

Safety is Not a Gamble: Risk Management Lessons from the Poker Table

**Ron Gantt, CSP, ARM, CET
Safety Compliance Management, Inc.
San Ramon, CA**

Introduction

If you think about it, it is somewhat ironic that this year's ASSE Professional Development Conference is in Las Vegas, the gambling capital of the world. Forget the fact that the safety profession is not usually associated with being a profession of party animals that would thrive in a destination like Las Vegas. The fact that a conference where serious discussion about how to protect people and control risks takes place within a close proximity to thousands of people who are making risky decisions that will adversely affect them is kind of funny (if not sad).

Even still, there is much that the safety profession can learn from Las Vegas. You could fill textbooks on the risk decisions and underlying psychology that people make every day at the gambling tables. However, at a more basic level, the games themselves that people play, if properly understood, are excellent teachers on some very important topics, such as risk and how to manage it.

Take for example the card game poker. Poker has been a staple at gambling halls across the United States and the world for a very long time. In the last decade poker, primarily the form of poker known as No Limit Texas Hold 'Em, has dramatically risen in prominence, even making appearances in prime time television and turning some professional poker players into veritable sports stars.

In contrast to almost all other games found in a casino, in poker you are not playing against the house, but rather against the other players at the table (the casino takes an agreed upon amount of money from all players to make its money). In this way the game of poker gives the player a significant amount of influence over the outcome. Unlike a game like blackjack, where the rules of the game are designed to give the casino a statistical edge in most cases, thus ensuring that the player will lose in the long run, in poker the decisions the player makes, especially as they relate to risks, dramatically influence the outcome.

In this way, poker is a lot like risk management. The decisions safety professionals and risk managers make can drastically affect the level of risk an organization and its employees face. Further, many of the decisions made by winning poker players at the poker table are similar in concept to the decisions that safety professionals make to keep organizational risk management

systems from becoming just another gamble. This article outlines five key concepts regarding risk management that poker players and safety professionals must understand to be successful both at and away from the poker table. The goal of the article is not to be comprehensive, but to introduce new ways of thinking about both poker and risk management that are required to be successful in both endeavors.

Concept #1 – Poker is a Skill Game, Determined Over the Long Term

This first concept may be hard to accept, given that poker is played in casinos and even though most casino games are games of chance, not games of skill. However, poker is different than any other game in the casino, primarily because you are not playing against the house, but against other players (Long story, short – the house doesn't play games against you that it can lose in the long term).

The bottom line though is that calling anything a skill game or a game of chance is misleading. Everything we do is influenced by both skill and chance. To more fully understand this we need to understand a little bit of math (don't worry, it's not hard math). Nobel laureate Daniel Kahneman once was asked what his favorite math equation is. His response was simple:

$$\text{Success} = \text{Talent} + \text{Luck (Kahneman 309)}$$

His point was that in everything we do is influenced by what we do and other random variables. Let's use an example – waking up on time in the morning. This seems like something that should not be greatly influenced by luck, but what if a fault in the alarm system of your alarm clock doesn't go off? What if your power goes out and disables your alarm? Certainly these things are determined by luck if you really look at them. The alarm system you use was designed by someone. The power grid is controlled by the local utility. But we have no direct control of these variables and we often cannot predict when they will affect us. Therefore we tend to refer to the influence of these types of things as luck or chance.

With this in mind, in the game of poker is a game that is more influenced by talent than by luck. Certainly there's luck involved. You can't control how the dealer shuffles the cards and you can't control how other players play their cards, but you can control how you play yours. This high degree of control allows good players to tip the scale, overcoming the luck factor and allowing many players to consistently win.

