

# How Do We **See** Safety?

In previous columns, Landis "Lanny" Floyd's has encouraged us to think more broadly and deeply about the integration of safety principles into our personal, professional, and organizational activities. In the coming months, we will continue with this theme.

Five years into the new century, 60 months into the new millennium, we live in a time when natural disasters, global conflicts, and economic uncertainties abound. Hazards can seem physically unavoidable and common, like wind, water, and electricity. Stories of horrible loss and destruction are shared worldwide.

As injuries and deaths mount from events seemingly beyond our control, we can be with victims almost in real time as pictures roll on the television, the Internet, or cell phones. We can view tragedy so readily that actual safety failures take on the quality of a made-for-TV movie, possibly entertaining more than disturbing us.

Safety can seem invisible, like an abstract intangible, existing without form. While failures may be high profile when damage is large, only rarely does safety make the evening news—often under a story line that runs "they were lucky to be safe from..." the hazard noticed on that day.

Rather than be tempted to adopt an attitude that "there's a lot of luck in safety" or "there's nothing we can do about" the hazards around us, one of our challenges is to transform "safety" from a random and formless, almost unreachable, abstraction, to a solid essential that we use in how we live. To transform safety from abstract to essential, in this and future columns, join me in addressing the question, "How do we see safety?"

The phrase "seeing is believing" suggests a close linkage in our thinking and awareness between visual information, knowledge, and belief. More importantly, what we believe we know can sharply define how we value safety. For example, suppose in our industrial applications that we know we can do a routine task quickly and easily without "added safety." Here by default the value of safety is low. We can especially rationalize this low value if we can say, "I know this will work because I've never seen anybody get hurt doing this task."

> "IT'S NOT WHAT YOU DON'T KNOW THAT HURTS YOU, IT'S WHAT YOU KNOW THAT AIN'T SO!"

On the other hand, if we actually experience through sight that a routine job done quickly and easily without added safety has resulted in a failure, injury, or death, we can reasonably move the value of safety higher, as suggested by the comment, "The last guy I saw who tried doing this melted his screwdriver and burned a hole in the switchboard...I don't want to go there."

Let's think about Mark Twain's quote, "It's not what you don't know that hurts you, it's what you know that ain't so!" Twain wrote long before the communication strategies we now have, like mobile phones, digital pagers, instant messaging, sat-com link-ups, online one-lines, and Web meetings, were invented. He was commenting on how firmly held beliefs can be wrong and, in being wrong, can create jeopardy.

Or, stated another way, "if what you know is wrong, what you know can get you into an unsafe condition." Twain's observation informs an illustration of the interplay between the visual and what is "known" as it relates to the common problem of electrical failures resulting in service interruptions and injuries.

Of course, most people readily appreciate that the "energized" industrial electrical scenario cannot be "seen" as powered on or off with the unaided human eye. Without testing, there is no way to recognize the presence of voltage. Yet this appreciation is often lost from active view during routine tasks.

Debriefing after electrical failures has shown that, in many cases, workers, supervisors, contractors, and engineers involved at the time had a belief, or thought they knew, that the task being done around the failure was being done while safely de-energized, as in "I know this is powered off so now I can..." Decisions flowing from incorrect knowledge or belief resulted in a hazardous sequence of actions, ending with electrical failures. In the

debriefed failures, the involved workers, supervisors, contractors, or engineers typically did not rely on a physical way to visualize the electrical hazard aided by testing technology.

In the electrical scenario, it is impossible understand "what you know ain't so" without testing, which is why testing is considered key to successful electrical operations. Testing technology creates visual safety information—numbers on a meter, color on a proximity detector, readouts from an LCD monitor—that is essential to doing electrical tasks well.

Beyond electrical scenarios, the interplay between the visual and known can extend to further industrial application safety examples, including:

- process safety, as in volatile concentrations and explosion limits
- confined space safety, as in oxygen levels in entry into hypoxic environments
- traffic safety, as in the relationship between speed and collision avoidance
- radiation safety, as in contamination detection.

Each of these application examples demands technology to assist people in recognizing boundary conditions consistent with safety. Devices such as air samplers, oxygen meters, speedometers, and gamma counters communicate visually and make visible the safety information needed to manage hazardous situations, which are not visually observable by an unequipped worker.

We can argue that how we see safety—safety's optics—can be limited by our natural physical abilities and advantaged by our innovation in use of technologies. From sensors to signal processing, nano- to outer space, metrics to multimedia, our technical ability to create and communicate visuals significantly advances our living at the edges between the safe and unsafe.

While deploying our technologies to the edges, we are reminded of Twain's quote, and remember that as people we are probably not fundamentally different in our make-up from those who lived and worked a few generations ago.

Next time, we will focus on how we measure safety. Let's explore safety metrics and evaluate if these show us what we want to know. ***IAS***

## President's Message

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### Standards Development Working Groups

The IAS has more than 30 standards under revision or development. There is a working group for each of these standards. Each responsible working group addresses the technical content as well as mange a network of interested parties who contribute their expertise by reviewing and commenting on proposed revisions. Visit the IAS homepage and select "Standards," then "List of Standards."

### Continuing Education Tutorials

Technical conferences and regional chapters promote continuing education by offering tutorials. More than 20 are offered each year as part of technical conference, and many more through the regional chapters. Opportunities for involvement include, planning, organization, and delivery, in addition to attendence. Most offer continuing education units (CEUs) for people needing accredited continuing education for maintaining professional licenses and certification. Visit the IAS homepage and select "Products & Services," then "Tutorials."

If you are not currently involved in these activities, I certainly encourage you to explore the possibilities. Browse the IAS Web site, contact the IAS members noted in leadership positions on the various activities, attend a regional chapter meeting or technical conference, and become actively involved in the technical and professional opportunities provided by the Society. ***IAS***