed as Semtech EMS Management Representative in order to ensure the EMS is maintained in accordance with the requirements of ISO 14001. The environmental representative shall report to top management on the performance of the EMS for review and recommendations for improvement, especially when establishing the inputs into the management review.

8.3 Environmental Policy / Leadership Focus (Clause 5.2)

Semtech's Leadership Team has determined that the following environmental policy: best expresses their overall intentions and directions for the corporation in its quest for environmental compliance, safe working environment and reducing our "carbon footprint"; includes our commitment to meeting and/or exceeding customer requirements; and, provides a framework for establishing and reviewing environmental objectives.

Semtech's Leadership Team reviews this environmental policy for suitability periodically throughout the year. Whenever the environmental or safety policy is modified, the change shall be communicated using 'best practice' methods to ensure the policy is understood at appropriate levels in the organization.

Semtech measures the effectiveness of the Environmental and Safety Policies through a variety of channels. They include but are not limited to;

- Environmental Key Performance Indicators
- Occupational Health & Safety Key Performance Indicators
- Monitoring and tracking Objectives and Targets
- Monitoring and reviewing Aspect and Hazard listing
- Monitoring and reviewing Significant Aspect listing

- Maintaining ISO 14001 and ISO 45001 certification

8.4 Scope of Management Systems

Semtech Corporation is a global manufacturing company empowering a network of design, manufacturing and test facilities. As these facilities develop and execute their management systems their scope may vary slightly, but the overall intent is to execute pursuant to Semtech's goals and requirements, relevant industry standards, while meeting customer requirements and expectations.

The scope of the EMS includes services and activities associated with:

- Semtech Corporate, Semtech Camarillo;

The Design, Development of Protection Product, Management of Manufacturing and Engineering Processes, the Marketing and Sales of Commercial, Military and Industrial Semiconductor Components, Modules, Assemblies and Associated Products which occur at Semtech's corporate headquarters at 200 Flynn Road, Camarillo, California 93012.

- Semtech Irvine:

The Manufacture, and Test of Transport and Data Communication High Performance Analog Integrated Circuits and Modules which occur at 5141 California Ave, Suite 150, Irvine, California 92617

- Semtech Colorado Springs (Elkton)

Process development and manufacture of wafer level packaging, die level packaging and package assembly which occur at 1025 Elkton Drive, Colorado Springs, CO 80907

- Semtech Colorado Springs (Federal)

Process development and manufacture of die level packaging, flip chip packaging, package assembly, TT&R (Test, Tape and Reel), and order fulfillment which occur at 10045 Federal Drive, Colorado Springs, CO 80908

8.5 Environmental Policy

Semtech is committed to producing environmentally sustainable product, reducing environmental impacts and conserving resources. We have incorporated sound environmental practices in our processes from design all the way through production and distribution by:

- ❖ **using sustainable products**
- ❖ **being efficient in energy usage and reduce consumption of paper, energy, water and fuel**
- ❖ **minimizing waste and increasing recycling**
- ❖ **keeping suppliers environmentally accountable**
- ❖ **helping customers minimize their carbon footprint by providing “green” enabling technology**
- ❖ **understanding and complying with customer, legal and other requirements**

8.6 Achieving Semtech’s Goals / Planning Focus

8.6.1 Policy Goal #1:

Using sustainable products through;

- Selecting packaging material that is recyclable, re-useable, contains no substances which could impact the environment

8.6.2 Policy Goal #2:

Being efficient in energy usage and reduce consumption of paper, energy, water and fuel through;

- Listing goals and targets for reduction efforts
- Finding alternate means to reduce consumption of paper, energy, water and fuel use
- Monitoring and measuring reduction efforts
- Taking action when necessary such as creating Preventive Action or Continuous Improvement Projects in PLM to ensure focus on this goal

8.6.3 Policy Goal #3:

Minimizing waste and increasing recycling through;

- Posting of recycling trash cans in occupied cubicles and offices

- Posting of paper recycling bins at key points in building and using 3rd party to collect
- External cardboard recycling bins
- Paper reduction efforts

8.6.4 Policy Goal #4:

Keeping suppliers environmentally accountable by;

- Sustained certification to ISO 14001
- Following up on certification findings and opportunities for improvement
- Checking status on environmental objectives and targets during supplier audits
- New suppliers complete Semtech on-line Supplier Business survey
- Suppliers submit conflict mineral declarations yearly or when changes are imposed.

8.6.5 Policy Goal #5:

Helping customers minimize their carbon footprint by providing “green” enabling technology by;

- Designing our product with environmentally safe components and sub-components, i.e., pb-free, Halogen free, RoHS / WEEE / REACH SVHC compliant
- Testing assembly builds using 3rd party analytical lab to determine substance levels
- Designing product that requires ultra-low, low power to operate

8.6.6 Policy Goal #6:

Understanding and complying with customer, legal and other requirements by;

- Using ‘flow down’ process when customer submits their environmental requirements, Semtech will flow down this information to our suppliers
- Conduct yearly legal review of regulatory and statutory requirements updating our processes as needed
- Conduct environment and safety internal audits and include an element of environmental and safety compliance in areas of audit.