That being said, if you're a winning player, does that mean you win every hand you play? Unfortunately, this is not the case. On any given hand the amount of luck is significant enough to affect the outcome. So, for example, in Texas Hold 'Em, the best possible starting hand is a pair of aces. But even a pair of aces against another random starting hand will lose 15% of the time. The key though is to understand that short-term results may exhibit variance, losers may win and winners may lose, but in the long run the talent side of the equation will win out for those that bet on the winner. For this reason, winning poker players commit themselves to a process of continual improvement, constantly looking for opportunities to grow as players

In the same way that poker is a game of skill where the outcome is affected by decisions made on a day to day basis and the outcome will become evident in the long run, **risk management is a process that requires skilled decision makers to make the right decisions on a day to day basis, even though the outcomes of those decisions may not be evident for some time.** In the same way its hard to convince someone they made a bad decision if they actually won the hand, the safety profession is a hard business because we often have to convince people that something they've done many times without incident could lead to an incident.

Obviously this concept puts some emphasis on choosing the right measures for both poker and risk management success (see Concept #3). However, what Concept #1 primarily teaches us is that success is within our grasp. **Safety is a skill game.** What will give us success in achieving our risk reduction goals is good decision-making. Good poker players understand that each opportunity to make a decision gives them an opportunity to win, regardless of the result of previous decisions. In the same way, each decision-making opportunity in risk management is an opportunity to lower organizational risk. Furthermore, because it is talent that will ensure success in the long term, safety professionals must seek opportunities to expand and grow their talents. We never want anyone to get hurt because we didn't try hard enough. Safety and risk management is such a broad field, there's always more to know and grow into.

Furthermore, an important underlying principle within this concept must be pointed out – **even though safety is a skill game, chance still has a role to play.** Now, keep in mind that this isn't referring to chance as some mystical entity that determines outcomes. Rather, as with the alarm clock example above, chance refers to the uncertain caused by numerous other variables outside the control of the individual or the organization. In a manner of speaking, chance is the effect of uncertainty, which happens to be the definition of risk (ANSI 2011b). What this means is that because there is always uncertainty in some respect, risk is always a part of daily life. We don't know what the next card off the deck will be and we don't know what will be around the next corner. As safety professionals we have to manage that risk appropriately. But that's where the next few concepts come into play, so we won't get ahead of ourselves yet.

To summarize, the first poker concept teaches us the follow key concepts for risk management:

- Safety is a skill game, where talent and good decision-making determine the outcome.
- The outcomes of the decisions made with respect to safety may not be readily apparent in the short term, but will be clear in the long term.
- Because effective risk management is determined by good decisions, safety professionals must seek to make better decisions by implementing a rigorous personal continual improvement program.
- Finally, even though risk management outcomes are determined primarily by good decision-making, risk always still exists and therefore must be managed.

Concept #2 - Never Put Money On the Table That You Can't Afford to Lose

This concept is true of all gambling endeavors - never play with money that you can't afford to lose. In poker, this is known as "bankroll management." On one level, this is very basic - to play

poker you need money and if you lose all your money you can't play anymore. Therefore, to keep playing you need to ensure that you have enough money to absorb any losses from bad luck that may occur.

Having an adequate bankroll also helps to overcome the possibility of playing with "scared money." When you're playing with money that you can't afford to lose you feel it and for most that will affect the way you play, even if only unconsciously. You may not make a call you're supposed to make because you're afraid of losing, which makes you less profitable overall.

How much money you need in your bankroll depends on numerous factors, such as playing style, the game you're playing, and the types of opponents you're playing against, all of which affect the amount of statistical variance you face. A very important factor in determining bankroll requirements is determining how much risk the player is willing to take. Given the luck factor in poker, it's possible that even winning players can go broke. Each player has their own level of risk tolerance and must determine what risk of going broke, known as risk of ruin, they are willing to take. The winning players determine their level of risk tolerance away from the table, when the temptations of the game cannot influence their decision, and they are disciplined in ensuring that they manage their bankroll appropriately. They don't take risks that would jeopardize their whole bankroll at once.

The underlying concept here is that the only way to eliminate all risk from the game of poker is to not play the game. Therefore, poker players must determine their acceptable level of risk based on their own personal level of risk tolerance. After all, a good poker player knows that nothing ventured means nothing gained.

