Safety and Health in the Home:
Helping Students Understand the Role of Standards

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Learning Objectives

- Gain an understanding of the U.S. standards system and the benefits of standards to manufacturers, consumers and government regulators
- Learn how consumer concerns are taken into account in the development of standards
- Introduce participants to standards resources that can be utilized in FCS education
Why Develop Standards?

- *Roughly 80 percent of global merchandise trade is affected by standards and by regulations that embody standards.*

Source:
National Institute of Standards and Technology
Testimony before the U.S. House of Representatives
Committee on Science, Subcommittee on Technology
September 13, 2000

Definitions

- **Standard** – a document, established by a consensus of subject matter experts and approved by a recognized body, that provides guidance on the design, use and performance of products, processes, services, systems or personnel

- **Conformity Assessment** – the process of evaluating or measuring products, processes, services, systems or personnel against a standard
Types of Standards

- **Voluntary Consensus Standards**
  - Developed via a formal process characterized by private/public sector cooperation and openness, consensus and due process (e.g., American National Standards)

- **Consortia Standards**
  - Developed outside the formal process by companies working together to solve a specific market need
  - Participation may be limited to members of the consortium and a significant financial commitment may be required

- **Government Unique Standards / Regulatory Specifications**
  - Written or adopted by government agencies (Milspecs)

- **De Facto Standards**
  - The marketplace determines acceptance (Microsoft Windows)

Examples of American National Standards for the home environment

- Safety of appliances
  - electric coffee makers (UL 1082)
  - household trash compactors (UL 1086)

- Performance of appliances (AHAM)
  - household refrigerators and freezers (ANSI/AHAM HRF-1)
  - portable air cleaners (ANSI/AHAM AC-1)

- Indoor air quality (ANSI/ASHRAE 62.1)

- Energy-efficient design (ANSI/ASHRAE 90.2)

- Safe electrical installation (NFPA 70)
The U.S. standards system

- Is decentralized, sector-based and market-driven
- Includes both standards-setting and conformity assessment programs
- Includes more than 95,000 recognized standards.
- These documents are developed by
  - some 600 standards developing organizations (SDOs), about 200 of which are accredited by ANSI, with the twenty largest of these organizations producing about 80% of the standards
  - at least 150 consortia
  - hundreds of committees addressing the technical requirements of standards

Examples of ANSI Accredited Standards Developers

- ANSI
  American National Standards Institute
- Underwriters Laboratories
- AHAM
  Association of Home Equipment Educators
- ASHRAE
  American Society of Heating, Refrigerating and Air-Conditioning Engineers
- NFPA
  National Fire Protection Association
- ASTM International
- IEEE
  Institute of Electrical and Electronics Engineers
- ARI
  Air-Conditioning and Refrigeration Institute
- NSF International
- CSA America
- Others
Standards serve industry

- Provide common methodologies, language and understanding
- Improve product design, performance and interoperability
- Reduce costs and time-to-market
- Open markets / reduce barriers to trade
- Achieve competitive advantage
- Help supplement regulatory frameworks
- Reduce anti-trust and product liability exposure

Standards address basic consumer concerns

- Performance, quality and reliability
- Interoperability
- Safety, health and the environment
- Ease of use
  - instructions, packaging, accessibility
- Affordability / choice
- Protection from false / misleading claims
- Redress
- Confidence / trust
Consumer input makes for better standards

- Facilitates the flow of goods and services into the marketplace
- Promotes safer, healthier, more environmentally-friendly products
- Fosters government reliance on voluntary standards and conformity assessment programs
- Raises awareness of consumers with special needs
- Introduces new subjects for standardization and conformity assessment
- Enhances the credibility of the system

Standards help the government

- Achieve public policy objectives
  - Building codes
  - Consumer Product Safety Act
  - Americans with Disabilities Act
  - Federal Fair Housing Act
- Provide access to private sector technology and “know-how”
- Lower regulatory and procurement costs
- Promote exports, trade, and economic growth
The Role of Government

- In the U.S., no single government agency has control over standards.
  - Each agency determines which standards meet its needs.
  - The agency is responsible for determining whether a voluntary consensus standard already exists that is appropriate for its needs.
    - If so, they will use the consensus standard.
    - If not, the agency is expected to work with the private sector to develop the needed standard.