- Updating our awareness training presentation and ensuring Semtech HR issues the presentations to our new hires as well and recurring training to Semtech personnel

9. RISK MANAGEMENT / EFFECT OF UNCERTAINTY / PLANNING (Clause 6)

The business of Semtech Corporation involves risk, the effects of uncertainty whether positive or negative. Uncertainty is the state, even partial, of deficiency of information related to, understanding or knowledge of, an event, its consequence, or likelihood of impact to the environment or safety measures and controls.

In order for Semtech to be successful Semtech acknowledges that it must consciously take risks where the potential and probability of positive return is high and eliminate or minimize risks that can only detract from success in minimizing environmental impact or eliminating safety threats to personnel.

Semtech Corporation carries out its business in an environment that is not totally predictable. Semtech's employees, managers, and leadership team make decisions and take actions where the results are uncertain and where the effects of decisions and actions taken by others or of natural events cannot be fully anticipated.

In order to obtain excellent results, Semtech Corporation must be successful in managing its risks and in managing and minimizing the damage associated with "threat based risks".

Semtech Corporation has taken action to identify uncertain events and to take action to maximize the contribution of opportunities and to minimize the detriment of dangers to personnel and impact to the environment. This supports the long term profitable growth in an uncertain business environment meeting environmental regulatory and statutory requirements reducing impact to the environment creating a safe work environment for personnel, contractors and visitors.

Where risk management seeks to understand what might go badly in a business decision or business plan, risks associated with opportunity based risk looks for what might go better. ^[3]

9.1 Opportunity Based Risk

To maximize the positive contributions of opportunity based risk, Semtech Corporation will continuously identify opportunities, set goals, anticipate future change and plan actions to realize opportunities and goals according to the Annual Business Plan, Environmental and Quality goals and targets, MITs program, management reviews and Performance Evaluations.

Opportunities may arise at any time. The decision to act or not to act on an opportunity should be informed by the relative probabilities of favorable or unfavorable outcomes and by the confidence of associated output.

Some important risk factors are the potential effects of a change in marketing analysis, competition, regulatory requirements, environmental conditions, public relations impact, infrastructure, inaction and cost or return on investment or implementation of control measures.

9.2 Risk Based Threats

Risk based threats can arise from the business environment, from the physical environment, from the human environment and from historical events or from unanticipated future events, public perception or environmental impact.

To minimize the negative effects of threats, Semtech Corporation will identify these types of risks and will evaluate on a regular basis their potential impact and the probability of their occurrence.

Semtech Corporation will take positive steps to determine the source of such risk and will take all reasonable actions to minimize or eliminate the root cause, minimize the potential losses, eliminate safety issues, minimize environmental impact or to compensate for them.

Where no action makes business sense, Semtech Corporation will bear the risk with continuous prudent intelligence to ensure that timely action is taken to minimize exposure to threats associated with such risk.

9.3 Process Methodology

Risk management can be described as the process of proactively working with stakeholders to minimize the risks and maximize the opportunity associated with good management decisions.^[5] Risks are about the possibility of an adverse consequence.^[6]

Good risk management relies on adaptability in response to change.^[7]
Risk management ensures that Semtech Corporation identifies and understands the risks to which it is exposed.

Semtech Corporation continuously face environments in which uncertainty is constantly challenging the existing ways of doing business and the way that risk needs to be managed. However, the upside to risk, that is often overlooked, is that the feared uncertain event could have a desired outcome. This is a positive risk or opportunity and needs to be managed to ensure a good result. Having a clear understanding of all risks allows Semtech to measure and prioritize them and take the appropriate actions to minimize environmental impacts, eliminate safety hazards and reduce business losses.^[9]

Opportunity management is the process that converts the chance to decisiveness and is increasingly becoming embedded in the culture of organizations as they mature and broaden their understanding of the value that managing uncertainty can bring.

Semtech Corporation acknowledges that in order for positive risk or opportunity management to be effective in creating or protecting value, the environment, personnel, contractors or visitors it has become an integral part of the management processes, and embedded in the culture and practices throughout Semtech.

9.3.1 Opportunity Risk – Internal

Semtech Corporation has listed some internal elements associated with opportunity risk which include;

- Customer
- Marketing
- Quality
- Business Units
- Finance
- Investor Relations
- Human Resources
- Legal
- Design
- Operations
- Information Technology & Security
- Sales

9.3.2 Risk Impact and Probability

Semtech Corporation has identified key risks and assigned a method of impact – probability rating to each. Refer to [External Risk – Risk Impact / Probability Chart](#)

9.3.3 External Risk

Semtech Corporation has identified several external risk factors impacting the corporation and business. These factors include;

- Technology
- Market
- Competition
- Customer
- Material Sourcing Vendor
- Supplier Sourcing Backup
- Supplier Resources
- Supplier Certification
- Semtech Certification
- Business Performance
- Business Cycle
- ASP
- Business Interruptions
- Product Liability
- Product Inventory & Lifecycle
- Cost of Product Compliance
- Risk to IP
- Foreign Currency Market
- Increase Tax Liability
- Industry Consolidation
- Distributor Termination
- Product Environmental and Conflict Minerals Compliance
- Global Health Crisis such as Coronavirus, SARs, Influenza,...

10. RISK RATING ASSIGNMENT

Semtech Corporation assigned ratings to each element of the risk based on experience, training, and input from stakeholders.