As we discussed in Concept #1, poker teaches us that risk is an inevitable part of life. As safety professionals, our job is to manage those risks appropriately. To do that effectively, **a definition of acceptable levels of risk must be determined and agreed upon within an organization.** In fact, in many safety and risk management standards, the definition of "safety" is "freedom from unacceptable risk" (ANSI 2011a). The underlying assumption in this definition is that someone or something has defined the level of acceptable risk.

Just like in poker, there is a certain level of subjectivity in this process. Each person and each organization will have varying levels of risk tolerance in both their personal and professional lives. This subjectivity on an organizational level can lead to poor decisions concerning risks that the organization may take. Whole books and research papers have been written on this subject, but the bottom line is that if organizations do not actively identify the acceptable level of risk for themselves then, just like the talent and luck balance discussed above, the organization will be subject to numerous outside influences beyond their control that will determine the effect of uncertainty (risk). For example, a large majority of organizations (and safety professionals) pass the buck on determining risk acceptability to regulatory bodies, such as OSHA. This is ironic because most safety professionals can point to examples where OSHA regulations provide only a minimal level of protection compared to the risk the workers take. And often, OSHA regulations focus people simply on what is required, not on what is possible when the seemingly competing needs of safety, quality, and production work together in a synergistic way that reduces risk and increases quality and productivity.

Further, the concept of acceptable risk must become a part of the organizational safety culture. Employees must understand and accept the principle or else the inertia of innate risk tolerance levels will overcome any formal policies. Take for example the classic cases of poor safety cultures that safety professionals often discuss, such as the NASA Challenger and Columbia disasters and the BP Texas City Refinery explosion. In all of these cases the organizational risk tolerance didn't translate to the employee/decision-maker level, leading to increasingly risky decision-making and, ultimately, disaster. **If the concept of acceptable risk is not meaningfully ingrained into the culture then an inevitable organizational drift towards danger will occur.**

The bottom line is that organizations that want to control their own destiny must define the level of risk that is acceptable and this must filter in a meaningful way into all levels within the organization. This process usually involves coming up with a risk matrix (sometimes more than one) that helps decision makers to visualize the level of risk as well as a firm understanding of the concept of ALARP, the process of lowering risk As Low As Reasonably Practicable (ANSI 2011a). Each organization will be different, making the process of determining acceptable risk different. The process should be comprehensive though. Consider all risks that the organization faces and the level of risk that the organization is willing to take (i.e. the "risk of ruin"). If no risk is acceptable then perhaps the best strategy is risk avoidance, or, in poker terms, perhaps its time to leave the table.

Inevitably, the process of determining acceptable risk will also include determining means of measuring the level of risk and the organization's success in achieving acceptable risk. Once again though, we're getting ahead of ourselves.

To summarize though, the second poker concept teaches safety professionals the following:

- Safety professionals must advise their organizations to determine the level of acceptable risk within the organization.
- The concept of acceptable risk and ALARP must find its way into the culture of the organization at all levels to be meaningful.
- Finally, the process of determining acceptable risk should be comprehensive and address all risks the organization faces.

Concept #3 – Results-Oriented Players Tend to be Losing Players

We've seen that winning poker players know that poker is a skill game that is determined by making good decisions, but also that luck (risk) is still involved. For winning poker players this combination adds up to one vital point – results can be deceiving. Because poker has an element of uncertainty that many call luck the outcomes of any given hand or even any given session of poker may be determined simply by the luck of the draw. If you leave the casino a winner this could be because you played like a super star poker player or because you were incredibly lucky.

Take for example the case of being dealt the best starting hand in Hold 'Em poker – pocket aces. As discussed above, this hand loses against another random hand 15% of the time. You can

play the hand perfectly and still lose a good portion of the time. On the other side of the coin, there are many times where players put their money in as a loser and they win. What does this add up to? Results, especially in the short term, are notoriously unreliable.