The Role of Government (contd.)

- National Technology Transfer and Advancement Act (NTTAA) (P.L. 104-113 – 1996)
  - Encourages federal agencies to utilize voluntary consensus standards as much as possible for both regulatory and procurement purposes
  - Encourages federal participation in voluntary consensus standards development activities
  - Designates the Department of Commerce’s National Institute of Standards and Technology (NIST) as coordinator of federal government agency standards policy activities
What is ANSI?

- The coordinator and facilitator of the U.S. voluntary consensus standards and conformity assessment system
- A not-for-profit 501c3 membership organization
- Private-sector led and public-sector supported
  - Founded in 1918 by five professional/technical societies and three federal government agencies

**ANSI is not a government agency or a standards developer**

ANSI’s Mission

- To enhance both the global competitiveness of U.S. business and the U.S. quality of life by promoting and facilitating voluntary consensus standards and conformity assessment systems, and safeguarding their integrity

- The ANSI By-laws specify that this includes:
  - To benefit the public health, safety, welfare and environment
  - To assure that the interests of the public have appropriate protection, participation and representation in standardization, certification and related activities
Roles and Responsibilities of ANSI

- Accredit U.S. standards developing organizations and U.S. technical advisory groups
- Approves standards as American National Standards
- Provides access to international and regional standards bodies
  - U.S. member of International Organization for Standardization (ISO) and, via U.S. National Committee, International Electrotechnical Commission (IEC)
- Offers a neutral policy forum
- Accredits product, personnel and management system certification bodies
- Information provider
- Seller of publications
The ANSI Process

- Is fair and open, with numerous checks and balances, designed to protect the rights and interests of every participant
- Ensures the integrity of the U.S. voluntary consensus standards system
- Accreditation signifies that standards developing organizations adhere to ANSI’s essential requirements for:
  - Openness
  - Balance
  - Due process
  - Consideration of Views and Objections (Public review)
  - Consensus
  - Right to Appeal
- American National Standards are those that have been developed by accredited SDOs in accordance with these principles

ANSI Strategic Initiatives – U.S. Standards Strategy (USSS)

- Developed by a broad cross-section of standards stakeholders, the U.S. Standards Strategy provides a vision, purpose and common framework that can be used by U.S. stakeholders to achieve their respective standardization goals.

- These include:
  - Improve the responsiveness of the standards system to the view and needs of consumers
  - Establish standards education as a high priority within the United States private, public and academic sectors

- USSS development facilitated by ANSI and strategy has been endorsed by ANSI
ANSI’s Consumer Interest Forum (CIF)

Promoting the education of consumers . . . facilitating the representation of consumer interests in standardization . . . enhancing the effectiveness and credibility of the Institute . . . providing U.S. leadership in ISO Consumer Policy Committee (COPOLCO)

- American Assn. of Family and Consumer Sciences
- Consumer Federation of America
- Council of Better Business Bureaus
- Intertek Testing Services
- Maryland Consumer Rights Coalition
- National Assn. of Consumer Agency Administrators
- National Consumers League
- U.S. Consumer Product Safety Commission
- U.S. Dept. of Agriculture—CSREES
- Underwriters Laboratories
- Telecommunications Industry Assn.
- Toy Industry Assn.
- Individual Consumer Advocates

ANSI’s Committee on Education

- Oversees ANSI’s education and outreach initiatives to fulfill USSS goal to establish standards education as a high priority
  - Chaired by Dr. William E. Kelly, Professor of Civil Engineering, The Catholic University of America
  - AAFCS represented by JoAnn Emmel, VA Tech
- Aim is to educate next generation of business leaders on strategic importance of standards to U.S. and global economies
  - In fields of study such as engineering, science, technology, government and public policy, business, economics and law
- Oversee development of education programs, training modules and materials that faculty can use in the classroom or online
ANSI Standards Education Survey