Impact Probability chart and process assigns a rating to Impact, Probability, Detectability then through a simple calculation

• **Impact X Probability**
Detectability

10.1 Ratings Definitions

Ratings assigned are based on the calculation noted in the table referenced above. Ratings levels span;

- 1; Trivial
- 2; Tolerable
- 3; Moderate
- 4; Substantial
- 5; Intolerable

10.2 [External Risk – Risk Impact / Probability Chart](#)

The chart identifies the risk impact and probability associated with various external risks. Refer to Semtech’s Aspects / Impacts / Significant Aspect listings for risk assignments associated with specific environmental conditions.

The impact and probability assignment were determined by Semtech’s management team and are reviewed annually. Last review: April 2018.

http://media.corporate-ir.net/media_files/IROL/99/99862/ar2018/assets/pdf/Semtech_2018_10KAR.pdf

Context Issues	Impact (1-5)	Probability (1-5)	Detectability (1-5)	Impact X Probability ÷ Detectability
Technology	3	4	4	3
Market	5	4	5	4
Competition	4	4	4	4
Customer	5	3	5	3
Material Sourcing; Vendor	4	3	5	2.4
Supplier Sourcing; Back-up	3	3	5	1.8
Supplier Resources	3	4	4	3
Supplier Certification	2	2	3	1.33
Semtech Certification	2	1	2	1
Reduced Business Performance	5	2	4	2.5
Reduced Business Cycle	3	2	3	2

Reduced ASP	4	3	4	3
Business Interruptions	5	4	5	4
Product Liability & Ins.	4	3	3	4
Obso. Inventory & Product Lifecycle changes	3	3	4	2.25
Cost of Product Compliance to Ind. Stnds.	3	4	4	3
Risk to IP	4	2	4	2
Foreign currency market	4	2	3	2.6
Increase Tax Liability	4	3	3	4
Industry Consolidation	5	3	3	5
Distributor risk of term.	4	2	4	2
Product Environmental compliance & conflict mtl's	4	1	4	1
Global Health Crisis	4	3	3	4

11. RISK ASSESSMENT PROCESS

To establish a process for risk assessment and identifying hazards, Semtech Corporation has established this basic flow to help identify elements within the assessment process.



11.1 Classify Work Activities

To enable this process, identifying work activities can include;

- Geographical locations within or outside a company's premises
- Stages within a production process or within the provisions of a service
- Planned or reactive work
- Define tasks such as driving

11.2 Identify Hazards

To help identify Hazards, Semtech's CFT have categorized hazards as either;

- Mechanical
- Electrical
- Radiation
- Substances
- Fire and explosion

11.3 Hazards associated with Work Activities

- Slips or falls
- Falls from heights
- Fall from ladder
- Falls from tools, materials from heights
- Inadequate headroom
- Hazards associated with manual lifting or handling of tools, materials..etc.
- Hazard associated with confined space
- Hazards from machinery associated with assembly, operation, maintenance, modification, or repair
- Vehicle hazards covering site transport or travelling by road
- Fire and explosion
- Violence to staff
- Substances that maybe inhaled
- Substances or agents that could damage the eye
- Substances that could cause damage to skin through contact or being absorbed through the skin
- Substances that could cause harm by being ingested
- Exposure to harmful energies such as electricity, radiation, vibration, or noise

- Contractors' activities
- Sudden illness brought on by work or contagion through contact or exposure

11.4 Determine Risk

Risk from a hazard should be determined by estimating the potential severity of harm and the likelihood that such harm will occur. Refer to SEMTECH 001.

11.5 Decide if Risk is tolerable

One simple method for deciding whether risks are tolerable. Risks are classified according to their estimated likelihood of their potential severity of harm

RISK	Slightly Harmful	Harmful	Extremely Harmful
Highly Unlikely	TRIVIAL	TOLERABLE	MODERATE
Unlikely	TOLERABLE	MODERATE	SUBSTANTIAL
Likely	MODERATE	SUBSTANTIAL	INTOLERABLE

11.6 Prepare Risk Control Action Plan (procedure) if necessary

The Risk categories described form the basis for deciding whether improved controls are required and the timescale for such action.

The outcome of a risk assessment should be an inventory of actions prioritized to create, maintain or improve controls.

RATING	RISK	ACTION
1	Trivial	No action is required and no documentation records need to be kept
2	Tolerable	No additional controls are required. Monitoring is required to ensure that the controls are maintained.
3	Moderate	Efforts should be made to reduce the risk, but the costs of prevention should be carefully measured and limited. Risk reduction measures should be implemented within a defined time period.

4	Substantial	Risk mitigation efforts must be considered. Considerable resources may have to be allocated to reduce the risk. Where the risk involves work in progress, urgent action should be taken.
5	Intolerable	Risk mitigation efforts must be in place and monitored until the risk has been reduced. Action plans, goals and targets will need to be reassessed, revised or replaced to reduce the risk.

11.7 Review Adequacy of Action Plan / Procedure

When the action plan or procedure is necessary it is created, or modified it should be reviewed by relevant stakeholders to ensure adequate measures are in place to bring risk level to a tolerable state.

11.8 Creating or Modifying Control Measures

Risk Assessment should be viewed as a continuing process. The adequacy of control measures should be subject to continual review and revised when necessary.

