



SAFETY

NEWS

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Message from the Chair

The Safety Technical Group is one of the three largest TGs in the society. The many TG members represent diverse interests in the field of safety. The varied interests and needs of members create a unique opportunity to further advance the discipline. This advancement, however, requires greater communication and cooperation among practitioners and researchers. Without a regular forum to convey practical needs and research findings, member of our TG can be isolated from the ability to identify and resolve safety related problems and concerns. If you're a practitioner, take a moment to consider the value of having a research community that can provide solutions to safety challenges. If you're a researcher, consider the value of applying research findings directly to areas of need. As you prepare to attend the upcoming meeting in Baltimore, consider how the TG might facilitate the advancement of the discipline by bridging the gap between the practice and study of safety.

Announcements

The Texas Transportation Institute's Center for Transportation Safety is happy to welcome its new director, Mr. David Willis. Dave comes to TTI from his post as President and Chief Executive Officer of the AAA Foundation for Traffic Safety. The TTI Center for Transportation Safety was established in 2001 to focus on health and safety issues associated with transportation. Work performed through the center will be closely coordinated with safety-related work being pursued by other agencies, such as the Texas Department of Transportation. The Center is comprised of a small nucleus staff focused in safety education and research in the areas of public health, driver behavior, and driver attitudes. For more information visit:

<http://tti.tamu.edu/cts>

If you have information concerning human factors in safety and would like to have it posted on the Safety TG website, please contact Eric Shaver at eshaver@quik.com

Visit the Safety TG website: <http://www.its.uidaho.edu/safetytg/>

Revision of ANSI Standards for Warning Signs, Labels, and Symbols

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Overview of ANSI Standard for Warnings

The American National Standards Institute (ANSI) produces a series of standards, entitled ANSI Z535, that provides guidance on the creation of warning labels and signs. This standard was first adopted in 1991, and was officially published in April, 1992. The ANSI Z535 series consists of five separate standards:

- Z535.1 - Safety Color Code;
- Z535.2 - Environmental and Facility Safety Signs;
- Z535.3 - Criteria for Safety Symbols;
- Z535.4 - Product Safety Signs and Labels; and
- Z535.5 - Accident Prevention Tags (for Temporary Hazards).

Apart from the specific recommendations contained in these standards, there are several annexes. These annexes, which are not officially part of the standard, provide further guidance on the development of safety information.

ANSI Z535 was revised in 1998. Since the 1998 version, the ANSI committee has been revising the standards further. In December, 2001 the main committee met for two days to discuss of all the comments and negatives votes received from the letter ballots to the five proposed standards. In terms of changes to the standards, the primary content of the three standards that have received the most attention during this revision (Z535.2, Z535.3, and Z535.4) remains the same. For example, the standards for signs and labels will continue to specify a three-tier system of signal words (Danger, Warning, and Caution) and associated colors (red, orange, and yellow). Also, the basic format of signs and labels will be the same. What follows is a discussion of changes to the standards, issues for future consideration and points of debate among committee members.

ANSI Committee Looks at Warnings in Product Manuals

At the December 2001 meeting, a presentation was given on a new proposed standard (ANSI Z535.6) dealing with safety communications in product-accompanying literature (e.g., collateral materials, such as owner's manuals, service manuals, assembly instructions, etc.). There has been interest over the years in addressing issues related to how manufacturers can present safety information in these types of materials. In the past, some manufacturers have referred to the recommendations outlined in ANSI Z535.4—1998 (the standard for





on-product warnings) for guidance on presenting safety information in collateral materials. However, this standard was not designed for such purposes and it is not particularly well suited for application in this domain. Many of the committee members in attendance expressed interest in the idea of creating a Z535 standard to deal with collateral materials. In April 2002, the Z535 committee voted to form a new subcommittee, Z535.6, to address the provision of safety information in collateral materials.

International Labeling vs. ANSI Z535.4



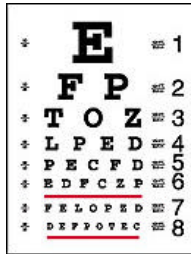
Another issue that has received a great deal of attention over the past couple of years is the extent to which ANSI Z535.4 should be “harmonized” with international standards for on-product warnings. Specifically, the International Standards Organization (ISO) 3864—Safety Colours and Safety Signs allows safety signs that consist solely of symbols, with no text messages and/or signal words (or headers). Harmonization of ANSI Z535.4 with ISO 3864 would require resolution of the issue of symbol-only signs. No final decisions have been made regarding such harmonization, except that the present revision (2002) will not allow symbol-only signs. It is anticipated that the next revision of the Z535.4 standard (post-2002) will reflect further developments with regard to the issue of harmonization with ISO 3864.

