

Special vs. Common Causation

Work processes are designed to produce products or services, not cause defects or injuries.



An accidental workplace injury, just like a manufacturing defect, is an undesired and unplanned outcome of a process.

W. Edwards Deming, one of the fathers of manufacturing quality control, explained the difference between special causes and common causes. He was speaking of the causes of defects in manufacturing processes.

He explained that sometimes someone does something obviously wrong, a machine malfunctions or raw material has an obvious flaw. When such an event causes a defect in manufacturing, that defect has a special cause. However, sometimes everyone performs normally, machines function as usual, raw materials meet specs and still a defect happens.

Such defects, according to Deming, have common causes. In other words, the cause of the defect is common to the process. It is built in and does not require outside intervention to make it happen. According to Deming, such defects may not happen frequently, and often may not be accurately assessed or diagnosed.

Think how this dichotomy applies to safety. An accidental workplace injury, just like a manufacturing defect, is an undesired and unplanned outcome of a process. Work processes are designed to produce products or services, not defects or injuries.

The causes of workplace injuries can fall into the same two categories as the causes of manufacturing process defects. A worker can do something wrong, a machine can malfunction or irregular events of other kinds can happen. When these things result in accidental injuries, such injuries could be said to have special cause. However, when organizations investigate accidents and fail to find irregular conditions or behaviors as root causes, they do not always consider the alternatives. It is at this level of investigation that Deming's observations can help improve safety.

Three Practices That Hamper Efforts

There are three heritage practices that hamper the application of common-cause thinking in many safety efforts. Before we look at the solution, consider how one or more of these three might impact your safety thinking and need to be addressed before this common-cause approach can help.

The first is the tendency to manage safety by exception. As long as the lagging indicators are okay, many organizations simply crank the safety activities. Once an accident or serious near-miss occurs, the reactive mechanism fires up.

Investigation and corrective actions are aimed at preventing recurrence of the problem or problems that were viewed as root causes of the event. Accident investigations often are focused on finding the exception to the rules, the failure to follow procedures or equipment malfunctions. If such exceptions are not found, corrective actions often are skipped or generalized or some new program is adopted to improve the overall safety culture. Management by exception often stalls if exceptions are not found. Such methodologies often lack any way to address issues embedded in the processes.

The second practice is the tendency to look to place blame. Blame often is attached to exceptions and thus, the methods often are similar. Who or what failed to perform correctly and caused this accident?

Blame also permeates many approaches to behavior-based safety. Observers are taught to confront anyone not being safe. The assumption is unsafe behavior is a major cause of accidents and such



behavior is within the control of the worker. The observations are aimed at seeing and intervening in unsafe acts, thereby reducing risk.

Such approaches often fail to determine or address organizational and cultural influences on these behaviors. They also assume stopping the unsafe acts will result in them being replaced with safe work practices. Such assumptions tend to miss the common causes of both conditional and behavioral risks.

The third is the tendency to overlook or underestimate low-probability risks. I once had the corporate

vice president of safety at a large company ask me how employees could work incident-free for years, then have an accident and when asked what they did differently to cause the accident, responded that they simply were doing their jobs the way they always did them.

His first thought was they were covering up their mistakes out of embarrassment or fear. He is not the only one confused by low-probability risks. A worker who takes a one in 500 risk once per week theoretically can go nine years or more before having an accident. In our consulting work, we regularly find low-probability risks play an important but largely misunderstood role in accidents.

Low-Probability Risks

Low-probability risks often are embedded in conditions, processes or standard operating procedures. This means a worker can obey all the rules, follow all the procedures, wear all prescribed PPE and still get injured. If you simply look

for the exception or blame, you almost always miss these types of issues.

Such issues are the epitome of what Deming labeled as common causes. He argued if you simply tried to inspect products at the end of the production line for defects, you would not find the causes of the defects because they occurred upstream in the process. He encouraged manufacturers to examine their equipment, their processes and their workers' behaviors to find where the defects were originating. Once these were found and addressed, the inspection process would confirm fewer defects occurring each day. He also developed the math to validate that such approaches actually were improving the quality of processes. That field of math now is called statistical process control.

Deming helped many organizations expand their thinking about quality and find the causes of defects that both were special (caused by outside issues) and common (caused by internal issues) to their manufacturing processes. Taking

the same approach in safety, we can divide accident causation into the two categories of special or common cause. We can continue to look first for the exceptions or the blame, but if we fail to find them we must look for those common causes built into our processes. Entirely too many accident investigations categorized as "no cause found" or "acts of god" can be identified by thinking about accident prevention like Deming did about preventing defects. **EHS**

Terry Mathis, founder and CEO of Pro-Act Safety, has served as a consultant and advisor for top organizations the world over. A respected strategist and thought leader in the industry, Terry has authored four books, numerous articles and blogs, and is known for his dynamic and engaging presentations. EHS Today has named him one of the "50 People Who Most Influenced EHS" four consecutive times. Terry can be reached at info@proactsafety.com or 800-395-1347.

True Safety

Competitively priced for any budget.



SECUNORM 175
175001

The Secunorm 175 is a semi-automatic retractable safety knife that features a double edge blade. This means all four corners of the blade can be used providing safety and maximum economy.

www.martorusa.com | info@martorusa.com | 920.662.9646

MADE IN
SOLINGEN, GERMANY

martor
USA

CIRCLE 107 ON READER CARD OR LINK TO THE VENDOR ONLINE AT WWW.EHSRS.BIZ/61806-107