



On Your Mark is a monthly column written by Geoffrey Peckham, CEO of Clarion Safety Systems. Mr. Peckham is chair of both the ANSI Z535 Committee for Safety Signs and Colors and the U.S. Technical Advisory Group to ISO Technical Committee 145 - Graphical Symbols, and member of the U.S. Technical Advisory Group to ISO Project Committee 283 - Occupational Health and Safety Management Systems. Over the past two decades, he has played a pivotal role in the harmonization of U.S. and international standards dealing with safety signs, colors, formats and symbols. This article is courtesy of Clarion Safety Systems © 2014. All rights reserved.

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## Designing Effective Product Safety Labels

Your Guide to Content

BY GEOFFREY PECKHAM

Designing product safety labels that help to prevent injuries and save lives is a multi-faceted task. This month, we'll focus on another key element to consider: content.

In the last column, we underscored the benefit of using symbols on your product safety labels. In my mind, there's no question that the use of symbols is the state of the art when it comes to safety communication. They not only draw attention to your safety label – they also have the ability to communicate across language barriers. Often, though, a product safety label's message is more involved than a single symbol can communicate. That's where the use of additional symbols and/or text comes into play. In this article, I'll outline the elements you should take into account when defining product safety label content to communicate information that protects both people from harm and your company from product liability litigation.

### ANSI Z535.4—YOUR STARTING POINT FOR CONTENT

In the U.S., we're fortunate to have a national standard – ANSI Z535.4 – that describes the content options for product safety signs and labels. I say we are "fortunate" because if you follow this standard, your defense in a product liability lawsuit should be strengthened, especially when it comes to allegations of "inadequate warnings" or "failure to warn." Honed over the past 20+ years, the ANSI Z535 standards represent the U.S. best practices in communicating safety on signs, labels, tags and in manuals.

ANSI Z535.4 is a good starting point for defining the content of your safety labels because the standard makes it very clear what should be conveyed. The following is what ANSI Z535.4 states about the proper message on hazard alerting product safety signs (and labels):

*"Hazard alerting sign: Sign directly related to a hazard that identifies the hazard, the level of hazard seriousness, the probable consequence of involvement with the hazard, and how the hazard can be avoided. When information on consequence, avoidance, or type of hazard is readily inferred, this information may be omitted from the message panel (see Annex B3.1)."*

When it comes to communicating this information through an ANSI Z535.4-compliant label, there are three visual elements used:

1. Signal word
2. Symbol(s)
3. Word message

The main role of the signal word (a topic I'll focus on in more depth in my next column) is to communicate the degree or level of seriousness of the hazard. The other two elements – symbol(s) and word message – are then left to identify the hazard, the probable consequence of involvement with the hazard, and how the hazard can be avoided.

## TO OMIT OR NOT TO OMIT CERTAIN INFORMATION

Note that the definition quoted above states that some of the information may be omitted. Yet, the referenced note in Annex B3.1 states that:

*“Many factors must be considered when determining whether to omit consequence, avoidance, or type of hazard information in the word message. Factors to consider include whether the message can be inferred from a symbol, other text messages, user training, or the context in which the safety sign is used.”*

As a product safety engineer, I believe you should understand that, in practical terms, the ANSI Z535.4 standard has set the expectation for the proper content for a safety label for the past two decades. As I understand things, this definition for the content of a safety label originally came from U.S. court precedents that defined the function of a safety label in product liability litigation. These “content elements” were then picked up and placed into the early drafts of the ANSI Z535.4 standard back in the 1980s. The fact that they have withstood the test of time – including five revisions to the standard and being routinely used in today’s product liability litigation that is focused on warnings – is proof, in my opinion, that the Z535 committee did a good job of defining the proper content of a warning. Yes, the standard says you don’t have to have all of this information on your label – and there may be good reason not to. But generally speaking, my advice is always to consider communicating all of this information on your labels if you can.

Having said this, there are times when omitting some of the Z535.4 defined label content can make sense, including:

- Space restrictions on a product, which can make content-heavy labels unreadable.

- The presence of too many hazards in one place, which can make it difficult to clearly define every hazard and every avoidance procedure on a single label.
- Choosing to communicate in ISO-compliant, symbol-only formats.
- Choosing to refer to another source for more information (such as a manual or a separate instructional label).

## HOW COMPLETE CONTENT DRIVES COMPLIANCE WITH SAFETY MESSAGES

So why does ANSI Z535.4 recommend including ALL of the content outlined above? Why isn’t identifying the hazard alone enough? Human factors studies have shown that people often benefit by having more information given to them. Applying this theory to product safety labels, the viewer benefits from having communicated both what your product’s hazards are and how to avoid them.

