

The Compass

SPECIAL ISSUE



HAZARDOUS
PAGE 2
SIGNAGE
 HazCom
 signage
 program

PAGE 4
STANDARDS
 ANSI Z535
 safety signs
 and labels

DANGER
Fall hazard.
 Roof access limited
 authorized personnel
 only. Safety harness must
 be worn when hatch
 is moved.
PAGE 17
TECH BRIEF
 Rooftop
 electrical
 substations

Developing Effective Visual Safety Systems

An Interview with Geoffrey Peckham, president, and Allen Quigley, vice president, sales and marketing of Clarion Safety Systems LLC.

Clarion Safety Systems LLC, designs and manufactures safety signs, labels and markings using a standards-based approach. Clarion helps companies develop effective visual safety systems using products that comply with U.S. and international safety standards and codes.

Working with a multitude of industries, Clarion has accumulated many ways to visually communicate hazards with safety signs and markings.

Clarion's staff has worked directly with its customers' safety engineers with the purpose of designing safety markings that not only comply with standards, but are tailored to address very specific needs.

Colors, word messages and now graphical symbols are the worldwide language of safety.

In this interview, Geoffrey Peckham, president, and Allen Quigley, vice president, sales and marketing, explain how Clarion helps companies develop effective visual safety systems. They also provide an update on the status of ANSI Z535 and ISO/TC 145 standards committee projects.

continued on page 12





(Above):
Geoffrey
Peckham

(Right):
Allen Quigley



Management Practice Specialty:
Please provide a brief description of your professional backgrounds and of your roles of president and vice president, sales and marketing, for Clarion Safety Systems LLC.

Geoffrey Peckham: I started Clarion, initially Hazard Communication Systems, two decades ago. From the beginning, my role has been to focus the company on a standards-based approach to the design and manufacture of safety signs—an approach that brings a higher level of safety to facilities and product manufacturers, especially those that produce capital equipment. Colors, word messages and now graphical symbols—the worldwide language of safety—all figure into what we call the Clarion visual system, an all-encompassing approach to safety markings that takes into account the best practices in the field.

While our core business has long been product safety labels, we have taken our experience in developing effective safety signage for thousands of companies in 180+ industries and expanded into facility safety signs, process identification signs, emergency equipment location signs and photoluminescent technology.

This last area, photoluminescent safety markings, is especially interesting. We use this high-tech material for safety purposes to produce everything from escape plan maps to exit signs. Because it is a passive-energy product (the material absorbs and stores ambient light and then re-emits it when the lights go off), our UL 924-certified exit sign products replace electrical fixtures and, thus, tie in well with today's shift toward green energy and cost savings.

Early on, I became involved with the ANSI and ISO standards committees and I think some of my greatest impact has been there. I have been an active participant in both standards-writing bodies for 15 years and I currently chair the ANSI Z535.2 subcommittee on environmental and facility signs as well as the U.S. TAG to ISO/TC 145—the international committee in charge of standards for safety signs, labels, symbols and colors.

Allen Quigley: My background includes positions as a sales and marketing executive across many diverse industries, developing go-to-market strategies for national direct and indirect sales channels. As Clarion's vice president of sales and marketing, I am responsible for communicating Clarion's core competency to our existing customer base of more than 8,000 customers and to new customers in targeted markets like education, healthcare, construction, manufacturing, oil and gas and government. We also work with insurance carriers and safety consultants to assist their clients in minimizing

risk to workers and visitors and to meet codes and standards that impact their specific environment.

MPS: *Clarion's standards-based approach to visual safety systems takes the following factors into account: colors, formats, symbols, material performance and location. How did Clarion determine these five factors as essential to an effective visual safety system? What kind of research did Clarion conduct?*

GP: Every day for the last 20 years, Clarion's staff has worked directly with our customers' safety engineers with the purpose of designing safety markings that not only comply with standards, but are tailored to address very specific needs. For on-product warnings, the people with whom we work are typically product design engineers. For environmental and facility signage, we work primarily with on-site engineers and risk managers.

Clarion brings to the discussion the accumulated, practical experience of working with a multitude of industries. We have a tremendous amount of knowledge about the variety of ways in which particular hazards are visually communicated with safety signs and markings. This is important because in a very real sense, we provide the knowledge bridge from one company to another and one industry to another, which facilitates the ability to determine the best way to communicate specific safety information.