Reference Documents

Corporate Quality Document; SEMDOC004964,	Risk Management Program
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12. PLANNING

12.1 Environmental Aspects and Hazard Identification

Semtech is committed to minimizing its environmental, health and safety impacts and does so by screening probable environmental aspects, identifying significant environmental impacts and setting forth environmental objectives. Semtech incorporates its environmental management programs together with the Corporate Quality Management.

12.2 Identification of Environmental Aspects

Semtech has developed procedures for screening probable and identifying significant environmental aspects.

On yearly basis, each department meets with Environmental Management Representative to review its key processes and identify probable environmental aspects. Once probable environmental aspects are identified, each item is scored according to the criteria set and defined in Identifying Environmental Aspects and Impacts procedure (SEMDOC000583), (QA-02-807).

Identified significant environmental aspects are then ranked and documented on the Significant Environmental Aspects List noting each department responsible/contributing to the identified environmental impact.

Management together with Environmental Management Representative discusses each significant aspect and devises environmental management programs aiming at ameliorating environmental impacts.

Each environmental management program is measurable and monitored on quarterly basis with the exception of legal compliance which is measured on yearly basis (review of Legal and Other Requirements is completed on yearly basis).

12.3 Responsible Functions/Business Unit

All managers together with Environmental Management Representative are responsible for insuring the effectiveness of this EMS element by developing an aspect and impact listing, monitoring, tracking and rating the impact of such aspects and assigning a risk probability assessment. Measuring effectiveness is determined if Semtech meets or exceeds its annual Objectives and Targets.

Reference Documents

Corporate EH&S Document; SEMDOC000583,	Identifying Environmental Aspects and Impacts
Corporate EH&S Document; SEMTECH 001 <ul style="list-style-type: none"> • SEMTECH-0001 Irvine 	Environmental Aspects Screening and Significance Form
Corporate EH&S Document; SEMTECH 002 <ul style="list-style-type: none"> • SEMTECH-0002 Irvine 	Significant Environmental Aspects List

Corporate EH&S Document: SEMTECH 004 • SEMTECH-004 Irvine	Semtech Objectives and Target
Corporate Quality Document SEMDOC004964;	Risk Management Program

12.4 *Legal and Other Requirements / Compliance Obligations*

Semtech identifies and maintains a registry of all legal and other requirements. Legal requirements include federal, state and local requirements along with customer and Semtech defined requirements.

Legal and other requirements are reviewed on yearly basis to assess Semtech compliance. Legal requirements are reviewed keeping the organization's environmental aspects in mind.

All legal and other requirements identified are taken into the consideration in establishing, implementing and maintaining the organization's EMS.

Reference Documents

Corporate EH&S Document; SEMDOC000584	Environmental Compliance Legal Requirements Review
Corporate EH&S Document; SEMTECH 003 • SEMTECH-003 Irvine	Legal and Other Requirements Review – FORM

12.5 **Objectives, Targets and Programs / Environmental Objectives**

The organization has established, implemented and shall maintain a program to document the environmental objectives and targets on the Environmental Objectives and Targets list. The environmental objectives and targets shall be measurable and consistent with the environmental policy. The environmental objectives and targets shall also take into account the significant environmental aspects and hazards identification of the organization, technological options, financial, operational and business requirements and the views of interested parties.

The environmental objects and targets list shall include the departments responsible for achieving the specific environmental objective and/or target. This list and the status of the objectives shall be reviewed during the management review and revised accordingly.

Reference Documents

Corporate EH&S Document; SEMTECH 004 <ul style="list-style-type: none"> • SEMTECH-004 Irvine 	Semtech Objectives and Target
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13. IMPLEMENTATION AND OPERATION / SUPPORT (Clause 5 & OPERATION (Clause 8))
13.1 Resources, Roles, Responsibility and Authority

The organization has made available resources such as human resources, organizational infrastructure, technology and financial resources to establish, implement, maintain and improve the EMS.

Roles, responsibilities and authorities are defined, documented and communicated in the organizational chart referenced in the Corporate Quality Manual. Furthermore the Corporate Quality Manager has been appointed as Semtech EMS Management Representative in order to ensure the EMS is maintained in accordance with the requirements of ISO 14001. The environmental representative shall report to top management on the performance of the EMS for review and recommendations for improvement, especially when establishing the inputs into the management review.

13.2 Competence, Training and Awareness

The organization has identified its training needs associated with its environmental aspects and EMS in the Corporate General Training Procedure (KFID-4JCPZD) referenced in the Corporate Quality Manual. The organization provides training and keeps associated records and they are referenced in the Corporate Quality Manual.

Reference Documents

Corporate Document; KFID-4JCPZD	Corporate General Training Procedure
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13.3 Communication (Internal & External) (Clause 7.4)

Internal Communication, as defined within ISO 9001 and ISO 14001, has been accepted and adopted by Semtech to ensure that appropriate communication processes are established and that such communication takes place regarding the effectiveness of the QMS and EMS. This is also further elaborated on in the Corporate Quality Manual.

The organization provides information about its environmental aspects and impacts upon request. However, Semtech may choose not to share the details about its environmental impacts and aspects if it deems the inquiry is unjustified.

The organization will not communicate its significant environmental aspects to potential clients unless it is specifically required as part of a job bid, even then top management will make the final decision on whether or not to communicate the organization’s significant aspects.

Semtech’s Customer Request process is the controlling media whereby customers can request environmental compliance data, submit compliance surveys, or request compliance review of their documents and requirements.

