LEGAL ISSUES | SAFETY ZONE

DEMOLITION

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NATIONAL DEMOLITION ASSOCIATION
Making Way

The Swiss Cheese Model

The climate and culture of safety does not need to fall through the holes.

By Joshua Estrin

Construction is a hazardous industry. Even if an injury isn't fatal, the results can be catastrophic. A worker can be left a paraplegic or quadriplegic, and injuries can cause cognitive and psychological challenges as well. Subsequently, while not a new idea, safety as reflected in unsafe acts and unsafe conditions both fall under the larger umbrella concept and question: How do we keep the worker safe?

Construction safety management and, more specifically, the impact of the culture and climate of safety at the construction work site, is undoubtedly a large part of the answer. It endeavors to not simply be reactive, but rather to explore and codify the means and methods by which to create an environment where the construction worker can do his or her job with an understanding that, while they have chosen to work in an inherently dangerous industry, they do not need to be put in harm's way.

To that end, it is also not a new belief that safety programs — when conceptualized and implemented properly — do improve workplace safety. As recently as 2013, the concept of multilevel safety culture and climate models, constructs and assessment tools have underscored the reality that such programs are not simply lip service; they have the ability to impact organi-

zational safety from the top down and bottom up.

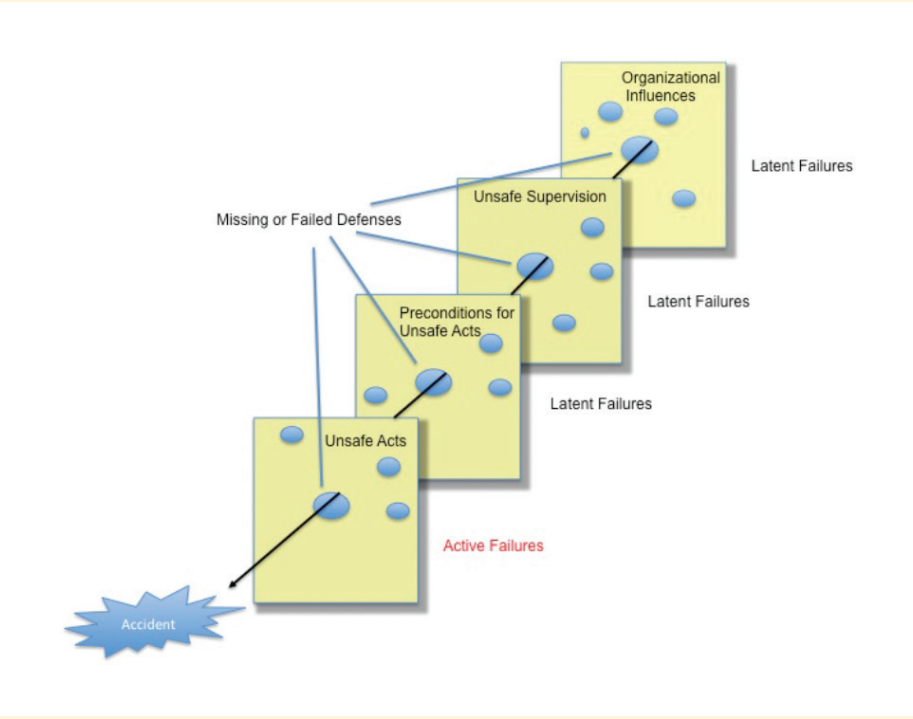
Therefore, it appears that the answer to the question "How do we keep the worker safe?" need not be an ambiguous one. In fact, it must be laser-focused. Safety cannot simply be a priority; it must be *the* priority. Safety performance established against the backdrop of a robust safety management system involves a culture and climate of safety in which controlling and monitoring safety performance is a daily routine.

Macro-level systems research or research that seeks to specifically examine the impact of the culture or climate of safety at the construction work site pays close attention to the impact decisions that the highest management level has on the frontline worker. These studies, although abundant, carry a common theme: accident prevention or, more specifically, a proactive rather than reactive approach to safety.