There are many reasons for this, partly having to do with statistical probability and partly having to do with psychology (humans are innately very poor at understanding probability. See Kahneman for examples). In general though, in the equation we discussed above where success is a combination of talent and luck, in the short term the luck factor tends to hold more sway, whereas talent wins in the long run. This has two effects on poker players. First, it makes poker extraordinarily complex. Second, it guarantees a nearly never-ending supply of losing for the winning players to take advantage of.

To the first point though, take for example the pocket aces example explained above. Against a random hand pocket aces will win 85% of the time. Mathematically that means for every dollar investment you make, you will make an additional \$0.85 in profit. That is known as the concept of “expected value.” The problem is that expected value is only realized in the long term. In reality, when you play pocket aces you either win the entire pot of money or you lose the entire thing. There is no “second place” in a poker hand. Therefore, each player experiences a sense of finality with each hand that seems to lead itself to a simple, seemingly logical conclusion – I won the hand, therefore I must have played the hand correctly.

Winning players though understand that this is not necessarily the case. The outcome of any given hand or any given session is subject to numerous variables, only some of which are controllable by the winning player. With this extreme influence of uncertainty in the short term the winning players learn to focus not on what they cannot control (e.g. “luck”) but instead focus on what they can control. If you want to tell the winning players from the losing players you have two options – you can either wait a few years and see which players are consistently winning and which aren’t, or you can look at the decisions that the poker player makes on a day-to-day, decision-by-decision basis and evaluate it them that way. Winning poker players understand the old saying “garbage in, garbage out.” You don’t have to wait for the results if you look at the plays that a player makes and see that they are good plays or bad plays. The sum total of those good and bad plays over the long term will inevitably be the results. So, winning players focus not on the outputs, they focus on the inputs.

In risk management world we face a similar dilemma. Incidents don’t happen that often and are subject to multiple variables, some that safety professionals can control and some that they cannot control. Therefore, at least in the short term, safety professionals cannot look at the results, or what are more commonly known as “lagging indicators,” to be reliable measures of the effectiveness of their risk management strategies. **Instead, safety professionals must look to inputs, i.e. “leading indicators,” to help guide them in choosing, implementing, and adjusting risk management strategies.** As with poker players, the sum total of all the leading indicators, if they are chosen right, will identify the lagging indicators over time.

All safety professionals can relate stories of organizations they’ve worked with that have very poor risk management programs that can hardly spell “OSHA,” but have not had a serious incident in a long time. The safety professionals try and try to implement strategies to reduce organizational risks, but management continues to point to the lack of serious incidents as proof that such strategies are not needed. However, good poker players and good safety professionals

know that, at least in the short term, the proof is *not* in the pudding. Because success is equal to the sum of talent and luck, any outcomes in risk management can be a result of a really good/bad risk management program, a really lucky/unlucky organization, or both.

Take a recent example of a multi-national chemical company who experienced a three-fold increase in recordable injuries from one year to the next. Naturally, that organization was alarmed at the increase and began looking to their safety professionals for strategies to bring the numbers back down. Employees at the organization were a bit surprised when told by a consultant that works with them that no matter what they do there is a high degree of likelihood that the numbers will go down the next year. What the consultant understood is the concept of “regression to the mean.” Whenever you have performance that is in the extremes one way or another, subsequent performance is likely to go back to non-extreme levels. An increase of three-fold increase in recordable injuries in one year is a bad sign, but it is extreme for most industries. Therefore, it is very likely that regardless of the safety performance of the organization the injury rates will be less the following year.

So, this is a good thing, isn't it? Any reduction of injuries is a good thing. However, good safety professionals and good poker players understand that success is not measured in the short term. The problem with a reliance on short-term results is that they may reinforce bad strategies or punish good strategies. In the above example, the consultant was trying to force the client to see the importance of identifying good measures for any risk management strategies implemented in response to the upswing in injuries. Otherwise, it is possible that the organization could implement a really poor risk management program that actually increases risks, see that injuries are reduced, and infer that the reason for the reduction is because of their strategies. Remember, with poker the faulty logic was “I won, therefore I must have played the hand correctly.” In risk management the faulty logic is “injuries were reduced, therefore the risk management strategies I implemented were effective.”