Through this process, Semtech’s quality team gathers all supporting documents, completes surveys and prepares responses which are forwarded back to the customer.

Reference Documents

Corporate Quality Document; SEMDOC000724	Corporate Customer Request Procedure
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13.4 Documented Information (Clause 7.5)

Per the requirements of the 14001 standard, the organization has documented several aspects of the EMS. The environmental policy is documented in this supplemented Environmental (EMS) Manual and is posted at various onsite locations. The objectives and targets are documented on the Semtech Objectives and Targets form. A description of the scope of Semtech’s environmental management system is documented within this EMS Manual.

A description of the main elements of the EMS is the main purpose of the documentation contained herein the Environmental Manual. Documents and records required by ISO 14001 and also the documents and records that are necessary to ensure the effective planning, operation and control of processes that relate to its significant environmental aspects are identified as Environmental Health and Safety documents and kept on the internal server.

The interaction of key processes including both ISO 9001 and ISO 14001 are documented in the Corporate Quality Manual as well as referenced throughout this EMS Manual

13.5 Control of Documented Information / Creating and Updating (Clauses 7.5.2 & 7.5.3)

Section 1.5 of Semtech Corporate Quality Manual, Control of Documents, defines procedures in place for proper document control. This procedure addresses what is necessary for approving documents prior to use, reviewing and updating documents as necessary, re-approving documents, ensuring the changes and the current revision status of status of documents are identified, ensuring that relevant versions of applicable documents are available at points of use, ensuring the document remain legible and readily identifiable, ensuring that documents of external origin determined by the organization to be necessary for the planning and operation of the EMS are identified and their distribution control and for preventing the unintended use of obsolete documents and apply suitable identification to them if they are retained for any purpose.

Reference Documents

Corporate Document; PSAZ-5AFU9J	Corporate Change Control
Corporate Document; PSAZ-5AFNKG	Corporate Document Control

13.6 Operational Planning & Control (Clause 8.1)

Operational planning and controls are methods, systems, processes, and equipment that safeguard the environment. These can be special containers, containment or isolation arrangements, alarms and automatic shutdown mechanisms, communication requirements, instructions and procedures, training programs, etc.

The organization has identified and planned those operations that are associated with the identified significant environment aspects consistent with the environmental policy and the objectives and targets to ensure they are carried out under specified conditions. Semtech Significant Environmental Aspect List (FORM SEMTECH 002) lists significant environmental aspects and identifies departments responsible for control methods for minimize the impact of the aspects.

Additionally, Semtech’s conflict mineral program ensures its supply chain is monitored for compliance to EICC, customer and Semtech’s requirements ensuring Tantalum, Tungsten, Tin and Gold metals are not

procured or smeltered in conflict areas pursuant to the Dodd-Frank Act of 2010.

Reference Documents

Corporate EH&S Document; SEMTECH 002 • SEMTECH-002 Irvine	Significant Environmental Aspect List
Corporate EH&S Document; KFID-4N8SER	Semtech Hazardous Communication Procedure
Corporate EH&S Document; KFID-4K8LX9	Hazardous Waste Handling
Corporate EH&S Document; SEMDOC000660	Evaluating Vendors Affecting Environmental Aspects
Corporate EHS & Quality Document; SEMDOC004924	Corporate Confined Space Policy & Program
Corporate Quality Document; SEMDOC004328	Conflict Mineral: Semtech's Policy, Program and Expectations

13.7 Emergency Preparedness and Response (Clause 8.2)

Semtech is committed to safety and health of all of its employees. The organization has defined corporate safety policy in Corporate Illness and Injury Prevention Program (IIPP) and this includes procedure that outlines different emergency procedures. IIPP contains procedures for the following emergency and safety procedures:

- Emergency Procedures
- Enforcement and Disciplinary Policies and Procedures
- Health and Safety Training Program
- Accident Reporting and Investigation
- Hazard Abatement

Reference Documents

Corporate EH&S Document; SEMDOC000586	Semtech Injury & Illness Prevention Plan
TDC EH&S Document; HR-01-101	Semtech Irvine Injury & Illness Prevention Plan
Corporate EH&S Document; KFID-4N8SER	Semtech Hazardous Communications Procedure

14. PERFORMANCE & EVALUATION (Clause 9)

14.1 Monitoring and Measurement (Clause 9.1)

The organization is in compliance with monitoring and measurement requirements as stated in both ISO 9001 and ISO 14001. All process and procedures that require monitoring and measurement are referenced in the Corporate Quality Manual and include: Internal Audits, Calibration and On-Going Reliability Testing. Legal Review is referenced in section 8.6.6 of this EMS Manual. All measurement and monitoring of environmental objectives programs is documented in Semtech Objectives Programs Scorecard and conducted according to Semtech EMS Monitoring and Measurement procedure (SEMDOC000731).

In line with its QMS and EMS policies, the organization will work with its direct suppliers to assist in obtaining and maintaining their management systems to the requirements of both ISO 9001 and ISO 14001.