One such model — the Swiss Cheese Model — was initially developed by James T. Reason in 1997. This model acts as a foundation for further analysis, but more than two decades later, it still offers great insight into accident prevention and causation at the macro level and highlights the relationship and interaction between organizational policy and the ultimate safety of the frontline worker.

In short, the focus moves away from the individual worker and the specific accident; instead, it looks at the event systemically. Clearly, this type of research, while valid, deviates from a more traditional explanation of accidents and instead accepts the complexity and multilayered reality that the construction work site is a system constantly in a state of fluctuation. As such, education, intervention, monitoring and evaluation must continue to address this dynamic state accordingly.

THE SWISS CHEESE MODEL



Source: James T. Reason

Instead, the culture and climate of safety and the integration of the Swiss Cheese Model allow management the opportunity to preempt accidents by proactively exploring any and all organizational influences that may slip through the holes.

As recently as 2013, research continues to be built upon the foundation of the Swiss Cheese Model, understanding that any discussion regarding safety measures and the culture and climate of safety cannot simply be based on retrospective data or lagging indicators such as fatalities, lost time accident rates and incidents, and instead must embrace functional strategies that can be operationalized to assess the degree to which organizations have the ability to properly evaluate, on a day-to-day basis, efficient and effective safety means and methods.

How do the Swiss Cheese Model and safety work collaboratively to protect the health and well-being of the construction worker? The answer lies in understanding accident causation.

In his book, "Human Error," cognitive psychologist and researcher James T. Reason offered a theory of accident causation as follows:

- Accidents involving complex systems are often the result of the grouping of multiple contributing factors.
- Contributing factors can occur in a wide range of domains from unsafe acts, including organizational errors such as a lack of a culture of safety.
- As opposed to the active errors that occur at the time of an incident, many contributing factors are in fact latent errors. These latent errors lay dormant, waiting for an active effort to turn them into a trigger for an incident.
- Human beings, lacking unlimited concentration, focus and memory will always be at risk as a result of operational errors; therefore, properly designed systems must account for this limitation and be specifically designed to ultimately keep these errors from resulting in an actual incident/accident.

Understanding that scientific research needs to be applicable, Reason took the next step in his integrated accident causation approach, creating a highly effective infographic/visual that has come to be known and widely accepted as the Swiss Cheese Model.

This visualization of accident causation against the backdrop of a culture and climate of safety allows for a deeper understanding and greater perspective on the root cause of an accident. Rather than simply placing blame or pointing fingers, the Swiss Cheese Model offers user-friendly and immediately visible possibilities for not only why the accident occurred at the micro level, the climate of safety, but, more importantly, how the accident was allowed to occur at the macro level, the culture of safety. Instead of focusing simply on the worker, the Swiss Cheese Model demands management to peel back the layers of accident causation, letting go of the historical tendency to blame the worker, using words such as "careless," "reckless" and "stupid" — all of which are misleading, as they cannot be measured and therefore have no place in either a proactive or reactive investigation/exploration of any accident.

Instead, the culture and climate of safety and the integration of the Swiss Cheese Model allow management the opportunity to preempt accidents by proactively exploring any and all organizational influences that may slip through the holes.

What makes this model and its contribution to construction safety so profound is the understanding that an accident is highly unlikely, if not impossible to occur, without a series of previous systemic failures: the culture of safety. These failures may not be initially obvious, but they do exist — often dormant — and, as such, demand a commitment on the part of management to sustain a level of vigilance that will allow the unseen yet hazardous components of a weak culture of safety to be highlighted and, in turn, addressed and corrected long before an accident need occur.

While it may seem easiest to find cause and reason for blame at the micro level, the climate of safety, the construction and demolition industries must collectively make a decision to be progressive rather than retrospective for true change to occur. It is imperative to recognize that every system has holes, but these holes — if not ignored — can be properly and systemically addressed to create a strong culture of safety, which leads to a strong climate of safety. In an industry as hazardous as this one, understanding the need for a strong safety process design is not a luxury but a necessity, as it provides adequate, multilayered defenses that can and will keep the worker safe. D

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