

Hazardous Energy

The Battle for Control in the Standards Arena



By Bruce W. Main and Edward V. Grund

Competing views exist on the requirements for how and when to control potentially hazardous energy. On one hand is OSHA's 29 CFR 1910.147 standard, promulgated in 1989. On the other hand is ANSI/ASSE Z244.1-2016, a voluntary consensus safety standard written by industry stakeholders to address the control of potentially hazardous energy. Although the common goal of both standards is to protect workers from harm, some conflicts arise over how to achieve this goal. Furthermore, significant differences between the requirements in these documents have created confusion as to how to best control hazardous energy to protect employees.

This article, excerpted from *The Battle for the Control of Hazardous Energy* (Main & Grund, 2016), reviews the history of these standards to help safety professionals understand and appreciate the changes that have occurred over time; explains why the requirements are the way they are; and explores why conflict exists over the interpretation and application of the standards. Understanding the history and developments will help OSH professionals implement effective hazardous energy control solutions.

Why Does This Matter?

An employer has a legal right to contest any citation it receives from OSHA if the employer believes it did not violate a standard. In this regard, under-

standing the history of the standard can help an employer understand why certain solutions are prohibited under OSHA; support its effort to contest and defend against an OSHA citation(s); and, more fundamentally, apply the current standards to prevent harm in the workplace.

In addition, knowing this history can help safety managers understand how current Z244.1-2016 requirements came to be and how they can be applied to improve safety via current technology, something that mere compliance with the OSHA standard cannot achieve.

The 1970s: Before Z244.1

ANSI and OSHA standards originally emerged because too many workers were suffering serious or fatal injuries when energy was unexpectedly released. Grund's (1995) extensive analysis of benchmark lockout/tagout events in the U.S. from 1950 to 1993 revealed ample evidence that employers need to control the unexpected release of hazardous energy. The injuries related to the unexpected or uncontrolled release of hazardous energy eventually resulted in the writing of what became ANSI/NSC Z244.1-1982.

IN BRIEF

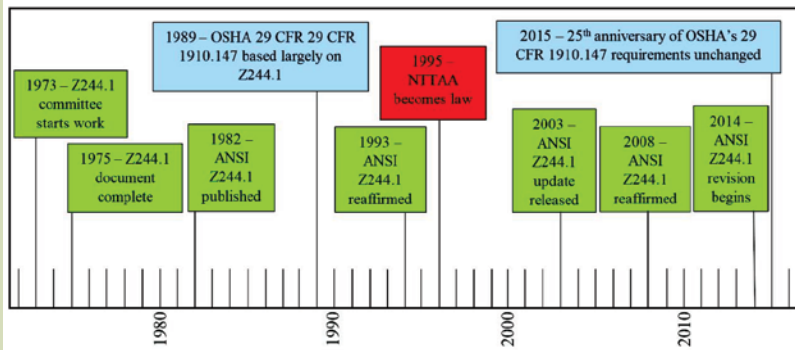
- By knowing the history and evolution of OSHA 29 CFR 1910.147 and ANSI Z244.1, OSH professionals can more effectively address current prevention and compliance issues related to the control of hazardous energy.
- The original Z244.1-1982 and OSHA's 1989 regulation were based on the technology and knowledge as of 1975.
- While Z244.1 has evolved since 1982, OSHA's regulation has remained unchanged for more than 25 years. Relying on requirements that date back to 1989 and before impedes safety progress.

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FIGURE 1

Evolution of Work on Standards for the Control of Hazardous Energy



The Creation of ANSI Z244.1

The foreword of ANSI/ASSE Z224.1-2016 describes the early history of the effort that resulted in ANSI/NSC Z244.1-1982:

In March 1973, the Accredited Standards Committee Z244 held its first organizational meeting in New York to develop a standard on lockout/tagout. The National Safety Council functioned as the secretariat and provided a draft document "Guidelines for a Lockout Program" dated November 1971 that was used as a reference for the committee's deliberations. By the end of 1975, the standard development work was complete and a public review and balloting was finished. However, various administrative and procedural problems precluded the standard from being officially released. In March 1982, American National Standard for Personnel Protection, Lockout/Tagout of Energy Sources: Minimum Safety Requirements Z244.1, was finally approved and published.

It is important to note that the content of Z244.1-1982 and OSHA 1910.147, which followed in 1989, were based on the technology and knowledge available in 1975.