The concept of leading indicators seems to be a very puzzling one for many organizations. To illustrate this just look at all of the seminars and articles devoted to identifying leading indicators. However, leading indicators do not have to be a mystery. Consider our equation for success, $\text{success} = \text{talent} + \text{luck}$. Lagging indicators measure the left side of the equation, the success. To achieve success in both poker and risk management though we should focus on the talent. Those are our leading indicators. **The key to developing good leading indicators is to understand those areas of your risk management program that actually reduce risk.** As safety professionals, we are trained and experienced in the reduction of risk. We may not know everything, but we at least have idea of what works and what doesn't. Identify those things, find a way to measure them, set realistic goals, check your progress, and then reassess your goals.

Ideally, your leading indicators should be based upon the specific goals your organization is setting for the risk management system you have in place. Some examples of basic leading indicators though could include measuring the percentage of employees that have received any required training, the number of safety audits completed, or the time frame from the identification of an audit finding to completion of corrective action. They can also be broad and more qualitative, such as whether your organization has implemented a comprehensive risk management or safety management system. Leading indicators can be behaviorally based, such as behavioral observations completed, scores on safety perception surveys, or percent compliance with a written procedure. You can also have more advanced indicators, such as percentage of jobs

that underwent a Prevention through Design process or reviewing the hazards your employees face and identifying the percentage of hazards that were controlled by higher order controls, such as elimination, substitution, or engineering controls, and those that were controlled by lower order controls, such as administrative controls and personal protective equipment. The bottom line is to figure out what it would take to reduce the risks in your organization, find a way to measure that, and then you have a leading indicator.

In summary, our third poker concept teaches us:

- Lagging indicators of safety performance, such as injury rates, are not effective measures alone. A more accurate portrayal of safety performance should include a combination of leading and lagging indicators.
- To develop effective leading indicators simply identify the actions that must occur to reduce risk in your organization, find a way to measure those actions, set realistic goals, and run with it!

Concept #4 – In General, Be Aggressive

In poker a player is generally faced with three options when it is their turn to act. The options may have different names at different times, but in general, in poker you always have the option to fold your cards (i.e. give up), a passive option, which usually involves calling a bet (i.e. matching someone else's bet), or the aggressive option, to bet or raise (i.e. increase the bet size on top of someone else's bet). When faced with this option many players tend to take the middle, passive road. Folding isn't very fun, because most players don't play poker to fold. And the aggressive options involve a lot of risk, which is scary. Therefore, by process of elimination, the player is left with the passive option, not because it's the best option, but because it's the least bad option.

In contrast, winning poker players understand that when it is their turn to act each option should be considered and analyzed, not based on the least bad option, but based on which option will yield the highest expected value. A winning player calls a bet only when doing so will have a positive expected value. Sometimes the option with the highest expected value is to fold, because the other options have a negative expected value. Regardless, the situation dictates the right play, not emotions such as fear or a desire to play and have fun.

Furthermore, in the same way that losing players are often easily identified by how passive they are, winning players are often identified by how aggressive they are. The next time you see a poker table, pay attention to the players and how often they are making passive actions versus how often they are making aggressive actions. More times than not, the better players will be the ones making the aggressive actions and losing players will be the passive ones.

Why is this? Winning poker players understand a very simple, fundamental concept – by being aggressive the winning players give themselves two ways to win a poker hand instead of one way. When players play passively the only way they can win a poker hand is to get to the end of the hand (known as “showdown”) and show the best hand. If you don't have the best hand you lose and if you do you win. By being aggressive though a poker player has two ways to win the hand. They can still get to showdown and show the best hand and win that way. However, when a

player bets and raises often they also can win the hand because all of the other players fold their hands. If everyone folds it doesn't matter what cards you have, you win! So by being aggressive you can win by showing down the best hand or by having everyone fold.

