

American Nuclear Society

administrative practices for nuclear criticality safety

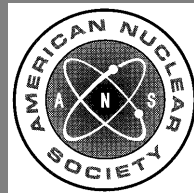
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Administrative Practices for Nuclear Criticality Safety**

Secretariat
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Working Group ANS-8.19**

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Foreword (This foreword is not a part of the American National Standard “Administrative Practices for Nuclear Criticality Safety,” ANSI/ANS-8.19-2005.)

Administrative practices for nuclear criticality safety have evolved in the various organizations processing fissionable materials in ways appropriate to these organizations. Stimulated by expressions of interest on the part of the U.S. Nuclear Regulatory Commission, Subcommittee ANS-8 of the Standards Committee of the American Nuclear Society has developed this standard. Typical of the differences between organizations is the nature of the nuclear criticality safety staff. While the functions assigned to the staff by this standard are being carried out by all these organizations, the administrative arrangements are so diverse that a concise definition of the term “nuclear criticality safety staff” has not been developed. In essence, the staff comprises those elements of the organization that, in concert, carry out the functions described.

During this revision of the standard, there was much discussion regarding the use of the term “fissile.” Some think the broader term, “fissionable,” should be used in place of “fissile,” while others held to the opinion that the standard does not apply to all fissionable materials. The term “fissile” is the most commonly used term and is appropriate in the majority of applications, although it does not include every nuclide that could present a nuclear criticality safety concern. Facilities that have nuclear criticality safety concerns with nuclides that are fissionable, but not fissile, can also apply this standard to those situations. For the purposes of this standard, the term “fissile” is intended to apply to any nuclide that presents a nuclear criticality safety concern.

This revision was prepared with the objective of providing additional guidance for facilities where missions are changing and equipment and operations are undergoing a decline in usage or, in some cases, cessation of operations. Clarifications, where appropriate, were also made consistent with the evolution of this standard.

Most of the guidance provided in Section 10 of the previous revision of this standard was deleted and replaced with a reference to American National Standard “Nuclear Criticality Accident Emergency Planning and Response,” ANSI/ANS-8.23-1997.

This revision of the standard was drafted by Working Group ANS-8.19 of Subcommittee 8 of the American Nuclear Society. The membership of the working group at the time of the revision was as follows:

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Administrative Practices for Nuclear Criticality Safety

1 Introduction

An effective nuclear criticality safety program includes cooperation among management, supervision, and the nuclear criticality safety staff; for each employee, the program relies upon conformance with operating procedures.

Although the extent and complexity of safety-related activities can vary greatly with the size and type of operation with fissile material, certain safety elements are common. This standard represents a codification of such elements related to nuclear criticality safety.

General guidance for nuclear criticality safety can be found in American National Standard "Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors," ANSI/ANS-8.1-1998 [1].¹⁾ Guidance for special isotopes that are fissionable can be found in American National Standard "Nuclear Criticality Control of Special Actinide Elements," ANSI/ANS-8.15-1981;R1987;R1995;R2005 [2].

2 Scope

This standard provides criteria for the administration of a nuclear criticality safety program for outside-of-reactor operations in which there exists a potential for nuclear criticality accidents.

Responsibilities of management, supervision, and the nuclear criticality safety staff are addressed. Objectives and characteristics of operating and emergency procedures are included.

3 Definitions

3.1 Limitations. The definitions given below are of a restricted nature for the purposes of this standard. Other specialized terms are defined in *Glossary of Terms in Nuclear Science and Technology* [3].

3.2 Shall, Should, and May. The word "shall" is used to denote a requirement; the word "should" is used to denote a recommendation; and the word "may" is used to denote permission, neither a requirement nor a recommendation. To conform with this standard, all operations shall be performed in accordance with its requirements but not necessarily with its recommendations. When recommendations are not implemented, justification should be provided.

4 Management Responsibilities

4.1 Management shall accept overall responsibility for safety of operations. Continuing commitment to safety should be evident.

4.2 Management shall formulate nuclear criticality safety policy and make it known to all employees involved in operations with fissile material. Distinction may be made between shielded and unshielded facilities, with appropriate nuclear criticality safety controls in all cases. Guidance for the distinction between shielded and unshielded facilities may be obtained from American National Standard "Criteria for Nuclear Criticality Safety Controls in Operations with Shielding and Confinement," ANSI/ANS-8.10-1983;R1988;R1999;R2005 [4].

4.3 Management shall assign responsibility and delegate commensurate authority to implement established policy. Responsibility for nuclear criticality safety should be assigned in a manner compatible with that for other safety disciplines. Each individual, regardless of position, shall be made aware that nuclear criticality safety in his or her work area is his or her responsibility.

4.4 Management shall provide personnel familiar with the physics of nuclear critical-

¹⁾Numbers in brackets refer to corresponding numbers in Section 11, "References."