THE U.S. NATIONAL VOLUNTARY CONCENSUS NUCLEAR STANDARDS PROGRAM IN RADIATION PROTECTION (ANSI N-13)

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1. INTRODUCTION

This paper describes the organization, composition, operation, and ongoing standards program conducted by or under the U.S. voluntary concensus organization (N-13) in the field of radiation protection.

2. SCOPE, COMPOSITION AND ORGANIZATION OF ACTIVITIES

The American National Standards Institute has under its aegus a variety of technical boards which supervise the development and adoption of technical concensus standards in the United States. Standards in the nuclear field fall under the N board and N-13 is the committee which is responsible for the development and adoption of (U.S.) American National Concensus Standards in the field of radiological protection. The scope indicated in the charter of the N-13 Committee is:

> "Standards for the protection of individuals and groups from occupational or environmental exposure to radiation or radio-active materials either of general applicability or related to specific classes of facilities."

The N-13 Committee works closely with several other N committees, including N-42 (Nuclear Instruments), N-43 (Equipment for Nonmedical Radiation), N-44 (Equipment and Materials for Medical Radiation Applications), N-46 (Nuclear Reactor Fuel Cycle), and N-48 (Radioactive Waste Management). Concensus on several standards has been developed jointly with N-42, which is sponsored by IEEE, and a joint N-13/42 working group exists.

The committee has a chairman, a secretary, and 30 members. Twenty-seven members are organizations or societies and three are individual members. The organizations or societies appoint experts to serve as their representatives in the development of concensus. Types of organizations represented include government regulatory and development agencies, professional societies, insurance organizations, labor, industrial, trade, or professional organizations, and individual members appointed for their general technical competence. The function of the committee is to develop a concensus on draft standards submitted to it. To do this, individual members may circulate draft proposed standards for appropriate technical review within their organizations or to others whose views would be important to their organizations. A two-thirds vote of the committee is required for adoption of an American concensus standard. The direction of the committee is the function of the chairman. Administrative handling of standards balloting and compliance with the regulations of the American National Standards Institute are the responsibility of the secretary, who represents the secretariat (the Health Physics Society). The secretariat is the sponsoring organization of the committee and assumes responsibility for it.

Special writing groups may be established for the purposes of developing standards. Administratively this is done in two separate ways. First, technical societies may be asked to form committees and to write drafts for submission to N-13 for adoption. The Health Physics Society Standard Committee is quite active in this regard and has nine working groups developing drafts of standards which will be sponsored for adoption. The American Nuclear Society writes standards related to its particular field of expertise not covered by the Health Physics Society Standard Group's writing committees. Finally, special working groups may be established by the Chairman of N-13 and these are appointed whenever it is necessary to obtain special expertise, or a particularly able individual or group exists, willing to develop the draft of a standard. The writing group may consist of several to a dozen people. Attempts are made to provide a rounded composition of the writing groups in terms of the organizations represented, but the major point in their formation is technical expertise.

The relationship between the writing groups and the N-13 Committee is at times a difficult one, because it is sometimes necessary for the N-13 Committee to return a draft to the writing committee without adoption if a national concensus cannot be reached. Often the draft standard can be revised to make it acceptable. There are many reasons why draft standards are rejected and these include such things as technical narrowness (i.e., insufficiently broad to elicit general acceptance), temporal prematurity (i.e., attempting to write standards in areas where a genuine concensus does not exist), technical errors, lack of clarity, etc.

For the most part, the process of review of draft standards is extensive and a standard may be returned many times to the writing committee before it is acceptable. This engenders delays so that the process, aside from being a thorough one, is a long and tedious one.

3. STANDARDS IN FORCE AND IN PREPARATION

This not withstanding, Table 1 shows a list of 12 standards presently in force. These cover a wide range including administrative practices in radiation monitoring instrumentation, specification of standard source terms for nuclear power plants for environmental dose design calculations, guides for radiation protection in uranium mines, air sampling criteria, and performance specifications for instrumentation.

Standards may be written into government regulations or references, so that they may, if so adopted, hold greater legal force than the voluntary standard would assume by itself.