This form of practical experience-driven research provides a loop back to the standards-writing process to improve the standards when they are due for revision. Over the years, Clarion has been responsible for many of the proposals accepted by the ANSI Z535 committee for changes to be incorporated into the next revision of the standards. We have also been the primary author of several of the Z535 standards' informative annexes (sections that explain how best to use the content of the standards to better design safety signs and labels), and we were the principal author of the ISO standard for product safety labels, ISO 3864-2.

The practical application of the standards becomes the research used to continually improve the standards themselves so the definition of *best practices* continually evolves. The role our company plays in this process is one we enjoy because working with SH&E professionals is rewarding. We know the outcome of our efforts will positively impact people's lives. Reducing risk, protecting people, this is what we are about.

I should also mention that we are heavily involved in the research we conduct with our material suppliers. We have a special relationship with 3M that has given us key insights into materials performance and durability. This is important from a safety perspective because a warning will not do anyone good, no matter how well it is designed and researched, if it falls off, delaminates or fades quickly. Matching the right materials to the application is a critical part of the work that stands behind our products. Too much is at stake not to use the best materials you can from a durability perspective.

MPS: *How does Clarion ensure that its signs, labels and tags comply with U.S. and international safety standards and codes?*

GP: Because we are aware of every change that occurs in ANSI and ISO standards pertaining to safety markings, from initial proposal to final balloted standard, our customers can be assured that the labels and signs we design and produce will comply with the latest safety standards and codes. The standards development process is collaborative and involves all stakeholders. It is an open process, so everyone has access to this information.

However, it is more than information; it is putting that information into the context of the last 20 years of ANSI, ISO, UL, ASTM, NFPA, SEMI and IBC standards. Clarion works with all of these standards organizations and this broad scope of knowledge is a significant part of what we bring to the picture when it comes to defining a company's visual safety system.

In terms of the actual designing of labels and signs here at Clarion, it is a team-oriented approach between the customer and our design staff. The goal is not just to meet the standards. It is to exceed the standards and reach what we call "best practices" for all safety markings, be they product labels or facility signs. We also have new technologies, like symbols and new sign formats, that are light years ahead of the old "Danger: High Voltage" signs that are ubiquitous but not very useful.

Today's safety sign technology surpasses the 1940s-era signage that OSHA incorporated into its regulations back in the 1970s. The regulations may not have changed, but the complexity of our manufacturing processes and equipment, the expectation for safety, the workforce demographics and safety sign standards technology are all way beyond what the old-style signage can deliver. Best practices that the most recent standards define are best practices for a reason—they work.

AQ: On the standards, we also maintain an in-house library of the latest version of the key standards for any of our staff to consult. We have established a compliance department to review designs where there might be a question as well as to keep abreast of updated standards. Training is important, too. We have staff training weekly and the topic often includes standards updates or discussion about new standards in development or recently released standards and how they may impact all or a segment of our customer base.

MPS: *Clarion serves on the ANSI Z535 and ISO/TC 145 standards committees. What is the current status of these committees' projects?*

GP: On the U.S. front, all of the ANSI Z535 standards are in the middle of a revision process whereby change proposals will be accepted until June 30, 2009. The Z535 committee's subcommittees will then work on recommendations as to whether to accept the proposal. If questions come up, authors are asked to clarify their proposal. The subcommittees work in tandem with the main Z535 com-

mittee to arrive at each standard's draft revision, which is then letter-balloted to all committee members. The public has a chance to comment on the draft revisions with a completion date of public review by March 1, 2011. The committee then meets to form responses to each and every public comment. The final revised set of standards will be sent to the printer at the end of May 2011 with an expected publication date of Dec. 15, 2011.

The standards-writing procedure is a long and involved process. I once heard there are two things you do not want to watch being made—sausage and standards. It is true. Much time is spent arguing the merits of details that most people probably could not care less about. But as they say, "the devil is in the details."

Everybody on the ANSI Z535 Committee recognizes the important role these standards play in keeping people safe from harm and in preventing product and premises liability exposure. The ANSI rules for committee balance and procedure are strictly adhered to throughout the process and the result, I believe, has been an exceptional set of professionally written standards that provide the country with a national uniform set of design principles for visually communicating safety information.