Consider our pocket aces example from before. If we have pocket aces against a random hand we win 85% of the time and lose 15% of the time. So if we get to show down we make \$0.85 profit for each dollar that is put in the pot on average. However, if the players in the hand fold then we win the whole thing. So, in essence, for every dollar in the pot we make \$1, rather than \$0.85, making an extra \$0.15. Of course, we'd rather have the other players in the hand when we have the best hand so they can put more money in when we are ahead, but even if they fold we win because, in theory, 15% of the pot belonged to that person and 85% belonged to us. If they fold we get 100% without any risk.

In risk management we also need to be aggressive, we need to give ourselves two ways to win. To explain this concept lets first take a step back and identify what we mean by "win." What are we trying to achieve as safety professionals? Many safety professionals answer that question by saying that the goal is to prevent incidents or accidents. This of course is a laudable goal but it misses the point. Preventing incidents just for the sake of preventing incidents doesn't make sense. An incident by itself is not bad. Rather, it is the effect that incident has on people, on property, and on the environment that is the problem.

Take for example the Vision Zero Initiative (<http://www.visionzeroinitiative.com>). This organization is devoted to road safety and their vision is zero, but not zero vehicle accidents. The Vision Zero Initiative takes the emphasis off of prevent vehicle accidents and makes their vision a world where no one is seriously injured or killed by vehicle accidents. That certainly makes sense given the extreme level of uncertainty (aka risk) when someone is driving. We can't control all of the variables to stop an accident, but the Vision Zero Initiative suggests that perhaps we can stop people from being killed while driving.

What if the safety profession adopted a similar thought process? What if instead of all of the debate regarding whether achieving zero incidents is possible we focused on a vision where no one goes to work and is seriously injured, gets seriously ill, or is killed as a result? This is still certainly an optimistic vision for the safety profession, but by taking the focus off of preventing incidents and onto preventing serious injuries and fatalities it very simply gives safety professionals two ways to win – by preventing the incident or by preventing the effects of the incident.

With this vision as our backdrop, **risk management then becomes a balancing act of two concepts – prevention and contingency.** The prevention side tends to focus more on preventing the incident, whereas the contingency side is focused on preventing the effects of the incident. Depending on their background many safety professionals tend to gravitate toward one extreme or the other. However, to achieve the goal of preventing all serious injuries, illnesses, and fatalities we need both.

To illustrate this balancing act, consider vehicle accidents again. The prevention of incidents is very difficult, which is why the majority of safety features on an automobile are not designed to prevent accidents, but to prevent people from being seriously injured or killed in accidents. Consider features such as seat belts, air bags, bumps in roadways to signal inadvertent

lane changes, etc. The automobile safety industry realized that the prevention side is somewhat lacking, therefore a stronger focus on contingency is required.

On the other side of the equation, consider confined space entry. Why do we make such a fuss over confined spaces? Certainly there tend to be more hazards in confined spaces than outside, but the same hazards that exist in a confined space can exist outside of a confined space. What's the big deal then? Consider the scenario of an employee being injured by falling off of a ladder. Certainly this is not good no matter what environment we're in. If that employee is in a confined space though we have a much bigger issue than if that same employee with those same injuries were to be outside of the confined space. Why? Because confined spaces are, by definition, hard to get in and out of (i.e. difficult ingress and egress). And its that last part, that confined spaces are difficult to get out of, that makes them problematic because it removes contingency as an important control in preventing serious injuries or fatalities. What if the scenario is a fire instead of an injury? What if it's a heart attack? Quick evacuation of the employee is required, but if we're in a confined space that may not be possible. As a result, we put more of an emphasis on the prevention side of risk management when doing confined space work, particularly when hazards are or may be present, with controls such as confined space attendants and confined space permitting.

So an effective risk management program must incorporate strong elements of both prevention and contingency. What are the hazards your employees face? Can you prevent employees from being exposed to the hazards? If not, can you prevent the hazards from having an effect on the employees? In general, prevention programs should receive the emphasis, but Concepts 1 and 2 taught us that some risk will still exist in the system. Because risk is uncertainty, we may not be aware of the risks that are out there. But a holistic risk management program that emphasizes both key elements will, at a minimum, increase the chance that we can prevent all serious injuries and fatalities at work.

