



Risk Integrity Safety Knowledge, Inc.

ISA-84 Standards and OSHA PSM

In January 2006, the U.S. Occupational Safety and Health Administration (OSHA) officially notified ISA that the three-part ISA series of standards comprising ISA-84 may be used in achieving compliance with OSHA regulations for the prevention and mitigation of accidents involving hazardous chemicals. This notification followed interpretation letters issued by OSHA in response to requests for clarification by ISA that outlined the use of ISA-84 standards to meet certain requirements of OSHA's Process Safety Management Standard (PSM), [29 CFR 1910.119].

The ISA-84 Standards

The three-part series commonly referred to as ISA-84 is ANSI/ISA-84.00.01 Parts 1-3 (IEC 61511 Modified), "Functional Safety: Safety Instrumented Systems for the Process Industry Sector" is a set of standards for Safety Instrumented Systems (SISs). The standards resulted from the adoption and modification of the three-part international standard IEC 61511 by ISA's SP84 standards development committee.

Endorsement by OSHA

In a January 2006 letter to ISA, Richard D. Fairfax, director of OSHA's Directorate of Enforcement Programs, wrote:

"OSHA considers ANSI/ISA-84.00.01-2004 Parts 1-3 to be recognized and generally accepted good engineering practice [RAGAGEP] for SIS (Safety Instrumented Systems), therefore if an employer chooses to use ISA-84 as a basis for SIS and meets all ISA-84 requirements and other OSHA PSM requirements related to SIS, the employer will then be considered in compliance with OSHA PSM requirements for SIS."

The endorsement letter echoed the interpretations issued in 2000 and 2005 by Mr. Fairfax, that the standard would be viewed as a RAGAGEP item. In the initial letter from March 2000 and again in the November 2005 letter, Mr. Fairfax addressed two questions from ISA Manager of Standards, Lois M. Ferson:

Question 1: Does the modification of corporate standards to comply with ANSI/ISA-84.00.01 ensure compliance with related areas of 29 CFR 1910.110?

Question 2: We are interested if your agency views ANSI/ISA-84.00.01 as the benchmark OSHA will use to measure compliance with 29 CFR 1910.110?

His responses in the interpretation letters note that PSM requires that employers document information pertaining to the equipment in the process, which includes SIS when used with a covered process. The employer is required to document which design codes and standards are used for SIS, and that SIS comply with recognized and generally accepted good engineering practices. He then states that the ISA 84.00.01 is a national consensus standard and, as such, OSHA considers it to be a RAGAGEP for SIS. He further specifically calls out the Operating Procedures requirement of PSM for employers to develop and implement written operating procedures for safely conducting activities involving safety systems and their functions; and the Mechanical Integrity requirements to conduct inspection and testing on process equipment, including SIS, and states that if an employer documents that it will comply with ISA-84.00.01 for SIS and meets all ISA-84 and other OSHA PSM requirements related to SIS, the employer will be considered compliant. Because the PSM standard is a performance-based standard, the employer has flexibility in complying with the requirements and therefore OSHA does not specify or benchmark national consensus standards as the only recognized

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and generally accepted good engineering practice. Copies of the interpretation letters are appended to this information sheet.

Summary of SIS Requirements Under OSHA PSM

From the interpretation letters, OSHA clarifies that the PSM standard contains several requirements for equipment and that those requirements apply to SIS when associated with a covered process.

- Employers must document information pertaining to the equipment in the process, including SIS when utilized. [1910.119(d)(3)]
- Employers must document which design codes and standards are used for SIS. [1910.119(d)(3)(i)(F)]
- Employers must document that SIS comply with recognized and generally accepted good engineering practices. [1910.119(d)(3)(iii)]
- Employers must develop and implement written operating procedures for safely conducting activities involving safety systems and their functions. [1910.119(f)(1)(iv)]
- Employers must conduct inspection and testing on process equipment, including SIS, as per recognized and generally accepted good engineering practices. [1910.119(j)(4)]
- Employers must include SIS under the Mechanical Integrity requirements. [1910.119(j)(1)(iv) and (v)]

OSHA also clarifies that there may be processes which are not covered by PSM which may include SIS covered by ISA-84 and that the employer may be in violation of the General Duty Clause, Section 5(a)(1) of the OSH Act if SIS are utilized which do not conform with ISA-84 and hazards exist related to the SIS which could seriously harm employees.

OSHA Citations for Non-Compliance with ISA-84

OSHA has cited companies for non-compliance with ISA-84 and included implementation of the ISA-84 standard in settlement agreements, including:

- The settlement agreement for BP Texas City Refinery specifically stipulates that BP will implement the American National Standard (“ANSI”)/ISA-84.00.01-2004 entitled Functional Safety: Safety Instrumented Systems (“SIS”) for the Process Industry Sector (“SIS Standard”). [<http://1.usa.gov/1gOdcAJ>]
- The citation for the April 2004 Formosa Plastics Corporation incident in Illiopolis, IL specifically refers to non-compliance with ANSI/ISA 84.01 when citing for failure to maintain, inspect, test and operate devices in a safe manner as OSHA found no documentation of inspection and tests of devices. The citation also notes that there was no team discussion and review of PLCs and DCS, critical control and safety-instrumented systems, such as required safety integrity levels, as part of any PHA study. Additionally, OSHA cited the company for failing to implement a process to address changes (i.e. staffing levels) that impacted the ability to perform required inspections and tests. [<http://1.usa.gov/MflWnu>]
- The July 2012 OSHA citation to Arkema references ISA84 as when citing failure to ensure that interlocks and/alarms in the process complied with Recognized and Generally Accepted Good Engineering Practices (RAGAGEP). [<http://1.usa.gov/1ebOWn0>]

Summary

It is clear from the letters of interpretation and citations that OSHA’s expectation for sites utilizing Safety Instruments Systems (SIS) for health and safety protection that ISA84 should be implemented and well documented as part of the PSM management system as well as SIS in non-PSM-covered processes.