Reference Documents

Corporate EH&S Document; SEMDOC000731	Semtech EMS Monitoring and Measurement
Corporate EH&S Document; SEMTECH 006 • SEMTECH-006 Irvine	Semtech EMS Objectives Programs Scorecard
Corporate Document; KFID-4KGKRU	Calibration Procedure
Corporate Document; PSAZ-5AMV6Y	Calibration Record - FORM

14.2 Evaluation of Compliance (Clause 9.1.2)

The organization has created procedures for legal and other requirements review and internal auditing. Legal and other requirements review is noted in section [12.4](#) of this EMS Manual. Internal Auditing is referenced in [14.3](#) of this EMS Manual and further detailed in the Corporate Quality Manual section 21.2.

Reference Documents

Corporate EH&S Document; SEMDOC000584	Environmental Compliance Legal Requirements Review
Corporate EH&S Document; SEMTECH 003 • SEMTECH-003 Irvine	Legal and Other Requirements Review – FORM
Corporate Document; KFID-4L3S3E	Corporate Audit Program

14.3 Internal Audit (Clause 9.2)

The organization has created a procedure for performing internal audit of the EMS and QMS at planned intervals to determine whether the EMS conforms to the planned arrangements of the EMS and to ISO 14001 and ISO 9001. Corporate Quality Manual section 21.2 outlines Internal Auditing Policies and Procedures.

It is the responsibility of the environmental representative to plan and conduct EMS internal audits as well as report results to the management and retain records. The environmental representative shall ensure objectivity and impartiality when selecting auditor for the internal audit.

Reference Documents

Corporate Document; KFID-4L3S3E	Corporate Audit Program
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14.4 Management Review (Clause 9.3)

Top Management reviews the organization's EMS as part of its regular quarterly business management system meetings. Management meetings are further defined in the Corporate Quality Manual. Corporate Management Review outlines inputs, outputs and documentation of quarterly business management system meetings.

Management reviews can be further defined by the business unit management team based on business and operational needs whereby extending the review cycle to a less frequent period.

Reference Documents

Corporate Document; SFBN-4MFN3G	Corporate Management Review
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15. IMPROVEMENT (Clause 10)

15.1 Nonconformity, Corrective Action, Preventive Action and Continuous Improvement (Clause 10.2)

Semtech has in place procedures for non-conforming material, corrective and prevention actions, continuous improvement as required by ISO 9001 and ISO 14001. Corrective Action Request System as described in detail in section 22 of the Corporate Quality Manual and encompasses both requirements of ISO 9001 and ISO 14001.

Prevention Action System is described in detail in section 23 of the Corporate Quality Manual and encompasses requirements of both ISO 9001 and ISO 14001.

Actions are taken accordingly to the magnitude of the environmental impacts that are encountered as a result of the nonconformity and necessary changes, if any, will be made to the EMS.

15.2 Continual Improvement (Clause 10.3)

Semtech Corporation embarks upon a model of continuous improvement. Such actions are clearly noted throughout our business processes.

Continuous Improvement is part of Semtech’s quality system as a proactive measure to improve efficiency, reduce costs, reduce environmental impact, and enhance product and services

Continuous Improvement is described in detail in section 11 of the Corporate Corrective Action, Preventive Action & Continuous Improvement procedure.

The continuous improvement process enables any one to plan, document and execute such a plan or project.

Reference Documents

Corporate Document; PSAZ-5AMMXS	Corrective Action, Preventive Action and Continuous Improvement
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15.3 Control of Records

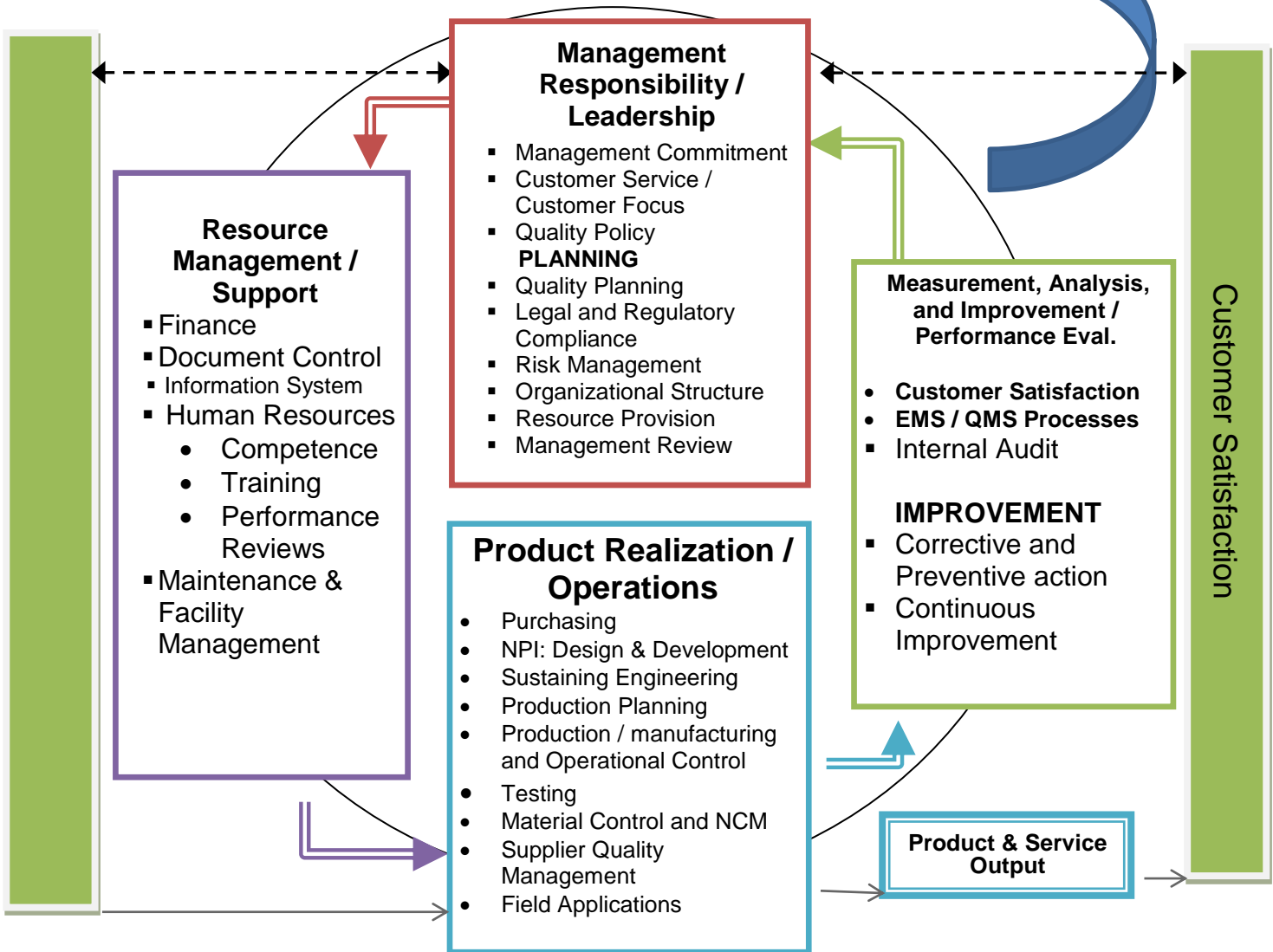
The organization has created a procedure to address both document and record control as required by ISO 9001 and ISO 14001. Corporate Quality Manual describes has a detailed reference to Semtech policies, procedures and responsibilities. Documents and records are maintained to demonstrate conformity to the EMS and to ISO 14001.

