



# AMERICAN NATIONAL STANDARD

*ANSI/ASSE Z244.1 - 2003 (R2008)*  
*Control of Hazardous Energy*  
*Lockout/Tagout and Alternative*  
*Methods*

*American National Standard*

*ANSI/ASSE Z244.1 - 2003 (R2008)*



AMERICAN SOCIETY OF  
SAFETY ENGINEERS

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## **Foreword** (This Foreword is not a part of American National Standard Z244.1-2003 (R2008).)

### **History**

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 initial 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 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.

In 1987, the standard was re-affirmed without any changes in content. In April 1988, the Occupational Safety and Health Administration (OSHA) released a proposed rule "The Control of Hazardous Energy Sources (Lockout/Tagout) 29CFR1910.147 which used ANSI Z244.1 as a principal reference source. The Committee believed no consequential action should be taken on the Z244.1 Standard while federal rulemaking was underway. In September 1989, OSHA promulgated its final rule 29CFR1910.147, The Control Of Hazardous Energy Sources (lockout/tagout). Again in 1992, the ANSI standard was re-affirmed without change. The American Society of Safety Engineers became the secretariat of the Z244 Lockout/Tagout Committee in 2003. The standard was significantly revised in 2003 and was reaffirmed without technical change in 2008.

### **Need for a Standard**

A wealth of casualty data exists in the private, public, and governmental sectors related to the unexpected release of hazardous energy. In fact, the issue is of global concern since all of the major industrialized countries of the world are actively addressing the problem in various ways. The U.S. Occupational Safety and Health Administration provided persuasive injury data in its justification for a lockout/tagout standard for general industry.

In spite of substantial efforts by employers, unions, trade associations and government during the past 35 years, the annual toll of injury and death related to hazardous energy release incidents remains unacceptable. We now know that all forms of energy must be addressed; that operational personnel are injured as often as maintenance workers; that often thermal, and gravitational forces and trapped materials under pressure are overlooked; that complex equipment and processes frequently demand unique approaches to energy isolation or control; and that employers need to commit resources and substantial effort in planning, training, procedure development, and infrastructure before lockout/tagout application ever occurs.

The rapid growth of technology continues to require different methods and techniques for safeguarding workers from the unexpected release of hazardous energy. Every business sector is actively changing the way traditional work is done, which then requires employers to develop new equally effective responses for hazardous energy control. Protective standards need to be continually improved to provide guidance for current conditions as well as evolving technical developments.

### **Standard Perspective**

The content of this standard was approached from a business and industry perspective. However, the principles, methods and guidance are applicable to a variety of other

settings and circumstances where unexpected release of hazardous energy can occur. It is recommended that the procedures, techniques, methods and design guidance detailed herein will be utilized by all those whose activities fall within the scope and purpose of this standard.

The Standards Committee and the Secretariat have made a concerted effort to produce a standard that represents the "best practice" regarding the control of hazardous energy. All circumstances or situations where personnel are exposed to unexpected energy release may not have been anticipated and adequately addressed with respect to the standard's content. New developments are to be expected, and revisions of the standard will be necessary as the state of the art progresses and further experience is gained. However, uniform requirements are needed and the standard in its present form provides performance requirements that are necessary when developing and implementing a system for protecting personnel from hazardous energy.

### **Current Status**

During 1997, the Committee was reconstituted and voted to revise the existing standard after over 20 years without change. Consequential meetings began in 1998 and the revision process began with writing task groups being formed and continued through 2003 when this document was produced. The title of the standard was modified to recognize the broader universe of hazardous energy control. The standard now more effectively addresses the need for greater flexibility through the use of alternative methods based on risk assessment and application of the hazard control hierarchy. In addition, the standard emphasizes management's responsibility for protection of personnel against the release of hazardous energy.

The standard was processed and approved for submittal to ANSI by the Accredited Standards Committee (Z244) on Control of Hazardous Energy-Lockout/Tagout and Alternative Methods for Personnel Protection. The standard was approved by ANSI on July 29, 2003 with a publication day of April 14, 2004.

The standard was then reaffirmed without technical change by the committee and ANSI on November 11, 2008.

Conformance language in the standard consists of the words "shall" and "should". In this standard, the word "shall" is intended to be prescriptive, specifying mandatory requirements for compliance with the standard. The word "should" specifies non-mandatory recommendations and good practices that have been found to be helpful.

Suggestions for improvements of this standard are welcome. They should be sent to: American Society of Safety Engineers (ASSE), 1800 East Oakton Street, Des Plaines, IL 60018 c/o Z244 Secretariat, Practices and Standards.