On the international front, we spent the last 12 years writing ISO standards regarding the basic formatting of safety signs, product safety labels and egress safety markings. Now the vast majority of our time is spent developing and registering the graphical symbols to be used on safety signs. It is interesting work with many countries participating. Everyone in this field recognizes the need for a globally uniform language of symbols for conveying safety-related meanings.

In time, say a decade, I predict that just as with our highway service information signs, you will see a large degree of compliance in the U.S. with the internationally standardized vocabulary of safety symbols that the ISO committee I participate on is in the process of developing.

MPS: *Do you believe changing products and technologies will create new areas of standards development for product safety labels?*

GP: A-level standards are broad-based and cut across industries. In the safety markings arena, these are the ANSI Z535 and ISO 3864 standards. A-level standards serve the function of providing industries the general rules and design principles so they need not be reinvented.

B- and C-level safety labeling standards address a particular industry or product group. The SEMI S1 Guideline



Clarion has new technologies, like symbols and new sign formats, that are light years ahead of the old "Danger: High Voltage" signs that are ubiquitous but not very useful.

PHOTO COURTESY CLARION SAFETY SYSTEMS LLC

Clarion designs and manufactures product safety labels on a one-by-one basis with customers and their design or safety engineers. A label is modified when Clarion perceives a new hazard or risk. It can be an evolutionary process, very consultative.

is an example. This is a standard specific to the semiconductor equipment manufacturing industry that defines their rules for safety labels. I have been the taskforce leader or co-leader for this standard since 1998 and the guideline incorporates large sections of the ANSI Z535 standard as well as some of the best sections from ISO 3864.

However, I do not see many industries coming together right now to develop their own B- and C-level standards. ANSI Z535 and ISO 3864 have fit the bill for them and on a one-by-one basis, we help companies tailor these standards to meet their specific needs.

AQ: Frankly, one of the things driving change is not a change in products, per se, but changes in the workforce and changes in economic patterns. For example, our translated-label business is up dramatically. Also, we see many manufacturers who do business worldwide turning to symbol-only labels. It is vital in those cases to use the right symbol for the information intended to be conveyed and to ensure that the label or sign is sized correctly so it can be seen from the likely viewing distance. In some cases, we will design a new symbol to match a customer's specific need. Training is often required, too.

Do not forget the opportunity to address visual safety requirements across all aspects of their businesses. Being able to create a common look and message for product and facility safety, process control and security has a real benefit from a productivity standpoint.

MPS: *How has the harmonization between ANSI and ISO product safety label standards impacted manufacturers?*

GP: That is a good question. For years, the number one question our design teams, standards compliance manager and I received was, "Is there a single standard we can use worldwide for our safety signs and labels?" And the answer was always "no." However, I am pleased to say that since Clarion's proposals regarding the incorporation of international design elements into the ANSI Z535 standards were accepted and published in the 2007 Z535 revisions, today the answer to that question is "yes."

As a company, we have found that many of our customers have eagerly adopted a harmonized approach to their safety signs and labels because:

- it helps meet the needs of international product users;
- it typically includes the use of international symbols and they want their safety messages to be conveyed beyond language and literacy barriers;

•they believe in the idea of fostering a global language for communicating safety. We live in a global economy infused by an increasingly global culture and safety concerns transcend national boundaries.

So the short answer to your question is yes, the impact of having harmonized standards in the area of safety signs, labels and markings has a dramatic impact on manufacturers as they meet their specific market requirements.

AQ: The new Z535 and ISO standards give our customers a full menu of options from which to choose. In the U.S., most customers still use a word message, as well as a symbol, to communicate safety information about a hazard. Internationally, some companies seek translated or multilingual labels, while others rely on the symbols alone. The choice should meet the needs of the industry and the product users, wherever they might be.

MPS: *Clarion provides safety signs and labels in 35 different languages and dialects. What steps should employers of multilanguage worksites take when implementing a visual safety system? How can they best ensure that all bases are covered?*

GP: The central goal is to keep everyone safe, regardless of what language they speak or their literacy level. I would say we have seen two effective approaches.

The first is to have a symbol or a symbol plus English text on the warning, with the label placed in the area near the hazard so the information is communicated at the proper time and place so avoidance action can be taken.

The second approach would be to augment or supplement the symbol and English text with additional text in the language spoken by the anticipated operators, if it is a multilingual workforce. The translation could be incorporated into the printing of the same sign or label as the English text, or it could be on a supplemental sign or label that is placed next to the English-text sign/label. Either approach works for U.S. facilities and for products intended for domestic or export use now that we have harmonized formats that are accepted by both U.S. and international standards.