Using Symbols in Labels and Signs



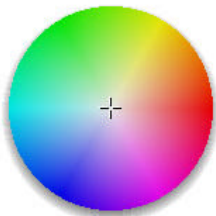
At the December 2001 meeting, only one major change was proposed to the Z535.2 standard and that change was related to the use of symbols in safety signs. As of the 1998 revision, Z535.2 stated that safety symbols should generally be used in conjunction with a word message and that symbols should not be used to replace word messages unless they have been “validated for recognition.” Symbol “recognition” was defined as “inclusion in U.S. or international standards, achievement through training, or meeting the comprehension test criteria outlined in ANSI Z535.3—1998 Annex B.” At the December 2001 meeting, it was recognized that symbols may sometimes need to be used in the absence of a word message even when the symbol failed to meet the comprehension criteria outlined in the Annex of ANSI Z535.3 (85% correct comprehension with less than 5% critical confusions). Thus, a proposal was submitted to allow symbols to be substituted for all or part of a word message if the symbol has been demonstrated to be satisfactorily comprehended (e.g., meeting a test such as that outlined in Annex B of ANSI Z535.3) or there are methods (e.g., instructions, training materials, manuals, etc.) to inform people of the symbol’s meaning. To date, this Z535.2 has an unresolved negative ballot and will need to be re-balloted.

Minimum Suggested Type Size in Product Labeling



Annex B of Z535.4 states that .08 inch type is the suggested minimum type size for use on product safety labels. Earlier in the revision of the 1998 standard, a proposal was made to allow .06-inch type “for products smaller than 2 square feet surface area.” In the December 2001 meeting, it was proposed that the “smaller than 2 square feet surface area” be changed to “except for small products.” However, this change did not result in a resolution of the negative ballot. The standard will not have to be re-balloted as a result of any changes, if any, made in response to this issue.

ANSI Provides Guidance on the Selection of Safety Colors



As of the 1998 edition, ANSI Z535.1 required safety colors for labels and signs using color systems that were not necessarily easy to specify. Because of this difficulty, it was thought that users would select the closest approximation to the specified colors using the pantone system. Taking expected user behavior into account, it was decided that ANSI should provides color specifications that refer to the closest pantone color that matches the ANSI specifications for safety red, orange, yellow, etc. While the pantone color specifications fall outside the tolerance limits for each color specified in Z535.1, it was deemed practical to provide a pantone specification to avoid the problem of users specifying a pantone color that might be farther outside the tolerances than the proposed recommended pantone colors. There were no substantive revisions to the Z535.1 standard at the December 2001 meeting. Thus, the standard is complete and ready for publication.

Basis for Assessing Symbol Comprehension



Currently (as of the 1998 standard), “a symbol used without demonstrated understandability shall be reinforced by a word message explaining the intent of the symbol.” (Section 7.2). While there are no specific criteria in the body of the standard to suggest what would constitute “understandability,” Annex B suggests criteria for acceptance of 85% correct responses with a maximum of 5% critical confusions. There was a negative ballot at the December 2001 meeting which questioned the foundation for the 85%/5% criteria and there was a proposal to include a citation to an Australian standard (AS 2342, Part 3, 1980 Test Procedures for Evaluating Graphic Symbols and Symbol Signs—1981) as one source of information related to the basis for the 85%/5% criteria. This negative ballot remains unresolved, but the standard will not have to be re-balloted as a result of any changes, if any, made in response to this issue.

Hang Tags and Barricade Tapes (for Temporary Hazards)



The major change to this standard is the inclusion of barricade tapes. The new proposed title of the standard is “Safety Tags and Barricade Tapes (for Temporary Hazards).” In the December 2001 meeting, a proposed change to this standard (and a change that had implications for all the standards) was the definition of the term “accident.” In an earlier revision to the 2002 standard, it was proposed that “accident” be defined as “an occurrence in a sequence of events that produces unintended death, injury, *illness* or property damage.” (italics added). Historically, the issue of “illness” has not been addressed by the Z535 standards and it was decided that such a change, if it were ever to occur, would require further discussion on the part of the committee. In the December 2001 meeting, it was decided to eliminate the term “illness” from the proposed standard and to consider the issue further in the next revision of the standards. To date, this standard has an unresolved negative ballot, but it will not need to be re-balloted.

