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SOPs: An integral part of EMS

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Abstract
An Environmental Management system (EMs) is that part of the organization's overall management system that addresses the immediate and long term impacts that an organization's products, services. And operations can have on the environment. It is a continual cycle of planning, implementing, reviewing and improving the processes and activities that the organization undertakes to achieve its business and environmental objectives. Implementing an EMs will enable your organization to identify the aspects of its activities that produce negative or positive environmental impacts, plan to eliminate or reduce its negative impacts and enhance its positive ones, Measure the effectiveness of the plans to achieve its desired objectives and targets. Development and use of Standard Operating procedures (sops) are an integral part of a successful Environmental management system as it Provides individuals with the information to perform a job properly and facilitates consistency and integrity of a product or end that are associated with the organization's identified significant environmental aspect. This paper describes sops as an integral Part of successful environmental management system.

Keywords: ems, 1so14001

1. Introduction

The development and use of SOPs form an integral part of a successful Environmental Management System (EMS) and quality system as it provides individuals with the information to perform a job properly and facilitates consistency in the quality and integrity of a product or end result. SOP addresses both technical and administrative operational elements in a thorough and integrated manner. Standard operating procedure is a set of written instructions that document a routine or repetitive activity followed by an organization. Or in other words standard operating procedure is a written set of instructions that should be followed for performing a task or for conducting an activity or operation. It actually spells out how to perform or conduct a recurring hazardous or environmentally important task or activity or operation. Standard operating procedure in fact, provides the preferred and safest method for conducting an operation or activity. Through incorporating necessary precautions and measures, SOP eliminates or at east minimizes the risk associated with potential but common hazards of any task, activity or operation.

2. Sops and Iso 14000 Based Ems

According to IS0 14001: 1996 clause 4. 4. 6 the organization shall identify those operational activities that are associated with the identified significant environmental aspects in line with its policy, objectives and targets. The organization shall plan these activities. Including maintenance in order to ensure that they are carried out under specified conditions by

- Establishing and maintaining documented procedures to cover situations w here their absence could lead to deviations from the environmental policy, objectives and targets
- Stipulated operating criteria in the procedures
- Establishing and maintaining procedures related to the identifiable significant environment aspects of goods and services used by organization and communicating relevant procedures and requirements to the suppliers and contractors.

According to IS0 14001 1996 clause 4. 5. l the organization has to establish and maintain documented procedures to monitor and measure, on a regular basis, the key characteristics of its operations and activities that can have a significant impact on the environment. This includes the recording of information to track performance, relevant operational controls and conformance with the organization's environmental objectives and targets.

Monitoring equipment should be calibrated and maintained and records of this process should be retained according to the organization's procedures. The organization has to establish and maintain a documented procedure for periodically evaluating compliance with relevant environmental legislation and regulations.

According to IS0 14004: 1996 clause 4.3.3.3 implementation is accomplished through the establishment and maintenance of operational procedures and controls ensure that the organization's environmental policy, objectives and targets can be met.

According to IS0 14004: 1996 clause 4.4.2 there should be a system in place of measuring and monitoring actual performance against the organization's environmental objectives and targets in the areas of management systems and operational processes. This includes evaluation of compliance and relevant environmental legislation and regulations. The results should be analysed and used to determine areas of success and to identify activities requiring corrective action and improvement.

3. Need and Benefits of Sops

All operations and activities that are associated with risk to humans (to human health and safety), property and environment require SOPs, Use of hazardous chemicals,

production of hazardous products, byproducts and intermediates may necessitate SOF. Tasks associated with serious, physical hazards and tasks involving biological materials, which cause infections or allergies, may require SOPs. ISO 14001 indirectly recommends, in section-4.4.6 use of SOPs for conducting the operations and activities that are associated with the organization's identified significant environmental aspect. Pulp and paper mill consists of enormous number of technical and administrative operations and activities. Only some of these activities and operations may be associated with the significant environmental aspects and, for these, SOPs can be developed and implemented. Because of the resources and time limitations in the development and implementation. It is appropriate to prepare a priority list of the operations and activities and to develop and implement SOPs to them.

Development and implementation of SOPs is supposed to benefit the industry in many different ways. Important among them are listed below:

- SOPs being the safest and the most preferred methods of conducting operations and activities can reduce overall work effort and optimize operations and activities of the industry.