The 1980s: OSHA's 1910.147

According to Grund (1995), OSHA developed its 1910.147 standard subsequent to the work of the Z244.1 Committee.

During the development phase of OSHA's standard 29 CFR 1910.147, the ANSI/NSC Z244.1-1982 document was heavily referenced as the principle resource. Almost all of the concepts and principles in the consensus document now exist in the 29 CFR 1910.147 standard. (p. 92)

On Sept. 1, 1989, OSHA published 1910.147. Through this action, the agency achieved a long-desired result (Grund, 1995):

Since the 1970s, OSHA has sought to provide more specific guidelines and standards for lockout/tagout and energy-control procedures. With the promulgation of the lockout/tagout standard, it now has the tool to become more vigorous in its enforcement of energy-control compliance to reduce the number of treated workplace injuries

and death. The agency has taken the stand that these incidents are within the power of the companies and employees to prevent if proper procedures are implemented, monitored, measured and assessed. (p. 267)

The need to control hazardous energy clearly justified the creation a standard. The need for the creation of two standards is less clear, however.

Why OSHA Did Not Adopt ANSI/NSC Z244.1

OSHA relied on ANSI/NSC Z244.1 as a principal reference resource in creating 1910.147, yet the agency did not adopt the consensus standard in 1989. The agency provided this rationale for that action in the preamble to 1910.147:

OSHA believes that national consensus standards, in and of themselves, do not ensure a safe and healthful workplace *since they are not enforceable regulations* (emphasis added). Compliance with specific provisions of such standards is voluntary except when OSHA incorporates them into its regulations.

Interestingly, OSHA has never provided an analysis of its position that ANSI/NSC Z244.1-1982 was unenforceable. However, an analysis by Main and Grund (2016) after the fact points to some vagueness in the language of Z244.1-1982.

Although OSHA claimed Z244.1-1982 standard was unenforceable, it did not attempt to clarify the perceived vagueness. The agency could have added more specificity to the items it found lacking, but it instead elected to write unique requirements that became 29 CFR 1910.147. No evidence suggests that agency officials attempted to interact with the ANSI/NSC Z244.1 Committee to clarify content or to propose revisions to eliminate any perceived vagueness.

History has demonstrated that OSHA 1910.147 has suffered from vagueness and unenforceable language in practice (Main & Grund, 2016). Viewed from the vantage point of 2016, through the language included in 1910.147, OSHA fared no better at crafting an enforceable and clear standard than ANSI/NSC Z244.1-1982.

The 1990s: Congress & the National Technology Transfer & Advancement Act

It has been said that changing an OSHA standard requires the equivalent of "an act of Congress," which implies that getting congressional action is even more difficult and unlikely than changing an OSHA regulation.

Succinctly described, the National Technology Transfer and Advancement Act (NTTAA) of 1995 "was signed into law by President Clinton on March 7, 1996. The act mandates that all federal agencies use technical standards developed and adopted by voluntary consensus standards bodies, as opposed to using government-unique standards" (NIST, 2016).

In 1998, the Office of Management and Budget (OMB) issued Circular A-119 to address federal

participation in developing and using voluntary consensus standards. It states:

This circular . . . directs agencies to use voluntary consensus standards in lieu of government unique standards except where inconsistent with law or otherwise impractical. . . . The policies in the circular are intended to reduce to a minimum the reliance by agencies on government-unique standards. . . . All federal agencies must use voluntary consensus standards in lieu of government-unique standards in their procurement and regulatory activities, except where inconsistent with law or otherwise impractical.

The circular includes a definition of the word *impractical*:

“Impractical” includes circumstances in which such use would fail to serve the agency’s program needs; would be infeasible; would be inadequate, ineffectual, inefficient or inconsistent with agency mission; or would impose more burdens or would be less useful, than that use of another standard.

A logical interpretation of the use of the word *must* leads to the reciprocal conclusion that a government agency would have to demonstrate that a national consensus standard cannot be adopted because it is impractical in order to be exempted from this requirement. This constitutes a different construct than what OSHA typically uses. OSHA is accustomed to evaluating industry or state-OSHA program requirements as compared to its federal requirements. If the other requirements fail to meet the federal requirements, then OSHA deems the requirements unacceptable.

NTTAA changes this paradigm. The metric is not “provides equal or greater employee protection” than the federal requirement. The metric is “must use unless impractical,” even if a lesser requirement is the result in certain respects. It is not clear whether OSHA has acknowledged this substantial change.