Reference Documents

Corporate Document; KFID-4KWSAP	Control of Quality Records
Corporate Document; PSAZ-5AFU9J	Change Control Procedure

16. CONTINUAL IMPROVEMENT SEQUENCE & INTERACTION

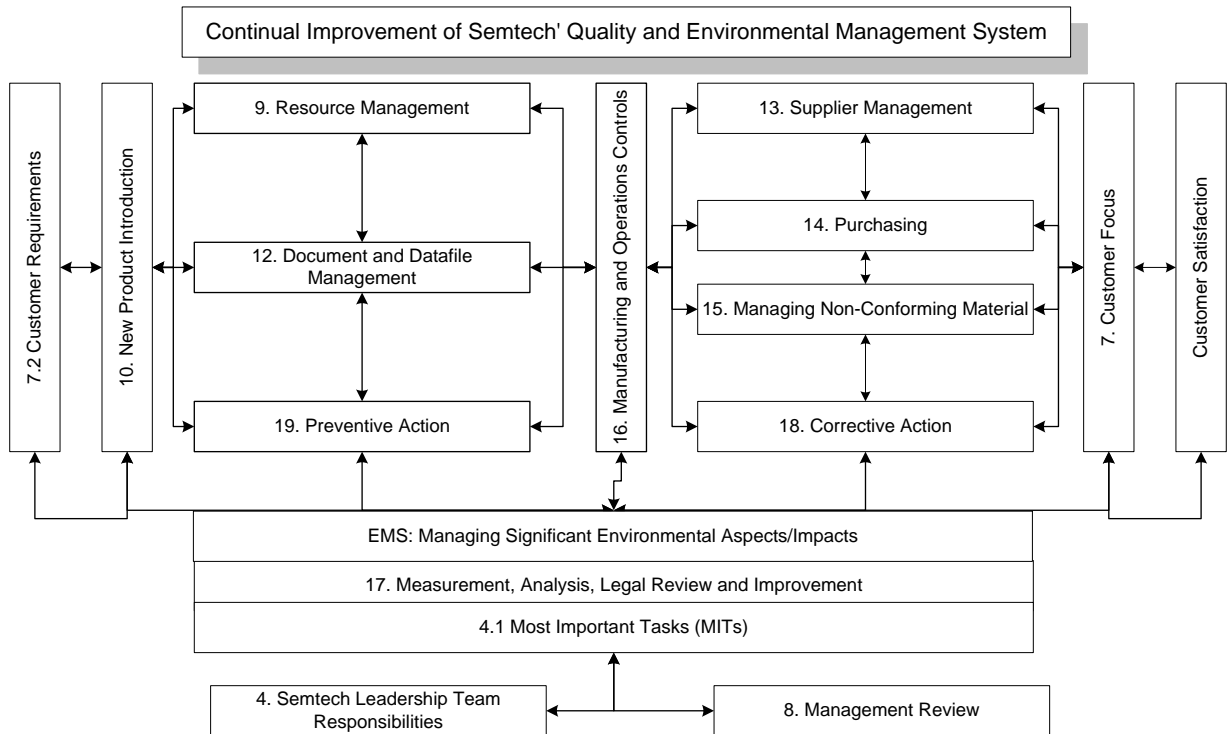
Continual Improvement



Value Added Activities →
Information Flow - - - ->

Process Flow Improvement →

17. QMS & EMS PROCESS INTERACTION



18. ENVIRONMENTAL CORRELATION BETWEEN ISO 14001:2004 & ISO 14001:2015

This section provides a cross reference between ISO 14001:2004 & ISO 14001:2015 requirements