This is not as difficult a task as it might sound, even knowing that your workforce might change over time. Our country's factories are filled with immigrants of all different nationalities and with our state-of-the-art print technology, multilingual safety signs are not difficult to produce.

OSHA is increasingly looking at the need to protect workers of all backgrounds in our workforce. Whether in construction or in factories, the need for multilingual, symbol-based communication is becoming more and more evident. I do not think it is a stretch to say that we will see more activism from OSHA and Washington under the new administration, making it even more critical that these issues related to safety signage are handled correctly.

MPS: *How does Clarion measure the effectiveness of*

its safety signs, labels and tags? How does it know when to modify or to completely overhaul its designs?

GP: Clarion designs and manufactures product safety labels on a one-by-one basis with customers and their design or safety engineers. A label is modified when they perceive a new hazard or risk. It can be an evolutionary process, very consultative. We have more than 40,000 designs in our library, but we do not have all of these labels sitting on a shelf. Most of our labels and signs are printed when a customer orders them, so a design change can be made responsively.

Effectiveness can be a strange word. When a plug is put into a receptacle and electricity passes through it, it has done its job. With safety signs, labels and tags, it is tougher to measure. They are designed to alter behavior, but the measurable result is the absence of harm, the avoidance of an accident. The effectiveness of our safety signs, labels and tags is measured by the job they perform for our customers, day in and day out.

AQ: It is a combination of knowing and applying the latest standards and weaving in the specific industry practices and approaches. When a standard changes, we alert customers to this fact, rather than reprint an old design.

MPS: *What new hazards have emerged during the last 5 years for which Clarion has designed safety labels?*

GP: Think of practically any industry and we are working in it to design better safety signs and labels to communicate critical safety information. Most recently, I would cite wind turbines, semiconductor manufacturing equipment, battery cells for hybrid cars and various projects for the high-tech medical instrument/equipment industry as examples of hazard mitigation projects we are participating in that have emerged recently. Many of the hazards for which we are developing safety signage are for facilities and products that did not exist ten years ago. Not to sound gruesome, but it is quite fascinating to see new ways in which people can get hurt. The intent, of course, is always to create signage systems that prevent such accidents from ever occurring.

The role & scope of the ANSI Z535 standards

These standards provide a uniform and systematic approach for the visual layout of safety signs, labels, tags, barricade tapes and now also safety messages found in instructional materials such as owners' manuals, assembly instructions, use and care guides, etc. A uniform system provides the best opportunity for maximum recognition and understanding of important safety information.

AQ: Skylights. Many people are killed each year in accidental falls through skylights on the roofs of apartment buildings or schools. We learned of this when a large property and real estate concern approached us to help warn tenants of this issue. We developed both a label for the skylight and a sign for each roof-access point using a symbol our design and standards compliance team created. Besides the symbol, we have an English and Spanish word message about the hazard. It is a substantial liability issue.

MPS: *What guidelines does Clarion provide for the proper use and selection of photoluminescent materials in facilities?*

GP: I chaired the expert panel for Local Law 26 in New York City and, more recently, I had input on the Canadian guideline standard that just came out for the installation of photoluminescent egress markings. As a company, we have developed a Clarion best-practices guide for this topic that takes into account all of the new standards, many of which we had a key role in writing. I have found this field tremendously interesting, especially the work with New York City's Buildings Department.

The challenge after Sept. 11, 2001, was to write a groundbreaking building code that would accurately define the size, type and location of components for directional photoluminescent egress systems in the stairwells of all commercial skyscrapers in the city and to do this in one year so it could be implemented in the next.

The impetus behind developing this new set of building code provisions came as much from the 2003 black-out (when many backup lighting systems in stairwells failed) as it did from the terrorist attacks (where the photoluminescent markings installed in the WTC towers in 1993 played a significant role in getting many people out of the buildings quickly and safely). Because of my standards work on this subject with ISO a few years before, we were able to bring considerable expertise to the table when it came time to write this new code. All in all, it was a fascinating project.

What we have done with the Clarion guide on this topic is bring together the key elements of the principle standards in this field to illustrate the best-practice options that go into designing an effective photoluminescent egress route marking system. You need uniform approaches, high-quality materials and adhesives, proper installation procedures and a degree of training for the building's tenants or occupants. Done right, these systems will save lives by helping people get out of buildings in the event of a disaster.