In 2016, National Institute of Standards and Technology (NIST) published a revised version of Circular A-119 that restates and reinforces this policy and purpose.

Annual Reporting Requirements

Under NTTAA, OSHA must file an annual report to Congress through NIST on its progress in using voluntary consensus standards. Congress could have required that government agencies use industry consensus standards only to revise a federal standard, but it made no such allowance. Thus, it is reasonable to conclude that the legislators intended that government agencies make annual progress in using industry consensus standards.

An analysis of OSHA’s annual NTTAA reports from 1997 to 2012 demonstrates that the agency was aware of these reporting requirements (Main & Grund, 2016). However, OSHA neither identified 1910.147 as a government-unique standard used in lieu of a voluntary standard (Z244.1), nor has the agency explained why the voluntary standard was not used as required by NTTAA.



(Clockwise from top): Mechanical pin control for press (gravity energy control); lock-out of electrical plug; lockout performed on gate entry (alternative method); tagout; safety block for a press; group lockout; local lockout control.



TABLE 1

Violations of 29 CFR 1910.147, 2001-2015

Year	Violations	Rank
2001	3,875	5
2002	3,796	5
2003	4,506	4
2004	4,304	4
2005	4,051	5
2006	3,659	5
2007	3,980	3
2008	2,937	5
2009	3,321	5
2010	3,531	6
2011	3,639	5
2012	1,572	9
2013	3,254	8
2014	3,117	6
2015	3,308	5

Via NTTAA, Congress explicitly requested information on how government agencies were participating in industry standards development efforts to ensure that government views could be adequately considered and that the industry standards could be used in lieu of government standards.

NTTAA also requires that government agencies participate in writing industry standards to be certain that government views are considered. However, as Main and Grund (2016) report, OSHA has no representation or participation on several key safety standards committees, the exact constituency that led to the need for 29 CFR 1910.147. An OSHA representative attended the first meeting of the committee that developed the 2003 version of Z244.1, but since then the agency has not participated in the development of this industry standard.

OSHA's failure to participate and its decision not to adopt this industry consensus standard is striking, and raises questions about the agency's response to Congress' explicit indication that it should participate in the consensus standards-development process. In this regard OSHA states:

Neither the NTTAA nor the OMB Circular mandate the revision of an existing standard, such as the Control of Hazardous Energy (Lockout/Tagout), 29 CFR 1910.147, whenever a relevant consensus standard is amended. However, OSHA will consider all relevant consensus standards, including the current ANSI Z244 (2003) standard, if the agency determines in the future that it is appropriate to revise 29 CFR 1910.147. (Fairfax, 2004)

Although a technically correct statement, this interpretation seems to conflict with the congressional intent of NTTAA. Congress did not likely intend that government agencies drop what they were doing to adopt industry consensus standards immedi-

ately. However, Congress likely also did not intend for existing industry consensus standards such as Z244.1 to be ignored.

On its face, this interpretation seems at odds with the annual requirements via which Congress expects reports on progress in government adopting industry standards. One can reasonably interpret this to mean that OSHA is electing to ignore the explicit direction of Congress indefinitely. To date, it is clear that OSHA has provided no evidence that adopting Z244.1 is "impractical," nor has the Secretary of Labor filed an explanation with Congress about the agency's failure to adopt Z244.1 through the required reporting channels.

Evolution Since Adoption of OSHA 1910.147

After OSHA promulgated its lockout/tagout standard, the Z244.1 Committee remained observant of ongoing developments as described in the foreword to the 2016 version of Z244.1:

In 1987, the standard was reaffirmed without any changes in content. . . . The committee believed no consequential action should be taken . . . while federal rulemaking was underway. In September 1989, OSHA promulgated its final rule. . . . Again in 1992, the ANSI standard was reaffirmed without change.

In early 2000, the Z244.1 Committee reconvened to update and revise the standard based on then-current technical knowledge, experiences and OSHA compliance issues. The result was ANSI/ASSE Z244.1-2003, which the committee subsequently reaffirmed in 2008.

Of the many changes made to the 2003 version of Z244.1, two deserve particular attention. The committee introduced risk assessment as a fundamental component of workplace safety and controlling potentially hazardous energy. The committee also advanced the concept of alternative methods, thus enabling companies to develop solutions to protect workers from harm when performing tasks that are not suited to conventional lockout practices. These two concepts greatly advanced the state of the art in controlling potentially hazardous energy.