Summary and Conclusions

At this time, four of the five standards appear likely to be finalized and published without additional voting by the main committee. ANSI Z535.2 is the only standard that requires revision and re-balloting. While it is difficult to predict when the revised standards will be available to the public, it appears that summer of 2002 will be the earliest time. Those wishing to obtain copies of the standard should contact the National Electrical Manufacturers Association (www.nema.org).

About the Authors

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HFES 46th Annual Meeting
Baltimore, MD: September 30-October 4, 2002

Below is the schedule for the Safety Technical Group Sessions for the Human Factors and Ergonomics Society 46th Annual meeting in Baltimore, Maryland, divided by Lectures, Symposium, and Posters.

Lectures

Wednesday 1:30 PM – 3:00 PM

Arnold M. Small Lecture

“Health Care and Human Factors: The Ultimate Challenge”

Lucian L. Leape, Harvard University

Thursday 10:30 AM – 12:00 PM

Warnings and Risk Perception

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|------------------|---|
| Casali, et al. | Masked Thresholds and Predicting the Audibility of Auditory Displays: An Example for Long-Haul Trucks |
| Shaver, et al. | Perceptions of Automotive Safety by Cell Phone Owners and Non-Owners |
| Bowles, et al. | Inference and Figurative Language in Warnings |
| Laughery, et al. | Guidelines for Warnings Design: Do They Matter |

Friday 8:30 AM – 10:00 AM

Safety Potpourri

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|-----------------|---|
| Chang, et al. | The Effects of Cut-off Length on Surface Roughness Parameters and Their Correlation with Dynamic Friction |
| Grech, et al. | Human Error in Maritime Operations: Analyses of Accident Reports Using the Leximancer Tool |
| Alkhouri, et al | The Impact of Shift-Work on Cognitive and Perceptual Performance |
| Nichols, et al. | Hazardous Products in the Older Adult Home |
| Drury, et al. | Demographic Effects of Behavior Modeling in Seat Belt Use: Analysis of 15,000 Observations |

Symposium

Wednesday 10:30 AM – 12:00 PM
Human Factors at the U.S. Consumer Product Safety Commission

Panelists

Robert B. Ochsman, Hope Johnson, Celestine Kiss, Michele Marut, Jonathan Midgett, & Tim Smith
U.S. Consumer Product Safety Commission

Posters

- | | |
|------------------|---|
| Santos, et al. | Comparison of On-Line and Physical Presentation of Product Safety Information |
| Lesch, et al. | Methodological Issues in Testing Comprehension of Safety Symbols |
| Wogalter, et al. | Glance Legibility of Prohibitive Safety Symbols |
| Leonard | Comparison of Symbols for Preferred Behaviors |
| Kalsher, et al. | Over-the-Counter Analgesics: A Survey of the Public's Knowledge, Attitudes and Beliefs Regarding Current Labeling Practices |

15th Annual Arnold M. Small Safety Lecture **Wednesday, October 2nd, 1:30 - 3:00 P.M.**

This year's lecture will be delivered by Lucian L. Leape of Harvard University. The title of the presentation is "Health Care and Human Factors: The Ultimate Challenge." Dr. Leape is a health policy analyst whose research has focused on error prevention and appropriateness of care as they apply to medical systems. Prior to joining the faculty of the School of Public Health at Harvard, he was Professor of Surgery at Tufts University School of Medicine and Chief of Pediatric Surgery at the New England Medical Center. He has been a leading advocate of the non-punitive systems approach to the prevention of medical error and has led several studies of adverse drug events and their underlying systems failures. In addition, he has directed research into overuse and underuse of cardiovascular procedures.

Mr. Leape is a member of the Board of Directors of the National Patient Safety Foundation and the Institute of Medicine Quality of Care in America Committee, which recently released its report, "To Err is Human". He has also served on the Agency for Healthcare Research and Quality (AHRQ) Health Services Research Review Committee and the Physician Payment Review Commission (PPRC) Access Advisory Committee. Dr. Leape is a graduate of Cornell University and Harvard Medical School and trained in surgery at the Massachusetts General Hospital and at the Boston Children's Hospital. He is the author of over 180 medical articles, book chapters and monographs.

Safety News

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