Clause Title	ISO 14001:2015	ISO 14001:2004	Clause Title
Introduction	0	0	Introduction
Scope	1	1	Scope
Normative References	2	2	Normative References
Terms and Definitions	3	3	Terms and Definitions
Context of the Organization	4		
		4	Environmental Management System Requirements
Understanding the Organization and its Contents	4.1		
Interested Parties	4.2		
Scope of EMS	4.3	4.1	General Requirements
EMS	4.4	4.1	General Requirements
Leadership	5		
Leadership & Commitment	5.1		
Environmental Policy	5.2	4.2	Environmental Policy
Organizational Roles, Responsibilities and Authorities	5.3	4.4.1	Resources, Roles, Responsibility and Authority
Planning	6	4.3	Planning
Risks & Opportunities	6.1		
General	6.1.1		
Environmental Aspects	6.1.2	4.3.1	Environmental Aspects
Compliance Obligations	6.1.3	4.3.2	Legal and other requirements
Planning Action	6.1.4		
Environmental Objectives and Planning to Achieve them	6.2		

Clause Title	ISO 14001:2015	ISO 14001:2004	Clause Title
Environmental Objectives	6.2.1	4.3.3	Objectives, Targets and Program(s)
Planning Actions to Achieve Environmental Objectives	6.2.2		
Support	7	4.4	Implementation and Operation
Resources	7.1	4.4.1	Resources, roles, responsibility and authority
Competence	7.2	4.4.2	Competence, training, and awareness
Awareness	7.3		
Communication	7.4	4.4.3	Communication
General	7.4.1		
Internal Communication	7.4.2		
External Communication	7.4.3	4.4.4	Documentation
Documented Information	7.5		
General	7.5.1		
Creating and Updating	7.5.2	4.4.5	Control of Documents
		4.5.4	Control of Records
Control of Documented Information	7.5.3	4.4.5	Control of Documents
		4.5.4	Control of Records
Operation	8	4.4	Implementation and Operation
Operational Planning and Control	8.1	4.4.6	Operational Control
Emergency Preparedness and Response	8.2	4.4.7	Emergency Preparedness and Response
Performance and Evaluation	9	4.5	Checking
Monitoring, Measurement, Analysis and Evaluation	9.1	4.5.1	Monitoring and Measurement
Evaluation of Compliance	9.1.2	4.5.2	Evaluation of Compliance

Clause Title	ISO 14001:2015	ISO 14001:2004	Clause Title
Evaluation of Compliance	9.1.2	4.5.2	Evaluation of Compliance
Internal Audit	9.2	4.5.5	Internal Audit
General	9.2.1		
Internal Audit Program	9.2.2		
Management Review	9.3	4.6	Management Review
Improvement	10		
General	10.1		
Nonconformity and Corrective Action	10.2	4.5.3	Nonconformity, Corrective Action and Preventive Action
Continual Improvement	10.3		

19. REVISION HISTORY

DOCUMENT HISTORY			
REV. NUMBER	DATE	ORIGINATOR	COMMENTS
08			<p>Updated Semtech Logo on Header.</p> <p>Changed doc # in 12.3: SEMTECH-001 to SEMTECH 001</p> <p>Changed doc # in 12.5 and 13.6: SEMTECH-002 to SEMTECH 002 and FORM SEMTECH-002 to FORM SEMTECH 002</p> <p>Changed doc # in 12.4 and 14.2: SEMTECH-003 to SEMTECH 003</p> <p>Changed doc # in 12.3 and 12.5: SEMTECH – 004 to SEMTECH 004</p> <p>Changed doc # in 14.1: SEMTECH-006 to SEMTECH 006</p> <p>Changed doc description in 14.2 and 14.3 Reference docs: Corporate Document; KFID-4L3S3E Corporate Internal Audit Program, to Corporate Audit Program</p> <p>Updated typo in 11.8: From Ouility to Quality</p> <p>Updated typo in 18: From Leadership and Commitrment to Leadership and Commitment.</p> <p>Updated typo in 8.6.6: From stator to statutory</p> <p>Updated section 14.1: From: Legal Review is referenced in section 4.3.2 To: Legal Review is referenced in section 8.6.6</p> <p>Updated typo in 9.1: To maximize the positive contributions of oppportunity based risk... To: opportunity</p> <p>Updated typo in 11.3: Substances that could cause damage to sking through contact... To: skin</p> <p>Updated typo in 11.3: Sudden illness brought on by work or contagant through contact or exposure</p>

			To: contagion
08		J. Vargo	<p>8.4 Updated: Semtech Colorado, Inc.</p> <p>To: Semtech Colorado Springs (Elkton)</p> <p>Added: Semtech Colorado Springs (Federal)</p> <p>Process development and manufacture of die level packaging, flip chip packaging, package assembly, TT&R (Test, Tape and Reel), and order fulfillment which occur at 10045 Federal Drive, Colorado Springs, CO 80908</p> <p>Added: 19. Revision History</p> <p>Updated: Revision in header to Rev 8</p>