In addition to the standards already adopted, active work is underway on about 20 standards in five different areas (see Table 2 for a complete list). In radiation protection instrumentation and its applications, work is underway on several standards including performance specifications for thermoluminescent dosimeter monitoring of occupational workers, several in the field of environmental contamination, and several standards dealing with contamination of equipment and facilities. A series of standards dealing with environmental radiation surveillance from objectives to techniques are underway, some specific for facilities, such as nuclear power plants. Finally, a number of standards on internal dosimetry techniques are being prepared primarily with respect to occupational exposure and covering activation and fission products, tritium, uranium, and plutonium.

As the standards being worked on are adopted, they may then be available for international models. Conversely it is hoped that work in other countries on similar standards will be brought to our attention.

ACKNOWLEDGMENTS

Thanks are due to the following who ably serve N-13 in various capacities: Richard J. Burk, Jr., who serves as Secretary of N-13; Robert A. Johnson, staff assistant to the Secretary and Secretariat; Edward Vallario, who is Chairman of the Health Physics Society Standards Committee, N-13 area manager for instrumentation and their applications, and chairman of the joint N13/42 working group; and Paul Vollique, who chairs the ANS standards committee for radiation protection. Also, thanks are due to Louis Costrell, Chairman of N-42.

TABLE 1

LIST OF N-13 STANDARDS CURRENTLY IN FORCE

ANSI NO.	TITLE
N13.1-1969*	Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities
N13.2-1969*	Guide to Administrative Practices in Radiation Monitoring
N13.3-1969*	Dosimetry for Criticality Accidents
N13.5-1972	Performance Specification for Direct Reading and Indirect Reading Pocket Dosimeters for X and Gamma Radiation
N13.4-1971**	Specification for Portable X and Gamma Radiation Survey Instruments
N13.6-1966/72	Practice for Occupational Radiation Exposure Systems (formerly N2.2, revised 1972)
N13.7-1973	Film Badge Performance Criteria
N13.8-1973	Radiation Protection in Uranium Mines Operation (Revision of N7.1-1960)
N13.10-1974**	Specification and Performance at On Site Instrumentation for Continuous Monitoring Radioactivity in Effluents
N237 (1977)	Source Term Specifications (Light Water Reactors)
N319 (1976)	Performance Specification for Personnel Neutron Dosimeters
N545 (1975)	Performance Testing and Procedural Specifications for Thermoluminescence Dosimetry (Environmental Applications)

Standards are available from: American National Standards Institute, 1430 Broadway, New York, New York 10018 U.S.A.

* Under Revision

** Jointly with N-42, Secretariat IEEE.

TABLE 2

LIST OF N-13 STANDARDS UNDER DEVELOPMENT

Radiation Protection Instrumentation and Applications

N317 In Plant Pu Monitoring for Personnel Protection

N320 Performance Specifications for Reactor Emergency Monitoring Instrumentation

N323 Radiation Protection Instrumentation Test and Calibration

N324 Thermoluminescent Dosimetry: Standards for Performance (Occupational)

N373 Occupational Radiation Protection in Fuel (Mixed Oxide) Fabrication Plants (Revision of N7.2-1963)

Radiation Contamination

N328 Control of Radioactive Surface Contamination on Materials, Equipment and Facilities to be Released for Uncontrolled Use

N547 Standards for the Unrestricted Release of Radioactivity Contaminated Real Property

Administrative Practices

N330 Occupational Internal Radiation Exposure Evaluation and Records

Environmental Radiological Surveillance

N13.9 Environmental Surveillance Around Nuclear Facilities

N221 Specific Environmental Monitoring Program to Assess Operational Dose from LWRs Power Reactors

N331 Program for Environmental Monitoring of Nuclear Reactor Installations

N332 Programs for Monitoring Reactor Fuel Reprocessing Plants

N333 Programs for Monitoring Reactor Fuel Fabrication Plants

N334 Programs for Monitoring Radioactive Waste Storage Facilities

N336 Methods for Inferring Environmental Doses

N338 Radiation Surveys of Mine and Mill Sites

N340 Monitoring Nuclear Facilities Upon Decommissioning

N651 Radiation Zoning for the Design of Nuclear Power Plants

N683 Facilities for Emergency Contamination Control at Plant Site

Internal Dosimetry Techniques

N341 Internal Dosimetry Techniques for Uranium

N343 Internal Dosimetry Techniques for Fission and Activation Products

N548 Internal Dosimetry Techniques for Plutonium

N716 Criteria for Testing Personnel Dosimetry Performance