Warning Placards versus Safe Practices –
Redefining Safety Hierarchy for Process Industries

Sunil D. Lakhiani*, Delmar R. (Trey) Morrison

Exponent, Inc.
4580 Weaver Parkway, Suite 100
Warrenville, Illinois 60555
* slakhiani@exponent.com

ABSTRACT

The traditional safety engineering hierarchy methodology for hazard control is frequently used as the rule for equipment manufacturing and design. The safety engineering hierarchy has been standardized through ANSI and ranks the relative strength of hazard control strategies. The strongest/most effective hazard control strategy, when possible, is to design out the hazard and the weakest intervention is to warn of the hazard (e.g., through placards). This methodology is often simplified as a three-stage, design-guard-warn approach and may sound logical in theory. However, its application in the process industry as the sole method for controlling hazards ignores the roles and responsibilities of some of the major contributors to injuries and operational failures in complex processes—the employees and the employers. Instead, such an approach is often abused in hindsight to divert the responsibility for individual incidents away from facility safety management systems and towards manufacturers of machinery and equipment.

One of the major pitfalls of applying the safety engineering hierarchy approach in the process industry is its failure to include employee training and safe practices as stages for risk mitigation and the over emphasis on communicating hazards through warning signs and labels. This paper compares the effectiveness of employee training, proper maintenance practices, and compliance with effective workplace safety policies with the traditional approach of hazard communication through safety placards and signs. In particular, this paper presents bases for modification of the traditional safety engineering hierarchy approach through examples of operations requiring confined space entry.