MPS: *What advice do you have for those who are implementing a visual safety system for the first time?*

GP: First, find a reliable partner. It is much more complicated than it may seem on the outside. There are many standards to review. It will take much patience and time to wade through the information and to determine

what fits your company best. Imagine being the manufacturer on the witness stand in a case where someone has been injured by your product and you tell the court, “No, I am afraid we just were unaware of that particular safety sign standard.” The plaintiff’s lawyer will have a field day with such an admission and your company could be put at great risk.

The job must be done right. Not just with products, but with facilities too. An emerging legal negligence concept called “the failure to plan” is something building owners and managers should pay attention to. Think of Hurricane Katrina, Sept. 11, 2001, or the latest quality and process control disaster that happened in the peanut factory in Georgia, which caused many deaths and substantial financial losses to a whole host of food manufacturers. Having in place the right visual safety system (which includes process identification and control procedures) is an integral component of reducing risk.

The long and the short of it is that our society is demanding an ever higher level of safety and security, both on the job and in using products that one might personally purchase. The March 2009 Supreme Court decision against pharmaceutical giant Wyeth that essentially concerned its failure to update a drug’s safety label with new information is a prime example of how the U.S. public and courts will increasingly refuse to put up with the loss of life and property that can occur if a company fails to live up to its responsibility to warn.

My overall point is to say that it is important for every company to put their best people on the critical task of implementing a visual safety system. Finally, if you need help, ask for it. We are always willing to be a part of the process of achieving the goal of making the world a safer place. ☺

Geoffrey Peckham, *president of Clarion Safety Systems LLC, has been a key figure in bringing about the harmonization of U.S. standards and international standards for safety labels and signs. He is an active member of the ANSI Z535 Committee and chairs its Z535.2 subcommittee on Environmental and Facility Safety Signs. He is also chair of the U.S. ANSI Technical Advisory Group to ISO/TC 145 Graphical Symbols, the international body in charge of standardizing safety signs and symbols.*

Allen Quigley, *vice president, sales and marketing, is responsible for Clarion Safety Systems LLC’s national account and channel sales organizations as well as for its customer relations and marketing departments. With more than 25 years experience, Quigley directs Clarion’s mission of providing their customers with an innovative approach to visual safety.*

HazCom Signage

continued from page 2

specific OSHA or ANSI standards because there may be wording requirements, such as Danger: Permit-Confined Space.

Double-check definitions for:

- Danger** (white on red on black): Indicates an imminently hazardous situation, that, if not avoided, could result in serious injury or death.
- Caution** (black on yellow): Indicates a potentially hazardous situation, that, if not avoided, may result in minor or moderate injury.
- Warning** (black on orange): Indicates a potentially hazardous situation, that, if not avoided, could result in death or serious injury caused by equipment or machinery.
- Notice** (white on blue): Indicates a statement of company policy directly or in directly related to the safety of personnel or protection of property.
- Safety** (white on green): Indicates general instructions relative to safe work practices, reminds of proper safety procedures and PPE and may indicate the location of safety equipment.

Many fail to do this and put into place a designation that is wrong and does not accurately relate to the hazard for which the sign was intended.

The five categories above will generally have black lettering for the words in the body of the sign. Usually, the bolder and bigger the size of the letters, the better for long-range visibility and understanding.

TYPE OF MATERIAL & HOW SIGNS ARE MOUNTED

The type of material used for a sign and how and where a sign is mounted are important.

Determine the surface to which the sign will be attached. Ask the following questions:

- Is the surface rough or smooth?
- Will you need heat-resistant signs or labels?
- Will you need long-term, UV-protected signs?
- Will the signs be exposed to water treatment or other harsh chemicals?
- Will the sign designate an entry point for a confined space? If so, do not mount it on the manway or door opening. Mount it above, below or to one side for continuous visibility.
- Will the sign be in a high-traffic area? If so, install metal and reflective.

Initiating a common-sense approach to an effective HazCom signage program will save you and your managers time and money and will minimize your liabilities.

What are you waiting for? Start using these practical common-sense steps for an effective, value-added HazCom sign program. ☺

D. Michael Parker, CSP, *is a regional safety and technical training manager for NRG Energy Inc. He may be reached at michael.parker@nrgenergy.com or (225) 718-3710.*