In summary, Concept #4 teaches us:

- Success in risk management should be defined by the prevention of injuries, illnesses, and fatalities, not merely on the prevention of incidents
- A balanced, effective risk management system gives itself two ways of achieving the goal of no serious injuries, illnesses, or fatalities by emphasizing both prevention and contingency.

Concept #5 – To End With a Winning Hand You Should Start With a Winning Hand

When someone sits down in at the poker table they typically have three distinct goals:

1. To win;
2. To play poker; and,
3. To not look stupid.

That second goal seems obvious, but it is important and influential in how people tend to play the game. Most people who play poker recreationally have come to play poker and therefore play as many poker hands as possible. In just one deck of 52 cards there are 1,326 possible

combinations of starting hands for the poker game Texas Hold 'Em. The overwhelming majority of those starting hands are considered "junk" hands. For example, the classic hand that is known as the "beer hand" (ostensibly because one has to drink a lot of beer to think that playing the hand is a good idea) is the two card starting hand of seven, two offsuit (7-2o). This hand is generally considered the worst starting hand in Hold 'Em poker (that is actually not always true though). However, there are also some really strong hands, such as a pair of aces, or hands like an ace and a king (known as "big slick").

Most novice poker players are aware of the hands that are really good and those that are really bad. But the really good hands and the really bad hands make up only a really small percent of the total number of possible hands. If you take the best 10% of hands and the worst 10% of hands you're still left with 80% of the total number of starting hands that are somewhere in between. Most novice players know they should almost always play the top 10% of hands and fold the worst 10% of hands, but those middle 80% of hands they don't know about.

So what inevitably happens? The novice players default to goal #2 – the goal of poker is to play poker. The result is that one of the most obvious mistakes losing poker players make is that they play way too many hands (and then they play those hands passively, as Concept #4 teaches us). The problem that the players are left to deal with is that the majority of those hands are weak hands. So the player always has to deal with the fact that they are starting with a weak hand and they have no clear plan for why they are playing that hand and how they intend to play it.

Compare this to winning players. Pay attention to the winning players in a poker game. Likely these players are not playing nearly as many hands as the other players, and if you asked them why they played a certain hand, if they answered you honestly there is always a well thought out reason. The good player is analyzing a variety of variables to make his/her decisions on which hands to play. Most of these variables are beyond the scope of this article, but things like skill advantage over opponents, stack sizes, previous history, table image, table position, hand playability, etc. are all considered. In general though, the good player ends up playing far less hands, meaning that, on average, when a good player and a bad player are in the same hand, the average hand strength of the good player is greater than that of the bad player, giving the good player a decided advantage.

In essence, the good player is taking a proactive stance to poker hand selection. By playing stronger hands on average the chance that those hands will be beaten is reduced. This is essentially a form of risk reduction because the uncertainty in the outcome is reduced when the chance of a favorable outcome is increased. Proper hand selection is a gate that allows the poker player to choose the risks they want to take.

In the world of risk management safety professionals are growing increasingly frustrated with having to deal with hazards that are inherent in the systems we work in. Whether it's the valve that is 12 feet off the ground, the flat roof, or the chemical process designed to use highly hazardous substances, hazardous environments are routinely built into the job environments of most employees. The unfortunate reality is that safety professionals often have to live in a world of reactivity, always dealing with what's already there. Never able to do the things needed to really reduce the risks faced by employees.