For example, consider Figure 1: at left is a label saying “Danger – High Voltage”, used on a machine that needs to be serviced. This overly simplistic content gives you an abbreviated understanding of the hazard – presumably electric

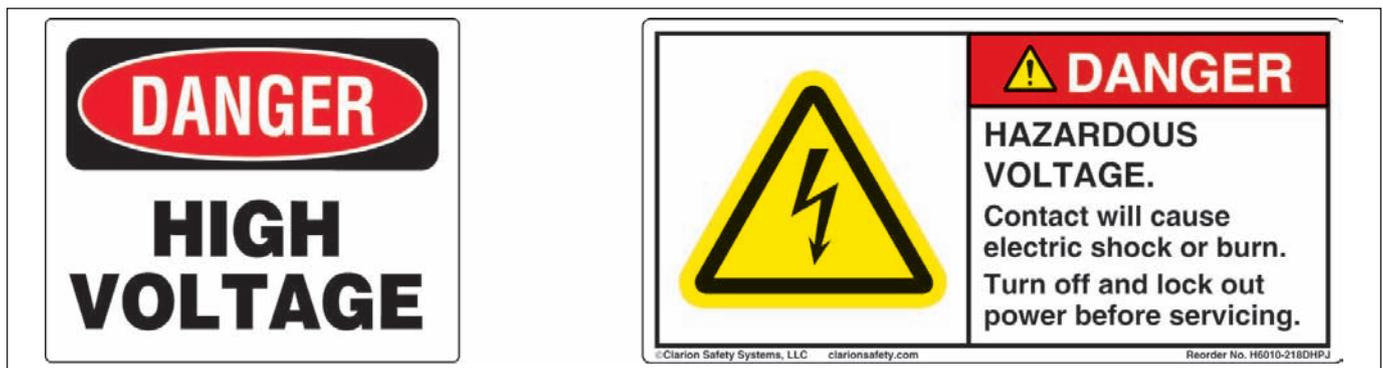


Figure 1: At left, an OSHA-style “Danger – High Voltage” label. At right, an up-to-date ANSI Z535.4 counterpart. (Design at right ©Clarion Safety Systems. All rights reserved.)

shock. It does not tell you how to avoid the hazard, whether you have to disconnect the power, if there are two sources of power, whether a full lockout procedure is necessary, or similar hazard avoidance information. You can see how its incompleteness introduces unnecessary risk. Identifying both the nature of the hazard and the proper avoidance procedure (see the ANSI-style label to the right) is needed if your goal, here, is to control the risk of electrocution.

Similarly, see Figure 2. At left is a label that only identifies the hazard avoidance procedure, “Do Not Operate with Guard Removed.” This label is one that Clarion often replaces because it does not tell the viewer what the hazard is that they need to avoid. Is it a danger of entanglement, a pinch point, a crush hazard or electrocution? Put yourself in the viewer’s shoes. Wouldn’t you rather see the label to the right which provides fuller information on what the hazard is and the consequence of interaction with it? Not only will you be better informed but, according to human factors experts, you will also be more likely to obey the message. An understanding of all three content items (what the hazard is, the consequence of interaction with the hazard, and how to avoid the hazard) provides the viewer with the information they need to make a wise decision.

My final example, see Figure 3, illustrates how all three items of content could be communicated in symbolic form. Here, Clarion’s label design uses ISO-formatted symbols (meaning symbols in ISO colored surround shapes) to communicate the existence of a crush hazard, the need to lockout the equipment and read and understand the maintenance manual before performing maintenance on the product. Such labels are often backed up with explanations in the product’s manual that elaborate on the safety

aspects involved with the situation. The point here is that reliance on words to convey safety messages on on-product warnings is not an absolute given. The ANSI Z535.4 standard allows for a portion or all of a label’s message to be conveyed with symbols; this format is in complete compliance with the standard. If you decide to go this route, the design of the symbols and the credentials of their origins will be important.

When it comes to creating the content for your safety labels, you have several options to choose from and a number of aspects to consider. A future article on this topic will focus on special layout considerations including accommodating translations and multi-hazard formats. Amid all of the choices that we’ve outlined above, remember:

using the latest standards and best practices in considering the elements of your label means that clear and concise messaging is possible – as well as visual consistency – which ultimately should help your safety labels to be more easily seen and understood.

Preventing accidents and saving lives from tragedy is the goal. Stay tuned for the next article in this year’s *On Your Mark* series which will explore another aspect of effective on-product hazard communication: visually defining risk severity levels. ■

## REFERENCES

The American National Standards Institute (ANSI) Z535.4 *Standard for Product Safety Signs and Labels*, 2011.



Figure 2: At left, an OSHA-style “Caution – Do Not Operate with Guards Removed” label. At right, an up-to-date ANSI Z535.4 counterpart. (Design at right ©Clarion Safety Systems. All rights reserved.)



Figure 3: A Clarion symbol-only safety label. (Design ©Clarion Safety Systems. All rights reserved.)