Objectives	→ What is the procedure trying to achieve?
Scope	→ What are of work are to be covered by the procedure?
The Stage Of The Process	→ Description of how the task is to be carried out.
Responsibility	→ Who is responsible for carrying out each stage of the process: under normal operating conditions? Indifferent circumstances e.g. when staff is sick/on holiday.
Other Useful Information	→ Is there any other information you think could usefully be included in the procedure? Does the SOP incorporate mechanisms for audit?
Review	→ How are you going to ensure that the procedure continues to be useful, relevant and up to date.

Fig 1: Considerations for Developing SOPs and activities, SOPs promote quality

- Strict adherence to SOPs can minimize the environment and health impacts of operations and activities and ensure safety of workers
- SOP standardizes handling of a recurring activity or operation and ensures its conductance in safe, efficient and reliable fashion every time.
- Through introducing consistency into the operations
- SOPs contribute to continuously improve the manner of conducting its operations and activities
- SOPs can serve as good (raining material for the operators and supervisors on conducting operations and activities.
- SOPs can improve data comparability, defensibility and credibility of operations and activities.

4. Considerations for Development of Sops

Before developing any SOPs the following points elaborated in the flow diagram (Fig 1.) need to be considered:

5. Contents of Sop

In general, technical SOPs will consist of five elements: Title page, Table of Contents, Procedures, Quality Assurance/Quality Control, and References:

5.1 Title Page

The first page or cover page of each SOP should contain the following information: a title that clearly identifies the activity or procedure, a SOP identification (ID) number, date of issue and/or revision, the name of the applicable agency, division, and/or branch to which this SOP applies, and the signatures and signature dates of those individuals who prepared and approved the SOP. Electronic signatures are acceptable for SOPs maintained on a computerized database. Revision log may include the information such as: revision number, effective date, description of changes and pages or SOP affected by the revision.

5.2 Table of Contents

A Table of Contents is needed for quick reference for locating information and to denote changes or revisions made only to certain sections of a SOP. Relatively short SOPs may not have the table of contents.

5.3 Procedures

The following are topics that may be appropriate for inclusion in technical SOPs.

Not all will apply to every procedure or work process being detailed.

a. Scope & Applicability (Describing the purpose of a. the process or procedure and any organizational or regulatory requirements),
b. Summary of Method (briefly summarizing the procedure),
c. Definitions (identifying any acronyms, abbreviations, or specialized terms used),
d. Health & Safety Warnings
e. Cautions
f. Interferences (describing any component of the process that may interfere with the accuracy of the final product),
g. Personnel Qualifications (denoting the minimal experience the SOP follower)
h. Equipment and Supplies
i. Procedure (identifying all pertinent steps, in order, and materials)

j. Data and Records Management (e. g., identifying any forms to be used, reports etc.)

5.4 Quality Control and Quality Assurance Section

Quality Control activities are designed to allow self-verification of the quality and consistency of the work. Describe here the preparation of appropriate QC procedures (self-checks. such as calibrations, recounting. re-identification) and QC material (such as blanks-rinsate, trip, field, or method; replicates; splits; spikes; and performance evaluation samples) that are required to demonstrate successful performance of the method. Specific criteria for each should be included.

Describe the frequency of required calibration and QC checks discuss the rationale for decisions. Describe limits/criteria for QC data/results and actions required when QC data exceed QC limits or appear in the warning zone. Describe the procedures for reporting QC data and results.

5.5 Reference Section

Documents or procedures that interface with the SOP should be fully referenced (including version), such as related SOPs, published literature, or methods manuals. Citations cannot substitute for the description of the method being followed in the organization. Attach any that are not readily available.

Different organization use different formats for process specific SOPs. Generally small formats are used for process specific SOPs. Here are few examples of process based SOPs which are used by different organizations.

The examples are:

1. "SOP for Access to roofs" used by "Charles Strut University"
2. "SOP for Chemical Hygiene Plan" used by "University of Florida"
3. "SOP for start-up of the Purified Water System" used by "Puritron Engineering Co. Ltd.".
4. "SOP for Silk screening process using racal breathe easy system" can be used by "anywhere for silk screening".
5. "SOP for quenching the bottom of a solvent-drying still" used by "American Chemical Society".

6. Conclusions

Standard operating procedures are vital to workplace where the work environment has potential hazards. The introduction of SOPs for any organization is likely to bring many benefits and facilitate the implementation of Environmental Management Systems (EMS). The preparation of SOPs requires documentation of what is already been done. This makes it easier to analyze current ways of working and decide whether better use can be made of existing facilities. SOP need to be clear, concise, and reviewed regularly in order to keep pace with the changes in equipment or work activities. Sops also provides an opportunity 1o demonstrate professionalism, professional accountability and responsibility and helps tackling the issue of pollution prevention within the organization.

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