Z244.1 Committee Reaches Out to OSHA

In 2004, Z244.1 Chair Edward Grund wrote a letter to OSHA asking four questions related to Z244.1-2003 (Fairfax, 2004). As Grund (E. Grund, personal communication, 2015) explains:

On March 4, 2004, on behalf of ASSE and the ANSI Z244.1 Accredited Standards Committee (ASC), I wrote to Mr. J. Henshaw, Assistant Secretary of Labor/OSHA, regarding the recently published (April 14, 2004) standard, Control of Hazardous Energy—Lockout/Tagout and Alternative Methods. The intent of the letter was to have OSHA formally acknowledge the new consensus standard that substantially advanced the original 1982 document . . . it was believed that the new ANSI standard was superior in content and incorporated more progressive thinking on this subject matter.

Our view was supported by the National Tech-



Top: Gate access (alternative method). Bottom: gate access control (alternative method).

nology Transfer and Advancement Act (NTTAA) Public Law 104-113 and OMB Circular A-119 that encouraged government agencies such as OSHA to cite, recognize and reference national voluntary consensus standards. . . .

I viewed the response as a courtesy, with minor concessions to the four specific issues raised in my letter. . . . However, there was little attempt to recognize the significance of the more contemporary and progressive ANSI Z244.1-2003 standard. More importantly, there was no further effort by OSHA to respond to the requirements of OMB Circular A-119 or engage the Z244.1 Committee in any sort of constructive dialogue regarding the merit of the new standard's content. Twelve years after my request to the agency to use the ANSI standard in a constructive way, the agency has made no progress in doing so.

As is shown in Figure 1 (p. 46), while the ANSI standard has evolved and been updated over time, OSHA 1910.147 has remained largely unchanged since 1989. The fact is, politics have become as much a part of OSHA standards development as safety. As with many such issues, some seek to keep OSHA standards updated and current, while others seek to minimize or eliminate these requirements or to weaken the agency so as to render it ineffective. In such an environment, standards are likely to remain (largely) unchanged.

OSHA Enforcement Activity

With the promulgation of 1910.147, OSHA enforcement effort ramped into action. Grund (1995) describes this process:

Since issuance of the lockout/tagout standard (29 CFR 1910.147), OSHA has become very assertive in its enforcement. . . . Most violations of the standard are classed as serious so employers can anticipate significant fines, depending on the inspection circumstances and the findings of the compliance officer. OSHA states that compliance is well within the capabilities of every employer and organization, and that effective lockout/tagout implementation is expected. (p. 275)

This 1995 forecast has become today's reality. The lockout/tagout standard has ranked high among the agency's most frequently cited violations for the past 15 years (Table 1). This fact indicates that OSHA's standard is not well understood and is subject to continuous interpretation.

Conclusion

Based on the information presented, the authors offer the following conclusions:

- The original Z244.1 was based on the knowledge and technology of the mid-1970s.
- OSHA used the original Z244.1 as a "primary basis" in drafting 29 CFR 1910.147.
- OSHA did not adopt ANSI/NSC Z244.1-1982 based on a vague rationale that it was "unenforceable."
- OSHA did not attempt to clarify any unsatisfactory language in Z244.10-1982, but instead elected to write its own standard that became 1910.147.
- The Z244.1 consensus standard has evolved

over time, while the OSHA standard has not.

•Congress requires federal agencies to use voluntary consensus standards, under the original OSH Act and the NTTAA, yet this has not happened in the case of the lockout/tagout standard.

Workers should be protected from the unexpected startup or release of potentially hazardous energy. No consumer today would accept a product designed to meet the safety requirements from 1989. Yet, OSHA requires and expects employers to comply with its lockout/tagout requirements that date back to 1989 and before. This impedes safety progress and has essentially created a battle for the control of hazardous energy.

The key conflicts in the current situation involve who will control the requirements, and how and when the requirements apply. Understanding these conflicts can help all stakeholders move toward a more productive focus on protecting workers against the release of potentially hazardous energy (Main & Grund, 2016). **PS**

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Addendum

As this issue of *Professional Safety* went to press, ASSE received a letter from OSHA indicating that the agency plans to issue a request for information on modernizing and updating the federal standard (29 CFR 1910.147).