*Revisions:* The Z244 Committee welcomes proposals for revisions to this standard. Revisions are made to the standard periodically (usually five years from the date of the standard) to incorporate changes that appear necessary or desirable, as demonstrated by experience gained from the application of the standard. Proposals should be as specific as possible, citing the relevant paragraph number(s), the proposed wording, and the reason for the proposal. Pertinent documentation would enable the Z244 Committee to process the changes in a more timely manner.

*Interpretations:* Upon a request in writing to the Secretariat, the Z244 Committee will render an interpretation of any requirement of the standard. The request for interpretation should be clear, citing the relevant paragraph number(s) and phrased as a request for a clarification of a specific requirement. Oral interpretations are not provided.

*No one but the Z244 Committee (through the Z244 Secretariat) is authorized to provide any interpretation of this standard.*

*Approval:* Neither the Z244 Committee nor American National Standards Institute (ANSI) "approves," "certifies," "rates," or "endorses" any item, construction, proprietary device, or activity.

*Appendices:* Appendices are included in most standards to provide the user with additional information related to the subject of the standard. Appendices are not part of the approved standard.

*Committee Meetings:* The Z244 Committee meets twice a year. Persons wishing to attend a meeting should contact the Secretariat for information.

*Standard Approval:* This standard was processed and approved for submittal to ANSI by the American National Standards Committee on Control of Hazardous Energy, Z244. Approval of the standard does not necessarily imply (nor is it required) that all Committee members voted for its approval. At the time this standard was reaffirmed, the Z244 Committee had the following members:

Edward V. Grund, CSP, P.E., Chairman  
Jeff Fryman, Vice Chairman  
Timothy R. Fisher, CSP, CHMM, ARM, CPEA, Secretary  
Jennie Dalesandro, Administrative Technical Support

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**Name of Representative**

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American Chemistry Council	Mark Eliopoulos
American Petroleum Institute	Paul Dobrowsky
American Society of Safety Engineers	Kendall C. Crawford, P.E., CSP
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Bayer MaterialScience, LLC	George Karosas, CSP, P.E.
Castell Interlocks	David Felinski
Chrysler Corporation	Terry L. Ketchum
Edison Electric Institute	Mark Dornoff
Honda of America Manufacturing, Inc.	Bill Glenn
Grund Consulting	James K. Weber
Institute of Electrical & Electronics Engineers	Charles J. Kelly
International Brotherhood of Electrical Workers	Joe Cicero, MS, CPEA
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## AMERICAN NATIONAL STANDARD Z244.1 CONTROL OF HAZARDOUS ENERGY LOCKOUT/TAGOUT AND ALTERNATIVE METHODS

### INTRODUCTION

This standard provides guidance regarding:

- responsibilities of the principal parties involved in hazardous energy control (Section 3);
- design issues that influence the effective application of control methodology (Section 4);
- hazardous energy control program elements necessary for employee protection (5.3);
- alternative methods development for tasks that are routine, repetitive, and integral to the production process, or where traditional lockout/tagout prohibits the completion of those tasks (5.4);
- special applications where traditional methods of hazardous energy control are inappropriate or impractical (5.3.10);
- communication and training requirements for involved personnel (5.5); and
- management review of the total hazardous energy control process to ensure its functioning effectiveness (5.6).

The standard provides for decision-making flexibility regarding hazardous energy control methodology. Alternative methods, when used, are based upon risk assessment and application of the classic hazard control hierarchy (5.4.2). However, lockout/tagout continues to be emphasized as the primary hazardous energy control approach.

### 1. SCOPE, PURPOSE, AND APPLICATION

**1.1 Scope.** This standard establishes requirements for the control of hazardous energy associated with machines, equipment, or processes that could cause injury to personnel.

**1.2 Purpose.** The purpose of this standard is to establish requirements and performance objectives for procedures, techniques, designs and methods that protect personnel where injury can occur as a result of the unexpected release of hazardous energy. Unexpected release of hazardous energy can include any unintended motion, energization, start-up or release of stored energy, deliberate or otherwise, from the perspective of the person(s) at risk.

Lockout/tagout is the primary method of hazardous energy control. When the tasks specified in 1.3 are routine, repetitive, and integral to the production process, or traditional lockout/tagout prohibits the completion of those tasks, alternative methods of control that are based on risk assessment (5.4.1) and that provide effective personal protection shall be used.

NOTE: Tasks that are routine, repetitive and integral to production generally exhibit most of the following characteristics:

- Short in duration
- Relatively minor in nature
- Occur frequently during the shift, day or week
- Usually performed by operators, set-up, service or maintenance personnel
- Do not involve extensive disassembly
- Represent predetermined cyclical activities