Revision of
N16.8-1975

American Nuclear Society

REAFFIRMED
April 1, 2005
ANSI/ANS-8.10-1988;
R1999;R2005

criteria for nuclear criticality safety controls in operations with shielding and confinement

an American National Standard

This standard has been reviewed and reaffirmed with the recognition that it may reference other standards and documents that may have been superseded or withdrawn. The requirements of this document will be met by using the version of the standards and documents referenced herein. It is the responsibility of the user to review each of the references and to determine whether the use of the original references or more recent versions is appropriate for the facility. Variations from the standards and documents referenced in this standard should be evaluated and documented.

This standard does not necessarily reflect recent industry initiatives for risk informed decision-making or a graded approach to quality assurance. Users should consider the use of these industry initiatives in the application of this standard.

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Revision of
N16.8-1975

American National Standard
Criteria for Nuclear Criticality Safety Controls in Operations with Shielding and Confinement

Secretariat
American Nuclear Society

Prepared by the
American Nuclear Society
Standards Committee
Working Group ANS-8.10

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American National Standard

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Foreword

(This Foreword is not a part of American National Standard Criteria for Nuclear Criticality Safety Controls in Operations with Shielding and Confinement, ANSI/ANS-8.10-1983.)

This standard amplifies the conditions necessary for the control of criticality in fissionable materials set forth in American National Standard for Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors, ANSI/ANS-8.1-1983. Criteria for the prevention of criticality are presented herein for facilities which provide adequate protection for personnel and the public against radiation and releases of radioactive materials resulting from accidental criticality. This standard recognizes the usefulness and protective features of shielding against radiation and confinement of radioactive materials, and allows a relaxation of criticality safety criteria when shielding and confinement meet criteria specified in this standard. In the context of this standard the shielding and confinement properties may exist because of the radioactivity of material processed in normal operations, or they may be designed into the facility expressly to protect against the effects of accidents.

This standard was initiated as the result of a survey, conducted in September 1968, to establish the need for and the feasibility of such a standard. A Work Group was appointed by Subcommittee 8 of the Standards Committee of the American Nuclear Society in November 1968, and submitted the first draft in June 1969. In response to comments and discussions, the Work Group subsequently prepared twelve succeeding drafts over a five-year period. Some of the later revisions were the consequence of recommendations from American National Standard Committee N16 during 1972. The standard was then adopted by the American National Standards Committee N16 in 1974, under the title "Criteria for Nuclear Criticality Safety Controls in Operations Where Shielding Protects Personnel."

The prescribed five-year review of N16.8-1975/ANS-8.10 was performed by a Work Group of Subcommittee 8 of the ANS Standards Committee, the originating body. The Work Group was composed of B. F. Gore and E. D. Clayton of the Battelle Pacific Northwest Laboratories. They recommended a single substantive change in the standard, along with minor wording changes in the standard and in its title to reflect the broadened content. This revision defines a criterion for determining the adequacy of a facility's confinement of radioactive materials under accident conditions based upon a maximum radiation dose which could be received by a member of the public located outside the restricted area surrounding the facility. Definition of this criterion removes perceived ambiguity in the wording of the previous version.

This revised standard was prepared under the guidance of ANS Subcommittee 8, Fissionable Materials Outside Reactors, which had the following membership at the time of its approval of this revision:

J. D. McLendon, Chairman, *Union Carbide Corporation*
Elizabeth B. Johnson, Secretary, *Oak Ridge National Laboratory*
F. M. Alcorn, *Babcock & Wilcox Company*
H. K. Clark, *Savannah River Laboratory*
E. D. Clayton, *Battelle Pacific Northwest Laboratories*
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David R. Smith, *Los Alamos National Laboratory*
J. T. Thomas, *Oak Ridge National Laboratory*
G. E. Whitesides, *Oak Ridge National Laboratory*
F. E. Woltz, *Goodyear Atomic Corporation*

The American National Standards Committee N16, Nuclear Criticality Safety, which reviewed and approved this revision in 1982, had the following membership:

Dixon Callihan, Chairman
Elizabeth B. Johnson, Secretary

Organization Represented	*Name of Representative*
Allied General Nuclear Services	William R. Waltz
American Institute of Chemical Engineers	Alex F. Perge
American Nuclear Society	Dixon Callihan
American Society for Testing and Materials (Liaison only)	Ricardo Artigas
Atomic Industrial Forum, Inc.	D. Frank Cronin
Exxon Nuclear Company	Leo E. Hansen
Health Physics Society	Fred W. Sanders
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	Elizabeth B. Johnson
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