- ANSI asked SDOs what educational resources exist and what needs to be developed to support universities with the tools they need to introduce standards into the classroom.
- 32 responses from SDOs representing a broad range of industries:
  - Majority engaged in education activities
    - Most involved in continuing education or professional development
    - Forty percent involved in activities for students at university level and younger, and had developed standards materials for use by universities
  - Interest expressed in developing both cross-discipline and discipline-specific education materials for use by universities
  - Some sponsor or fund education activities or receive sponsorship / funding

ANSI University Outreach

- Pilot Project Phase I – launched Fall 2005 semester
  - 21 schools from a range of disciplines invited/requested to participate
    - Civil, medical, mechanical and agricultural engineering
    - Computer science
    - Industrial technology
    - Geography
    - Law
    - Graphic design
    - Business management
    - Apparel, housing, and resource management
  - ANSI offered fee-waived access to ISO and certain IEC standards for use in the classroom
  - Some U.S. SDOs provided free or discounted access to their standards
  - Discussions underway with U.S. SDOs to provide standards, case studies, model tutorials, guest speakers, and other resources that professors can use
Survey of Assn. of Home Equipment Educators

- Are you aware of the standards that relate to your academic field?
- Are you familiar with / do you participate in any SDOs?
- Are your students expected to be knowledgeable about standards?
- Do you reference standards in your course materials?
- Do you feel it would be beneficial to do so?
- Would you be interested in free access to ISO / IEC standards?
- What other resources would help you to introduce standards into your course curricula?
- What factors would prevent you from requesting standards or other resources?

ANSI Educational Resources

- Free, introductory courses on standardization
  www.StandardsLearn.org
  - Why Standards Matter
  - U.S. Standards – Today and Tomorrow
- Standards search engine www.StandardsMall.org
- List of ISO and IEC standards http://webstore.ansi.org
- Standards Education Database
  - Links to SDOs, academic institutions and ANSI members that provide standards education
ANSI Educational Resources (contd.)

- About ANSI [www.ansi.org/about]
  - Introduction / History / FAQs
- News and publications [www.ansi.org/news]
  - Published articles
  - Library of speeches & presentations
  - Media tips and case studies [www.ansi.org/mediatips]
    - Designed as a resource for journalists, consumers and educators/students, uses non-technical language to illustrate the role of standards in daily life.
- National student design competition for sustainability [www.ansi.org/p3]
  - ANSI’s partnership with U.S. EPA’s P3 project which provides grants to college student teams and faculty to research, develop, and design sustainable solutions to environmental challenges
- Environmentally preferable purchasing (EPP) [www.ansi.org/epp]
  - ANSI / EPA presentation on how standards can incorporate EPP provisions to protect the environment, and reflect life-cycle concerns

Sample Educational Resources of SDOs

- The ISO Cafe [www.iso.org/isocafe]
  - For students, educators and journalists, provides an overview of ISO standardization and examples / benefits of ISO standards in many areas of life and work
- 100 years of the IEC [www.iec.ch/100years]
- ASTM International
  - The ASTM Campus [www.astm.org]
    - Student Membership, Student Forum, Professor’s podium and Standards 101
- IEEE Standards Association
  - Standards Development Online [http://standards.ieee.org/resources/development/index.html]
    - Training materials
    - Standards Companion
Government & Other Educational Resources

  - Includes a searchable database of standards referenced by Federal agencies in regulations and procurement activities
- USDA’s Cooperative State Research, Education and Extension Service Housing & Indoor Environment Program
  - [http://www.csrees.usda.gov/ProgView.cfm?prnum=5315](http://www.csrees.usda.gov/ProgView.cfm?prnum=5315)
- Electrical Safety Foundation International [www.esfi.org](http://www.esfi.org)

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