

ISO/TS 20559: A SYSTEMS APPROACH TO SAFETY COMMUNICATION

By Erin Earley

How the International Organization for Standardization's Recently Published Technical Specification 20559 Can Be Applied to Products

This summer, the International Organization for Standardization's Technical Committee in charge of standards for safety signs and symbols, ISO/TC 145, published a new Technical Specification, *ISO/TS 20559 Graphical symbols – Safety colours and safety signs – Guidance for the development and use of a safety signing system*.¹ This new international specification focuses on workplace safety sign systems. Yet many of its underlying concepts speak to various forms of safety communication meant to reduce risk in today's world – including product safety labeling. In this article, we again go behind-the-scenes with insight from Geoffrey Peckham, the chairman of ISO/TC 145 and long-time member of the ANSI Z535 committee (as well as the founder of Clarion Safety Systems and the original author of this “On Your Mark” column).

THE OVERALL OBJECTIVE: SAFETY COMMUNICATION THAT LEADS TO RISK REDUCTION

According to ISO/TS 20559's scope, it provides “recommendations and explanations on the practical application of safety signs to form a system of communication intended to reduce risk.” Safety signs and labels are basic communication tools used by organizations to lessen risk – but their risk reduction benefits are only fully achieved when these communication tools are designed correctly from the beginning, or, if already installed, replaced by signs and labels that meet the latest best practice industry standards. The new ISO technical specification, ISO/TS 20559, thoroughly describes the visual components that make up best practice “systems” of signage, making it an essential document for organizations to use to better manage risk.

“The substantial benefits of improved safety communication from the use of a systems approach to the specification and installation of safety signs is the key reason ISO/TS 20559 was written,” says Peckham, the document's principal author. “Bringing awareness of potential hazards and instructing safe work procedures is a major function of a system of safety signage, whether it's

on a product in the form of a ‘system’ of safety labels, or in a public or private facility in the form of a ‘system’ of posted safety signs and markings.”

THE GAP IN ISO 45001 – AND THE NEED IT CREATED

When it comes to identifying hazards and risks in the workplace, including those arising from pandemics, *ISO 45001 Occupational health and safety management systems – requirements with guidance* is the standard to look to. Published in 2018, ISO 45001 gives organizations an internationally standardized, systematic approach to managing and reducing risk in the workplace.

“ISO 45001 is the world's guidance standard for organizations seeking to provide a safer and healthier workplace. Pertinent to this article, ISO 45001 has sections titled “6.1.2 Hazard identification and assessment of risks and opportunities” [to reduce risks], and “7.4 Communication,” Peckham says, “As a member of both the U.S. TAG to the ISO committee established to write ISO 45001 (ISO/PC 283), and chairman of the ISO committee responsible for graphical symbols and safety signs (ISO/TC 145), I saw that ISO 45001 was dealing with a safety communication problem for which TC 145 had an answer.”

The dilemma was that TC 145's solution was contained in over a dozen standards, standards that establish international best practices for nearly every aspect of visual safety communication. The safety profession needed a single concise document that brought everything related to signage together so those responsible for managing safety and risk could:

1. Easily learn about best practice concepts related to the design and installation of safety sign and label systems, and
2. Be guided to the appropriate specific ISO standards that define each component of a systems approach to safety signs and labels.

As the appointed liaison between ISO/TC 145 and ISO 45001's committee (now ISO/TC 283), Peckham

1. At the time of writing, ISO/TS 20559 was expected to be published in August 2020.

recommended that TC 145's Subcommittee 2 write such a guidance document. The member countries of TC 145 agreed and ISO/TS 20559 was born as a new work item.

“As someone who has been writing standards for 25 years,” Peckham says, “I can tell you it's definitely more difficult to make things simple than it is to make them complex. The committee's objective, which I believe was achieved, was to provide the reader with a clear overview that links together the key ISO safety sign standards pertaining to visual safety communication, which include, but not limited to, product safety labeling, facility safety signs, evacuation route markings, escape plans, and industrial pipe and tank markings.”

EXPLAINING ISO/TS 20559'S SYSTEMS APPROACH

Importantly, ISO/TS 20559's Clause 4 states:

“In many ways, safety signs, labels and markings function as systems of visual information that provide permanent evidence to support an organization's safety training and safety policies...these systems of signage assist an organization to fulfill its legal requirements and demonstrate the organization's commitment to placing the highest priority on the health and safety of their workers and the public.”

The technical specification goes on to explain that there are four ways that signs can be considered “systems” of safety information.

1. Each sign is made up of a **system of standardized elements** (safety color coding, graphical symbols, specific shapes, and various layouts), all for the purpose of conveying a specific safety message.
2. Each sign belongs to a **system of standardized sign categories** meant to convey a certain type of safety communication (such as evacuation routes or the location of fire equipment).
3. Safety signs function as a **unique system** of signs that can be easily distinguished from other types of installed signs and markings in a facility.
4. When best practice ISO safety sign standards are used by an organization, each posted sign and marking becomes part of a **global system of safety communication**.

Peckham says, “Prior to ISO/TS 20559, those responsible for safety communication – like labels on a machine or evacuation guidance signs in a building – rarely thought of their task as part of a larger worldwide system of safety communication. However, that changed with this new specification; now a single document gives readers

the big picture view of how every safety sign and label component, when specified correctly, helps to make the world a safer place. To learn the details of designing and specifying each part of a sign system, TS 20559 points safety professionals to the specific standards ISO/TC 145 has written for each type of safety sign system component. This practical guidance is what makes this specification an essential reference document for those responsible for risk reduction.”