There is a growing emphasis on the need to take a more proactive approach to risk management. **If the safety professional can identify hazards and then take steps to eliminate, reduce, or control the risks derived from those hazards as early as possible then perhaps some real progress towards serious injury, illness, and fatality prevention is achievable.** This concept of proactivity is growing in prominence and is commonly known as Prevention through Design (PtD). The PtD process involves incorporating risk management into the planning elements of the organization. Effectively, PtD forces designers to think about how employees will interact with their designs and what the consequences of that interaction will be. Like proper hand selection in poker, **PtD is a gate that allows the risk management program to control the risks before employees are exposed.**

Implementing a PtD process into an organization does require a bit of a paradigm shift. Instead of the majority of safety resources being spent on the operational side of an organization, PtD forces safety professionals to focus their efforts into planning and design. It will require a shift in the knowledge base for many within the organization. Engineers, designers, and project managers will have to be trained. New processes for hazard analysis and risk assessments must be developed. A great framework for implementing this process is available to safety professionals in the form of the recently developed PtD standard ANSI/ASSE Z590.3-2011. Most importantly though, for PtD to work there has to be top management commitment and PtD must be integrated into the organizational culture.

People within the organization have to believe that hazards are not inevitable. Many winning poker players are quite imaginative in what hands they play and how they play them. In the same way the employees need to be taught to think outside the box and always ask “why.” Sometimes a little creativity can lead to significant risk reduction. Further, a little known secret of PtD is that often the “hazards” that are identified in the process not only are safety issues, but also affect quality and production. By doing more work on the front end the organization can often save immensely in costs over the life cycle of the system.

In summary, with Concept #5 we learn that:

- One of the most effective ways to reduce risks within an organization is through the implementation of a PtD process.
- Organizations should implement a comprehensive PtD program similar to ANSI/ASSE Z590.3-2011.
- Implementation of an effective PtD program requires buy-in at all levels in the organization, with employees thinking differently about the hazards they face and how they interact with them.

Summary

Most people wouldn't associate the gambling game of poker with risk management. However, both poker and risk management, when done effectively, involve the manipulation of risk to achieve favorable outcomes. A fundamental understanding of risk is required for both disciplines. This article is not intended to be an exhaustive review of either discipline, but rather to highlight the similarities in a way that enlightens the safety professional on some fundamental concepts in risk management. Specifically:

- Safety is a skill game, where talent and good decision-making determine the outcome.
- The outcomes of the decisions made with respect to safety may not be readily apparent in the short term, but will be clear in the long term.
- Because effective risk management is determined by good decisions, safety professionals must seek to make better decisions by implementing a rigorous personal continual improvement program.
- Even though risk management outcomes are determined primarily by good decision-making, risk always still exists and therefore must be managed.
- Safety professionals must advise their organizations to determine the level of acceptable risk within the organization.
- The concept of acceptable risk and ALARP must find its way into the culture of the organization at all levels to be meaningful.
- The process of determining acceptable risk should be comprehensive and address all risks the organization faces.
- Lagging indicators of safety performance, such as injury rates, are not effective measures alone. A more accurate portrayal of safety performance should include a combination of leading and lagging indicators.
- To develop effective leading indicators simply identify the actions that must occur to reduce risk in your organization, find a way to measure those actions, set realistic goals, and run with it!
- Success in risk management should be defined by the prevention of injuries, illnesses, and fatalities, not merely on the prevention of incidents
- A balanced, effective risk management system gives itself two ways of achieving the goal of no serious injuries, illnesses, or fatalities by emphasizing both prevention and contingency.
- One of the most effective ways to reduce risks within an organization is through the implementation of a PtD process.
- Organizations should implement a comprehensive PtD program similar to ANSI/ASSE Z590.3-2011.
- Implementation of an effective PtD program requires buy-in at all levels in the organization, with employees thinking differently about the hazards they face and how they interact with them.

Bibliography

American National Standards Institute (ANSI). 2011a. *Prevention through Design: Guidelines for Addressing Occupational Hazards and Risks in the Design and Redesign Processes* (ANSI/ASSE Z590.3-2011). Des Plaines, IL: American Society of Safety Engineers.

American National Standards Institute (ANSI). 2011b. *Vocabulary for Risk Management*. ANSI/ASSE/ISO Guide 73 (Z690.1-2011). Des Plaines, IL: American Society of Safety Engineers.

Kahneman, D. *Thinking Fast and Slow*. New York: Farrar, Starous and Giroux, 2011.