APPLYING ISO/TS 20559 TO PRODUCT SAFETY LABELS

When it comes to safety labels, generally speaking, safety engineers are advised to develop a holistic approach to their safety communication task. What this means is to consider the design and installation of a single product's labels as a task to create a uniform system of communication that correctly uses standardized best practices – and to apply that mindset throughout the entire product line. The following ISO/TS 20559 principles will help engineers employ a ‘systems’ approach to this initiative:

- Know your intended user/viewer of your product safety labels and then choose the right design components and layout configuration per the ISO 3864-2 and/or ANSI Z535.4 standards. Consistent, correct application of these standards' best practices should lead to increased comprehension by product users. And, increased comprehension should lead to fewer accidents and injuries, the goal of all safety communication.
- Use standardized elements and categories of symbols and labels to convey specific meanings. The three types of ISO safety symbols typically used in product safety labeling (warning, prohibition, and mandatory action) have their own specific meanings and design criteria (see Figure 1). In a similar vein, ANSI Z535.4 contains three distinct categories of safety labels, each with their own meaning (see Figure 2 on page 3):



Figure 1: ISO surround shapes for each of the three types of symbols typically used in product safety labels (top row) and examples of ISO safety symbols using the design criteria for each type of symbol (bottom row). For example, a warning symbol uses a yellow warning triangle with a black graphical symbol to identify the hazard.

- **Hazard alerting** labels are used to indicate potential personal injury hazards and how to avoid them. This kind of label includes a signal word (“DANGER,” “WARNING” or “CAUTION”) to indicate a specific risk severity level.
- **Safety instruction** labels communicate explanatory safety information (like lockout/tagout procedures).
- **Notice** labels communicate information considered important but not directly hazard-related (such as maintenance information).
- Understand that product safety labels should provide a unique system of communication on the product. Like safety signs in a workplace, each product or piece of equipment can be thought of as the location for a system of safety signage. This signage must distinguish itself from all of the other markings appearing on the product (such as branding, model designation, and function and control markings).
- Make sure your product safety labels work together to reinforce each other as a uniform system of safety-related communication. Using like symbology, layouts and phrasing are basic starting points for this uniformity. A more nuanced example is placing a multi-hazard safety label on your machine’s control station and then placing more specific, explanatory safety labels on the machine at each point of potential interaction with the hazards.

Remember that the first job in product safety is to identify potential risks and determine whether or not those risks can be designed out of the process or product. If not, then determine how best to protect people from harm, such as installing guards, mandating the use of PPE, and/or providing warnings that accurately inform and instruct people about the risk and how to avoid injury. ISO 45001 and ISO/TS 20559 were written to give structure to this thought process so it can be carried out in an effective, systematic manner.

RELEVANCE IN OUR COVID-19 WORLD

At the time of this writing, COVID-19 continues to impact people throughout the world. The pandemic has made us all more concerned about the need for continual improvement in mitigating risks.

Peckham says, “COVID-19 has reminded us that potential hazards exist to our individual and collective health and safety. We live and work in a world filled with risk. It may sound obvious, but only when we’re made aware of risks and how to avoid them can we reduce the possibility of harm to ourselves and to others.”

Whether it’s on a product in the form of a ‘system’ of safety labels, or in a public or private facility in the form of a ‘system’ of posted signs and markings, the goal is to bring about awareness of potential hazards – and to change people’s behavior in a positive way so that risks are avoided. 

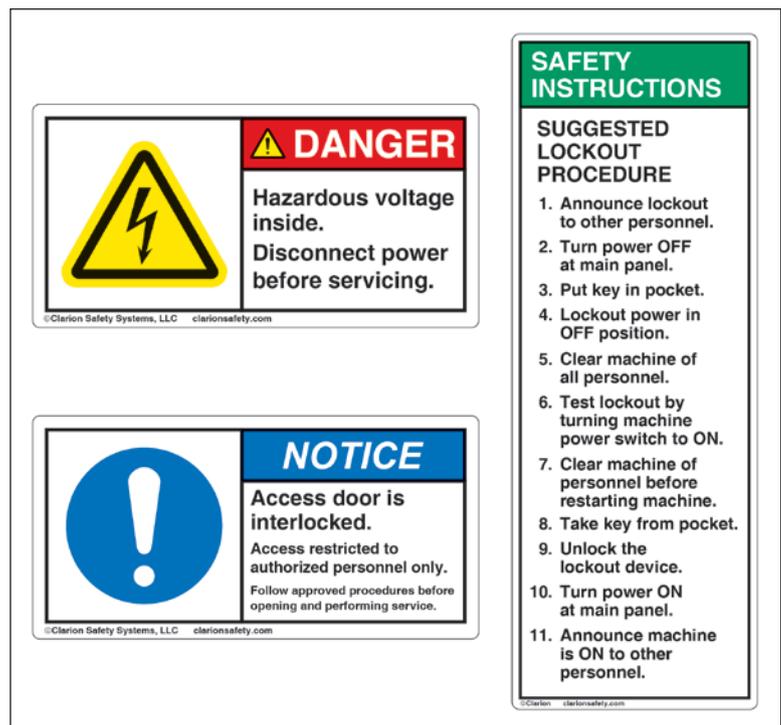


Figure 2: Examples of hazard alerting, safety instructions and notice labels

Erin Earley, head of communications at Clarion Safety Systems, shares her company’s passion for safer products and workplaces. She’s written extensively about best practices for product safety labels and facility safety signs. Clarion is a member of the ANSI Z535 Committee for Safety Signs and Colors, the U.S. TAG to ISO/TC 145, and the U.S. TAG to ISO 45001. Erin can be reached at earley@clarionsafety.com.